NUCLEAR DECOMMISSIONING CITIZENS ADVISORY PANEL

NOTICE OF PUBLIC MEETING

The Nuclear Decommissioning Citizens Advisory Panel ("NDCAP") established pursuant to Chapter 188 of the Acts of 2016 § 14 will hold a public meeting on Monday, September 23, 2024 starting at 6:30 pm. This meeting notice is published pursuant to Massachusetts General Laws, Chapter 30A.

Pursuant to Chapter 2 of the Acts of 2023, this meeting will be conducted in person at Plymouth Town Hall, Great Room, and, as a courtesy, virtually in accordance with applicable law. Please note that while an option for remote attendance and/or participation is being provided as a courtesy to the public and panel members, the meeting will not be suspended or terminated if technological problems interrupt the virtual broadcast, unless required by law. This hybrid in-person/virtual meeting structure will be used as long as the state permits.

Local Scene (pactv.org) will record the meeting and host the virtual meeting.

The link for members of the public to attend and participate in the meeting is: https://pactv.zoom.us/webinar/register/WN_vnUUzMrFQoymLBkh8atPwA.

To call in, Dial: 1 929-205-6099
Webinar ID: 848 5787 6163
Passcode: 112233

The link for NDCAP members to join the meeting will be sent in a separate email to the members of the panel.

The listing below is topics that the chair reasonably anticipates may be discussed at the meeting. The topics may not be discussed in the order listed and may be discussed at various times during the meeting. Not all topics listed may be discussed. Topics not listed may be discussed to the extent permitted by law. The Panel also may discuss any general business of NDCAP.

Please note that for how long a topic may be discussed ("Duration") and when discussion of a topic may begin ("Start Time") are estimates.

	Topic	Presenter(s)	Estimated Duration	Estimated Start Time
1	Call to Order Roll Call of Members	Chair/Panel	5 minutes	6:30 pm
2	Previous Meeting Minutes	Chair/Panel	5 minutes	6:35 pm
3	Holtec Report; Outstanding Requests; Panel Discussion and Questions (See Attachment A)	Holtec/Panel	20 minutes	6:40 pm
4	IWG Report; Panel Discussion and Questions (See Attachment B)	IWG/Panel	15 minutes	7:00 pm

5	Decommissioning Work Accomplished and Planned (See Attachment C)	Panel; State, Holtec and ERM Representatives	35 minutes	7:15 pm
7	Holtec Appeal of DEP Final Determination	Chair/Panel	10 minutes	7:50 pm
8	Public Comments and Questions	Public/Chair/Panel	30 minutes	8:00 pm
9	Adjourn	Chair		

The next NDCAP meeting is planned to be In-Person with Hybrid option via Zoom on November 25, 2024 at 6:30pm.

As suggested by panel members at the last meeting, the Chair expects Topic 5 - Decommissioning Work Accomplished and Planned - will carry over to the November meeting.

Attachment A – Outstanding Requests

September 4, 2024 E-mail to Holtec and Panel Members

Dear Panel Members:

At the July meeting, Mr. Noyes he said would entertain specific financial questions and try to get answers. (Video 53). Mr. Priest suggested that we put together our collective questions together and provide them to Holtec.

I have put together the following questions, based largely on the videos of the May and July NDCAP meetings. Some are financial. I hope that Holtec will be able to respond to them at the September meeting.

If any of you have additional questions, for either Holtec or the state IWG group, please let me and the Holtec and IWG representatives know.

I also ask that Holtec send Panel members copies of the various documents referred to in paragraphs 10 and 13 in advance of the meeting so that Panel members will have time to review them.

Questions

1. Following up, how much water has been added to the spent fuel pool, reactor cavity and dryer/separator each year since Holtec purchased Pilgrim? To be consistent with the total volume figures discussed at the July meeting, please provide these numbers for each of the 12-month periods ending 30 June each year from 2020 through 2024.
2. At the July meeting, Mr Noyes said that Holtec receives regular reports of the status of the decommissioning trust fund (Video, 53). How much has the value of fund gone up since December of 2023? What was the stated value in the most recent report Holtec received?
3. Does Holtec charge corporate overhead or indirect costs to the decommissioning fund? If so, in detail, what is the basis upon which those charges are made?
4. Are direct salaries of staff at the Plymouth facility charged to the fund? If so, how many?
5. Are direct salaries of staff not stationed at the Plymouth facility charged to the fund? If so, how many full and parttime charges are assessed and what functions do these staff serve that is related to Plymouth?
6. With the extension of the clean-up date 8 years and the slowdown of decommissioning activity, will the direct, indirect and overhead charge rates be adjusted to reflect the change in work being done at the facility? If yes or no, please explain, in detail, why or why not and how any changes are being applied.
7. HDI's March 29, 2024 Report on Status of Decommissioning Funding said that total 2023 expenditures for license termination, spent fuel management and site restoration was $86 million.

a. How much of this $86 million came from the Pilgrim's decommissioning trust fund?

b. What percentage of this $86 million was paid to third-party contractors doing decommissioning work at Pilgrim.

c. What percentage was paid to third-parties other than those actually doing decommissioning work?

d. What percentage was paid to any Holtec entity?

8. At the July, NDCAP Meeting, Mr. Priest said he would like to see a breakdown of what Holtec's costs would be to ship the remaining contaminated water offsite. What would the cost be? Please provide the requested breakdown.

   Is that estimated cost more or less than the currently estimated costs of Holtec's appeal of the Final Determination? Please explain.

9. At the July NDCAP meeting, Mr. Noyes said that the alternative evaluations sent to DEP included the costs of shipping Pilgrim's contaminated wastewater, and said that he would send me a copy of those evaluations for distribution to the Panel (Video, 1:29). To date, I have not received them.

10. None

11. At the July NDCAP meeting, Mr. Noye slide presentation said that Holtec had shipped 251,213 cubic feet of low level radioactive waste, containing 1,909 curies to WCS in West Texas. How many truck loads was that?

12. What is Holtec's best estimate of how many more cubic feet of solid LLRW will be shipped from Pilgrim to WCS between now and the completion (excluding the ISFSI) of decommissioning Pilgrim. How many curies? About how many truckloads?

13. At the July NDCAP meeting, Mr. Noyes said that you had sent draft chapters of the LTP to the NRC. The NRC has told me that it does not have copies of these. Please send them to Panel members or to me for distribution to the Panel. Also please send copies of the apparently revised chapters that Mr. Noyes said would be sent to the NRC in September.

14. At the July NDCAP meeting, Mr. Noyes said that earthwork (referred to in the waterfall slide) was anything, not approved to the contrary, that must be graded back to its original 1967 condition. He also said that there has been no change in the planned site restoration described in the PSDAR (Video 1:37)

    The PSDAR described site restoration and site restoration costs as follows:

    "2.4.10 Site Restoration

    During demolition, above-ground structures will be removed to a nominal depth of three (3) feet below the surrounding grade level. Characterization surveys will then be performed in the remainder of the below ground structures and any areas with activity exceeding established DCGLs will be removed. Final Status Surveys, including NRC

verification surveys, will be conducted. Once the NRC approves the Final Status Surveys, the affected area(s) will be backfilled with suitable fill materials, graded, and appropriate erosion controls established. Site restoration activities will begin in non-radiological areas after demolition of buildings and structures outside the radiological controlled area. Final site restoration will be completed after ISFSI decommissioning and demolition is completed."

"3.1 Cost Estimate Summary *** Site Restoration costs 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."

Questions:

a. What is "conventional dismantling, demolition and removal?"

b. What earthwork is included in the PSDAR site restoration costs?

15. Holtec's original PSDAR said that the then-estimated cost of spent fuel management was a little over $501 million. Its March 29, 2024 Report on Status of Decommissioning Funding said that it had spent $294 million on spent fuel management through the end of 2023 and that the then-estimated remaining cost of spent fuel management was $339 million, for a total of $633 million.

a. Will these spent fuel management costs be paid out of the decommissioning trust fund?

b. Will Holtec seek to recover costs of spent fuel management from DOE?

c. What will Holtec do with any money it recovers from DOE? Will it be returned to the fund at least until decommissioning is complete?

16. Mr. Noyes said that the "first delay" in your decommissioning schedule reflects larger than expected cost of labor. (Video, 48)

a. What labor costs have been "larger than expected," and in what years were they incurred?

b. Have "larger than expected costs of labor" caused any significant decrease, e.g., greater than $1 million, in Holtec's expected profit?

17. The following are extracts from the transcript of Senator Markey's May 22, 2022 hearing:

a. Mr. Schofield - "It was interesting what [Dr. Singh] just said, because I think what he was saying was that the parent organization, what he was saying today was that they would take responsibility for any future shortfalls" (p. 113).

b. Senator Markey – "So it is very important that we have an understanding that the parent company will accept full responsibility. I don't know, Mr. Schofield, if there is some way we can formalize that. But I think it would be important. As much as I do believe in the sanctity of Senate hearings, to have a legal document that accompanies the

verbal assurances from Mr. Singh I think it will be very important for the people of Plymouth to hear" (p 116)

c. Dr Singh – "If it doesn't [indiscernible] we will provide the guarantee" (p. 116)

Question, asked by me asked at the last NDCAP meeting: Will Holtec, and by Holtec I include the entire Holtec organization up to and including Holtec International, be responsible for all of the costs of decommissioning up to and including the ISFSI? Will the costs of completing the work be paid by Holtec?

18. Pages 3-4 and Appendix A of the February 16, 2024 revised environmental site assessment work plan lists buildings and other structures, defined in the Settlement Agreement as "all underground structures, including building foundations, buried piping, and contained piping" (Par. 10(g)(3)) that have been removed, will be removed, and that will not be removed. The PSDAR says that buildings will be removed to a depth of 3 feet below grade.

The Settlement Agreement also says:

"Settlement Agreement Asbestos: III site Restoration… (h)(i)

(i) Notwithstanding any other provision in this Agreement, Holtec shall abate all asbestos and lead containing materials prior to any demolition activities and remove all asbestos and lead containing material from the Site for disposal at an authorized off-Site location, unless otherwise approved and agreed to in writing by DEP."

At the July NDCAP meeting Mr. Noyes, and I believe also Mr. Pickering, said that core samples have been and will be taken of concrete structures.

Questions

a. If a building or other structure (including pipes and tanks) is at or extends to a depth greater than 3 feet below grade, have and will core samples of that structure be taken at depths greater than 3 feet below grade?

b. What removed concrete from what structures has been found to include asbestos containing materials, either in the concrete or a coating of the concrete?

Thanks, particularly to Holtec, for your cooperation .

Jim Lampert

Attachment B – General Questions to IWG

This attachment relates to Agenda Item No.4.

A. The following questions were submitted in March by Chris Nord, Amesbury, MA, submitted in March. In both March and August I sent emails asking they be answered.

1) [for: Jack Priest, Mass. DPH; David Noyes, Holtec] Apparently, there is Low-Level radioactive waste buried on-site at the Pilgrim reactor. Does the State of Massachusetts know where the waste is buried, and how much there is? Is Holtec going to be responsible for its removal and cleanup?

2) [for: Seth Pickering, Mass. DEP] According to former owner Entergy experts Dr. Kevin O'Kula and Dr. Steven Hanna, approximately 60% of the radioactive water vapor from Pilgrim will fall back into the ocean off the coast of Massachusetts. Taking into account the hundreds of thousands of gallons of water already sent skyward through forced evaporation, this seems to violate the Ocean Sanctuaries Act—which the State of Massachusetts has vowed to enforce. Why is there no enforcement?

3) [for: Seth Pickering, David Noyes] According to Marco Kalt0fen, Ph.D. of Boston Chemical Data Corp., Holtec's forced evaporation of all the radioactive water at Pilgrim will create a concentration of radionuclides on-site one million times that found in Massachusetts coastal waters. What safeguards are in place from the State of Massachusetts or the NRC, to protect our regional environment from these toxins; and what is Holtec's plan for the proper final handling of this incredibly dangerous residual waste?

4) [for: Jack Priest, Seth Pickering] In August, 2023, and February 2024, radiation monitors at the Pilgrim site failed their calibration tests. If the State of Massachusetts and Holtec are indeed interested in assuring the residents near the Pilgrim site of their safety, how were these radiation monitors allowed to fail two calibration tests in a row? Were other radiation monitors operating at the time that were functioning properly; and have these failed monitors been either restored to working order, or replaced?

B. On August 9, 2024, Mr. Lampert sent Seth Pickering and Gerard Martin the following email:

> Gerard and Seth:
>
> In the late 1960's and early 1970's when Pilgrim was constructed, it was common to use asbestos in concrete to provide strength, durability and flame resistance.
>
> Have the concrete structures, particularly the containment and buildings (including foundations), been tested for asbestos?
>
> If so, what were the results? If not, when will they be?
>
> Has anyone looked at the building plans and specifications to see what concrete mixes were used?
>
> Jim

Mr. Pickering's August 20, 2024 response was:

> Good Afternoon Jim,
>
> Here is a link to MassDEP's Asbestos Information and Resource Guide online: MASSACHUSETTS. All built structures in Massachusetts, including residential, commercial, and institutional buildings, are subject to MassDEP's asbestos regulation at 310 CMR 7.15: download (mass.gov).
>
> In response to your questions:
>
> 1. Question: Have the concrete structures, particularly the containment and buildings (including foundations), been tested for asbestos? Answer: Not that I'm aware of. The containment building and the turbine building have not been scheduled for demolition yet.
> 2. Question: If so, what were the results? Answer: Not tested to date, no results.
> 3. Question: If not, when will they be? Answer: If applicable to 7.15, concrete will be tested in accordance with that regulation for asbestos content. Except for the owner of an Owner-Occupied, Single-Family Residence who performs asbestos abatement activities at the owner's residence involving solely non-friable asbestos containing material (ACM), the owner/operator of a facility or facility component that contains suspect ACM shall, prior to conducting any demolition or renovation, employ or engage an asbestos inspector to thoroughly inspect the area to be worked on. Therefore, owners and/or operators (e.g., building owners, renovation, and demolition contractors, plumbing and heating contractors, flooring contractors, etc.) need to determine all asbestos containing materials (both non-friable and friable) that are present at the site and whether those materials will be impacted by the proposed work prior to conducting any renovation or demolition activity.
> 4. Question: Has anyone looked at the building plans and specifications to see what concrete mixes were used? Answer : No, not at MassDEP.

Attachment C – Decommissioning Work Accomplished and Planned

This attachment relates to Agenda Item 5. This subject was on the July NDCAP agenda but the panel agreed to move it to the September, and possibly also the November meeting.

The attachment has 3 sections. Section 1 was attached to the July NDCAP Agenda. Section 2 is questions that were sent to Seth Pickering and Jack Priest on July 12, 2024. Section 3 is questions sent to Holtec on July 10, 2024.

Section 1. Attached to July NDCAP Agenda

Potential Subjects for Discussion - Settlement Agreement and ESA Work Plans

A. In General

1. The 2022 version said that "where requested information had been previously provided it has been incorporated into this revised ESA Work Plan to facilitate review."

   Were any other materials sent to or considered by the Commonwealth in connection with reviewing the 2022 Work Plan?

2. The Settlement Agreement says that that "Pilgrim" means not only the Pilgrim Nuclear Power Station but also all "land and associated facilities (including the ISFSI) and equipment transferred to Holtec on the closing date," and that "Site" or "Pilgrim Site" includes "any place or area where radiological or non-radiological oil or hazardous material (as defined by the Massachusetts Contingency Plan) has been deposited, stored, disposed of or placed, or otherwise come to be located.

   Has Holtec sampled/tested all areas and places on the Site where radiological or non-radiological oil or hazardous material (as defined by the Massachusetts Contingency Plan) [and including the so-called doughnut hole, may have] been deposited, stored, disposed of or placed, or otherwise come to be located."

3. The Plymouth-Carver aquifer is located below the Site, the Site slopes towards the Bay, and that underground water flows in that direction also.

   In preparing and reviewing the ESA Work Plans what consideration was given to the potential flow of contaminated water into the bay or aquifer? What in the ESA Work Plans is intended to prevent radioactivity from making its way into Cape Cod Bay or the Plymouth-Carver Aquifer?

4. Paragraph 10(e) of the Settlement Agreement says "Holtec shall comply with Chapter 21E and the MCP as applicable."

   What sections/paragraphs of Chapter 21E and the MCP are potentially applicable?

What portions of the 2022 and 2024 Revised Work Plans are directed to compliance with Chapter 21E or the MCP?

5. Page 7 of the 2024 Revised ESA says that "Table 1 includes two sets of calculated DCGL values, one for "building surfaces based on the building occupancy exposure scenario" and another "for soil based on the resident farmer scenario."

On what actual data and measurements are the "Calculated DGGL values for Building Surfaces and Soil" at page 6 of the 2024 Revised ESA based?

There are no values based on the basement inventory scenario. Why were they not included? Will all three DCGL's be used in determining compliance with the Massachusetts Standard?

6. Paragraph 11(e) of the Settlement Agreement says that the ESA should "include a proposed list of potential radiological and non-radiological contaminants for which sampling and testing will be conducted at the Site."

Where in either the 2022 or the 2024 Revised ESA is a "list" of the radiological and non-radiological contaminants that ERM or Holtec will sample and test?

B. The Massachusetts Standard

7. Section 10(d) of the Settlement Agreement says, "Holtec shall comply with the following requirements for addressing radiological contamination at the Site." Section 10(d)(1) requires Holtec to "demonstrate compliance, or progress toward compliance, with 105 C.M.R. § 120.245."

At this point in time, does Holtec expect to demonstrate compliance with the Massachusetts radiological standard at the time of Partial Site release?

8. 105 CMR 120.245 says when "A site will be considered acceptable for unrestricted use."

What is the "site" referred to in this sentence of the CMR? Is it only the relatively small (I believe about 150 acre) parcel on the water side of Rocky Hill Road, or does it also include the 15,000+ acre parcel on the other side? To which do the "requirements for addressing radiological contamination at the Site" apply?

9. In Vermont, perhaps following the NRC's resident farmer scenario, dose is not averaged but rather is measured and/or calculated survey sector by survey sector, and no sector is allowed to exceed the limit.

How will compliance with the Massachusetts standard be determined if, for example the average residual radioactivity above background for the overall Site meets the Massachusetts standard but the residual activity some portion or portions of the Site is higher and does not?

10. 105 C.M.R. § 120.245 says, "A site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a TEDE to an average member of the critical group that shall not exceed 0.10 mSv (10 mrem) per year, including that from groundwater sources of drinking water and the residual radioactivity has been reduced to levels that are as low as reasonably achievable (ALARA)." 120 CMR 120.005 says that Critical Group "means the group of individuals reasonably expected to receive the greatest exposure to residual radioactivity for any applicable set of circumstances."

Does Total Effective Dose Equivalent (TEDE) include not only the dose from residual radioactivity activity relative to site soils but also any dose from radioactivity that remains in any below-grade structure or building materials, and from any residual reactivity on indoor building surfaces?

Is TEDE the sum of the effective dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures)?

C. Modeling Dose

11. Section 10(d)(5) of the Settlement Agreement says, "To demonstrate compliance with Paragraph 10(d), Holtec shall use … the 'resident farmer scenario' and 'basement inventory model' to model the potential exposure to residual radioactivity in all pathways, provided, however, that the Parties may mutually agree to an alternative standard for modeling if an approved future reuse supports the use of such an alternative standard."

The AGO's letter of January 19, 2024 raised "several issues pertaining to the models Holtec will use for dose assessment of radionuclides of concern." The AGO said that "Holtec has introduced a 'Building Occupancy Scenario,' and that 'This model is not addressed in the Settlement Agreement and may not be as conservative as the two models specified in the Settlement Agreement…."

Why may the Building Occupancy Scenario "not be as conservative as the two models specified in the Settlement Agreement?"

Why did the January19, 2024 letter suggest that Holtec might "add[] the Basement Inventory to the list of models that Holtec will use." The two models specified in the Settlement Agreement were chosen because they are conservative. What would be gained by adding a third scenario that the AGO says "may not be as conservative?"

12. RCP Comment 3 in the AGO letter says, "Holtec cannot demonstrate compliance with paragraph 10(d) unless it uses both the Resident Farmer Scenario and the basement inventory model," and that "Holtec must revise" the February 2022 Revised ESA Work Plan to read that the basement inventory model "will be used to model residual radioactivity for compliance with the state radiological standard."

How might or will these models be used to determine (i) whether Holtec has complied or demonstrated progress towards compliance with the Massachusetts

standard, and (ii) the greatest exposure that might potentially be received by an individual not only from residual radioactivity activity relative to site soils but also from any radioactivity that remains in any below-grade structure or building materials, and any residual reactivity on indoor building surfaces?

D. Removal of Structures

13. Section 10(g)(2) of Settlement Agreement says, "By the License Termination date, Holtec shall remove all structures that remain at the Pilgrim Site," and Section 10(g)3) says that this requirement applies "to all underground structures, including building foundations, buried piping, and contained piping, unless retention of such structures is approved by DEP through issuance of a beneficial use determination pursuant to 310 C.M.R. § 19.060."

The listing in Par. 2.1 of the 2024 Revised ESA Work Plan appears to include only buildings, five storage tanks, and the "low level radwaste facility" in the listing of on-site structures that have been or will be demolished.

There are many underground pipes and tanks on the Pilgrim Site. Entergy provided a diagram of all buried pipes and tanks during license renewal litigation.

Where in the ESAs has Holtec provided a listing of all "all underground structures" that will be removed?

By when does Holtec intend to remove all of them on the Site, possibly excepting those in the ISFSI?

14. Section 10(g)(1) of the Settlement Agreement says "(1) By the Partial Site Release date, Holtec shall remove all structures at the Pilgrim Site necessary for Partial Site Release…"

What structures, including underground structures as described in paragraph 13 above, it might be necessary to remove "for Partial Site Release?"

What portions of the ESAs deal with the requirements of Sections 10(g)(1) and (2) of the Settlement Agreement?

How will Holtec characterize each below grade structure? Will it test both inside and outside of buildings and pipes for radiation?

E. Disposal and Use of Contaminated Materials

15. Section 10(h) of the Settlement Agreement says "Holtec may not dispose of any radioactive waste materials on the Site or use rubblilized radioactive waste materials as fill at the Site."

What does the term "radioactive waste materials" encompass?

What portions of the 2022 and 2024 ESAs might help ensure that Holtec will comply with this requirement

16. Paragraph 12 of the Settlement Agreement says, “Upon approval of the revised work plan, Holtec shall … perform all actions in the Initial Pilgrim Environmental Site Assessment work plan.”

Section 2.12 of the 2022 Revised ESA Work Plan says, “Below structure soil that is radiologically contaminated will be removed for disposal will be handled and processed as radiological waste and / or mixed waste dependent on applicable non-radiological constituents.”

Does paragraph 12 of the Settlement Agreement mean that Holtec will remove any soil below any structure having a detectible radiation level site as said in Section 2.12 of the 2022 Revised Work Plan, and will not use any such soil for fill?

F. Beneficial Use

17. Paragraph 10(g)(3) of the Settlement Agreement says, “DEP understands that Holtec will seek approval through a beneficial use determination to leave clean, uncontaminated underground structures, such as concrete foundations and similar structures, in place at depths of three (3) feet or more below the grade existing on the Effective Date.”

What does “clean, uncontaminated” mean? Does it mean there must be no detectible level of radiation above background and no hazardous material (as defined in Ch. 21E)?

As of now, does Holtec intend to seek approval to retain any structures through a beneficial use determination, with respect to what structures does Holtec intend to do so, and why does Holtec think it is desirable or necessary to do so?

18. The Commonwealth’s regulations appear to say that Beneficial Use means the use of a material as an effective substitute for a commercial product or commodity, and that the material cannot be a hazardous material as defined in Ch. 21E.

Is that your understanding of the regulations applicable to a potential beneficial use determination to leave underground structures on the Pilgrim Site”

19. According to Ch. 21E, "Hazardous material" is “material including but not limited to, any material, in whatever form, which, because of its quantity, concentration, chemical, corrosive, flammable, reactive, toxic, infectious or radioactive characteristics, either separately or in combination with any substance or substances, constitutes a present or potential threat to human health, safety, welfare, or to the environment, when improperly stored, treated, transported, disposed of, used, or otherwise managed.

When would fill or a structure that was not removed include “ .material … which, because of its quantity, concentration, chemical, corrosive, flammable, reactive, toxic, infectious or radioactive characteristics … constitute[] a present or potential threat to human health, safety, welfare, or to the environment?”

20. 310 CMR 19.060(2) says “a) The applicant [for a determination of beneficial use] must demonstrate to the Department's satisfaction that the proposed secondary materials and uses are beneficial … and “b) The Department may grant a beneficial use determination, and may allow a beneficial use determination to remain in effect, only to the extent, and only while, the Department is satisfied that such secondary materials and uses are beneficial…,” and pose an insignificant potential hazard to public health, safety or the environment.

Does “beneficial” require that the use be “beneficial” to some person or entity other than the applicant?

How might the retention of “structures” on the Pilgrim Site be “beneficial” to any person or entity other than Holtec?

21. Many buildings and other structures on the Pilgrim Site may be “at depths of three (3) feet or more below the grade existing on the Effective Date.”

For what “structures” will Holtec seek a beneficial use determination to leave the structure in place?

Section 2 - Sent to Seth Pickering and Jack Priest on July 12, 2024

Seth and Jack:

It seems that the Commonwealth has approved, or shortly will approve, the Revised ESA Work Plan that Holtec (HDI and Holtec-Pilgrim) and ERM submitted to the state in February of 2022 as supplemented with a 2024 Revised ESA Work Plan that was submitted on February 16, 2024.

It is important to ensure for panel members and the public to understand the ESA, the Commonwealth's review of it, and how Holtec's decommissioning plans will accomplish the work set forth in the ESA and required by the Settlement Agreement.

The two of you are NDCAP's IWG representatives to NDCAP. There are a number of questions that I would appreciate you answering at the next NDCAP meeting.

Given your experience and involvement in IWG, I expect that you know the answers to most of them. If you would like to ask Seth Schofield (or anyone else) to attend, either in person or virtually, you should feel free to ask them to do so.

A. <u>In General</u>

1. The 2022 version said that "where requested information had been previously provided it has been incorporated into this revised ESA Work Plan to facilitate review."

In reviewing the February 2022 Work Plan, were any materials other than the 2022 Work Plan itself were considered or reviewed, Could you provide NDCAP copies of any such materials.

2. When reviewing the 2022 Work Plan was reviewed, what was the Commonwealth's understanding with respect to where Holtec had determined that radiological and non-radiological oil or hazardous materials might be, or would not be, located? Do you know how these determinations were made, and what areas or places Holtec has sampled?

To best of the Commonwealth's knowledge, has Holtec sampled/tested all areas and places, both on-site and off-site, "where radiological or non-radiological oil or hazardous material (as defined by the Massachusetts Contingency Plan) [and including the so-called doughnut hole, may have] been deposited, stored, disposed of or placed, or otherwise come to be located." See the definition of "Site" in the Settlement Agreement

3. My understanding is that the Plymouth-Carver aquifer is located below the Site, the Site slopes towards the Bay, and that underground water flows in that direction also. To the best of your knowledge, are these understandings correct? In any event, during review of the 2022 Revised Work Plan, what consideration was given to the potential flow of contaminated water into the bay or aquifer?

4. Paragraph 10(e) of the Settlement Agreement says "Holtec shall comply with Chapter 21E and the MCP as applicable."

To the best of your knowledge what sections/paragraphs of Chapter 21E and the MCP are potentially applicable?

Could you point to any portions of the 2022 and 2024 Revised Work Plans that are directed to compliance with Chapter 21E or the MCP?

5. To the best of your knowledge and understanding, on what actual data and measurements are the "Calculated DGGL values for Building Surfaces and Soil" at page 6 of the 2024 Revised ESA based?

6. Paragraph 11(e) of the Settlement Agreement says that the ESA should "include a proposed list of potential radiological and non-radiological contaminants for which sampling and testing will be conducted at the Site."

Could you point NDCAP to where either the 2022 or the 2024 Revised ESA has a "list" of the radiological and non-radiological contaminants that ERM or Holtec will sample and test?

B. <u>The Massachusetts Standard</u>

7. Section 10(d) of the Settlement Agreement says, "Holtec shall comply with the following requirements for addressing radiological contamination at the Site." Section 10(d)(1) requires Holtec to "demonstrate compliance, or progress toward compliance, with 105 C.M.R. § 120.245."

An obvious question, in determining compliance with the Massachusetts Standard, what is the "site" referred to in the standard? Is it only the relatively small (I believe about 150 acre) parcel on the water side of Rocky Hill Road, or does it also include the 15,000+ acre parcel on the other side? To which do the "requirements for addressing radiological contamination at the Site" apply?

The Settlement Agreement says that that "Pilgrim" means not only the Pilgrim Nuclear Power Station but also all "land and associated facilities (including the ISFSI) and equipment transferred to Holtec on the closing date," and that "Site" or "Pilgrim Site" includes "any place or area where radiological or non-radiological oil or hazardous material (as defined by the Massachusetts Contingency Plan) has been deposited, stored, disposed of or placed, or otherwise come to be located."

Another question, how is compliance determined if, for example the average residual radioactivity above background for the entire site meets the Massachusetts standard but the residual activity some portion or portions of the Site is higher and does not? My understanding is that in Vermont, and perhaps following the NRC's resident farmer scenario, dose not averaged but rather is measured and/or calculated survey sector by survey sector, and that no sector is allowed to exceed the limit. What is the story here?

8. 105 C.M.R. § 120.245 also says, "A site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a TEDE to an average member of the critical group that shall not exceed 0.10 mSv (10 mrem) per year, including that from groundwater sources of drinking water and the

residual radioactivity has been reduced to levels that are as low as reasonably achievable (ALARA)." 120 CMR 120.005 says that Critical Group "means the group of individuals reasonably expected to receive the greatest exposure to residual radioactivity for any applicable set of circumstances."

My understanding is that TEDE is the sum of the effective dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures). Is this your understanding?

What is your understanding? Does total Effective Dose Equivalent (TEDE) include not only the dose from residual radioactivity activity relative to site soils but also any dose from radioactivity that remains in any below-grade structure or building materials, and from

any residual reactivity on indoor building surfaces?

Where is this addressed/explained in the 2022 and 2024 Work Plans, or in any CMR?

C. Modeling Dose

9. Section 10(d)(5) of the Settlement Agreement says, "To demonstrate compliance with Paragraph 10(d), Holtec shall use … the 'resident farmer scenario' and 'basement inventory model' to model the potential exposure to residual radioactivity in all pathways, provided, however, that the Parties may mutually agree to an alternative standard for modeling if an approved future reuse supports the use of such an alternative standard."

The AGO's letter of January 19, 2024 raised "several issues pertaining to the models Holtec will use for dose assessment of radionuclides of concern." The AGO said that "Holtec has introduced a 'Building Occupancy Scenario,' and that 'This model is not addressed in the Settlement Agreement and may not be as conservative as the two models specified in the Settlement Agreement…."

Could you explain why the Building Occupancy Scenario "may not be as conservative as the two models specified in the Settlement Agreement?"

Could you also explain why the January19, 2024 suggested that Holtec might "add[] the Basement Inventory to the list of models that Holtec will use." The two models specified in the Settlement Agreement were chosen because they are conservative. What would be gained by adding a third scenario that the AGO says "may not be as conservative?"

RCP Comment 3 in the AGO letter says, "Holtec cannot demonstrate compliance with paragraph 10(d) unless it uses both the Resident Farmer Scenario and the basement inventory model," and that "Holtec must revise" the February 2022 Revised ESA Work Plan to read that the basement inventory model "will be used to model residual radioactivity for compliance with the state radiological standard."

Please explain how you currently expects those models to be used.

Please also explain how, the best of your understanding or knowledge, how each of these models might or should be used to determine (i) whether Holtec has complied or demonstrated progress towards compliance with the Massachusetts standard, and (ii) the greatest exposure that might potentially be received by an individual not only from residual radioactivity activity relative to site soils but also from any radioactivity that remains in any below-grade structure or building materials, and any residual reactivity on indoor building surfaces.

10. Page 7 of the 2024 Revised ESA says that "Table 1 includes two sets of calculated DCGL values, one for "building surfaces based on the building occupancy exposure scenario" and another "for soil based on the resident farmer scenario." There are no values based on the basement inventory scenario.

To the best of your knowledge, how is e basement inventory scenario important to determining dose exposure? What is your understanding of why Holtec did not include DCGLs for the basement inventory scenario? Has this been discussed with Holtec? Do you know the combined DCGL value for all three scenarios, and if so what is it?

D. Removal of Structures

11. Section 10(g)(2) of Settlement Agreement says, "By the License Termination date, Holtec shall remove all structures that remain at the Pilgrim Site," and Section 10(g)3) says that this requirement applies "to all underground structures, including building foundations, buried piping, and contained piping, unless retention of such structures is approved by DEP through issuance of a beneficial use determination pursuant to 310 C.M.R. § 19.060."

The listing in Par. 2.1 of the 2024 Revised ESA Work Plan appears to include only buildings, five storage tanks, and the "low level radwaste facility" in the listing of on-site structures that have been or will be demolished.

There are many underground pipes and tanks on the Pilgrim Site. Entergy provided a diagram of all buried pipes and tanks during license renewal litigation. In the course of ESAs, has Holtec provided a listing of all of them?

12. Section 10(g)(1) of the Settlement Agreement says "(1) By the Partial Site Release date, Holtec shall remove all structures at the Pilgrim Site necessary for Partial Site Release…"

What is your understanding with respect to what structures, including underground structures as described in the paragraph above, it might be necessary to remove "for Partial Site Release?"

13. To the best of your understanding, what portions of the ESA deal with the requirements of Sections 10(g)(1) and (2) of the Settlement Agreement?

14. To the best of your knowledge, what process will Holtec use to characterize each below grade structure? Will it include testing both inside and outside of buildings and pipes for radiation? What the steps do you think Holtec might need to take if removal of those structures is necessary for Partial Site Release or by License Termination date?

15. To the best of your knowledge and understanding, what portions of the 2022 and 2024 ESAs might help ensure that Holtec will comply with Sec. 10(h) of the Settlement Agreement: Holtec may not dispose of any radioactive waste materials on the Site or use rubblilized radioactive waste materials as fill at the Site"?

E. Disposal and Use of Contaminated Materials

16. Par. 12 of the Settlement Agreement says, "Upon approval of the revised work plan, Holtec s shall … perform all actions in the Initial Pilgrim Environmental Site Assessment work plan."

17. Section 2.12 of the 2022 Revised ESA Work Plan says, "Below structure soil that is radiologically contaminated will be removed for disposal will be handled and processed as radiological waste and / or mixed waste dependent on applicable non-radiological constituents."

Does paragraph 12 of the Settlement Agreement require Holtec to remove any soil below any structure having a detectible radiation level site as said in Section 2.12 of the 2022 Revised Work Plan, even if that detectable radiation level is not equal to or greater than 10 millirem per year for all pathways? .

F. Beneficial Use

18. Paragraph 10(g)(3) of the Settlement Agreement says, "DEP understands that Holtec will seek approval through a beneficial use determination to leave clean, uncontaminated underground structures, such as concrete foundations and similar structures, in place at depths of three (3) feet or more below the grade existing on the Effective Date."

To the best of your understanding, what does "clean, uncontaminated" mean? Does it mean there must be no detectible level of radiation above background and no hazardous material (as defined in Ch. 21E)? If not, what is your understanding?

Could you explain for the Panel the process and requirements for obtaining a beneficial use determination?

19. My understanding is that Beneficial Use means the use of a material as an effective substitute for a commercial product or commodity, and that the material cannot be a hazardous material as defined in Ch. 21E. If you have a different understanding, please explain it.

20. 310 CMR 19.060(2) says "a) The applicant [for a determination of beneficial use] must demonstrate to the Department's satisfaction that the proposed secondary materials and uses are beneficial … and "b) The Department may grant a beneficial use determination, and may allow a beneficial use determination to remain in effect, only to the extent, and only while, the Department is satisfied that such secondary materials and uses are beneficial…," and pose an insignificant potential hazard to public health, safety or the environment.

Does “beneficial” require that the use be “beneficial” to some person or entity other than the applicant?

To the best of your understanding, how might the retention of “structures” on the Pilgrim Site be “beneficial” to any person or entity other than Holtec?

21. Many buildings and other structures on the Pilgrim Site will be “at depths of three (3) feet or more below the grade existing on the Effective Date.” To the best of your understanding, for what “structures” will Holtec seek a beneficial use determination to leave the structure in place?

Section 3. Sent to Holtec on July 10, 2024

Dave:

Section III of the Settlement Agreement of June 16, 2020 is directed to “Site Restoration and Environmental Requirements and Reporting,” and includes what the Agreement calls an Environmental Assessment Work Plan.

That plan has gone through a number of iterations. But from what Seth Pickering has said, it seems that that the Commonwealth has approved, or shortly will approve, the Revised ESA Work Plan that Holtec and ERM submitted to the state in February of 2022 as supplemented by the 2024 Revised ESA Work Plan that was submitted on February 16, 2024.

Given that, and paragraph 12 of the Settlement Agreement providing that Holtec will perform all actions set forth in the approved plan, I sent you an email on June 24 asking “Would ERM be available for about 20 minutes (that may not prove to be enough time) at the next NDCAP meeting to answer questions about the Revised ESA Work Plan and how it comports with what has been done and future decommissioning?

You replied the same day saying that you would check their availability, but I have heard nothing since. I hope that they will be available. But even if they will not, I trust that you, perhaps with Ms. Fleming who asked that any questions or comments be addressed to her, will attend the meeting and be prepared to answer questions and explain the ESA, its purpose, and how Holtec will accomplish the ESA work plan and other Settlement Agreement requirements.

Your reply email asked if I had any specific concerns. My basic “concern” is ensuring that panel members and the public understand the ESA and how, at least in Holtec’s view, it and Holtec’s other decommissioning plans will accomplish the work set forth in the ESA and required by the Settlement Agreement.

Your email also asked, “wouldn’t it be more productive to identify what those are, in advance of the meeting, rather than expecting ERM to respond off the top of their heads?” I agree that it would, and that is the principal reason for this email.

For the Panel and public to understand the ESA and Settlement Agreement and what they are intended to accomplish, I suggest that Holec start by telling the Panel what, in Holtec’s view, is

the purpose of the ESA, and then answer the following about what is said in and required by the Settlement Agreement and the ESA.

1. The Settlement Agreement says that "Pilgrim" means not only the Pilgrim Nuclear Power Station but also all "land and associated facilities (including the ISFSI) and equipment transferred to Holtec on the closing date," and that "Site" or "Pilgrim Site" includes "any place or area where radiological or non-radiological oil or hazardous material (as defined by the Massachusetts Contingency Plan) has been deposited, stored, disposed of or placed, or otherwise come to be located."

Please explain how ERM and Holtec determined where radiological and non-radiological oil or hazardous materials are located. Did the determination include all places in which such materials may have been deposited either on-site or off-site during, for example, the 1982 releases or as result of other atmospheric emissions when bad fuel and no off-gas treatment system occurred in Pilgrim's early years of operations. On-site, did it include what was disposed of in the so-called donut hole? Regarding the later, I understand that monitoring wells were installed, but they would only tell what has leaked not drums of hazardous materials are there and may leak later.

2. Paragraph10(d)(1) of the Settlement Agreement says Holtec shall (i) meet applicable NRC standards for radiological contamination, including the criteria in 10 C.F.R.§ 20.1402, "Radiological criteria for unrestricted use" and (ii) demonstrate compliance, or progress toward compliance, with 105 C.M.R. § 120.245, the Massachusetts radiological standard for unrestricted use of <10 millirem per year for all pathways, and reduction of residual radioactivity to levels that are otherwise as low as reasonably achievable ("ALARA")

Do the ESA and Holtec's decommissioning plans envision that all portions of the entire Pilgrim Site (not some type of average) will meet the Massachusetts not-more-than 10 mrem dose standard? If not, could you explain Holtec's understanding of what "compliance with … Massachusetts radiological standard" requires.

At this point in time, does Holtec expect to demonstrate compliance with the Massachusetts radiological standard at the time of Partial Site release?

3. Paragraph 10(e) of the Settlement Agreement says "(e) Holtec shall comply with Chapter 21E and the MCP as applicable."

In Holtec's view, what sections/paragraphs of Chapter 21E and the MCP are applicable?

In Holtec's view, what in the ESA is intended to ensure compliance with any section/paragraph of Chapter 21E or the MCP?

4. Could you point us to and explain, what in the ESA is intended to prevent radioactivity from making its way into Cape Cod Bay or the Plymouth-Carver aquifer? How do will Holtec assess flow paths once buildings and other structures are removed? How has or will Holtec model flow into aquifer? Does Holtec assume all flow will head east (down the slope) and not enter the aquifer?

5. Section 10(g)(2) of Settlement Agreement says "By the License Termination date, Holtec shall remove all structures that remain at the Pilgrim Site," and Sectio 10(g)(3) says that this requirement applies "to all underground structures, including building foundations, buried piping, and contained piping, unless retention of such structures is approved by DEP through issuance of a beneficial use determination pursuant to 310 C.M.R. § 19.060."

310 CMR 19.060(2) says "a) The applicant [for a determination of beneficial use] must demonstrate to the Department's satisfaction that the proposed secondary materials and uses are beneficial … and "b) The Department may grant a beneficial use determination, and may allow a beneficial use determination to remain in effect, only to the extent, and only while, the Department is satisfied that such secondary materials and uses are beneficial…," and pose an insignificant potential hazard to public health, safety or the environment.

Could Holtec explain to whom (other than Holtec) the "retention of such structures" would be "beneficial," and the ways (in Holtec's view) such retention would be "beneficial" to entities other than Holtec?

6. With respect to Par. 10(g)(3) of the Settlement Agreement, as of this date, does Holtec intend to seek approval to retain any structures through a beneficial use determination, with respect to what structures does Holtec intend to do so, and why does Holtec think it is desirable or necessary to do so?

7. The listing of on-sites structures that have been or will be demolished in Par. 2.1 of the 2024 Revised ESA Work Plan appears to include only buildings, five storage tanks, and the "low level radwaste facility."

Could Holtec explain whether "all underground structures, including building foundations, buried piping, and contained piping" will be demolished and removed from the Site, and when it plans to demolish and remove them. Could it also and identify what in the ESA deals with such demolishing and removing removal? There are many buried pipes at Pilgrim. Entergy provided a diagram of all buried pipes and tanks during license renewal litigation.

8. Section 10(g)(1) of the Settlement Agreement says, "By the Partial Site Release date, Holtec shall remove all structures at the Pilgrim Site necessary for Partial Site Release…."

In Holtec's view, what structures, including building foundations, buried piping, and contained piping, is it necessary to remove for Partial Site Release?

9. Section 10(d)(5) of the Settlement Agreement says, "To demonstrate compliance with Paragraph 10(d), Holtec shall use … the 'resident farmer scenario' and 'basement inventory model' to model the potential exposure to residual radioactivity in all pathways, provided, however, that the Parties may mutually agree to an alternative standard for modeling if an approved [by whom?]future reuse supports the use of such an alternative standard."

As noted in paragraph 3, above, par. 10(d) of the Settlement Agreement requires Holtec to "demonstrate compliance, or progress toward compliance, with 105 C.M.R. § 120.245, the Massachusetts radiological standard for unrestricted use." According to that section, "A site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a TEDE to an average member of the critical group that shall not exceed 0.10 mSv (10 mrem) per year, including that from groundwater sources of drinking water and the residual radioactivity has been reduced to levels that are as low as reasonably achievable (ALARA)." Critical Group "means the group of individuals reasonably expected to receive the greatest exposure to residual radioactivity for any applicable set of circumstances." 120 CMR 120.005.

The AGO's letter of January 19, 2024 raised "several issues pertaining to the models Holtec will use for dose assessment of radionuclides of concern." The AGO said that "Holtec has introduced a 'Building Occupancy Scenario,' and that 'This model is not addressed in the Settlement Agreement and may not be as conservative as the two models specified in the Settlement Agreement…."

RCP Comment 3 in the AGO letter said that "Holtec cannot demonstrate compliance with paragraph 10(d) unless it uses both the Resident Farmer Scenario and the basement inventory model."

The 2024 Revised ESA work plan says that the Residential Farmer Scenario will include the Basement Inventory Model to add the additional dose pathways associated with foundations that will remain below 3 feet."

All of this is, at least to me, somewhat confusing.

My understandings (and please let me know if any are incorrect) are that the Resident Farmer Scenario is "used for residual radioactivity in soils and sediments" (ML051860189) and that "Under the NRC scenario, the resident farmer may be exposed to radioactive contamination through several exposure pathways relative to site soils" (ML 073180601); the Basement Inventory Model "should be used to calculate dose, in particular to determine the amount of residual radioactivity that remains in any remaining below-grade structures or building materials that will be used as backfill" (ML051860189); and that the Building Occupancy Scenario "should be used for residual radioactivity on indoor building surfaces." (ML051860189).

But I am quite unclear how Holtec intends to use the results of these models to determine the total Effective Dose Equivalent (TEDE) to an individual reasonably who may be exposed not to only residual activity relative to site soils but also to any radioactivity that remains in any below-grade structure or building materials, and to any residual reactivity on indoor building surfaces. My understanding is that TEDE is the sum of the effective dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures),

Page 7 the 2024 Revised ESA says that "Table 1 includes two sets of calculated DCGL values, one for "building surfaces based on the building occupancy exposure scenario" and another "for soil based on the resident farmer scenario." There are no values based on the basement inventory

scenario. Could tell the Panel both what the DCGL values for the basement inventory scenario are, and why they were not included. Also, what is the combined DCGL value for all three?

Could you also explain what "additional dose pathways [are] associated with foundations that will remain below 3 feet," how these pathways are taken into consideration in determining TEDE, and whether any are potential pathways into Cape Cod Bay or the Plymouth-Carver Aquifer.

What aspects of the ESA are directed to any such pathways?

10. Section 10(h) of the Settlement Agreement says, "Holtec may not dispose of any radioactive waste materials on the Site or use rubbleized radioactive waste materials as fill at the Site."

In Holtec's view, does "radioactive waste materials" include all systems, structures or soil on the Site that have a detectible level of radiation?

11. Section 2.12 of the 2022 Revised ESA Work Plan says, "Below structure soil that is radiologically contaminated will be removed for disposal will be handled and processed as radiological waste and / or mixed waste dependent on applicable non-radiological constituents."

Does this commitment include all below structure soil that has any level of detectable radiation? Does it mean that Holtec will not use as fill any soil that that has any level of detectable radiation?

12. Paragraph 11(e) of the Settlement Agreement says that the ESA should "include a proposed list of potential radiological and non-radiological contaminants for which sampling and testing will be conducted at the Site." Paragraph 2.2 of the 2024 Revised Environmental Sie Assessment Work Plan says that "The approach and method applied in identifying Pilgrim site radionuclides of concern (ROCs) involved … "Develop a list of theoretical ROCs from information and activities found in NUREG/CR-3474 Long-Lived Activation Products in Reactor Materials."

Could you point us to where either the 2022 or the 2024 Revised ESA sets forth a "list" of the radiological and non-radiological contaminants that ERM or Holtec will sample and test, and tell the panel what contaminants have been sampled and tested and where on the Site they were found?

I realize that this asks for a substantial amount of information and explanation, but I doubt that much of it involves anything that Holtec and ERM have not previously considered.

Let me thank you in advance for your cooperation.

Jim Lampert