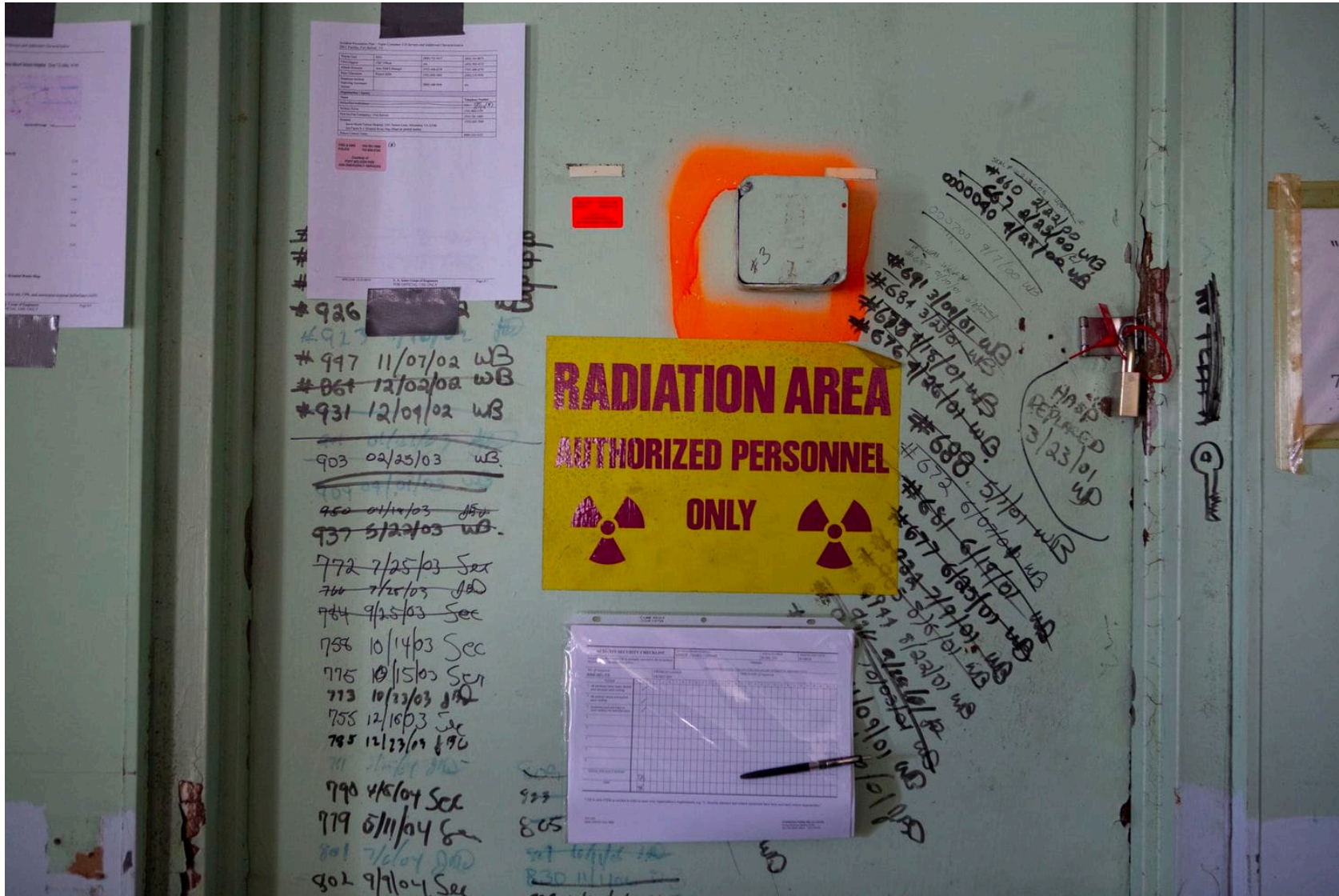


How do you dismantle a nuclear power plant? Very, very carefully.

[Michael E. Ruane](#) February 01, 2019



The Army plans to dismantle the SM-1, a former nuclear power plant at Fort Belvoir in Virginia. But first, experts need to check it for lingering radiation. (Calla Kessler/The Washington Post)

Behind the locked gates of Building 372 at Fort Belvoir in Virginia, past the door to the huge containment vessel where a sign warns of radiation, a large button on the control panel is covered in red plastic and reads: “manual scram.”

This is the emergency shutdown button, which nuclear legend says was pushed when it was time to scram.

But these days, the dark interior of the Army’s historic nuclear reactor, once called an “atomic-age miracle machine,” is a maze of rusted pipes, peeling paint and pressure gauges reading zero.

Keys in the control panel haven’t been turned in years, and switches are set to “off.”

The world’s first nuclear plant to supply energy to a power grid has been defunct for years. But the Army is preparing to break it up, check it for lingering radiation and haul it away piece by piece.

Dedicated in 1957, as the government was promoting “Atoms for Peace,” the facility was a training site and a prototype for small reactors that could produce power for bases in remote places around the world, the Army said. Built on the Potomac River’s Gunston Cove, it was called the SM-1, for stationary medium power plant No. 1.

“First nuclear power plant ever to put power on a grid, ever in the world,” said Hans B. Honerlah, a senior health physicist with the Army Corps of Engineers’ hazardous, toxic and radioactive waste branch.

Hundreds of nuclear plant specialists trained at the SM-1 before it was shut down in 1973. By then, the military’s need for such expensive plants had dwindled, said Charles Harmon, a former shift supervisor at the facility and an unofficial historian of the site. “The cost of the Vietnam War was making funds scarce,” Harmon said.

The plant’s uranium-235 fuel and reactor waste were removed in 1973 and ’74 and taken to a storage site in South Carolina. The 64-foot-high concrete-and-steel containment vessel that housed the smaller reactor vessel and other equipment was sealed.

But all these years later, there is probably still residual nuclear contamination of some of the internal structures, Army experts said.

[\[An atomic town revels in its plutonium past as tunnel collapse raises contamination concerns\]](#)

Before the site is torn down, experts will check everything for radiation and look for any impacts to the environment and historical record.



The plant was closed in 1973. Its uranium-235 fuel and reactor waste were removed and taken to a storage site in South Carolina. The 64-foot-high concrete-and-steel containment vessel that housed the smaller reactor vessel and other equipment was sealed. (Calla Kessler/The Washington Post)

Honerlah said at Fort Belvoir last month: “It’d be great to make it a museum, but it’s always going to be radioactive.

“It has to go away. It’s never going to not be radioactive. The goal . . . is to take the remaining radioactive components, remove them from the . . . facility here and take them” to a nuclear waste site, probably in western Texas.

Many parts of the facility will be broken into pieces and checked for radiation with detectors. If the pieces are safe, they will be dumped or recycled, Army officials said. Soils will also be examined. Most of the work will be done “in containment” to minimize outside contamination, said Brenda M. Barber, the Corps of Engineers' project manager.

“We have a very robust health and safety and radiological plan,” she said. “So they’ll be doing active air monitoring, radioactive monitoring, so that we constantly know if there’s particulates getting in the air.”

Some parts, like the stainless-steel reactor vessel, where the uranium was, will be taken away whole. “It will go into what we call a shielded shipping container” and probably will be hauled by truck and train, Barber said.

Ninety percent of the plant will probably leave as “clean material,” Honerlah said. “It’s pretty rigorous, the level of effort that we have to do to confirm that it isn’t contaminated.”

Corps of Engineer officials said they hope to start the process next year. They said it would probably take five years to finish. “These facilities were really not built to be taken apart,” Barber said.

‘Atoms for Peace’

In 1954, the SM-1 was described by The Washington Post as a miracle machine that could provide power anywhere in the world.

Only nine years after nuclear bombs killed over 100,000 people in the Japanese cities of Hiroshima and Nagasaki during World War II, science was seeking peaceful uses of atomic energy.

[[A single jawbone has revealed how much radiation Hiroshima bomb victims absorbed](#)]

In 1953, President Dwight D. Eisenhower had delivered his “Atoms for Peace” speech at the United Nations.

“The United States knows that peaceful power from atomic energy is no dream,” he said. “That capability . . . is here — now — today. . . . The miraculous inventiveness of man [should] not be dedicated to his death but consecrated to his life.”

Years before the nuclear plant disasters at [Three Mile Island in 1979](#), [Chernobyl in the Ukraine in 1986](#), and [Fukushima in Japan in 2011](#), hopes were that nuclear power could be clean and safe.

(Many countries still rely on it for some or most of their power needs. The United States gets about 20 percent of its electricity from nuclear plants, according to the International Atomic Energy Agency.)

Construction of the plant began in October 1955. On April 8, 1957, at 6 a.m., the plant went “critical” and started generating power.

Three weeks later, it was dedicated. A switch was thrown, and the first electricity went to operate a radar station and a printing press, according to an old news account.

Hit the scram button

It was chilly and poorly lighted inside the plant's old machine shop one day last month. Honerlah warned his visitors not to touch anything. "Lead-based paint, dust, just nasty stuff," he said. "Try not to pick things up, rub things, touch things."

Off the room was a padlocked metal door with a red-and-yellow sign that read: "Radiation Area Authorized Personnel Only."

Beyond the door was the big containment vessel, which houses the reactor pressure vessel, the spent-fuel pit and other equipment that made up the core of the plant. "We'll probably have to do some decontamination in certain areas on the concrete," Honerlah said, adding that some of the metal inside may also still be radioactive, although at a diminished level.

The plant itself is a dilapidated cinder-block and metal structure with a weathered plaque out front that says: "Army Package Power Reactor The U.S. Army's first nuclear-powered generating station."

The pipe that brought in water for the system still runs out to the river. (The river water in the system was never exposed to radiation, officials said.)

Deeper into the interior was a tangle of old pipes, pumps and gauges that the operators knew so well that they could draw a diagram of the layout, said Harmon, the former shift supervisor.

Chips of peeling paint clung to the giant pipes, rust had formed on many surfaces, and the vault where new fuel elements were stored was empty.

In the control room, amid an array of switches and monitors to measure steam flow and steam pressure, sat the control panel. It resembled a battered old prop from an episode of "Star Trek."

Right beside a black switch that said "rod drive" was the scram button.

Nuclear lore says "scram" was an acronym for "safety control rod activation mechanism," or "safety control rod ax man," a reference to a primitive shutdown method in which an ax was used to cut a rope.

More likely, it suggested an emergency shutdown of the reactor.

"It put your plant in safe-most configuration," Harmon said. "You hit the scram button, and it'll shut the reactor down."

During the late '60s and early '70s, when Harmon worked at the plant, the button was often used in training.

But in non-training situations, he said, "I never had to do it."



padlocked metal door at Building 372 at Fort Belvoir. (Calla Kessler/The Washington Post)