

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

In the Matter of

Docket No. NRC 2018-0279

Pilgrim Nuclear Power Station

Holtec Decommissioning International

Comments Relative to PSDAR of Holtec Decommissioning International,
Filed November 16, 2018

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These comments are directed to the Holtec Decommissioning International (HDI) Post-Shutdown Decommissioning Activities (“PSDAR”) and Site-Specific Decommissioning Cost Estimate (“DCE”), both of which were filed on November 16, 2018 in connection with a License Transfer Application (“LTA”) filed on that same day by Entergy Nuclear Operations, Inc. on behalf of itself and Entergy Nuclear Generation Company (“ENG”) (to be known as Holtec Pilgrim, LLC), Holtec International (“Holtec”), and HDI. (Docket nos. 50-293 & 72-1044)

John G. Lamb, Senior Project Manager of the Special Projects and Process Branch of the Office of Nuclear Reactor Regulation, told me that these “comments for the Holtec PSDAR are due March 4 since it is referenced in the Pilgrim License Transfer Application” (email of Saturday, February 23, 2019, 9:44 PM), and that “Comments are best submitted through Regulations.gov <http://www.regulations.gov> under Docket ID: NRC-2018-0279” (email of Monday, February 25, 2019 2:36 PM). The Federal Register Notice said “*Email comments to: Hearingdocket@nrc.gov.*”

Pilgrim Watch (“PW Petition”) and the Massachusetts Attorney General (“MAG Petition”) have each filed a petition to intervene in the license transfer application proceeding and requesting a hearing. (Docket 50-293 & 72-1044 LT) on February 20, 2019. Those petitions are pertinent to these PSDAR comments.

I understand that the PW Petition and MAG Petition each are part of the Hearing Docket. I expect that copies of documents on the Hearing Docket should be available to NRC staff other than the ASLB. My purpose in filing these comments is to provide information particularly relevant to the PSDAR and DCE to the portion of the NRC staff (“PSDAR Review Staff”) that will be responsible for reviewing the PSDAR and DCE and deciding whether they should be accepted in their current form.

A major concern that these comments address is that Pilgrim's Decommissioning Trust Fund (DTF) will not be sufficient properly to decommission and clean-up the Pilgrim site, that Massachusetts taxpayers will be forced to pay costs¹ that properly should be borne by those that profited from Pilgrim, and that at the same time Holtec will walk away with "profit" that may be as much as about \$800 million dollars.² A closely related concern is that the shortfall in the DTF will leave residents with a contaminated site that will, as the NRC has said, "result in significant adverse health, safety and environmental impacts." (NRC Questions and Answers on Decommissioning Financial Assurance, ML 111950031)

Comments

Requirements for a PSDAR are set forth in Regulatory Guide 1.185 – Standard Format and Content for Post-Shutdown Decommissioning Activities Report (ML 13140A038, "Reg. Guide"), 10 CFR 50.82(a), and 10 CFR 72.30(b).

¹ Because Pilgrim is a merchant plant, it will not be able to collect funds through the rate-setting process. (ML1119/111950331):

The NRC explained the need for full up-front assurance from merchant plants with the following statement: For licensees that will not be able to collect funds through such a process [through rates] after industry restructuring, up-front assurance is necessary to ensure that reasonable financial assurance is provided for all decommissioning obligations. In the more competitive environment that is likely to prevail after restructuring, some of these licensees may not remain financially viable for reasons not related to decommissioning financial assurance, further suggesting the need for up-front assurance. (63 FR 50465, 50469)

² A possible \$800 million Holtec profit is not fantasy.

- a) Holtec will pay very little to buy Pilgrim and the Pilgrim DTF. At a recent meeting of the Massachusetts Nuclear Decommissioning Citizens Advisory Panel, an Entergy Vice-President said that Holtec would pay only a "nominal" price to buy Pilgrim; and referred to the \$1,000 for which Entergy had sold Vermont Yankee.
- b) A Holtec representative told me that Holtec's profit is wrapped into the projected decommissioning costs. My understanding is that a company would expect a profit in the range of not less than 25% to 35%, i.e., of between about \$250,000 and \$350,000.
- c) Holtec will use about \$500,000 in the DTF (to which neither Holtec nor Entergy has contributed anything) for spent fuel management, and likely recover that \$500,000 from DOE. Nothing requires Holtec to put any of that DOE recovery back into the DTF, rather than putting it into a Holtec pocket.
- d) Total potential Holtec profit: \$750,000 - \$850,000. Not bad for a \$1,000 investment.

It seems clear that the NRC review of the PSDAR is intended not only to ensure that a PSDAR satisfies what the Regulatory Guide says are the purposes of a PSDAR, but also to ensure that both the letter and the intent of any specific requirements and regulations are satisfied also.

According to the Regulatory Guide:

“The purposes of the PSDAR are to: ... (3) ensure that the licensee has considered all the costs of the planned decommissioning activities and has considered the funding for the decommissioning process, and (4) ensure that the environmental impacts of the planned decommissioning activities are bounded by those considered in existing environmental impact statements.” (Reg. Guide, pg. 5).

According to the Guide, one thing a licensee’s PSDAR should do is describe planned activities including “Decontaminating radioactive components, including the use of chemical decontamination techniques” and “Removing hazardous radioactive (mixed) wastes.” (Reg. Guide, pp 5, 8)

The Regulatory Guide seems clear that the cost estimate presented in the PSDAR “should be based on the latest annual update and include the cost of any contamination identified during site surveys” (Reg. Guide, p. 9), and that

“a licensee’s PSDAR must include the reasons for concluding that the environmental impacts associated with site-specific decommissioning activities will be bounded by previously issued environmental impact statements. ... Examples of potential impacts that should be examined to ensure that they are within the envelope of impacts predicted in the GEISs on decommissioning or radiological criteria for license termination, FES, or site-specific analysis include: occupational dose; public dose; environmental releases to air, water, and soil and the resulting population doses; quantity of low-level radioactive waste generated; transportation impacts; and impacts from non-radiological hazards, such as dust, noise, water use, and hazardous (non-radiological) waste.”

As discussed below, it seems clear that the Holtec PSDAR does not meet the purpose of a PSDAR, does not consider all of the costs of decommissioning, does not adequately consider funding, does not describe decontaminating radioactive components or removing hazardous materials, is not based on current conditions at the Pilgrim site, does not include the cost of removing contamination at the site, and incorrectly asserts that environmental impacts are “bounded” by incomplete and outdated environmental impact statements.

It also seems clear that the Holtec PSDAR fails to meet the requirements of 10 CFR 50.82(a)(4 and 6). It does not provide either defensible “reasons for concluding that the environmental impacts ... will be bounded by appropriately previously issued environmental impact statements,” or a reasonably accurate DCE, or “reasonable assurance that adequate funds will be available for decommissioning.”

The failure of the Holtec PSDAR to satisfy the requirements of 10 CFR 72.30(b)(1 through 5) seems even clearer. The PSDAR’s supposed “information on how reasonable assurance will be provided” in fact shows that there is no such assurance. There is no adequate contingency factor. Holtec’s assumption that there is no “significant contamination” of the Pilgrim site (DCE, p.2) is based on nothing more than a cursory review of some Entergy 10 CFR 50.75(g) records, and that the no “significant contamination” assumption ignores what is known, and what should be known, about actual site conditions.

Holtec’s failure provide an “identification and justification for using the key assumptions contained in the DCE” may well be the most egregious. The NRC PSDAR Review Staff cannot conduct a meaningful review without knowing what assumptions Holtec made, and whether those assumption can be justified. Many of Holtec’s key assumptions, both stated and unstated, are simply wrong.

Regulatory Guide 1.185 and NUREG 1700 require the NRC PSDAR Review Staff to determine whether a licensee's PSDAR contains the information required by NRC; and, if the PSDAR Review Staff determines that the information provided by the licensee in the PSDAR does not comply with the requirements in 10 CFR 50.82(a)(4)(i), to will inform the licensee in writing of the additional information required by the regulations, and not accept the PSDAR until that information has been provided.

Based on the facts as I know them, it seems that the PSDAR Review Staff's review will inevitably lead to the conclusion that the NRC properly cannot accept HDI's PSDAR and CDE as they now stand. Rather, and as part of its review, the NRC PSDAR Review Staff should require HDI to submit a revised PSDAR that, at the very least:

1. Provides real financial assurance.
2. Includes enforceable agreements with Holtec International that Holtec International will pay any decommissioning cost shortfall, and that any recovery of spent fuel management costs from DOE will be paid into Pilgrim's Decommissioning Trust Fund (DTF).
3. Provides a reasonable "rainy day fund" for unforeseen costs;
4. Recognizes that decommissioning costs will increase at a rate that is faster the general inflation, as the NRC says they will, and bases estimated decommissioning costs on this fact.
5. Explains and justifies Holtec's assumption that the Department of Entergy (DOE) will remove all spent fuel from Pilgrim by the end of 2062, and also explain how HDI and Holtec Pilgrim will pay the costs of spent fuel management if, as seems extremely likely, spent nuclear fuel remains at Pilgrim long after that date.

6. Bases the estimated costs of removing radioactive and hazardous waste on an up-to-date assessment of the actual current condition of the Pilgrim site.
7. Explains and justifies its incorrect assumption that “environmental impacts associated with decommissioning PNPS are bounded” by previous old, inaccurate and incomplete environmental impact statements. (PSDAR 6, 20)

1. Costs and Reasonable Assurance

Simply stated, it seems clear that HDI’s PSDAR and CDE do not provide the financial assurance required by the Regulatory Guide and 10 CFR 72.30(b)(1), or an accurate and realistic estimate of “all the costs of planned decommissioning activities” (Reg. Guide, p 5) as required by both the Regulatory Guide and 10 CFR 72.30(b)(2 through 5).

I recognize that NRC regulations say that a licensee must provide assurance that it has sufficient funds for decommissioning, but the regulation would not affect the real-world situation here.

What the NRC PSDAR Review Staff undoubtedly recognizes, and that HDI skirts, is that (1) NRC jurisdiction extends to, and NRC regulations cover, only licensees, and (2) the only Holtec licensees will be Holtec Pilgrim and Holtec Decommissioning International, both of which are limited liability companies. The NRC might ask that other Holtec entities agree to pay decommissioning costs that these prospective licensees are financially unable to pay, but my understanding is that the NRC has no authority to either force anyone except a licensee to do so. Holtec offers no Parent Company Guarantee (“PCG”), and Holtec representatives have made quite clear that Holtec has no intention of providing any such guarantee. (See, PW Petition, pp 17-18)

The PSDAR Review Staff, as part of its review, should require a sufficient PCG.

Similarly, as Mr. Bruce Watson and other NRC representatives made clear at recent NRC meetings in Plymouth, the NRC has no authority to require that spent fuel management funds recovered from the Department of Energy be returned to the Decommissioning Trust Fund. Once again, Holtec representatives have been very clear; Holtec will not agree to put any funds recovered from DOE into the Pilgrim DTF (See, PW Petition, Declaration of James B. Lampert), even though Holtec expects to use almost half of the total funds in the DTF for the very same spent fuel management costs that DOE might reimburse.

The PSDAR Review Staff, as part of its review, should require an enforceable agreement that Holtec International will put any funds recovered from DOE into the Pilgrim DTF.

Holtec's and Entergy's assertion that HDI and Holtec Pilgrim are financially qualified rests solely on one fact, that Holtec Pilgrim will own the Decommissioning Trust Fund. (LTA, pp 16-17; LTA Enclosure 1, pp 1, 16). So far as can be told, neither HDI nor Holtec Pilgrim has any other assets of significance; neither does either have any apparent ability to obtain any other funds.

As part of its review, the PSDAR Review Staff should determine that HDI's PSDAR and DCE do not meet the purpose of Reg. Guide 11.185 or the requirements 10 C.F.R 70.30(b). The LTA, PSDAR and DCE do not provide reasonable assurance will be provided that sufficient funds will be available, and do not provide any basis for concluding that Holtec Pilgrim or HDI (both of which are limited liability companies) is financially responsible. There are no enforceable agreements that Holtec International will pay any DOE recoveries into the DTF, or that any company will be responsible for any decommissioning cost shortfalls or future unforeseen costs and events.

The PSDAR Review Staff should not accept a PSDAR that does not include these commitments.

As for the PSDAR and DCE themselves, the NRC PSDAR Review Staff should conclude that neither identifies or justifies the key assumptions contained in the DCE, as required by 10 CFR 72.30(b)(3). To the contrary, both the PSDAR and DCE make ignore significant facts and make incorrect assumptions, both of which will result in additional costs, above and beyond any funds available for decommissioning. Although 10 CFR. §72.30 requires it to do so, Holtec has not justified and explained key assumptions on which its cost estimates rest. Some of HDI's factual mistakes and incorrect assumptions that the NRC PSDAR Review Staff should consider in its review include the following:

- A. Even HDI's cost estimates show that the Pilgrim Decommissioning Trust Fund will be essentially exhausted by the planned decommissioning activities; neither HDI nor Holtec Pilgrim has any financial ability to deal with any costs that cannot be paid out of the Fund or that result from unforeseen events.
- B. Holtec's cost estimates do not include an adequate contingency allowance.
- C. Holtec's cost estimates incorrectly assume that decommissioning costs will not rise faster than inflation.
- D. Holtec's estimated spent fuel management costs are based on the unlikely and unexplained assumption that DOE will remove all spent fuel by 2063.
- E. Holtec's cost estimates are based on the incorrect assumption that the Pilgrim site is essentially "clean." It is not. Neither the costs, nor the economic impacts of decommissioning, are "bounded" by previously issued environmental impact statements

- F. Holtec's cost assumptions and cash flow analyses do not include the cost of managing Low Level Radioactive Waste or the cost of decommissioning the ISFSI.
- G. Holtec's cost estimates and its assertion that HDI and Holtec Pilgrim are financially qualified unrealistically assume, among other things, that there will be no other significant potential costs, such as those that would result from fires in structures, systems and components containing radioactive and hazardous material, climate change impacts, repackaging of spent nuclear fuel into new containers approved by DOE for transportation, and mitigating radiological accidents.

2. Neither licensee will have the financial ability to deal with unforeseen events or expenses.

Holtec Pilgrim will own Pilgrim, and HDI will be responsible for Pilgrim's operations, for at least the next 44 years. Reg. Guide 1.185 and 10 CFR 72.30(b) require HDI and Holtec Pilgrim to show that they are financially responsible, e.g., that the DTF that will be owned by Holtec Pilgrim and from which HDI will be paid has or will have not only enough money to decommission Pilgrim. To show that they are financially responsible, these licensees also should be required to demonstrate how it will be financially capable of dealing with other costs that will almost certainly have to be paid between now and 2063.

HDI's and Holtec Pilgrim's optimistic cost estimate scenarios conclude there will be only \$3.6 million left over after decommissioning is complete. No one knows what will happen at Pilgrim between now and when Pilgrim's licenses are terminated; but both history and common sense teach us that something will, and that "something" is more than likely to result in damages and costs more than \$3.6 million, costs that neither licensee will have the funds to deal with.

HDI's "Contingency Allowance of 17 percent ... incorporated into the estimate of License Termination, Spent Fuel Management and Site Restoration costs" is not enough. It may be sufficient to cover some currently unknown costs of HDI's planned "decommissioning activities," but it does not provide the "*adequate* contingency factor" (italics added) required by 10 CFR 72.30(b)(2)(ii). HDI admits that the "Contingency Allowance is ... expected to be fully consumed [and] does not account for inflation or escalation of the price of goods and services over the course of the project." (PSDAR, Sec. 4.5)

In other words, HDI and Holtec Pilgrim do not expect that any of the "contingency allowance" will be available to cover decommissioning costs that will increase faster than the rate of inflation, spent fuel management costs incurred after 2062, site restoration costs resulting from the fact that the Pilgrim site is not clean, or any of the other myriad costs that HDI's DCE and PSDAR have essentially ignored. Much less is there is any suggestion that either licensee will have the "rainy-day fund" that financially responsible company would find essential to deal with unforeseen events over the next almost half-century.

As part of its review, the PSDAR Review Staff should require HDI and Holtec Pilgrim to revise the LTA, PSDAR, and DCE to provide a contingency factor that is adequate not only to pay the actual costs of decommissioning, and but also to provide assurance these two prospective licensees will have the ability to deal unforeseen events and costs between now and whenever Pilgrim's licenses are terminated, as required 10 CFR 72.30(b)(1, 2 and 4) and Regulatory Guide 1.185, p. 5.

3. Holtec incorrectly assumes that decommissioning costs will not rise faster than inflation.

In the PSDAR and LTA, Holtec Pilgrim and HDI assumed that the Decommissioning Trust Fund would grow at the rate of 2% more than inflation. However, they also assumed, incorrectly and with no apparent basis or justification as required by 10 CFR §72.30(b)(3), that decommissioning costs will not rise faster than inflation:

“The decommissioning costs presented in this report are reported in 2018 dollars. Escalation of future decommissioning costs over the remaining decommissioning project life-cycle are excluded.” (PSDAR, p. 19; DCE, pp. 7, 18)

* * *

Additionally, contributions to the PNPS NDT and *cost escalation* are both *assumed to be zero* in the Table 1 analysis. (HDI Request for Exemption, p. E-3, italics added)

These assumptions are simply wrong. Both the history of decommissioning costs and the NRC’s own statements show precisely the contrary – *decommissioning costs will increase more than inflation*.

The NRC’s own Questions and Answers on Decommissioning Financial Assurance (ML1119/ML1119050031) make clear that decommissioning costs *will* increase at a rate higher than the rate of general inflation:

“The NRC formulas represent the cost to decommission today, not in the future. *Due to rising costs, the future value of decommissioning will be much larger than the NRC formula calculated today.* For example, using the range of cost escalation rates based on NUREG - 1307, the increase in cost over a 20-year license renewal period would range from 2.5 to 5.6 times today’s estimated cost, not counting costs that are not included in the formula, such as soil contamination. *The rates of increase in decommissioning cost are higher than general inflation.*”³

³ A 2.5 to 5.6 times increase over 20 years corresponds to a 5% to 9% annual increase. The average rate of U.S. inflation over the past 60 years was 3.7%

These NRC statements are confirmed by Callan Associates' annual analyses and reports of decommissioning funds and costs. Callan's 2015 Nuclear Decommissioning Funding Study⁴ said that "Total decommissioning cost estimates have risen 60% since 2008," an annual rate of about 6%, and Callan's 2018 study reported that decommissioning costs increased by about 80% (from \$55 billion to \$89 billion, *an annual rate of about 5 percent*) from 2008 and 2017.⁵ The average annual rate of inflation between 2008 and 2018 was 1.55%; total inflation over those years was 16.63%.

In short, both the NRC statements and Callan's historical analysis are clear that there is no rational support for HDI's assumption that decommissioning costs will not increase faster than inflation.

But this assumption that any increases in costs will be less than inflation is the keystone of Holtec's claim that the DTF has (or will have) enough money. For example, HDI's estimated "License Termination Costs" are \$592.553 million. If those license termination costs alone (forgetting about spent fuel management costs and site restoration costs) were to increase by even 1% more than inflation over the next 44 years, the DTF could not pay them. If license termination and spent fuel management costs were to increase at an annual rate of 4% more than inflation, a fair assumption based on the NRC statements and Callan reports, the shortfall in the DTF would be more than \$500 million. See PW Petition, pp. 25-26.

This one incorrect Holtec assumption alone shows that Holtec, HDI and Holtec Pilgrim have not considered the real costs of decommissioning or what will actually be needed to provide

⁴ <https://www.callan.com/library/2015>

⁵ <https://www.callan.com/library/2018>

sufficient funding, or funding that will actually be required for decommissioning (See, Reg. Guide, 1.185 p. 5; 10 FR 72.30(b)(1 and 2). Neither do they appear to recognize that far more than the DTF is required to show that HDI or Holtec Pilgrim is financially responsible

As part of its review, the PSDAR Review Staff should require HDI to prepare a revised PSDAR based on the rational and factually supportable assumption that decommissioning costs will increase faster than inflation, likely at an annual rate that is at least about 4% higher than the rate of annual inflation.¹

4. Holtec's unexplained assumption that DOE will remove all spent fuel by 2063

HDI's DCE (p 23) says that

“Consistent with ENOI's Spent Fuel Management Plan (SFMP) for PNPS (Reference 3), HDI assumes a spent fuel management plan for the Pilgrim spent fuel that is based on the assumption that DOE will commence acceptance of PNPS's spent fuel in 2030 and, assuming a maximum rate of transfer described in the DOE Acceptance Priority Ranking & Annual Capacity Report (Reference 10), the spent fuel is projected to be fully removed the Pilgrim site in 2062, consistent with the current DOE spent fuel management and acceptance strategy (References 9 and 10).”

Although 10 CFR 72.30(b)(3) explicitly requires it to do so, HDI never explains the justification for this assumption.

Holtec's Reference 10, DOE's January 2013 *Strategy for The Management and Disposal of Used Nuclear Fuel and High -Level Radioactive Waste*. (“DOE Strategy”)⁶ on which HDI apparently relies, is simply “a framework for moving toward a sustainable program to deploy an

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<https://www.energy.gov/sites/prod/files/Strategy%20for%20the%20Management%20and%20Disposal%20of%20Used%20Nuclear%20Fuel%20and%20High%20Level%20Radioactive%20Waste.pdf>

integrated system capable of transporting, storing, and disposing of used nuclear fuel” (DOE Strategy, p. 1). The DOE Strategy does not even try to guess by when an interim or geologic repository might actually exist and be ready to accept spent nuclear fuel.

Holtec’s assumption that “DOE will commence acceptance of PNPS’s spent fuel in 2030 appears to rest on the DOE Strategy’s statement that “*With appropriate authorizations from Congress,*” “*The Administration currently plans to implement a program over the next 10 years.*” (italics added) The keys here are “With appropriate authorizations from Congress” and “plan to implement.” To my knowledge there have been no such authorizations or implementations in the 6 years since the DOE Strategy was announced. None are mentioned by Holtec.

The unavoidable fact, that Holtec tries to avoid, is that no one knows when there will be an interim or permanent repository that is ready and willing to accept Pilgrim’s spent nuclear fuel.

As part of its review, the PSDAR Review Staff should require HDI to revise the LTA, PSDAR and DCE to explain and justify its assumption that no spent fuel will remain at Pilgrim after 2062. The PSDAR Review Staff should recognize that if Holtec’s assumption that DOE will remove all spent nuclear fuel by the end of 2062 were to slip by only one year, the DTF would be in the red. The PSDAR and DCE estimated an on-going annual spent fuel storage cost of about \$7.2 million in 2018 dollars; The cost of a single additional year would be more than Holtec’s entire “left-over” \$3.6 million.

Holtec also should be required to explain how its assumptions and estimated costs take into consideration the NRC’s Continued Storage Rule that envisioned 100 years of onsite storage

for 100 years. Even if Holtec's estimated about \$7.2 million per year cost never increased by more than inflation, which is extremely unlikely, that many additional years of spent fuel storage would add more than \$380 million to the DTF shortfall.

In short, the NRC Regulatory Guide and Regulations seem clear that the PSDAR Review Staff should require HDI to revise the LTA, PSDAR and DCE to explain and justify its assumption that no spent fuel will remain at Pilgrim after 2062, to recognize that there is a very substantial risk that spent fuel will be at Pilgrim after 2062, and to explain how it would pay for spent fuel management after 2062.

5. Pilgrim is not "clean"

Holtec and the NRC appear to agree that an accurate cost estimate is necessary for a safe and timely plant decommissioning (NUREG-0586, Supplement 1, p. 68; DCE, p.55.) HDI admits that site characterization must be completed as part of "planning and *preparing for* the prompt decontamination and dismantlement of PNPS" (PSDAR, pp 10-11), and that site characterization is essential for Holtec "to supplement plant historical knowledge and the PNPS" and further the identification, categorization, and quantification of radiological, regulated, and hazardous wastes." PSDAR, p. 11.

The PSDAR Review Staff undoubtedly knows that the "discovery" of previously unaccounted for waste has resulted in actual site restoration costs far exceeding what the licensee had earlier assumed. See PW Petition, pp. 34, 92; MAG Petition, 19 and cited Declarations.

Likely because it does not know what contamination actually exists, HDI made the incorrect and unjustified assumptions that Pilgrim's site was essentially clean, and that HDI's PSDAR needed to provide only a "relatively small amount of the decommissioning cost ... for

the demolition of uncontaminated structures and restoration of the site. (p. 62). The only Site Restoration costs HDI's PSDAR foresees "are those costs associated with conventional dismantling, demolition, and removal from the site of structures and systems after confirmation that radioactive contaminants have been removed. (p 19); an assumption that HDI, again, made without knowing the actual condition of the Pilgrim site.

Once again, 10 CFR 72.30(b)(3) explicitly requires HDI to explain the justification for these assumptions. Given known facts that HDI ignored, to say nothing about facts it may not know, the assumptions are wrong, and cannot be justified.

The PSDAR Review Staff review of HDI's LTA, PSDAR and DCE will confirm a number of important facts:

- a) At the time it filed its PSDAR and DCE, Holtec simply did not know what radiological and hazardous wastes now exist on Pilgrim's site.

When HDI filed its PSDAR and DCD on November 16, 2018, Holtec had not characterized the Pilgrim site, and had done essentially nothing to determine what contaminants are on the site or what it would cost to remove them. HDI admits that its cost estimates are based on nothing more than what appears to be an initial cursory "review of PNPS decommissioning records required by 10 CFR 50.75(g) records" (PSDAR, p.22).

Entergy apparently gave Holtec what HDI calls an "Historic Site Assessment (HSA);"⁷ HDI says it will review this HSA sometime in the future "to support the identification,

⁷ Nothing in the LTA, PSDAR or DCE describes what the HSA says, and insofar as we know no copy has been filed with the NRC. The Massachusetts Nuclear Decommissioning Citizens Advisory Panel requested that a copy be given to it, but to our knowledge the request as not yet been met.

categorization, and quantification of radiological, regulated, and hazardous wastes.” PSDAR, pp. 8-9; See also DCE, p. 14).

Sometime in the future, HDI said it will also “plan[] and prepar[e] for the prompt decontamination and dismantlement of PNPS will begin by completing the following activities: ... Conduct site characterization activities so that radiological, regulated, and hazardous wastes are identified, categorized, and quantified to support decommissioning and waste management planning.” Holtec PSDAR, pp 10-11

NUREG-0586 requires HDI’s PSDAR to provide “accurate decommissioning cost [that is] necessary for a safe and timely plant decommissioning.” (NUREG-0586, *supra*.)

But there had been no “categorization, and quantification of radiological, regulated, and hazardous wastes” or “site characterization activities. HDI could not and did not base its PSDAR and estimated costs are on the actual condition of the Pilgrim site; and HDI’s PSDAR thus does not, and could not, provide the “accurate decommissioning cost necessary for a safe and timely plant decommissioning.” (NUREG-0586, *supra*.)

The PSDAR Review Staff should require HDI to provide an estimate of decommissioning costs that is based on an up-to-date site assessment that shows the actual condition of the Pilgrim site.

- b) HDI had no basis or justification for its assumption that there is no “significant contamination” on the Pilgrim site (DCE, p. 22).

Perhaps because it had done essentially nothing to learn what contaminants are actually on Pilgrim’s site before Holtec prepared and filed the LTA, PSDAR and DCE, those documents

ignore that, over the years, Pilgrim has buried contaminated materials on-site and has had many leaks and releases. Entergy's old GEIS and SEIS seem to ignore these facts also.

Pilgrim opened with bad fuel and no off-gas treatment system; later it blew its filters prompting Mass Dept. Public Health to do a case-control study of adult leukemia testing the hypothesis that the closer you lived or worked at Pilgrim there would be an increase in leukemia. The hypothesis was confirmed.⁸ Due to these leaks, many lethal radionuclides, including for example tritium, manganese-54, cesium-137, Sr-90, I-131, cobalt-60, and neptunium⁹ were found in the surface water, groundwater, and soils at Pilgrim at levels exceeding "background" levels. (See PW Petition, p 36)

The PW Petition describes, and provides extensive evidence showing, multitudinous instances of on-site contamination, including a history of releases and contamination resulting from buried pipes and tanks, tritium and other radionuclides in ground water, storm drains and electrical vaults, and hazardous waste dumping. (See PW Petition, pp. 36-48, 50-54, 97-104)

The MAG Petition does so also. See MAG Petition, pp. 13-14 and cited Declarations, particularly the Declaration of John M. Priest, now the Director of the Radiation Control Program at the Massachusetts Department of Public Health. Mr. Priest was employed at PNPS from 2008-2014 as Pilgrim's Radiation Protection Manager, Project Manager, and Emergency Preparedness Manager. Mr. Priest's Declaration, describes his personal knowledge of contamination at the Pilgrim site:

⁸ *The Southeastern Massachusetts Health Study* [published in the *Archives of Environmental Health*, Vol. 51, p.266, July-August 1996 (Pilgrim Motion Request for Hearing and Motion to Intervene, May 2006, Exhibit F-2, NRC Adams, EHD, Pilgrim LR, Pleadings 2006)]

⁹ Neptunium releases into Cape Cod Bay reported by Stuart Shalat, who worked for the contractor doing the refueling in the 1980s. Stuart Shalat, Sc.D. Associate Professor Robert Wood Johnson Medical School, Exposure Science Division, Environmental and Occupational Health Sciences Institute

“Based on my site knowledge, contamination has previously been identified by the utilities in the soil in the vicinity of the condensate water storage tank, the reactor truck lock and radioactive waste building. Further, there were other releases into the environment associated with a former condenser tube refurbishment building east of the radioactive waste truck lock. Historically, contaminated soil from previous site remediation has been “stockpiled” on a small hill along the east protected area fence. DPH does not know whether these sites and others were captured as part of decommissioning records required by 10 C.F.R. § 50.75(g), communicated to Holtec and evaluated by Holtec in its decommissioning cost estimate. Based on my knowledge of this site and experience at other nuclear power plants, it is reasonable to assume based on this site’s history that other contaminants will be identified once excavation and demolition begins.”

I expect that the PSDAR Review Staff will be able to obtain copies of, and will review, the PW Petition and the MAG Petition (including its attached Declarations) as part of the Staff’s work, and for that reason I will not here repeat the extensive evidence that is part of the PW Petition and the MAG Petition. Suffice it to say that the PW Petition and the MAG Petition set forth significant evidence and information showing extensive contamination at the Pilgrim site that HDI did not consider when it created the cost estimates set forth in its PSDAR and DCE. That information similarly does not appear to have been considered in Entergy’s previously issued environmental impact statements.

An up-to-date site assessment and analysis almost certainly would show that, as shown above and in the PW and MAG Declarations, and contrary to what HDI says in the PSDAR and DCE, there *is* significant contamination on the Pilgrim site (See, DCE, p. 2), and that much more than a “relatively small amount of the decommissioning cost [will be required] for the demolition of uncontaminated structures and restoration of the site. (PSDAR p. 62).

An estimate of decommissioning costs based on the actual condition of the Pilgrim site, would almost certainly further show yet more reasons that HDI and Holtec Pilgrim do not have enough financial assets.

As part of its review, the PSDAR Review Staff should require HDI to conduct and provide to the NRC an updated site assessment and analysis of the actual now-existing contamination at Pilgrim, and also to submit a new estimate of decommissioning costs, particularly site restoration costs, based on that assessment and analysis.

6. Neither the costs nor the economic impacts of decommissioning are “bounded” by previously issued environmental impact statements.

10 CFR 50.82(a)(4)(i) required HDI’s PSDAR to

“include the reasons for concluding that the environmental impacts associated with site-specific decommissioning activities will be bounded by previously issued environmental impact statements.”

In response to that requirement, HDI’s PSDAR said that “HDI has concluded that the environmental impacts associated with planned PNPS site specific decommissioning activities are less than and bounded by the previously issued environmental impact statements” (PSDAR, p. 20), and that no new or supplemental EIS is required.

Holtec’s conclusion is wrong. It seems axiomatic that “previously issued environmental impact statements cannot bound future potential environmental impacts resulting from events that were after the previous statements were issued, or that the previous statements did not consider.

Some of the facts set forth, here and in the PW and MAG Petitions, are directed to contamination found after the previous environmental impact statements were issued, and to the

potential environmental impacts resulting from that contamination or from likely future events. Others show potential environmental impacts resulting from contaminations should have been known earlier but were ignored.

In its review, the PSDAR Review Staff should conclude that these facts show, alone or cumulatively,¹⁰ environmental impacts that are potentially significant and were not, properly or in many instances at all, considered by previously issued environmental impact statements.

Under these circumstances, I suggest that the PSDAR Review Staff could not properly conclude that the potential environmental impacts of what HDI will do, and not do, between now and whenever Pilgrim's licenses are terminated, are "bounded" by old, and (as its review should show) often incomplete and inaccurate "previously issued environmental statements."

HDI spends several pages of its PSDAR on its "reasons for concluding that the environmental impacts ... will be bounded," discussing what it says would be the effect of its planned site-specific decommissioning activities on such things as water use, endangered species, socioeconomics, and cultural, historic and archeological resources. But much of what HDI says is incorrect or misleading.

For example, HDI's radiological and public dose is based on risk coefficients recommended by the International Commission on Radiological Protection 28 years ago, rather than the far greater health impacts reported in the National Academies 2006 BEIR VII report. (See PW Motion, pp 54-55), HDI's discussion of socioeconomic costs was based on outdated

¹⁰ "*Cumulative impact* is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (40 USC §1508.7)

2002 GEIS findings rather than the University of Massachusetts 2015 Pilgrim Nuclear Power Station Study: A Socio-Economic Analysis and Closure Transition Guide Book (See PW Motion, pp. 56-57, and the NRC's 2006 Groundwater Contamination Report found that the radiological Environmental Monitoring Program with which HDI says it will comply (LTA, 1.4 Additional Considerations) is badly flawed. (See PW Motion, pp. 50-53).

Also, HDI's discussion of environmental impacts did not consider the potential "cumulative effects" of potential environmental impacts. Either did the HDI PSDAR address the substantial, and often new, significant information that the previously issued impact statements did not consider.

The previously issued statements did not consider, either individually or cumulatively, the economic impacts of the contamination discussed in the PW and MAG Petitions, and at pp. 18-20 above. HDI's conclusion that environmental impacts are "bounded" by these statements apparently did not consider these either.

In addition to not considering the potential impact of the discovery of previously "unknown" contamination, it also seems clear that neither HDI nor the previously issued statements considered, among other things: potential environmental impacts resulting from such things as future on-site radiological incidents (See PW Petition, pp. 68, 111-112, 127, and MAG Petition, p. 13 and cited Declarations), including for example spent fuel fires and dry cask failures (See PW Petition, pp. 68, 77-80, 111-112, 113-114, 118-120, and MAG Petition, p. 14 and cited Declarations); climate change (See PW Petition, pp. 60-61, 104-107, 127, and MAG Petition, pp. 38-40); compliance with Massachusetts requirements (See PW Petition, pp. 663-64, 129 and MAG Petition, p. 13) and acts of malice (See PW Petition, pp. 72-77, 114-118)

The PSDAR Review Staff should require HDI to explain how the previously issued environmental statements consider and properly account for these many potential environmental impacts, individually and cumulatively; and should conclude that “the environmental impacts associated with site-specific decommissioning activities” (PSDAR) cannot be “bounded” by those previous statements that do not do so.

7. Other unaccounted for costs

Finally, there are numerous other costs that cannot be paid from the Pilgrim Decommissioning Trust Fund.

HDI PSDAR and DCE ignore the costs of, for example:

- a. Managing low level radioactive waste (See PW Petition, pp. 58-59);
- b. Potential fires in structures, systems and components containing radioactive and hazardous materials (see PW Petition, p. 59);
- c. The impacts of climate change (See PW Petition, pp. 60-61; MAG Petition, pp 38-39);
- d. Mitigating radiological accidents, such as a spent fuel fire or dry cask rupture See PW Petition, pp. 66-71 and 78-80);
- e. Repackaging dry casks for transportation (See PW Petition, pp 61-63, MAG Petition, p 14)
- f. ISFSI and fuel transfer accidents (see PW Petition, pp. 71-77);

With respect to the ISFSI, the PSDAR Review Staff should also note that HDI estimated that costs of decommissioning it (in 2018 dollars and again based on HDI’s assumption that costs will not increase faster than inflation) will be about \$4.2 million (DCE, pp 66-70),¹¹ and that this amount

¹¹ For some unexplained reason, HDI’s estimated cost to decommission the ISFSI is far less than Entergy’s.

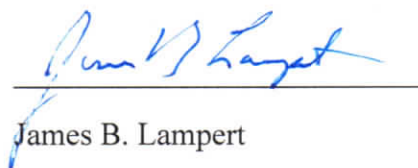
is more than what HDI's cash flow analysis says will be left over after decommissioning the rest of Pilgrim, and HDI's PSDAR and DCE do not appear to say where this money will come from.

The PSDAR Review Staff, as part of its review, should require HDI to provide a cost estimate for each of these, and to show how the DTF will pay them.

Conclusion

I urge the PSDAR Review Staff to require HDI to address all the shortcomings and questions in and raised by the PSDAR filed November 16, 2018, and not to accept any HDI PSDAR until it has properly and satisfactorily done so.

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