



OPPD's Fort Calhoun Station Safety

OPPD has been producing electricity at Fort Calhoun Station, safely and efficiently, since 1973. Safety has always had the highest priority in the design and construction of the plant, and it has remained the number one priority in daily operations ever since. Because of the abundance of safeguards in the design, construction and operation of Fort Calhoun Station, the chance of an accident affecting the public health and safety is extremely remote.

The safety approach used at Fort Calhoun Station follows the “defense-in-depth” concept employed by all commercial power plants in this country. The defense-in-depth concept includes multiple physical barriers to protect against the release of fission products, and several engineered safety features to prevent or mitigate the damage that might occur due to an accident.

The approach also includes numerous procedural barriers to prevent or mitigate damage, and extensive training for all personnel involved with the operation of the plant.

A series of engineered safeguards – back-up safety systems – ensures that the nuclear fuel in the reactor core remains covered with cooling water, even if there is a loss-of-coolant accident. These redundant water-injection systems prevent the fuel in the core from melting and accidentally releasing its radioactive content.

Beyond this, however, there are also physical barriers to prevent the release of large quantities of radioactivity from the reactor system to the environment during either normal operations or accident conditions.

These physical barriers include:

- The nuclear fuel itself, fabricated into dense ceramic pellets, inside which most fission products remain bound.
- The fuel pins of zirconium alloy, about 11 and 1/3 feet long and half an inch in diameter, into which the fuel pellets are stacked and sealed. The zirconium alloy used in the construction of the fuel pins is a highly corrosion-resistant metal alloy.
- The steel reactor pressure vessel is 39 feet high and 13 feet in diameter, with seven-inch-thick steel walls. It contains about 23,000 fuel pins assembled into 133 fuel assemblies that make up the reactor core.
- The reactor coolant system consists of high-strength steel piping, pumps, valves and other components attached to the reactor pressure vessel. The reactor pressure vessel and reactor coolant system provide the leak-tight environment for the cooling water for the system.
- The massive Containment Building is a steel-reinforced concrete structure, with walls and dome nearly four feet thick and steel-reinforced concrete floor more than 12 feet thick and securely anchored to solid bedrock. This heavy containment structure guards against the escape of radioactivity to the environment if all of the other lines of defense are breached. The Containment Building also protects the reactor system from outside hazards, such as a tornado or an earthquake.

OPPD has comprehensive plans in place for handling the most improbable plant emergencies. The plans are continually updated to ensure the best protection of the health and safety of the public and power plant workers. Plant employees routinely participate in emergency drills with Nebraska and Iowa emergency response team personnel. These drills are evaluated biennially by Nuclear Regulatory Commission and Federal Emergency Management Agency personnel.