

Robinson Nuclear Plant Fact Sheet



Robinson Quick Facts

Groundbreaking: 1967

Commercial operation:
Unit 1 – 1971

Number of units: 1

Reactor type: Pressurized water reactor (PWR)

Station capacity: 741 megawatts, enough to power approximately 519,000 homes

General Information

Robinson Nuclear Plant is located on Lake Robinson near Hartsville, S.C.

Robinson plant personnel remain committed to operating the units safely, reliably and maintaining a good relationship with the community.

- Lake Robinson is a 2,250-acre lake created by Duke Energy to provide cooling water for Robinson's nuclear and coal-fired generating units.
- Issued a 20-year extension on its license by the NRC (all U.S. reactors were initially licensed for 40 years).
- First nuclear plant in the southeast to enter commercial service.

Nuclear Safety

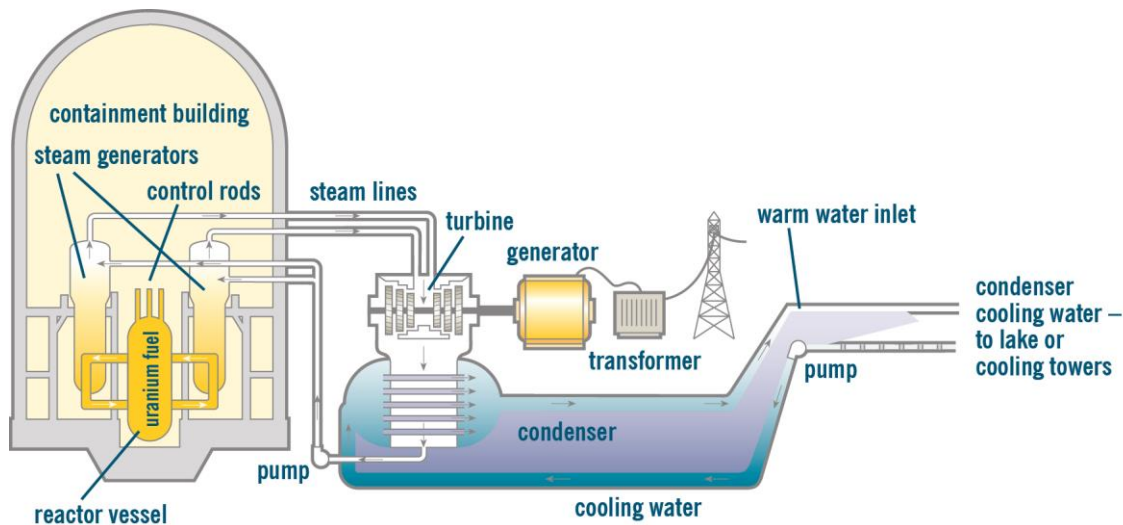
- Multiple, robust safety barriers in place.
- The containment building housing the nuclear fuel core is made of concrete 3.5 feet thick with a 3/8 inch-thick steel liner.
- The reactor vessel containing the nuclear fuel is 42 feet tall, 13 feet in diameter and constructed of 9-inch-thick steel.
- Robinson has redundant safety systems such as multiple pumps and backup electrical supply systems.
- Nuclear stations are built to withstand a variety of external forces, including hurricanes, tornadoes, fires, floods and earthquakes.
- Duke Energy works closely with the Nuclear Regulatory Commission (NRC), various federal agencies, state agencies and local governments to maintain emergency response plans that ensure close coordination with these groups.

Nuclear Security

- Nuclear stations have numerous security features, seen and unseen.
- Armed, highly-trained security professionals provide 24-hour protection.
- Physical barriers and electronic surveillance systems surround Robinson.
- Access is tightly controlled and nuclear employees must pass strict background, psychological and drug/alcohol screenings.

Radiation

- Radiation is a natural part of our environment.
- We receive radiation from the sun, minerals in the earth, food, etc.
- The amount of radiation from a nuclear plant is less than a passenger receives during a coast-to-coast flight.



Nuclear Fundamentals

Robinson Nuclear Plant uses uranium as its fuel. Each uranium pellet, less than one inch long, is enclosed in metal rods 12 feet tall. There are 157 assemblies, each comprised of 204 rods containing a total of 67 metric tons of uranium.

In a process called nuclear fission, a source emitting free neutrons is inserted into the uranium fuel core. The uranium fuel absorbs these free neutrons, becomes less stable and releases additional free neutrons. This movement of free neutrons creates heat used to generate electricity. Here is how it works:

- Water circulates through the nuclear core reaching approximately 600 degrees by removing heat from the fission process.
- Neutron absorbing control rods are inserted into the fuel core to slow or stop this process.
- This heated water travels to steam generators or “heat exchangers.”

- This approximate 600 degree water flows through thousands of tubes inside the steam generators while cooler water circulates on the outside of these tubes and becomes steam.
- The steam flows to a turbine and spins large blades attached to a shaft and generator, producing electricity.
- This steam then flows across a set of tubes containing cool lake water that condenses the steam for reuse in the steam generators.
- This lake water flows down a cooling canal before discharging back into Lake Robinson.

Conserving Resources

Nuclear Power is one of the cleanest ways to generate electricity. Emissions prevented by generating electricity at U.S. nuclear plants are equal to the emissions from approximately 130 million cars.

