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# Critics Challenge Safety of New Reactor Design

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Courtesy Arnold Gundersen, Fairewinds Associates Illustration of how an accident might unfold in the containment vessel of a Westinghouse AP1000 nuclear reactor.

As Southern Company and its partners, armed with federal loan guarantees of $8.3 billion, move toward construction of two new reactors at a site near Augusta, Ga., opponents are taking aim at the design details.

The reactor, the Westinghouse AP 1000, is also planned for several other locations, but has not yet been fully approved by the Nuclear Regulatory Commission. It is intended to be far safer than existing plants, ensuring that there will be no fuel melting in an accident by relying for its cooling on forces like gravity and natural heat flow instead of pumps, pipes and valves. That concept gives the AP 1000 its name, for Advanced Passive. (The 1,000 refers to the power rating in megawatts, although the actual power output is a less picturesque 1,154.)

A critical feature of the design is an unusual containment structure. One part is a free-standing steel dome, 130 feet high, surrounded by a concrete shield building and topped with a tank of emergency water.

The commission has raised concerns about whether a shield building would be strong enough to survive an earthquake. Westinghouse submitted a detailed report last month and plans another in May to demonstrate that the building is adequate.

But on Wednesday, Arnie Gundersen, a nuclear engineer commissioned by several anti-nuclear groups, released a report suggesting a different hazard.

In existing plants, he pointed out, the containment consists of a steel liner and a concrete dome, but sometimes the steel liner has rusted through.

In the new Westinghouse design, the liner and the concrete are now separated, to allow air to flow between them, so the temperature inside the steel structure will be kept down by natural forces. But if the steel rusts through, “there is no backup containment behind it,” Mr. Gundersen said.

In the new design, he said, metal baffles bolted to the steel direct the air flow, and those baffles are a spot where moisture from the atmosphere could collect. At coastal plants, salty water could collect, and inland, it would be evaporating water from the cooling towers. Inspection, he said, would be difficult.

If the dome rusted through and an accident occurred, the plant could deliver a dose of radiation to the public that is 10 times higher than the N.R.C. limit, Mr. Gundersen said. Instead of

drawing fresh air past the dome through a chimney effect, the design would expel radioactive contaminants.

Vaughn Gilbert, a spokesman for Westinghouse, disputed Mr. Gundersen's assessment.

Mr. Gilbert said that the dome would be made of high-quality steel that is 1.75 inches thick. (Most existing domes have a steel liner three-eighths or half an inch thick.)

The containment structure "is designed to preclude and avoid corrosion," Mr. Gilbert said. "In the unlikely event that there would be some corrosion, it would be readily determined in inspections, and remedied."

Mr. Gundersen's report was paid for by a combination of local and national groups, including Friends of the Earth, the Blue Ridge Environmental Defense League, the Green Party of Florida and the South Carolina chapter of the Sierra Club.