

Facts about Safety and Emergency Planning Oyster Creek Generating Station October 2011

This document provides facts about safety and security procedures, equipment and systems related to earthquakes, flooding and other disaster preparedness at the Oyster Creek Generating Station. This is not a comprehensive review of all facility safety and security procedures, it is meant to show Exelon Nuclear's commitment to the highest safety standards at all its facilities.

Oyster Creek is protected against earthquakes

- Exelon's facilities are engineered to withstand earthquakes between 6.0 and 6.9 on the Richter scale *at the facility site*, which translates into larger earthquakes as measured at the epicenter. This is far above any historical earthquake risk data for the area.
- Oyster Creek safety and security systems and components are protected in reinforced concrete structures, allowing them to remain functional in earthquakes, hurricanes, floods or an accident internal to the facility.
- Among protected systems are those that provide emergency cooling water to the reactor and used-fuel pools, emergency diesel generators and diesel fuel tanks.

Oyster Creek Generating Station is protected against floods

- Oyster Creek is designed to remain in a safe operating condition even during significant floods.
- Tsunamis are not a threat to Oyster Creek. The Atlantic basin does not have the tectonic makeup to generate earthquakes that cause large tsunamis seen in the Pacific Rim.
- According to the National Oceanographic and Atmospheric Administration, there have been three significant tsunamis in the Atlantic in the past 400 years. The largest of those produced a wave between two to four feet high in the mid-Atlantic region.
- Oyster Creek is situated 23 feet above sea level. The nearest body of water, Barnegat Bay, is at sea level. The largest recorded flood at the site is 4.5 feet above sea level. The maximum recorded high tide at Barnegat Bay (approximately two miles from site) is approximately seven feet above sea level.

Oyster Creek Generating Station is protected against power loss

- The electricity to operate the facility comes from one of three independent transmission lines feeding power into the station switchyard (similar to a substation). Two additional independent grid power sources can be connected quickly should any of the three primary sources fail.
- Should all five offsite power sources fail, two locomotive-sized emergency diesel generators that start automatically, two independent battery banks and two backup natural gas-fueled combustion turbine generators ensure continued electricity for safe and secure shutdown and cooling.
- The two emergency diesel generators are housed safely and securely within a reinforced concrete structure in separate rooms and can operate 24/7 for months if needed.
- The generators are fueled by two diesel fuel tanks. The primary tank is in an underground vault and holds a three-day supply of fuel. A second, above-ground tank holds an additional five-day supply. Pipes run underground to the diesel generators and the tanks are bolted and secured to the ground.
- The station has contingency plans for replenishing diesel fuel supplies in an extended natural disaster.

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- Oyster Creek has three banks of large emergency batteries in two locations within the facility and can power equipment for up to eight hours if all four emergency diesel and combustion turbine generators fail.
 - The emergency diesel generators are tested bi-weekly. Batteries are inspected weekly. Backup combustion turbines are tested regularly.

Oyster Creek is protected against hydrogen build up

- Oyster Creek has developed systems and strategies that minimize hydrogen buildup inside the facility, believed to be the cause of explosions in the Japanese facilities.
- Systems include nuclear-grade vents that bypass enclosed structures and a nitrogen injection system that purges hydrogen from critical areas.

Oyster Creek water resources

- Oyster Creek has seven independent methods of safely injecting water into the reactor if needed.
- The facility has four independent methods of safely maintaining water level in the used-fuel pool if necessary.
- Emergency water is available from any of four tanks holding approximately 700,000 gallons, a fresh water pond fed by a natural tributary, and, in an extreme emergency, from the facility's salt-water cooling canal.

Oyster Creek Generating Station has extensive emergency plans

- Oyster Creek has extensive procedures to respond to emergency events that undergo drills multiple times annually.
- Facility operators, maintenance personnel, engineers, and the emergency planning workforce verify their qualifications on a daily basis
- Oyster Creek and all U.S.nuclear facilities have “Severe Accident Mitigation Guidelines” that prescribe actions and require pre-staged equipment (portable diesel generators and portable power packs) beyond normal emergency operating procedures to address severe challenges to the reactor core.
- Station operators are regularly trained in control-room simulators to respond to severe natural disasters that exceed the facility's design basis.
- Station emergency drills are overseen by the Nuclear Regulatory Commission (NRC) and the Federal Emergency Management Agency (FEMA), with participation of state and local emergency agencies including the New Jersey Bureau of Nuclear Engineering.
- Oyster Creek conducts five emergency drills each year, and performs an NRC-graded drill every two years.

Oyster Creek used fuel

- Oyster Creek's used-fuel pool and dry cask storage facility are engineered to withstand greater than the largest earthquake ever seen in the region.
- Used-fuel pool walls are three to six feet thick steel-reinforced concrete with a stainless steel liner to maintain adequate water levels at all times.
- The used-fuel pool is elevated well above maximum postulated flood levels.

Quick facts about Oyster Creek Generating Station

- Oyster Creek Generating Station is a single unit boiling water reactor with a steel and concrete containment structure. The facility provides 645 total net megawatts at full power.
- The facility began producing electricity commercially in 1969.
- Oyster Creek is scheduled to be permanently shut down by Dec. 31, 2019.
- The main source of cooling water is a 10,000-foot intake canal that connects to Barnegat Bay. The facility employs approximately 700 people with an annual payroll \$65 million.