



## NJDEP OYSTER CREEK NUCLEAR REACTOR DECOMMISSIONING FAQs

*The Oyster Creek Nuclear Generating Station in Lacey, Ocean County began service in 1969. The 625-megawatt boiling-water reactor was the nation's oldest operating commercial nuclear power plant when it shut down on September 17, 2018. It was permanently defueled on September 25, 2018. The permanent shut down*



*occurred 10 years ahead of the expiration of Oyster Creek's U.S. Nuclear Regulatory Commission license. On July 1, 2019, Holtec International and its subsidiaries procured ownership of Oyster Creek from Exelon Nuclear. Comprehensive Decommissioning International (CDI) (Holtec subsidiary) has the responsibility for all decommissioning activities at the site. The Administrative Consent Order (ACO) signed by Exelon Nuclear and the New Jersey Department of Environmental Protection (DEP) on January 8, 2018 was transferred to Holtec/CDI in accordance with the sale agreement and the ACO terms. The following FAQs answer common questions about the New Jersey Department of Environmental Protection's role in the decommissioning process.*

### **What is Decommissioning?**

Decommissioning is the process by which a nuclear power plant is safely removed from service and the site property is released for other uses. Decommissioning involves removing the spent fuel, dismantling the power plant and cleaning up or dismantling contaminated materials from the facility for safe disposal. Decommissioning of a nuclear power plant must be completed within 60 years after shutdown. Here is the NRC link for additional information about decommissioning <https://www.nrc.gov/waste/decommissioning.html>

### **What role will the DEP have in the decommissioning of the Oyster Creek Generating Station?**

The DEP's role in the decommissioning of Oyster Creek spans several programs.

**Bureau of Nuclear Engineering:** The DEP's Bureau of Nuclear Engineering is comprised of three sections, each of which will have a role after the shutdown of the Oyster Creek Generating Station and in the plant's decommissioning.

- [Nuclear Engineering Section](#)

The January 2018 ACO provides for the continuance of unescorted access for authorized Bureau of Nuclear Engineering personnel to all Oyster Creek protected and owner-controlled areas. Holtec/CDI will continue to provide an on-site Bureau of Nuclear Engineering office and access to work activities, reports and plant data. The Bureau of Nuclear Engineering will continue to review decommissioning activities at Oyster Creek and make periodic visits on an as-needed basis to the Oyster Creek site. This will include being on-site during selected United States Nuclear Regulatory Commission inspections. During these periodic visits, Bureau of Nuclear Engineering personnel will observe the ongoing decommissioning activities and processes. Holtec/CDI will provide the Bureau of Nuclear Engineering with copies of all formal submittals related to decommissioning and decommissioning reports to outside agencies. The Bureau of Nuclear Engineering has and will continue to review these submittals and reports and provide any comments to the appropriate organizations.

- *Nuclear Environmental Engineering Section*

The Nuclear Environmental Engineering Section will ensure that the Oyster Creek Site is decommissioned in a manner that is protective of the environment and the health and safety of the public and in accordance with all federal, state, and local environmental regulations. The Nuclear Environmental Engineering Section will ensure that Holtec/CDI's plans for environmental monitoring after shutdown are sufficient and provide feedback to both Holtec/CDI and the NRC as necessary. The Nuclear Environmental Engineering Section will continue its own environmental monitoring program associated with the Oyster Creek Station to provide independent verification of the results of Holtec/CDI's monitoring program.

The Nuclear Environmental Engineering Section also will participate in the environmental sampling that will be performed to ensure that any residual radioactive material found at the site is within federal and state limits. This will include reviews of Holtec/CDI's sampling results as well as independent analyses of samples by Bureau of Nuclear Engineering's contractor laboratories to verify Holtec/CDI's results. Nuclear Environmental Engineering Section engineers also will conduct site visits on a regular basis during the decommissioning process and will be observing selected inspections performed by the NRC.

- *Nuclear Emergency Preparedness Section*

New Jersey State Police Office of Emergency Management and the DEP's Bureau of Nuclear Engineering will implement the Post Shutdown Response Plan for the Oyster Creek Nuclear Generating Station as required by the New Jersey Radiation Accident Response Act (*N.J.S.A. 26:2D-37, et seq.*) until all the spent fuel is transferred into dry-cask storage. Holtec will continue to support state efforts in implementing the Radiological Accident Response Act as outlined in the Administrative Consent Order of January 2018 with the DEP.

**Bureau of Environmental Radiation:** Staff of the Radiological and Environmental Assessment Section (REAS) will ensure that the Department's regulations at N.J.A.C. 7:28-12, Soil Remediation Standards for radioactive materials are met. Staff of the BER will perform site visits as necessary to ensure a complete understanding of the remediation reports that are submitted. Confirmatory sampling and gamma walkover surveys may also be performed by BER staff.

**Site Remediation and Waste Management Program (SRWMP):** Oyster Creeks is subject to the Industrial Site Recovery Act (ISRA). As required, the remediating party has hired a License Site Remediation Professional (LSRP) to oversee the remediation of this site in accordance with DEP's applicable standards and regulations. SRWMP will monitor the remediation progress and the actions of LSRPs by requiring the submittal of forms and reports as remediation milestones are reached.

Under the direction of the LSRP, the remediating party need not wait for the Department's direction and pre-approvals to continue the cleanup, except for the remediation of radionuclide contamination (7:26C-2.3). The LSRP will coordinate with the BER staff regarding the radiological contamination at the site.

#### **What is the role of the Safety Advisory Panel?**

On October 1, 2019, Commissioner McCabe signed an administrative order creating a Safety Advisory Panel to provide additional oversight of Holtec International's decommissioning activities at Oyster Creek nuclear plant. The Panel, consisting of the Commissioner, the Superintendent of the State Police, the President of the Board of Public Utilities and the Director of the Office of Homeland Security and Preparedness, will provide an additional avenue for the public to raise concerns regarding the decommissioning of the site. The Panel will meet at least twice annually to review decommissioning activities and ensure compliance with the requirements of the January 2018 Administrative Consent Order to which Holtec became subject after purchasing the plant from Exelon in July 2019.

#### **What are the primary safety concerns involved in decommissioning? Is there a danger of radioactive releases to the environment during the decommissioning process?**

Spent nuclear fuel is currently stored in the spent fuel pool. After sufficient cooling, the spent fuel will be transferred to dry casks and stored on-site at the Independent Spent-Fuel Storage Installation. The process for defueling the reactor, storage of the spent fuel in the pool and transfer to the Independent Spent-Fuel Storage Installation is the same process that Oyster Creek has used while in operation and therefore, provides no additional operational risk. The risk of a radioactive release is significantly reduced after permanent shutdown of the reactor. This risk is further reduced as the fuel cools in the spent-fuel pool and even further reduced when the fuel is moved into dry-cask storage.

#### **How long will it take for the spent-fuel rods in the spent-fuel pool to cool sufficiently to move them into dry-storage casks? How long will it take for all the fuel rods to be moved into dry storage casks?**

Typically, spent fuel can be transferred after five years of cooling in the spent-fuel pool. Site specific conditions may allow for earlier transfer into dry casks. According to the schedule provided by Holtec/CDI to the NRC, all spent fuel will be moved into the dry storage casks by 2021.

**How do you know the dry-cask cask systems are safe? Does the NRC inspect these casks?**

The NRC is responsible for reviewing the cask designs to ensure that they will provide a confinement barrier to the fuel before they are licensed and certified for use. The NRC reviews the testing, manufacturing, and maintenance of casks used in dry storage. The NRC is also responsible for inspection of dry-cask storage systems. Before casks are loaded, the NRC inspectors observe a dry run at the site and the initial cask loadings. After the casks are placed on the Independent Spent Fuel Storage Installation, the NRC performs periodic inspections of the casks. The licensee conducts their own periodic inspections according to its procedures.

**How do you know the spent-fuel pool is safe? How long can you store the spent fuel in the pool?**

The spent-fuel pool design is robust, constructed of reinforced concrete several feet thick, with steel liners. The water in the pool is about 40 feet deep, which helps in both shielding and cooling of the spent-fuel rods. The spent-fuel pool is designed to withstand a design-basis seismic event. The spent fuel in the spent-fuel pools can be stored safely for at least 30 years.

**Holtec/CDI has reduced staff and emergency preparedness personnel after shutdown and during decommissioning. Will the reduced staff be able to respond to onsite emergencies?**

The risk of a large offsite radiological release at a decommissioning power reactor storing fuel in the spent-fuel pool is lower than from an operating power reactor. Because of the lower risk from a decommissioning power reactor, licensees typically make a case for an exemption from some emergency preparedness requirements to the NRC. The NRC reviewed the exemption requests and approved the reduced emergency preparedness staffing. The NRC review concluded that the reduced staff can perform their functions adequately and provide reasonable assurance that the health and safety of the public will not be affected by the reduced staffing.

**How long will the NRC Resident Inspector be present at Oyster Creek during decommissioning?**

Per the NRC regulations, there is no need for the NRC Resident Inspector to be present at a permanently shutdown site. The NRC will conduct periodic inspections throughout the decommissioning process at Oyster Creek. The NRC staff will be present for specific inspections during spent-fuel transfer to the spent-fuel pool and other decommissioning activities as required. Bureau of Nuclear Engineering staff observe all NRC inspections.

**How long will the dry casks be stored on the Independent Spent Fuel Storage Installation pad? When will U.S. Department of Energy accept the fuel? Can the NRC expedite the Department of Energy's fuel move to either a permanent repository or a consolidated interim storage facility?**

Currently all dry-cask designs are issued a Certificate of Compliance by the NRC that is valid for 20 years and may be extended in 20-year increments. The U.S. Department of Energy will accept the spent nuclear fuel as soon as either a permanent repository or a consolidated interim storage facility is approved. Currently, there are no licensed facilities that can accept spent nuclear fuel for either interim or long-term storage. The NRC has no legal or regulatory authority to expedite the process.

### **Are the current casks on the Independent Spent-Fuel Storage Installation safe to be transported to a final repository?**

The current casks on the Independent Spent-Fuel Storage Installation can be transferred to a transportation cask specifically designed for transportation. The design, construction, use and maintenance of the transportation casks are also regulated and licensed by the NRC. The casks are designed to withstand a series of tests that simulate similar accidents during normal conditions of transportation, including drop, puncture, immersion and fire-accident tests.

### **How does the NRC ensure that Holtec/CDI will have sufficient money to complete decommissioning?**



The regulations require that all licensees submit a decommissioning trust fund report to the NRC annually. The NRC has placed regulations regarding the amount of money that can be used from the decommissioning trust fund at various stages of the decommissioning process. The NRC reviews the licensee's decommissioning trust fund report to ensure that the licensee has enough money to complete decommissioning. The NRC has successfully completed decommissioning of 10 nuclear power plants in the United States and no decommissioning project has been halted due to depletion of the decommissioning trust fund.

### **Will there be continued environmental monitoring at the site during decommissioning process?**

Both the DEP and Oyster Creek radiological environmental monitoring programs that were in place at the plant will continue after the plant is shut down. The program will be modified to appropriately monitor the types of releases that may occur during decommissioning and to monitor results at appropriate intervals. The DEP will continue to collect and analyze environmental samples throughout the decommissioning process to ensure that there are no adverse impacts to public health and safety or the environment.

### **Since Oyster Creek is now shut down, will the Nuclear Regulatory Commission continue to conduct routine Radiological Environmental Monitoring Program Inspections?**

The Radiological Environmental Monitoring Program will continue throughout the decommissioning process. The Radiological Environmental Monitoring Program can be

modified by the licensee to appropriately monitor the types of releases that may occur during decommissioning and to monitor results at appropriate levels. Under the NRC's inspection program for decommissioning nuclear power plants, Radiological Environmental Monitoring Program inspections will be performed annually during decommissioning. The New Jersey Bureau of Nuclear Engineering will be observing these inspections.

**Will the Continuous Radiological Environmental Surveillance Telemetry System remain after Oyster Creek shuts down?**

The 19 monitoring stations around Oyster Creek will remain and continue to read minute-by-minute radiation and meteorological conditions in the environment. The monitoring system will remain in place as it currently exists until all fuel is moved to dry casks at the Independent Spent-Fuel Storage Installation. At that point, a reduced network of monitors that provides continuous monitoring at the Independent Spent-Fuel Storage Installation would remain until all spent-fuel casks are removed from the site.

**Oyster Creek has been in operation for the nearly 50 years. How does the public know that they have not exceeded effluent release limits?**

The NRC imposes strict limits on the amount of radioactive material that operating nuclear power plants can release to the environment. Those release limits are designed to ensure the health and safety of the public and to protect the environment. To demonstrate compliance with those limits, all operating nuclear power plants are required to submit annual radioactive effluent release reports to the NRC. Those reports provide a very detailed accounting of the amounts of radioactive material released to the atmospheric and aquatic environments during the year. The annual radioactive effluent release reports for the Oyster Creek Nuclear Generating Station can be accessed on the NRC's website at [www.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/oc.html](http://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/oc.html).

The DEP's Bureau of Nuclear Engineering maintains an independent radiological environmental monitoring program around the Oyster Creek Station. The program includes two types of continuous radiation monitors: thermoluminescent dosimeters and pressurized-ion chambers. These extremely sensitive radiation monitors are deployed in a ring around the immediate vicinity of the facility and as far away as several miles, providing continuous, real-time radiation monitoring. No radiation above normal background levels attributable to Oyster Creek operations has ever been detected by these monitors.

The Bureau of Nuclear Engineering also operates continuous air samplers and collects samples of well water, surface water, fish and shellfish, sediment, and vegetables from the environment around Oyster Creek. The results of the analyses of these samples demonstrate that people living in the area around Oyster Creek have not received measurable radiation exposures above normal background.

**Has sea-level rise been taken into consideration in the decommissioning plans as it relates to the storage of dry casks and the dismantling of the nuclear plant?**



The NRC requires each site to perform an analysis of the potential impacts of flooding at the site. Each site, including Oyster Creek, has completed this analysis.

**Does New Jersey have any authority over the decommissioning of Oyster Creek?**

As previously stated, Oyster Creek must follow the regulations concerning the Industrial Site Recovery Act. In order for Holtec to be approved to sell the property, the site must meet all New Jersey regulations for chemical contamination and for radiological contamination. New Jersey and the NRC have different remediation standards for radionuclides. Where this has occurred in other states, the NRC staff and the State staff work together to ensure that all standards are met before license termination and release of the site.

**How will the NJDEP ensure that the site meets New Jersey cleanup standards?**

As with any other radiologically contaminated site in New Jersey, staff of the Bureau of Environmental Radiation will review site investigation (characterization) reports, remedial action workplans (including any proposed cleanup standards), and final status survey reports. Confirmatory monitoring may also take place. For more information regarding New Jersey's oversight of radiologically contaminated site cleanups click here:

[https://www.state.nj.us/dep/rpp/rms/rad\\_cleanups.htm](https://www.state.nj.us/dep/rpp/rms/rad_cleanups.htm)

## ONLINE RESOURCES

- NRC DECOMMISSIONING INFORMATION
  - <https://www.nrc.gov/waste/decommissioning.html>
- HOLTEC DECOMMISSIONING INTERNATIONAL HOME PAGE
  - <https://hdi-decom.com/our-fleet/oyster-creek-decommissioning/>
- OFFICE OF HOMELAND SECURITY AND PREPAREDNESS
  - <https://www.njhomelandsecurity.gov/>
- OFFICE OF EMERGENCY MANAGEMENT
  - <https://www.state.nj.us/njoem/>
- NJDEP BUREAU OF NUCLEAR ENGINEERING
  - [www.state.nj.us/dep/rpp/bne/index.htm](http://www.state.nj.us/dep/rpp/bne/index.htm)
- NJ BOARD OF PUBLIC UTILITIES
  - [www.state.nj.us/bpu/index.shtml](http://www.state.nj.us/bpu/index.shtml)