

Facts about Safety and Emergency Planning Dresden Generating Station October 2011

This document describes safety and security procedures, equipment and systems at the Dresden Generating Station that protect the station against earthquakes, tornadoes, flooding and other natural disasters. This is not a comprehensive review of all facility safety and security equipment and procedures. It is meant to show Exelon Nuclear's commitment to the highest safety standards at all its facilities.

Dresden Generating Station is protected against earthquakes and natural disasters

- 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.
- Dresden safety and security systems and components are protected in reinforced concrete structures, allowing them to remain functional in earthquakes, tornados, floods or an accident internal to the facility.
- Among protected components are those that provide emergency cooling water to the reactor and spent fuel pools, emergency diesel generators, diesel fuel tanks and systems that remove heat from the reactors and ensure they retain sufficient water at all times.

Dresden Generating Station is protected against floods

- Dresden is designed to remain in a safe and secure condition during significant flooding. Tsunamis are not a threat to Dresden due to its location.
- The average elevation of the facility property is 517 feet above sea level. The nearest bodies of water; Illinois River to the north and Kankakee River to the east, run 504 feet above sea level. The largest recorded flood at Dresden rose to approximately 510 feet above sea level.
- If a flood threatened to rise to a level higher than the facility's average elevation, both reactors would be shut down and reactor cooling transferred to a protected internal system and remain that way until waters receded. Cooling would be supplied by the Isolation Condenser, a passive system that does not require power once the valves are open.

Dresden Generating Station is protected against power loss

- The electricity to power the facility comes from two independent 345 kilovolt switchyards (similar to substations) that are connected to the grid via seven transmission lines.
- Should all seven transmission lines and both switchyards fail, three emergency diesel generators backed up by two additional generators roughly twice the size of the first three, start automatically to provide all necessary power.
- The three primary emergency diesel generators are stored safely and securely in separate rooms within a reinforced concrete building. The two larger backup diesel generators are in a separate reinforced concrete building in separate rooms.
- The generators are fueled by three underground fuel tanks holding a two-day supply of diesel fuel.
- The two larger backup diesel generators share an underground tank with a one-day supply. Pipes run underground between the diesel generators and the storage tanks.
- The station has contingency plans for replenishing diesel tanks during a natural disaster.
- Dresden has six banks of large batteries in four locations within the facility. Each battery bank can provide emergency backup power for at least four hours should all five diesel generators become unavailable.
- The primary emergency diesel generators are tested monthly, the larger backup diesels quarterly and batteries weekly.

Dresden Generating Station is protected against hydrogen build up

- Dresden has developed equipment and strategies that minimize hydrogen buildup inside the facility, believed to be the cause of explosions in the Japanese facilities.
- Equipment and strategies include nuclear-grade hardened vents that bypass enclosed structures and monitoring devices that prevent even the initial buildup of hydrogen before it can collect and become explosive.

Dresden Generating Station has ample water resources available instantly

- Dresden has seven independent primary methods of safely injecting water into the reactor and six backup methods.
- Dresden has eight independent methods of safely maintaining water in the used-fuel pools if needed.
- The fire protection system is another available resource for maintaining water in the used-fuel pool.
- Emergency water is available from any of four tanks holding a total of 900,000 gallons, from fire protection systems, and from the Kankakee or Illinois Rivers.
- If all station system pumps were unavailable, water would be delivered by diesel-driven fire protection pumps, backup “severe accident management” pumps, or fire truck pumps.

Dresden Generating Station has extensive emergency plans

- Dresden and all U.S. nuclear facilities have in place “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.
- Facility operators, maintenance personnel, engineers, and the emergency planning workforce verify their qualifications on a daily basis.
- 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 Illinois Emergency Management Agency.
- Dresden conducts multiple emergency drills each year, and conducts an NRC-graded drill every two years.

Dresden Generating Station used fuel

- Dresden’s two used-fuel pools are engineered to withstand forces greater than the largest earthquake ever recorded in the region, thereby exceeding federal safety standards.
- Pool walls are three to six feet thick steel-reinforced concrete with a stainless steel liner to maintain adequate water levels 24-7, 365.
- The used-fuel pools are elevated 613 feet above sea level.

Quick Facts about Dresden Generating Station

- Dresden Generating Station is a dual-unit Boiling Water Reactor with a concrete steel-lined containment structure. Dresden’s Unit 2 and Unit 3 provide a combined 1,751 total net megawatts of electrical capacity at full power.
- Unit 2 began producing electricity in 1970 and Unit 3 began producing electricity in 1971.
- Dresden’s Unit 2 is licensed to operate until 2029. Unit 3 is licensed to operate until 2031.
- The main source of cooling water for Dresden is the Kankakee River.
- The facility employs approximately 849 people with an annual payroll of approximately \$55 million.