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February 2, 2023

VIA EMAIL

Hon. Michelle L. Phillips
Secretary to the Commission
3 Empire State Plaza
Albany, NY 12223-1350

Re: Matter No. 21-01188 – In the Matter of the Indian Point Closure Task Force and Indian Point Decommissioning Oversight Board.

Dear Secretary Phillips:

Please accept for filing in the above-captioned matter, responses from the U.S. Nuclear Regulatory Commission to questions raised at the December 7, 2022 Indian Point Decommissioning Oversight Board meeting. Should you have any questions regarding this filing, please contact me. Thank you.

Respectfully submitted,

Tom Kaczmarek
Executive Director
Indian Point Closure Task Force
Indian Point Decommissioning Oversight Board

NRC Responses to Public Comments and Questions
December 7, 2022 DOB Meeting

Decommissioning & Spent Fuel Management	Decommissioning Monitoring	Security & Emergency Management

The responses below were provided by the U.S. Nuclear Regulatory Commission (NRC).

DECOMMISSIONING & SPENT FUEL MANAGEMENT

On-Site Management

1. **How long are the dry casks expected to last?**
   Generally, as stated in the NRC's final rule on the continued storage of spent nuclear fuel, and the associated final Generic Environmental Impact Statement (NUREG-2157), the NRC has found that spent fuel can be stored safely and without significant environmental impacts for 60 years past the licensed life for reactor operation. Studies and experience to date do not preclude a dry cask service life longer than 100 years.

   NRC's regulatory framework permits initial certification of spent fuel storage casks for up to a 40-year initial term and up to 40-year renewal terms. The NRC has determined that this regulatory framework, in conjunction with the slow degradation rates of spent fuel storage systems, provides reasonable assurance that significant storage, handling, and transportation issues do not arise during a single license period.

   The NRC requires the collection of appropriate information and the implementation of aging management activities as part of license renewals. The aging management activities are designed to assure that the storage system safety functions, including radioactive material confinement, structural integrity, criticality control, radiation shielding, and decay heat removal, will be maintained throughout the duration of the renewal period. If information collected during a license period identifies emerging issues and concerns, the licensee would be required to manage the issues and take corrective actions as appropriate. Specific cask service life will depend on the actual degradation observed during the renewal period. The NRC conducts regulatory oversight activities to ensure that safety is maintained during continued storage.

2. **What is the longest time functional dry casks have been in existence at this point in time?**
   The first dry storage system in the U.S was placed into service in October 1986, at Surry Power Station. Dry storage systems in the United States are housed at Independent Spent Fuel Storage Installations (ISFSIs). Here's a link to the map of ISFSIs in the United States: https://www.nrc.gov/docs/ML2111/ML21116A041.pdf .

Spent Fuel Transport and Management

3. **What issues have occurred since the casking of spent fuel began in the 1980s?**

Since the first dry casks were loaded in the United States in 1986, there have been no releases of radiation from dry storage facilities that have affected the public or the environment. The NRC staff provides oversight of these facilities, and any significant issues or generic issues that are identified by the NRC are addressed by each respective licensee and documented in NRC inspection reports or generic communications. The NRC inspection reports, and generic communications are typically made publicly available in the NRC's Agencywide Documents Access and Management System (ADAMS). As an example of making such information publicly available, inspection activity relevant to dry cask storage regarding a misalignment incident that occurred at the San Onofre Nuclear Generating Station, was captured on the NRC's Public web page here: https://www.nrc.gov/reactors/operating/ops-experience/songs-spec-insp-activities-cask-loading-misalignment.html

Furthermore, the NRC also reviews and evaluates potential generic issues across the nuclear industry that are safety significant, require technical resolution, and takes regulatory action where appropriate. The NRC shares information on generic issues with licensees and other stakeholders in the form of NRC generic communications. These generic communications include bulletins, generic letters, regulatory issue summaries, and information notices, and are available on the NRC's Public web page here: https://www.nrc.gov/reading-rm/doc-collections/gen-comm/index.html

Examples of generic communications relevant to the storage of spent fuel are listed below (not intended to be an all-inclusive list).

- NRC Bulletin 96-04, "Chemical, Galvanic, or Other Reactions in Spent Fuel Storage and Transportation Casks," July 5, 1996, (https://www.nrc.gov/reading-rm/doc-collections/gen-comm/bulletins/1996/bl96004.html).
- NRC Information Notice 96-34, "Hydrogen Gas Ignition During Closure Welding of a VSC-24 Multi-Assembly Sealed Basket," May 31, 1996, (https://www.nrc.gov/reading-rm/doc-collections/gen-comm/info-notices/1996/in96034.html).
- NRC Information Notice 2011-10, "Thermal Issues Identified During Loading of Spent Fuel Storage Casks," May 2, 2011, (ADAMS Accession No. ML111090200).
- NRC, Information Notice 2012-20, "Potential Chloride-Induced Stress Corrosion Cracking of Austenitic Stainless Steel and Maintenance of Dry Cask Storage System Canisters," November 14, 2012, (ADAMS Accession No. ML12319A440).
- NRC Information Notice 2013-07, "Premature Degradation of Spent Fuel Storage Cask Structures and Components from Environmental Moisture," April 16, 2013, (ADAMS Accession No. ML12320A697).

4. **The NRC has stated that procedures and safety measures [at Indian Point] have been reviewed based on existing standards. When were the standards last reviewed and updated? There have been many times when existing standards fall short of protecting the public and environment from harm because the standards are outdated.**

The NRC's rules and regulations associated with ISFSIs provide adequate protection of the public health and safety. Additionally, the NRC actively participates in the development and updates to consensus codes and standards that are used to demonstrate compliance with NRC regulations. The NRC also maintains working relationships with regulatory agencies in other countries, international organization working groups, and multilateral forums. These activities allow the NRC to monitor current trends in industry, science, technology, and update the NRC's regulatory framework and oversight process to ensure the continued reasonable assurance of adequate protection.

Recently, the NRC updated its licensing guidance in the Standard Review Plan (SRP) for storage facilities in 2020 (i.e., NUREG-2215, Standard Review Plan for Spent Fuel Dry Storage Systems and Facilities). The regulatory requirements, inspection manual chapters and inspection procedures associated with decommissioning facilities and for Independent Spent Fuel Storage Installations (ISFSIs) were last revised in 2020 and 2021 respectively.

5. **If Holtec and Orano succeed in establishing a Consolidated Interim Storage Facility, will they be able to choose how they accept spent fuel casks based upon their proprietary needs?**
   In general, a license for a spent fuel storage a facility would specify the type of casks that could be accepted at that facility. Subsequent changes to the license would require the licensee to request an amendment to the license.

6. **Are there currently written regulations by the NRC establishing procedures and practices for such proprietary facilities? Is the existence of such a facility a violation of the NNWPA of 1982 given there is no reasonable date for the opening of a national permanent repository?**
   The NRC regulations for licensing and regulating spent fuel storage facilities are found at 10 CFR Part 72. The NRC also has guidance for review of such applications, including NUREG-2215 for the safety review, and NUREG-1748 for the environmental review, among others.

7. **Will the NRC/DOE comply with the 2004 Appeals Court ruling and establish a deep geologic repository following the National Academy of Science Safety Containment Guidelines of 300,000 years?**
   The NRC has no comment at this time.

8. **Will the NRC/DOE forgo the safety preemption in order to engage in true Consent Based Siting?**
   The NRC has no comment at this time.

DECOMMISSIONING MONITORING

9. **Is there a decommissioning audit process by a separate entity other than the NRC?**
   The NRC is an independent agency tasked with regulating radioactive material so that licensees, including licensees of decommissioning reactors, are required to ensure that decommissioning activities are conducted safely from a radiological perspective. The NRC can only speak to its

authority and activities. For clarity, the NRC inspection staff conduct actual inspections rather than audits - the non-compliance issues identified in these inspections are not optional and must be corrected.

SECURITY AND EMERGENCY MANAGEMENT

10. **What protection do casks provide against terrorist explosives and/or overhead attack?**
The NRC considers spent fuel storage facilities to be robust so that in the event of a terrorist attack similar to those of September 11, 2001, no negative effect on the storage of radioactive materials would result.

    The NRC's security requirements for physical protection for spent fuel storage and transportation are located in 10 CFR Part 73, "Physical Protection of Plants and Materials" (http://www.nrc.gov/reading-rm/doc-collections/cfr/part073/), 10 CFR Part 72, and orders that outline additional security measures. The NRC reviews and approves facility security plans in evaluating the adequacy of on-site security measures. The NRC also inspects ISFSIs to ensure licensees' complete and correct implementation of the features of the security plan, as well as the applicable regulations and orders.

    The NRC conducted security assessments for ISFSIs using several storage cask designs that are representative of current NRC certified designs. The results of these security assessments contain sensitive unclassified information and therefore are not publicly available. Plausible threat scenarios considered in the generic security assessments for ISFSIs included, among other things, a large aircraft impact similar in magnitude to the attacks of September 11, 2001. Based on these assessments, the NRC concluded there is no need for further security measures at ISFSIs beyond those currently required by regulation and imposed by orders issued after September 11, 2001. The post-9/11 orders are not publicly available because they contain safeguards information. Furthermore, the NRC is not aware of any threat analyses that support requirements for additional hardening of spent fuel casks. Nevertheless, the NRC is continually evaluating the threat environment, to determine whether any specific threat to ISFSIs exists.

11. **How does the NRC address cyber security threats to the site?**
At a decommissioning facility, there is a reduced cybersecurity risk, due in part to the fact there are significantly fewer critical digital assets in comparison to the number of critical digital assets at an operating reactor. Once fuel is removed from the reactor vessel and placed in the spent fuel pool, the digital computers and communication systems and networks that require cyber protection are primarily those associated with security and emergency preparedness functions, and those safety systems that support operation of the spent fuel pool. Those critical digital assets remain protected under the site's cybersecurity plan while the spent fuel is cooling. Once the spent fuel has undergone a sufficient cooling period, the potential consequences of a cyberattack are significantly reduced. The NRC does not have cybersecurity requirements that would apply to the site's ISFSI.

12. **There have been computer hacks and intrusions into the USA infrastructure. Are the intrusion detection systems for the casks adequate enough to protect an intrusion?**

The intrusion detection systems protecting the casks are adequate to protect them from an intrusion. We cannot comment on the specifics of the security systems associated with the site due to the sensitive nature of the topic.

13. **How often is the radiation in the air near the casks measured? If there is a leak from a cask, what alarming/warning systems are in place to alert someone? How long would it take to have the warning message received?**

Typically, an ISFSI boundary fence surrounding the grouping of casks is equipped with multiple thermoluminescent dosimeters (TLDs) that are designed to collect a radiation dose at their posted location. These TLDs are regularly monitored and any increase in general radiation would be registered by the TLDs. However, radiation monitoring is not relied on for an early warning system for canister failure.

It is important to note that the casks are designed such that they contain no liquid from which a leak would emanate. The fuel is dry and after it is loaded, it is filled with helium to assist with heat transfer and prevent fuel degradation. After the cask is filled with helium, the cask is sealed and welded or bolted closed. There have been no leaks of helium from welded casks, and in the event that a leak of helium occurred, helium is not harmful to humans or the environment. Aging Management Programs (AMPs) are required when a cask system is renewed and used beyond the initial license or certificate term. Inspections conducted as part of the AMPs are relied upon to detect and mitigate aging effects that may affect important to safety functions such as confinement.

Independent spent fuel storage installations (ISFSIs) must follow NRC regulations including specific dose limits for an individual located beyond the ISFSI controlled boundary. These limits are defined in 10 CFR 72.104 for normal operations and anticipated occurrences and 10 CFR 72.106 for a design basis accident. The results of the monitoring program are one of many items, procedures, and operations reviewed by NRC inspectors during planned inspections. These planned inspections occur every three years or as needed to support specific activities. The NRC inspection reports are typically made publicly available in the NRC's Agencywide Documents Access and Management System (ADAMS).