



JOSEPH M. FARLEY

Nuclear Plant



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A guide for journalists

Southern Nuclear developed this media guide to help journalists that cover Plant Farley learn more about how we operate the plant to generate nuclear power, and the important role of the media in keeping the community informed.

We strive to give honest, straightforward answers to questions from the media about our plants and are available 24 hours a day via our media line.

Southern Nuclear Media Line: 205-992-5395

Alabama Power Media Line: 205-257-4155

We hope this information will help you cover stories about Plant Farley. You are an important source of information to our customers and neighbors living near the plant. In the unlikely event of an emergency, your role in informing the public with timely, accurate information would be vital.

Please take time to read this media guide and call us with any questions you have. Tours of Plant Farley are available, and you are encouraged to set up an appointment to visit us by calling our Energy Education Center at 334-661-2861.

Southern Nuclear introduction

Southern Nuclear, headquartered in Birmingham, Ala., operates Southern Company's six nuclear units at three locations: the Joseph M. Farley Nuclear Plant near Dothan, Ala.; the Alvin W. Vogtle Electric Generating Plant near Waynesboro, Ga.; and the Edwin I. Hatch Nuclear Plant near Baxley, Ga. Plant Farley was built and is owned by Alabama Power, and the plant generates approximately 19 percent of Alabama Power's electricity.

Southern Nuclear, Alabama Power and Georgia Power are wholly owned subsidiaries of Atlanta-based Southern Company (NYSE: SO). Southern Company is a leading energy company serving 9 million customers through our subsidiaries. We provide clean, safe, reliable and affordable energy through electric companies in three states, natural gas distribution companies in four states, a competitive generation company serving wholesale customers across America, a leading distributed energy infrastructure company, a fiber optics network and telecommunications services.

Southern Company brands are known for excellent customer service, high reliability and affordable prices below the national average. For more than a century, we have been building the future of energy and developing the full portfolio of energy resources, including carbon-free nuclear, advanced carbon capture technologies, natural gas, renewables, energy efficiency and storage technology.

Safety and emergency planning

Safety is the top priority at Plant Farley. We take very seriously our obligation to protect the health and safety of our employees, the public and the environment.

Multiple layers of protection

Plant Farley is designed with redundant safety systems and multiple layers of protection – including structural strength, highly trained operators and proven emergency plans – to ensure safe operation.

Regulatory oversight

Full-time, on-site inspectors from the U.S. Nuclear Regulatory Commission (NRC) monitor the plant to ensure it is maintained and operated safely and in accordance with established nuclear operating procedures. The NRC holds nuclear plants to the highest security standards of any American industry.

Emergency preparedness

In the unlikely event of an emergency, Plant Farley has comprehensive plans that define and assign responsibilities and outline an effective course of action for safeguarding personnel, property and the general public. These plans are updated regularly and maintained at all times. Drills and exercises are conducted frequently to test these plans and train plant personnel.

Managing a nuclear plant emergency

Southern Nuclear has the overall responsibility for the Plant Farley Emergency Plan, which involves Southern Nuclear, Alabama Power and various county, state and federal agencies. The emergency plan specifies the procedures, personnel and equipment that would be used to classify an emergency, to define and assign responsibilities and to outline an effective course of action for safeguarding personnel, property and the general public.

Plant Farley personnel is always on duty and trained to recognize and address plant problems before they become emergencies. If an emergency should occur, plant personnel are prepared to serve as the initial on-site emergency response organization. Depending on emergency severity, the on-site personnel would be supplemented and supported by additional Southern Nuclear and Alabama Power personnel.

Emergency support is available from a variety of other off-site organizations including:

- U.S. Nuclear Regulatory Commission
- State of Alabama
- State of Georgia
- U.S. Department of Energy
- Institute of Nuclear Power Operations
- Nuclear Energy Institute
- Other electric utility companies

Should an emergency occur, one of the first steps would be to notify our off-site partners and local county officials. Communication would be maintained with these agencies to keep them fully aware of the emergency status, including on-site and off-site radiological information.

At the same time, employees would immediately take steps to restore the plant to a safe condition, monitor and control radiation, and manage and coordinate all emergency activities.

Emergency response facilities

Alabama Power Corporate Media Center Plant Farley Joint Information Center

If an emergency occurs at Plant Farley, the Corporate Media Center (CMC) would be established at Alabama Power's Corporate Headquarters at 600 North 18th Street, Birmingham, AL. The CMC would serve as an information center until the Plant Farley Joint Information Center is activated.

Depending on the severity of an emergency, the Joint Information Center (JIC) would be activated for use by the news media. The JIC is located at 16070 U.S. Highway 431 North, Headland, AL.

Once the facility is activated, media calls should be directed to 334-693-6315. Spokespersons from Alabama Power, Southern Nuclear and our local, state and federal partners responding to the event will be at the JIC to discuss their activities.

Media personnel arriving at the JIC should use the front entrance. The degree of activity at these and other off-site emergency facilities would depend on the severity of the emergency.



Plant Farley Joint Information Center

Emergency classifications

There are four classifications used to describe accident severity of nuclear power plant emergencies. From least to most severe, the emergency classifications are:

Notice of Unusual Event

The least serious of the four NRC classifications. It means there is a minor problem at the plant. Because of strict federal regulations, many situations occur that qualify as unusual events. Unusual events pose no danger to the public. You will not need to take any actions unless directed to by state and local officials.

Alert

An event has occurred that could reduce the plant's level of safety. There should be no danger to the public. County and state officials will be involved and prepared for any necessary response. You will not need to take any actions unless directed to by state and local officials.

Site Area Emergency

An event has occurred that could involve major problems with plant systems. Local radio and television stations in the area will provide information and instructions. If you're in an affected area, you will be notified by state and local officials about any actions you need to take.

General Emergency

The most serious of the four NRC classifications. Radioactive material could be released outside the plant site. State and local authorities will take action to protect the public. Sirens may be sounded and local radio and television stations will provide information and instructions. If you're in an affected area, you will be notified by state and local officials about any actions you need to take.

Emergency notification systems

A variety of emergency notification systems would alert residents near Plant Farley should an emergency occur. State and county officials would be immediately notified, and those officials would determine what systems to use to notify residents.

Siren systems

Sirens have been installed within the 10-mile Emergency Planning Zone (EPZ) around Plant Farley. These sirens alert residents to listen to a local radio or television station. The sirens have a sound different from emergency vehicles. They are tested frequently and may sound briefly while routine maintenance is being conducted.

CodeRED emergency notification system

The CodeRED emergency notification system may be utilized to contact residents by phone in the event of an emergency. For additional information about CodeRED, contact your local emergency management agency.

Public protective actions

The decision to initiate protective actions for plant neighbors will be made by the Alabama Emergency Management Agency and/or local emergency management agencies. Residents in the vicinity of the plant would be informed of the emergency by designated alert stations in the Emergency Alert System. For questions about how to respond to an emergency, please contact the AEMA and/or local EMAs.

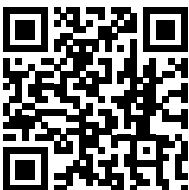
If protective measures are required, state and county authorities would advise the public what action, if any, to take for protection. The three actions health officials might recommend are called take shelter, go inside/stay inside and evacuate.

Take shelter means to protect oneself by going inside a building and keeping out as much outside air as possible. Taking shelter would generally be advised if there were small amounts of radiation in the air. The Emergency Alert System would be the major source of information and instruction to the public.

Go inside/stay inside means protecting yourself by going inside any type of building, home or business. This action will keep you safe if there is a security event occurring at the plant. Radiation levels above EPA limits are not detected under this emergency action.

Evacuation may be ordered by government authorities during an emergency at the plant if they decide that the protection provided by taking shelter is insufficient. Citizens would be told to move to pre-designated reception centers outside the emergency area. Evacuation plans are part of the overall Plant Farley Emergency Plan. These plans have been thoroughly researched and include provisions for transporting, routing and housing the public; protecting property; and handling virtually every conceivable difficulty during an evacuation. Public officials have been specifically trained to carry out these plans.

In any emergency event at Plant Farley that requires protective actions to be issued, the utility and state and county officials would work closely with the media to ensure reporters have accurate information to disseminate to the general public.



For more information on emergency procedures, view the Emergency Information Calendar, or download directly by scanning the QR code on the left.

Media contacts

On-call media representatives

- Southern Nuclear Media Line: 205-992-5395
- Alabama Power Media Line: 205-257-4155

Websites

- www.alabamapower.com
- www.southernnuclear.com

Social media channels

- Facebook: facebook.com/AlabamaPower
- Twitter: twitter.com/AlabamaPower
- Instagram: instagram.com/alabamapower
- LinkedIn: linkedin.com/company/alabama-power-company

Facilities

During an emergency, we will open our media facilities in phases as we meet activation guidelines.

- Alabama Power Corporate Media Center (CMC)
Media only: 205-257-1281
Public: 800-367-4020
- Plant Farley Joint Information Center (JIC)
334-693-6315
- Plant Farley recorded information line with most current update
205-257-2655

Contacts for federal, state and local agencies

Federal agencies

- Nuclear Regulatory Commission
Public Affairs, Region II, Atlanta
opa2@nrc.gov or 404-562-4416 or 4417 (during business hours)
After hours, call the NRC Headquarters Operations Officer in Rockville, Md.:
301-816-5100
www.nrc.gov
- Federal Emergency Management Agency
770-220-5200 (24 hours)
www.fema.gov

State agencies

- Alabama Emergency Management Agency
800-843-0699 or 205-280-2312 (24 hours)
ema.alabama.gov
- Georgia Emergency Management & Homeland Security Agency
Public Information Officer, Atlanta
800-879-4362 or 800-TRY-GEMA
www.gema.georgia.gov

Local emergency management agencies

- Houston County Emergency Management Agency (Alabama)
334-794-9720
www.dothanhoustoncountyema.org
- Henry County Emergency Management Agency (Alabama)
334-585-6702
henrycountyal.com
- Early County Emergency Management Agency (Georgia)
229-723-3029

Plant Farley facts and statistics

Owner

Alabama Power

Operator

Southern Nuclear

Location

Houston County in Southeast Alabama, 16 miles east of Dothan.

Acreage

1,850 acres. 400 used for the plant.

Reactors

Type: 3-loop Pressurized Water Reactor (PWR)

Rated capacity(size)

950 megawatts per unit

Reactor manufacturer

Westinghouse Electric Company

Turbine generator manufacturer

Westinghouse Electric Company

Containment building

Vertical, cylindrical, reinforced concrete structure with a dome and a flat base. It houses the reactor, reactor coolant system and other nuclear steam supply system components. It is 130 feet in diameter and 183 feet high. There are two containment buildings, one for each reactor.

Construction start date

1970

Commercial operation

- Unit 1: December 1977
- Unit 2: July 1981

Cost

\$1.57 Billion

License extensions

Granted May, 2005

- Unit 1: June 25, 2037 (originally licensed until 2017)
- Unit 2: March 31, 2041 (originally licensed until 2021)

Employment

Approximately 850

Engineer/Construction firms

- Bechtel Corporation
- Daniel Construction Company
- Southern Company Services

Fuel (17"x17" array)

- Fuel assemblies: 157
- Overall length of fuel assembly: approximately 12 feet
- Fuel rods per assembly: 264

Control rods (rod cluster control assemblies – RCCA)

- Number of RCCA: 48
- Control rods per RCCA: 24
- Absorber material composition: silver-indium-cadmium
- Cladding: stainless steel

Emergency power

- Diesel generators: 1 dedicated per unit; 3 others as backups
- Rated capacity: 4 MW each; four 120-volt vital AC distribution panels

Reactor coolant system (RCS)

Three loops, each loop with a reactor coolant pump and steam generator. Operates at a nominal pressure of 2,235 psig (pounds per square inch gauge) and 577 degrees Fahrenheit.

Reactor coolant pumps (RCP)

Three pumps, 7,000 horsepower each with a capacity of 90,000 gallons per minute.

Steam generators

Three generators, each with 3,592 tubes made of stainless steel.

Circulating water systems (CWS)

The condenser is cooled by the circulating water system, which transfers heat to the cooling towers. Water comes from the Chattahoochee River via the service water pond.

Our fuel

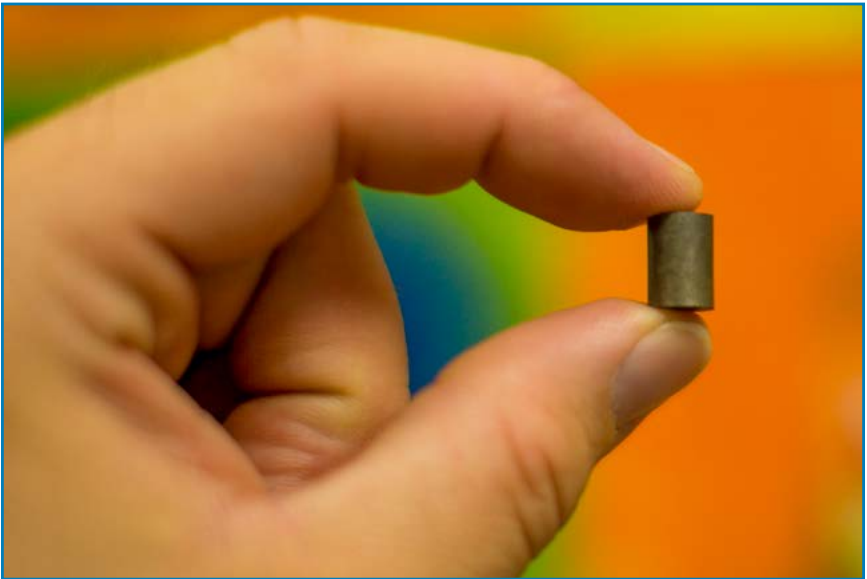
Plant Farley generates steam with the use of ceramic pellets made of uranium. The uranium ore is mined, processed, enriched and formed into cylindrical fuel pellets.

The pellets, each about the size of a pencil eraser, are arranged in long vertical tubes bundled together to form one fuel assembly. There are 157 individual fuel assemblies that make up each reactor core at Plant Farley.

Our uranium fuel does not burn chemically. The heat needed to create steam comes from the splitting of atoms, a process called fission, inside each pellet. Fission occurs when a uranium atom absorbs a neutron and the atom splits to create heat. Additional neutrons are also released, and they go on to split more atoms, creating a sustainable chain reaction.



Fuel assembly, fuel rod, cladding, fuel pellet

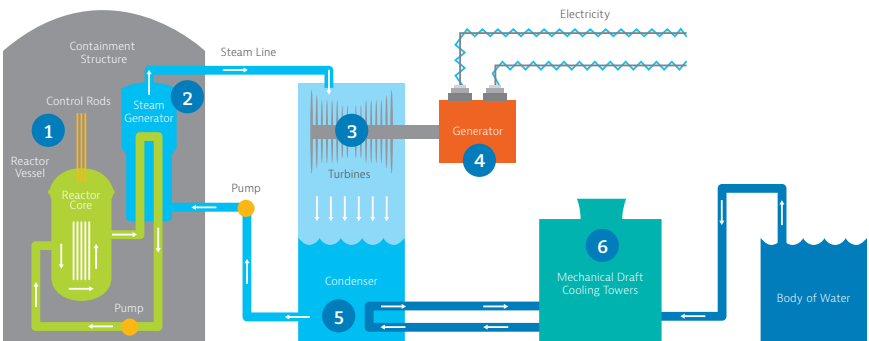


Fuel pellet

How Plant Farley works

- 1 Water is pumped through the reactor core, heated by the fission process, pumped through thousands of tubes in the three steam generators and back to the reactor in a closed loop.
- 2 Cooler water in the steam generator comes in contact with the hot tubes and turns to steam.
- 3 The steam goes to the turbine and spins the turbine blades.
- 4 The turbine spins the electric generator to produce electricity.
- 5 The steam goes to the condenser where it turns to liquid again to continue the cycle.
- 6 The water that circulates through the condenser is cooled by large cooling towers.

Note: The three water systems used to generate electricity are separate and don't mix with each other.

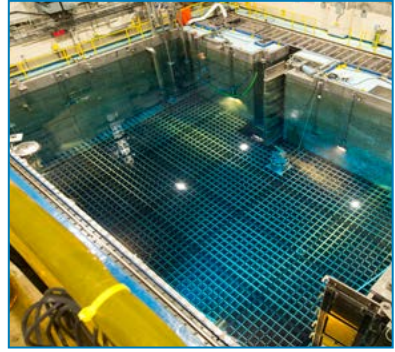


Storage of used fuel

Every nuclear plant in the U.S. safely stores used nuclear fuel assemblies on-site in indoor concrete pools or in storage canisters.

Spent fuel pool

When much of the uranium has been used in the fission process, the fuel assemblies are removed and replaced with new fuel assemblies. The used fuel is stored in spent fuel pools – steel-lined concrete pools filled with water. Water and concrete are excellent radiation shields, and in the spent fuel pools, water prevents radiation from emanating outside the pools. The water also keeps the fuel cool while the fuel becomes less radioactive over time.



Spent fuel pool

Dry storage

Plant Farley also uses dry canister storage to safely store used fuel on the plant site. Dry storage canisters are cylindrical containers constructed of steel-reinforced concrete, which serve as proven, effective radiation shields. These canisters effectively shield the radiation as the used fuel continues its cooling process.



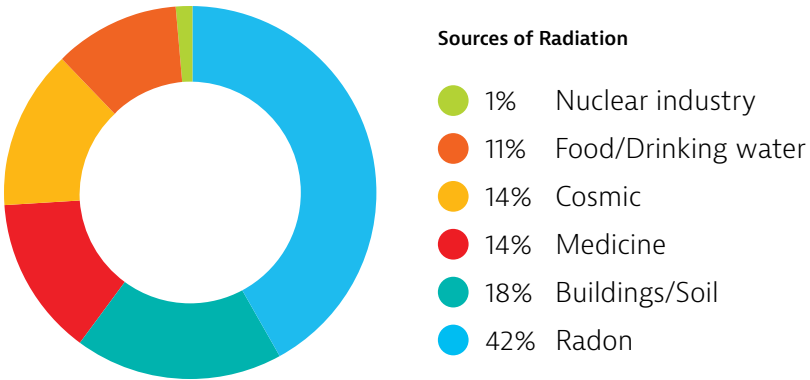
Dry canister storage

The NRC requires dry storage canisters to be constantly monitored and relicensed every 20 years. The naturally cooled and ventilated containers are designed and tested to prevent the release of radiation under the most extreme conditions – earthquakes, tornadoes, hurricanes and floods.

These storage areas are well protected by a combination of sturdy construction, state-of-the-art surveillance and detection equipment, and armed security forces.

Radiation

The combined effect of the structural, mechanical and human safety systems built into our nuclear plants means that a person living within a few miles of a plant receives less radiation from Plant Farley's operation than from watching television.



Radiation absorbed by the human body is measured in millirem. The average background radiation from our natural environment (sunlight, rocks, soil, food) and man-made sources of low-level radiation adds up to approximately 300 millirem a year.

For more information about radiation, please visit the Centers for Disease Control and Prevention's website.

Who was Joseph M. Farley?

The plant is named for Joseph M. Farley, former president, CEO and director of Southern Nuclear. He became president of Alabama Power in 1969, and during his 20 years of leadership, steered Alabama Power through an aggressive construction program – including the building of the plant that bears his name – to provide the electric energy needed to sustain economic growth in Alabama into this century.

After leaving Alabama Power in 1989, Farley became executive vice president-Nuclear of Southern Company. In that position, he guided the formation of the nuclear subsidiary, Southern Nuclear, which was formed for the purpose of operating Southern Company's six nuclear units. He subsequently was named president, CEO and director of Southern Nuclear.

Farley retired from Southern Nuclear in 1992 and died in 2010 at the age of 82.

Southern Nuclear Media Line: 205-992-5395

Alabama Power Media Line: 205-257-4155