APPROVED JULY 26, 2021- with highlights to indicate Action Items for future discussion

NUCLEAR DECOMMISSIONING CITIZENS ADVISORY PANEL ("NDCAP")
Monday, May 24, 2021
Virtual Meeting Due to Covid-19
Meeting Minutes

Meeting called to order at about 6:30 pm by NDCAP Chair John Mahoney.

NDCAP MEMBERS PRESENT

- John T. Mahoney, Representative of the Town of Plymouth (Chair)
- Pine duBois, Speaker of the House Appointee (Vice Chair)
- Mary Lampert, Senate President Appointee
- Richard Grassie, Minority Leader of the House Appointee
- David C. Nichols, Governor Baker Appointee
- John G. Flores, Governor Baker Appointee
- David Johnston[1], Department of Environmental Protection
- Robert Jones[2], Executive Office of Health and Human Services
- Jack Priest, Department of Public Health, Radiation Control Program
- John Viveiros,[3] Massachusetts Emergency Management Agency
- Robert Hayden[4], Department of Public Utilities
- Susan Whitaker, Executive Office of Housing and Economic Development
- Pat O'Brien, Representative of Pilgrim Nuclear Power Station
- John Moylan, Pilgrim Nuclear Power Station Site Vice President
- Richard Rothstein, Representative of the Town of Plymouth
- Mary Waldron, Old Colony Planning Council
- Paul D. Smith[5], Representative of UWUA Local 369

NDCAP MEMBERS NOT PRESENT

- Kevin O'Reilly, Speaker of the House Appointee
- Sean Mullin, Minority Leader of the Senate Appointee
- Richard Quintal, Plymouth BOS appointee

GUESTS IN ATTENDANCE

- Gerard Martin, Department of Environmental Protection Southeast Regional Office
- Seth Pickering, Department of Environmental Protection Southeast Regional Office
- John Drobinski, ERM
- Matthew Daly, ERM

REVIEW OF MINUTES

[1] Designee of Secretary Theoharides (EEA)
[2] Designee of Secretary Sudders (Executive Office of Health and Human Services)
[3] Substituting for Samantha Phillips
[4] Designee of Matthew Nelson (DPU)
[5] Designee of Richard Sherman (Representative of UWUA Local 369)

The draft minutes from the March 29, 2021 meeting were reviewed.

Ms. duBois stated that Mr. David Noyes was mistakenly listed as a panelist, and that absent members should be consistently listed moving forward. Absent from the March 2021 meeting were Sean Mullin, Kevin O'Reilly, Richard Grassie, Richard Quintal, and Susan Whitaker. Matthew Daly should be listed as a guest, and the spelling of his name corrected.

Mr. Rothstein commented that he would like the entirety of his comment included on p. 6, line 37. He stated that he had offered an opinion about the scope of NDCAP activities in terms of whether the panel should focus only on the physical aspects of decommissioning or also address dry cask storage and off-site ISFSI issues.

Mr. Priest suggested that Mr. Rothstein's statement be read to the panelists before including it in the minutes. Mr. Rothstein then reiterated his statement. Ms. Lampert suggested that the statement should be included in the body of the minutes rather than in a footnote.

A motion was made to include Mr. Rothstein's statement into the minutes, which was seconded.

Mr. Grassie asked whether the Town of Plymouth has a representative on the NDCAP. Mr. Mahoney indicated that Richard Quintal is currently the Chair of the Plymouth Board of Selectmen but has been unable to attend due to time constraints. Mr. Mahoney stated that he would ask Mr. Quintal to attend future meetings.

The motion to include Mr. Rothstein's statement in the March 29, 2021 meeting minutes was approved by a unanimous vote.

A further motion was made to approve the minutes from the March 2021 NDCAP meeting. The motion was seconded, and the minutes as corrected were approved by a unanimous vote.

PROJECT UPDATE FROM HOLTEC

General Holtec Update

Mr. O'Brien provided an update of activities at the site and showed a power point presentation.

Mr. O'Brien stated that Holtec had submitted an annual trust fund update with the NRC, which was shared with the NDCAP. Mr. O'Brien also provided an update on project schedule. The final fuel campaign will begin in June, and is scheduled to finish in November, after which the site will move to dry cask storage only. Holtec's eventual goal is completing site restoration activities in 2026-27.

Mr. O'Brien provided an overview of key elements of the NRC submittal. A total of $881 million is the updated balance in the trust fund. The schedule for placing spent fuel on the ISFSI pad has been pushed up, based on learnings from Oyster Creek where the fuel campaign has been completed.

Mr. O'Brien indicated that actual costs versus estimates for the period from August 27, 2019 (when Holtec took over) to December 31, 2020 are higher because much of the work was pulled forward. Actual costs for this period increased from an initial estimate (reflected in the 2020 NRC submission) of $100 million to $277 million because work was pulled forward. However, $824 million is the estimate of

costs needed from January 1, 2021 to the end of decommissioning, which is a decrease from the prior estimate of $1.031 billion. The total estimate of decommissioning costs is $1.101 billion , which is a decrease from the prior estimate of $1.132 billion.

A link to the full NRC submittal for 2021 is available online.
https://holtecinternational.com/company/divisions/hdi/our-fleet/pilgrim/

Demolition work is ongoing. Holtec is planning for removal of additional water tanks and another building in June. Another administrative building is due for demolition in July, and asbestos abatement is planned. Once the main warehouse and operation & maintenance buildings are demolished, staff will be relocated and the radiologically controlled area will be moved inside the turbine building.

As for vessel segmentation, disposal of "GTCC" (Greater than Class C) waste will occur after the fuel campaign wraps up at the end of the year. Segmentation work is ongoing while the fuel campaign is occurring.

As for waste management, Holtec has shipped ten Class A waste segments and four Class C vans. Concrete shield blocks have been cut up and are in transit. Five Class B boxes are loaded and ready for shipment.

A question was asked about the route to rail lines. Mr. O'Brien stated that there are truck routes out of state. The route is likely from Powerhouse to Route 3A to new Route 44 to I-495. He can double-check the route. Every shipment is shared with state and local officials.

Recent trainings were conducted regarding waste transport. For instance, Holtec conducted education and training for the Duxbury and Kingston Fire Departments, and is working to schedule a training with the Plymouth rescue team. The quarterly meetings with MEMA are where the idea of conducting trainings was raised.

Mr. O'Brien reiterated that Holtec is gearing up for the final fuel campaign scheduled for June. High-storm and MPC dry casks will be brought on site. The Oyster Creek site finished its fuel campaign in record time. Each batch of spent fuel must be tested to ensure that required specifications are met. Some were sent away because they did not meet specifications.

Discussion followed regarding potential Holtec responses in the event of cracks, leaks and other failures of the dry casks. Mr. O'Brien stated that, as the owner of the casks, Holtec must stay compliant with requirements. For instance, there is a need to have "overpacks," and the aging management program would flag a leak before it occurs.

Mr. Priest asked whether, if there were an issue with the canister during the fuel campaign, Holtec could simply put the spent fuel back in the cooling pool until the issue is resolved. Holtec confirmed that this was true; thus, issues most likely would be identified and resolved before the fuel left the building. The building itself that houses the cooling pool is not scheduled for demolition until 2024-25.

Mr. Priest suggested that a question be captured as an action item in the minutes, namely, a request from Ms. Lampert to provide more detail about the schedule for the spent fuel campaign. Ms. Lampert added that she would like information on how long the cooling pool would be available as a support system should there be issues while fuel is being removed.

Mr. O'Brien stated that the "waterfall" schedule is the same, as this is the schedule that is made available to the public. However, he confirmed that there are systems that go along with the cooling pool, which would be removed from service ahead of 2024-25 when the building would be demolished. He agreed to get a more definitive answer as to the schedule for these service suspensions.

Mr. Johnston stated that the pool does remain available while the spent fuel is being loaded. However, he is not aware of any long-term or intermediate plan to reserve the pool for a measurable period after all fuel has been completely loaded onto dry casks and relocated to the ISFSI pad.

Mr. Priest indicated that it is still a reasonable question as to when the spent fuel pool will be decommissioned and when the support equipment needed to keep the fuel covered and cool will no longer exist.

Ms. duBois asked whether, by January of next year, the pool will no longer be needed after the fuel is removed. Mr. O'Brien indicated that there will still be water to do GTCC loading.

Mr. Rothstein asked whether, once the spent nuclear fuel pool is demolished, there could be an interim period when a small pool to hold a canister under water deep enough just in case there is a problem could be explored.

Mr. O'Brien said the answer is likely 'no' due to security and the footprint of the protected area. However, he would need to ask the Holtec engineers.

After this discussion, a 3-4 min video was played to show the activities associated with the spent fuel campaign.

Mr. Noyes asked about the projected costs that Holtec presented. He noted that the revised cost estimate is now $ 1.1 billion, but that there is $881 million left in the fund as of December 31, 2020; this represents a "hedge" of $60 million.

Mr. O'Brien responded that there are contingencies built into these numbers, and that the agreement with the Massachusetts Attorney General's Office requires that certain minimum amounts be maintained in the trust fund.

Mr. Noyes asked whether Holtec would be taking profits as part of ongoing cost estimates, or at the end only. Mr. Noyes also asked whether Holtec is reimbursing itself for overhead costs along the way.

Mr. O'Brien did not have an answer, and indicated that he would check on this issue.

Site Characterization

Mr. Daly from ERM presented an overview of the amended environmental site assessment work plan, which will be submitted to the state for review under the settlement agreement terms.

The first part describes site characterization activities that occurred in 2020 and spring 2021, documenting all radiological and non-radiological samples that were collected and describing the scope and methodologies for collection and analysis. The document is broken up into survey areas.

The work plan also provides statistics regarding the 2020 sampling. A total of 149 radiological soil samples were analyzed, and 82 samples were analyzed for non-radiological constituents. Additional groundwater samples were collected, and six additional monitoring wells were installed. The results are broken up into radiological and non-radiological components, with radiological analysis following the MARSSIM process and non-radiological analysis following the Massachusetts Contingency Plan (MCP) process. The report also calls out specific data gaps that exist as compared to the original plan. There were equipment limitations, for instance, where equipment could not get to the depth required for sampling.

The second part of the amended work plan describes forward-looking activities related to the continued iterative site characterization process. There are work plans to collect more samples to fill data gaps, and ten more monitoring wells will be installed. Twenty-three wells were originally in place; six were added, and an additional ten are scheduled to be installed. **Thus, a total of about 40 wells at the site will be available for sampling activities.**

Mr. Daly indicated that exceedances were identified under the MCP, thereby formally bringing the site into the MCP remediation process. The state issued a Notice of Responsibility (NOR) letter to Holtec, which starts the clock under the MCP program for non-radiological site characterization for exceedances.

The site assessment work plan also contains a groundwater monitoring plan, describes a comprehensive analysis of groundwater flow directions, and will plan additional sampling of non-radiological parameters from monitoring wells.

There is also a schedule for site characterization beneath the buildings. There is a physical limitation currently to reaching the soil underneath buildings, and this is a data gap. Those areas should be opened in the 2024 time frame.

The work plan contains plans for initial characterization of additional licensed areas not included in the first phase, including land parcels south of Rocky Hill Road and additional near waterfront (former Greenwood estate). The work plan lists the types of samples to be collected and analyzed for radiological and non-radiological parameters.

DPH and DEP will have a robust set of documents they will be able to do review and comment on, consistent with the settlement agreement with the Commonwealth. Once comments are received, Holtec will have 30 days to respond and finalize the work plan.

Mr. Daly summarized key findings from the first phase of site characterization north of Rocky Hill Road. A map was shown with survey areas following the MARSSIM approach and showing preliminary classifications based on data obtained from the first phase of site characterization activities. An additional slide showing all non-radiological results that were above reportable concentrations was shown; these exceedances were communicated on April 21 to DEP under the MCP program. The reported exceedances included PFAS and various other metals. Holtec believes that some of the exceedances are attributable to how samples were collected as drilling down to the groundwater table could cause suspended sediments and turbidity. All metals will formally start to work their way through the Phase 1/2/3 program under the MCP, so that the source and nature of metals can be identified and remediation work conducted as necessary.

An additional map was shown where samples were collected, including soil borings and groundwater samples.

Mr. Priest asked for confirmation that the exceedances in drinking water standards did not suggest that drinking water wells were sampled. Mr. Daly confirmed this, indicating that the drinking water standards were only being used to identify exceedances that required reporting to DEP.

Ms. duBois asked whether there is a potential relation between tritium and PFAS contamination.

Mr. Johnston stated that it is doubtful. Tritium is a metal one would expect to see as related to nuclear power. However, PFAS not linked to that type of activity.

Ms. duBois asked further about a prior leak that caused a tritium release.

Mr. Johnston stated that it is unlikely that the release would have led to PFAS contamination. PFAS is contained in a lot of materials, so it is not inconceivable that it is in some building products that could have been contacted by tritium water. However, it is usually present in firefighting foam and other materials like flame retardants in furniture and clothing.

Mr. Martin stated that the area has a high yield aquifer and is a potential water supply source in the future, so the site is held to a conservative standard. The detected PFAS value (37) is parts per trillion, so it is not that high. Detection in one well is not surprising, but Holtec will need to identify the source and extent of contamination and identify a response.

Panel questions and discussion followed after Holtec's presentation.

Mr. Smith asked whether some existing wells are not suitable for testing.

Mr. Daly responded that "Fukushima wells" were installed to obtain water for emergency situations; however, the wells are deep with a long well screen. From a site characterization perspective, they are not the best wells to understand the presence or absence of radiological or non-radiological impacts.

Mr. Smith also asked whether the switchyard in existence since 1966-67 (belonging to Eversource) is subject to sampling and review.

Mr. Daly confirmed that it is within the scope of initial site characterization activities. Samples were collected, and new monitoring wells were installed just downgradient of switchyard.

Mr. Daly further clarified that "Fukushima wells" were installed in response to events in Japan. The NRC came up with an initiative where each plant had to identify an ability to tap a water source to put out the equivalent of a Fukushima type event. For Pilgrim, the plant could not rely on Town water, and seawater was not an option. So, it identified groundwater as a source of emergency water supply to put out a significant fire at the site.

Mr. Nichols asked whether it is surprising that no significant radiological contamination was found during initial site characterization activities.

Mr. Daly indicated that two main radionuclides would have been expected. However, when the plant was operating, it established baseline conditions consistent with a range of concentrations attributable to past activities unrelated to plant operation. For instance, cobalt was found to be present at less than background levels. Soil samples were assessed against derived concentration levels that equate to the state's 10mrem dose standard.

Ms. Lampert asked whether this approach indicates a "we didn't do it approach," even though radiological contamination is present.

Mr. Daly reiterated that 149 soil samples were analyzed in the amended ESA work plan, and were submitted to DPH and DEP for review.

Mr. Priest added that the analysis would be based on 40 years of environmental assessment reports that documented background concentration levels. That background level is very well understood.

Mr. Daly confirmed that any levels that are above background levels will go through the MARSSIM process, and will be subject to the 10 mrem standard.

Mr. Priest confirmed that, when the state reviews the data presented, it will look at numerical values that are above background and will use an iterative process to suggest more samples or take split samples. The 2024 time period when site characterization will extend underneath the state reactor building will be important.

INTERAGENCY WORK GROUP (IWG) REPORT

Mr. Johnston stated that the IWG has been focusing on environmental site assessment. DPH and DEP continue to meet regularly with Holtec and are expecting to have the submittal of the work plan by end of May. When it is received, the state will provide comments through the Attorney General's Office, and then Holtec will have 30 days to respond. This is an iterative process, and will be going on for quite some time. Buildings and other impediments limit completeness of the work that is possible, and force the process to be iterative and ongoing throughout decommissioning process.

The state's comments will also speak to the entirety of the report, including sampling results. The state has been involved along the way in selecting sampling locations. However, the report will inform whether the sampling was adequate, and the state can officially weigh in on the thoroughness of sampling plans based on reported results.

As indicated, the NOR letter was issued on May 20. This acknowledges receipt of notification that Holtec had exceedances of the applicable criteria. The NOR was provided to Ms. duBois for posting on the NDCAP website or other means of public dissemination.

In addition, DEP issued a Notice of Noncompliance (NON) on May 20. The NOR is affirmation that proper notification was made, and the event is assigned a notification tracking number and work will commence. However, an NON identifies a violation. This was a minor violation that occurred after asbestos abatement work occurred in February. Holtec did debris cleanup on a condenser unit; however, prior to having the space reoccupied, no visual inspection was conducted.

Ms. Lampert asked when the environmental site assessment work plan would be made publicly available.

Mr. Johnston stated that the state has asked Holtec to make it available, subject to the confidentiality provisions of the settlement agreement.

Ms. Lampert stated that, if there is a redacted version made available, the public should get an explanation of why it was redacted.

After the IWG update, Mr. Johnston announced that he will be retiring after 37 years of Commonwealth service. Seth Pickering will replace Mr. Johnston on the IWG and serve as EEA Secretary Theoharides' designee moving forward.

DISCUSSION OF PHYSICAL AND OPERATIONAL SECURITY DURING AND AFTER DECOMMISSIONING

Mr. Grassie presented a power point with Pilgrim ISFSI security observations.

Mr. Grassie indicated that he conducted a general security audit of the Pilgrim plant in response to questions posed by Town of Plymouth officials. Mr. Grassie has conducted security audits and security designs for nuclear sites. The power point presentation offers observations, based on Mr. Grassie's professional experience and judgment.

Mr. Grassie stated that he did not get inside ISFSI, but met with Holtec officials who were forthcoming and transparent with the exception of not disclosing confidential information.

There are currently 34 states that have ISFSI's. To Mr. Grassie's knowledge, none have been attacked to date. Yankee Rowe and Connecticut Yankee were designed and constructed prior to the event of 9-11. After 9-11, the NRC came out with revised guidelines. Security at other facilities is not nearly as robust as at Pilgrim.

There will be two ISFSI's operational at the same time: the "big ISFSI" on the lower pad and a smaller ISFSI on the upper pad. Spent fuel will be moved into dry casks and moved up the road, and within 2 weeks, it will be taken from the lower (big ISFSI) to the upper pad. There will be 65 casks, 63 with spent fuel casks and 2 waste casks.

There is a double fence line with two 8-foot chain link fences; in between is what is called a "clear zone" whether the strongest electronic security is placed. There are control gates for personnel and vehicles. Personnel will come from administrative buildings and enter the site at the personnel gate. There is a vehicle barrier surrounding the ISFSI and landscaping adjacent to Rocky Hill Rd.

Security design is based on a risk-based approach that assesses threats and risks, and provides an integrated security program both physically and electronically. The focus is on control and mitigation. The threat here is radiological sabotage from a violent external assault.

Mr. Grassie indicated that the Pilgrim security design is very extensive. Elements like personnel/ barriers/communications/monitoring/display are part of the ISFSI. Other ISFSI's do not necessarily have this type of design. This site has a top-notch security program.

Based on a risk matrix – based on likelihood of occurrence and level of impact – the ISFSI falls into the B quadrant related to high impact, low likelihood events. No one has ever attacked an ISFSI in the U.S. Mr. Grassie indicated that the security personnel that he met are taken from the current site, so they are all trained and ready.

As for the Town of Plymouth responsibilities, it has a comprehensive emergency operation plan (CEOP) for mitigation, preparedness, response and recovery for all types of hazards. Mr. Grassie coordinated with Captain Flynn at the Plymouth Police Department. However, information in the CEOP is not up to date on the ISFSI. The Town will need to look at this issue.

Mr. Grassie conducted a table-top design assessment based on a review of applicable requirements. There are some exceptions that apply to the site. For instance, pat down searches can be conducted in lieu of firearms detection, and guards can do surveillance and assessment but do not have to do video surveillance. The Pilgrim site does have video surveillance, so it has gone above and beyond some requirements.

Mr. Grassie's final observation was that security at Pilgrim is consistent with requirements and considered adequate/strong based on a risk informed and performance-based approach contained in ISFSI security rulemaking.

Mr. Grassie indicated that there may be misinformation in the public that the ISFSI is not secure. His observation is that it is secure. The key to the Pilgrim ISFSI is not just the excellent personnel, monitoring and other elements of the integrated security program. It also relies on current and actionable intelligence from the FBI, Plymouth police, state police. The security team is getting current information.

Mr. Grassie suggested that a neighborhood watch program be established with residents in the Rocky Hill Road area.

Ms. Lampert inquired whether Mr. Grassie would support "force to force testing" at the ISFSI.

Mr. Grassie indicated that he is strongly in favor of this, and suggested that Holtec, as the owner of the casks, should look into how to have exercises conducted that are meaningful for the ISFSI.

Mr. Grassie also noted that the site uses a sophisticated command control system that protects cybersecurity.

PUBLIC COMMENTS AND QUESTIONS

Ms. Turco asked for an explanation of the consequences of radiological sabotage.

Mr. Grassie responded that he was not completely sure. He indicated that research has been done on the types of weapons and explosives that could potentially impact Holtec's casks.

A comment from Henrietta indicated that ISFSI's have not been in place for that long, so it would not be reasonable to conclude that they could not be attacked based on this short history (of about 20 years). Henrietta also asked whether attacks by air have been researched, and Mr. Grassie indicated in the affirmative.

Henrietta also stated that there have been attempts to breach cybersecurity at energy plants by foreign national entities since 2015. She does not feel completely reassured about the security of the casks, and has ongoing questions about the possibility that the casks may degrade over time.

Mr. Lampert asked whether a preliminary report was submitted by Holtec prior to the May environmental site assessment work plan. Mr. Johnston indicated that no such report was submitted.

Mr. Lampert also asked whether Holtec has designated any content in the site assessment work plan as confidential or trade secret. Mr. Daly indicated that Holtec is going through that process now.

Mr. Lampert also commented that specific questions raised by Ms. Lampert since February have not been answered.

Mr. O'Brien responded that he feels Holtec has been responsive, and that there is a need to track questions asked and answers that are provided.

Mr. duBois agreed that this would be good idea and suggested that each Panel member be limited to three questions each.

Ms. Lampert disagreed that there should be a limit on the number of questions.

Mr. Priest indicated that he would assist with organizing questions in a table format, adding the name of the person to whom each question is addressed and an anticipated date for a response. The table could be referenced as a record moving forward.

A question from Becky asked what the extent of the aquifer is at the site.

Mr. Daly indicated that the aquifer is mapped by USGS.

Mr. Johnston added that the site is in the Plymouth Carver aquifer, which is a very large (standing gravel) aquifer with low hydrologic connectivity. The aquifer moves generally to the ocean in this location, which is why there is a low drinking water concern from PFAS contamination.

WRAP UP AND ADJOURNMENT

The date of the next meeting is Monday, July 26, 2021. A hybrid meeting format is available, and technology will be available to facilitate those who want to continue remote participation.

A motion to adjourn was made and seconded. The motion passed unanimously.

The meeting adjourned at about 9:00 pm.

MATERIALS PRESENTED AT MEETING

May 24, 2021 - Pilgrim NDCAP meeting slides (from Holtec)
May 28, 2021 - Environmental Site Assessment work plan for Pilgrim (from Holtec)
Pilgrim ISFSI security observations (Richard Grassie)