

Kennedy, Silas

From: Kennedy, Silas
Sent: Thursday, July 23, 2015 12:51 PM
To: [REDACTED]
Subject: Oyster Creek Annual Assessment Meeting Follow Up

Dear Ms. Gotsch,

Thank you for attending and participating in the NRC's Oyster Creek Annual Assessment Public Meeting held on May 28, 2015. I would like to provide information on those items for which you requested a response from the NRC.

You had a question regarding the number of years of experience the NRC has with long-term storage in spent fuel pools. The NRC has been providing oversight of spent fuel storage since the operating license for Dresden Unit 1 was issued on September 28, 1959.

In regards to your question about the status of the Boraflex (boron sheets) in the spent fuel pool, the following is provided. Oyster Creek's spent fuel pool has two types of high-density poison racks of similar design in its Spent Fuel Pool (SFP) - Boraflex racks and Boral racks. The spent fuel storage rack geometry and poison panels ensure the SFP remains subcritical and provide structural support for the spent fuel assemblies during normal operation and in accident conditions.

In June of 1996, the NRC issued Generic Letter 96-04 to address the issue of Boraflex degradation in SFP storage racks. As documented in NRC Generic Letter 96-04, the Electric Power Research Institute (EPRI) identified two issues with respect to using Boraflex in SFP racks. The first issue related to gamma radiation-induced shrinkage of Boraflex and the potential to develop tears or gaps in the material. The second issue concerned long-term Boraflex performance throughout the intended service life of the racks as a result of gamma irradiation and exposure to the wet pool environment. All plants with racks containing the Boraflex material were requested to provide an assessment of the physical condition of the Boraflex material and the impact on margin to criticality, as well as proposed actions to monitor ongoing Boraflex degradation. Note that these degradation mechanisms do not apply to Boral racks.

Oyster Creek monitors Boraflex degradation related to gamma radiation-induced shrinkage of Boraflex and the potential to develop tears or gaps in the material by direct measurement and assessment via monitoring of pool reactive silica levels and BADGER testing. This data is used as input into the EPRI-developed model, RACKLIFE, to assess the panel thinning (i.e. areal density reduction), utilizing 2014 BADGER data as validation for longer term boraflex degradation for pool wide projections. Currently, based on testing results and further analysis, there are no inoperable rack cells due to degradation. However, since Boraflex panel degradation increases with time as they are continually exposed to gamma radiation fields and SFP water, established administrative limits have been implemented. These limits, when exceeded, will restrict fuel type storage requirements (i.e., use by a less reactive bundle type) or can restrict fuel storage completely in the particular rack cell. At Oyster Creek, a small percentage of the total number of cells (approximately 1 ½ percent) are currently under this restriction.

The structural integrity of the spent fuel storage racks is not impacted by Boraflex panel degradation as long as criticality limitations are maintained and, as such, the safety functions regarding structural integrity do not need to be addressed. Oyster Creek's spent fuel storage racks continue remain able to perform their safety function as described in the Technical Specifications.

Sincerely,

Silas Kennedy

Chief, Project Branch 6

Region I, Division of Reactor Projects

Providing nuclear oversight of Three Mile Island, Beaver Valley, and Oyster Creek

Kennedy, Silas

From: Kennedy, Silas
Sent: Thursday, July 23, 2015 12:38 PM
To:
Subject: Oyster Creek Annual Assessment Meeting Follow Up

Dear Ms. Tauro,

Thank you for attending and participating in the NRC's Oyster Creek Annual Assessment Public Meeting held on May 28, 2015. I would like to follow-up on your inquiry concerning the "status of the lawsuit pertaining to the increase from 30 to 60 years for decommissioning."

I believe that you were referring to the court case, New York vs the Nuclear Regulatory Commission, in which three states, including New York, sued the NRC for approving a regulation that would allow the use of nuclear power facilities as storage sites for highly radioactive spent nuclear fuel for at least 60 years after their closure. This regulation was referred to as the Waste Confidence Decision and Rule. Specifically, the Waste Confidence Decision and Rule represented the Commission's generic determination that spent nuclear fuel can be stored safely and without significant environmental impacts for a period of time after the end of the licensed life of a nuclear power plant (previously, the time period was 30 years after the end of the license; however, in 2010, it was increased to 60 years). It was this increase to 60 years in 2010 that led to the lawsuit.

As you may be aware, in June 2012, the D.C. Circuit Court found that some aspects of the 2010 Decision did not satisfy the NRC's National Environmental Policy Act obligations and vacated the Decision and Rule. The Court concluded that the Waste Confidence Rulemaking was a major Federal action necessitating either an Environmental Impact Statement (EIS) or an Environmental Assessment that results in a Finding of No Significant Impact. The Court identified three particular deficiencies in the 2010 analysis. First, related to the Commission's conclusion that permanent disposal will be available "when necessary," the Court held that the NRC needed to examine the environmental impacts of failing to establish a repository. Second, related to the continued storage of spent fuel, the Court held that the Commission had not adequately examined the risk of spent fuel pool leaks. And third, also related to continued storage, the Court held that the NRC had not adequately examined the consequences of potential spent fuel pool fires.

In response to the Court's ruling, the NRC determined the agency would not issue licenses dependent upon the Decision and Rule, pending completion of action on the remanded proceeding. The Commission directed the NRC staff to prepare an EIS as part of revising the Waste Confidence Decision and Rule and addressing the Court concerns. In August 2014, the NRC staff completed the generic environmental impact statement (GEIS) and the Commission lifted the ban on licensing actions relying on the rule once the new rule was approved. The NRC has analyzed three timeframes in the GEIS that represent various scenarios for the length of continued storage that may be needed before spent fuel is sent to a repository. The first timeframe is the short-term timeframe, which analyzes 60 years of continued storage after the end of a reactor's licensed life for operation. The NRC considers the short-term timeframe to be the most likely scenario for continued storage; and the GEIS assumes that a repository would become available by the end of the short-term timeframe. The GEIS also analyzed two additional timeframes: Long-term and indefinite. The long-term timeframe considers the environmental impacts of continued storage for 160 years after the end of a reactor's licensed life for operation. Finally, the GEIS includes an analysis of an indefinite timeframe, which assumes that a repository never becomes available. The new rule, Continued Storage of Spent Nuclear Fuel, can be found here: <http://www.gpo.gov/fdsys/pkg/FR-2014-09-19/pdf/2014-22215.pdf>. The GEIS can be found here: <http://pbadupws.nrc.gov/docs/ML1419/ML14196A105.pdf>.

Please contact me if you have any further questions or comments.

Silas Kennedy

Chief, Project Branch 6

Region I, Division of Reactor Projects

Providing nuclear oversight of Three Mile Island, Beaver Valley, and Oyster Creek

Kennedy, Silas

From: Kennedy, Silas
Sent: Thursday, July 23, 2015 11:54 AM
To:
Subject: Oyster Creek Annual Assessment Meeting Follow Up

Dear Mr. Brown,

Thank you for attending and participating in the NRC's Oyster Creek Annual Assessment Public Meeting held on May 28, 2015. The Spent Fuel Scoping Study we referenced in response to your question regarding the safe storage of fuel in spent fuel pools can be found via **Agencywide Documents Access and Management System (ADAMS)** Accession No. ML14255A365. ADAMS is the official recordkeeping system through which the NRC provides access to publicly available documents. The above referenced document is hyperlinked to ADAMS for your convenience.

Please contact me if you have any further questions or comments.

Sincerely,

Silas

Silas Kennedy

Chief, Project Branch 6

Region I, Division of Reactor Projects

Providing nuclear oversight of Three Mile Island, Beaver Valley, and Oyster Creek

Kennedy, Silas

From: Kennedy, Silas
Sent: Thursday, July 23, 2015 11:51 AM
To:
Subject: Oyster Creek Annual Assessment Meeting Follow Up

Dear Mr. Gunter,

Thank you for attending and participating in the NRC's Oyster Creek Annual Assessment Public Meeting held on May 28, 2015. I would like to provide information on those items for which you requested a written response from the NRC. Note that the documents referenced below are located in the NRC's **Agencywide Documents Access and Management System (ADAMS)**. ADAMS is the official recordkeeping system through which the NRC provides access to publicly available documents. The referenced documents are hyperlinked to ADAMS for your convenience.

Regarding Oyster Creek's extension request on hardened vents for severe accident conditions, you made an inquiry concerning the availability of information to the public and the NRC schedule for the review of the request. The NRC staff is currently reviewing the extension request and may make a decision in the next several months. There are several documents associated with this review that are available to the public:

- Exelon submitted the Hardened Vents Order Extension Request for Oyster Creek by letter dated June 2, 2014 ([ML141453A421](#)).
- Following Exelon's extension request, the NRC staff issued a Request for Additional Information (RAI) by letter dated August 27, 2014 ([ML14220A027](#)).
- Exelon responded to the RAI by letter dated September 26, 2014 ([ML1427A323](#)).
- Exelon provided a supplement to the RAI by letter dated November 25, 2014 ([ML14329A263](#)).
- Every six months, the NRC provides a status update on our activities associated with lessons learned from Japan's March 11, 2011, earthquake and tsunami. The latest update, dated April 9, 2015, is located here: <http://pbadupws.nrc.gov/docs/ML1506/ML15069A540.pdf>.

I also would like to provide you some information concerning the installed containment hardened vent system at Oyster Creek. The containment hardened vent system permits a manual, controlled depressurization of primary containment via the torus during severe accident sequences that involve loss of decay heat removal capability. For example, if the containment spray system fails to operate following a small break loss of coolant accident, the hardened vent system can be manually operated to provide decay heat removal for containment. The NRC inspection program recognizes the importance of this backup safety function and inspection of this system was performed during two recent Component Design Basis Inspections (05000219/2007-006, [ML071870171](#) and 05000219/2013-007, [ML13325A089](#)). During the 2007 inspection, one Green finding was identified because the acceptance criteria for allowable accumulator pressure drop within the periodic test procedure was not consistent with the original design criteria and did not ensure the assumed design capability of the valves during loss of instrument air events. This issue has been corrected. No findings were identified in the 2013 Component Design Basis Inspection. As such, the installed containment hardened vent system at Oyster Creek is capable of functioning for severe accidents as discussed in the Final Safety Analysis Report; however, the ability of the system to meet the functional requirements, quality standards, and programmatic requirements of the Hardened Vent Order (beyond design basis severe accident) is under consideration in the NRC's review of the Oyster Creeks' extension request related to that order.

Following the 9/11 attacks, additional beyond design basis requirements were imposed on the plant through security orders that were later codified into 10 CFR 50.54(h)(h)(2) (<http://www.nrc.gov/reading-rm/doc-collections/cfr/part050/part050-0054.html>). This required each licensee to develop and implement guidance and strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under the circumstances associated with loss of large areas of the plant due to explosions or

fire. These strategies included manual operation of the containment vent system and were originally inspected under Temporary Instruction 2515/171, "Verification of Site Specific Implementation of B.5.b Phase 2 & 3 Mitigating Strategies," Revision 1 (05000219/2008-006, [ML083570173](#)). Routine follow up inspections of these requirements are incorporated in the triennial fire protection inspections and have been completed in 2011 and 2014 (05000219/2011-007, [ML111250021](#) and 05000219/2014-007, [ML14125A004](#). No findings were identified.

You requested that we pass on your comment that it is unacceptable to move the emergency operations facility for Oyster Creek to Coatesville, PA. We forwarded your comment to our Senior Emergency Preparedness Inspector in our Region I Office in King of Prussia, PA. He contacted Exelon who confirmed that there are presently no plans to move the Oyster Creek emergency operations facility to any other location. However, in preparation for decommissioning, the plant owner may apply to the NRC for an exemption to the emergency preparedness regulations in accordance with [10 CFR 50.12, "Specific exemptions"](#), though Exelon has not made such a request for Oyster Creek. An exemption would be required because there are no explicit regulatory provisions distinguishing emergency preparedness requirements for a power reactor that has been shut down from those for an operating plant. As such, for a decommissioned plant, it is not unusual that plant owner requests exemption from certain emergency preparedness requirements (including emergency operations facility requirements). If approved by the NRC, the exemption would typically take effect after the fuel is no longer susceptible to zircaloy oxidation and the fuel cladding will remain intact given the spent fuel pool is drained. Note that as the plant transitions through the decommissioning process, it is expected that all of the spent fuel will eventually be transferred into a dry cask storage system. After this transfer is completed, the plant owner may consider changing its emergency plans to reflect dry cask system only in accordance with [10 CFR 72.32, "Emergency Plan."](#)

You also requested that the NRC consider the recent approach that Canada has taken with regards to door-to-door distribution of potassium iodide. The Federal position is that potassium iodide should be stockpiled and distributed to emergency workers for radiological emergencies at a nuclear power plant and its use should be considered for the general public within the 10-mile emergency planning zone of a nuclear power plant. The NRC will not require use of potassium iodide by the general public because the NRC believes that current emergency planning and protective measures--evacuation and sheltering in place--are adequate and protective of public health and safety; however, the NRC recognizes the supplemental value of potassium iodide and the prerogative of the States to decide the appropriateness of the use of potassium iodide by its citizens. Thus, the NRC does provide funding for the purchase of a state's supply of potassium iodide and the NRC believes that this strikes a proper balance between encouraging (but not requiring) state authorities to take advantage of the benefits of potassium iodide. Some states have distributed potassium iodide to residents of a plant's emergency planning zone. In other states, like New Jersey, potassium iodide is stockpiled and would be distributed if and when it is necessary. If you are not in favor of the current approach, you may petition the State of New Jersey to supply the potassium iodide door-to-door or you may file a petition for rulemaking with the NRC to amend the rule. The current rule and policy on potassium iodide can be found here: <http://pbadupws.nrc.gov/docs/ML0201/ML020150357.pdf>.

Please contact me if you have any further questions or comments.

Sincerely,

Silas

Silas Kennedy

Chief, Project Branch 6

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