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## U.S. Moves to Abandon Costly Reactor Fuel Plant

By MATTHEW L. WALD

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WASHINGTON — The Energy Department is moving toward abandoning a half-built factory that has cost \$3.7 billion so far and was intended to make reactor fuel out of plutonium from retired nuclear bombs — part of an agreement with Russia to shrink the world's supply of nuclear bomb fuel after the cold war.



The department's estimate of the cost to complete the plant, at the [Savannah River Site near Aiken, S.C.](#), has jumped to \$7.7 billion from \$4.9 billion. The Obama administration is seeking to reduce the construction budget for the fiscal year that begins on Oct. 1, and has proposed allocating no money at all in subsequent years. If the plant were to be abandoned, the government would owe its contractors a cancellation fee that is likely to run into the tens of millions of dollars, according to experts, although details are not public.

Other countries, including France, have successfully made reactor fuel out of plutonium for years, which was one reason that policy makers in the administrations of Presidents Bill Clinton and George W. Bush liked the idea. But officials now acknowledge that they did not have an accurate idea of the cost.

With the new price estimate — which could go higher because the plant is only about 60 percent complete — the idea of making reactor fuel “may be unaffordable,” [according to a summary of the Obama administration's budget request](#). The summary also cited the tight budget environment. The plant has also faced a host of technical problems.

“Just about everything is going wrong,” said Edwin Lyman, a physicist at the [Union of Concerned Scientists](#), a group that has consistently opposed the plant because it would introduce into the commercial world a material that can be purified to make bombs. “What finally caught the attention of the administration was the massive increase in the projected capital cost of the plant, and the overall cost of the program.”

The plant would blend the plutonium with uranium and transform it into a new fuel called mixed oxide, or MOx.

Experts offer many explanations of what went awry. An executive at Areva, the French company that owns 30 percent of the partnership that contracted to build the factory, said one problem has been the dearth of parts manufacturers and skilled workers on nuclear projects in the United States, where work has only recently begun on four new reactors [after a construction hiatus of 30 years](#).

“The problem is getting a welder on site, qualified, trained, up to speed, and all of a sudden he’s off to a higher-paying job, at Vogtle,” said David C. Jones, a senior vice president of Areva, referring to [one of the new reactors, Vogtle](#), near Waynesboro, Ga.

Kelly Trice, the president and chief operating officer of Shaw-Areva Mox Services, [the company building the plant](#), blamed construction at Vogtle and another civilian reactor project for driving up construction costs at the South Carolina factory.

Robert Alvarez, a former special assistant to the energy secretary in the Clinton administration, said there was a gap at the top, too. “A problem facing the U.S. more than France is we are losing the capability to design and construct these large nuclear material facilities,” he said.

Despite the problems with the MOx plant, the Obama administration cannot simply drop the plant because it has promised the Russians that it will “disposition” — a term meaning to render the plutonium beyond practical retrieval — 34 tons of former weapons plutonium. The Russians are supposed to do the same, although their schedule has also stretched out.

Any solutions are unattractive, said Neile L. Miller, the acting administrator of the [National Nuclear Security Administration](#). “The choices are not fabulous, none of them.”

One of those options — initially favored by the Clinton administration but dropped during Mr. Bush’s presidency as too expensive — would be to move the plutonium to a nearby factory that takes high-level radioactive liquid wastes from underground tanks and blends them with molten glass to solidify them for burial. Mixed with the highly radioactive wastes, which were a byproduct of plutonium production, the plutonium would be very hard to recover, some experts argue, and thus unavailable for weapons use.

The Russians have never agreed to this option because they say it would not constitute “disposition.”

The plant still has supporters, including lawmakers from the area, where the project promises many high-paying jobs. Senator Lindsey Graham, Republican of South Carolina, briefly put a hold on the nomination of Ernest Moniz as energy secretary to try to keep the project alive. Mr. Graham said on the Senate floor that although Dr. Moniz was “a wonderful fellow,” there was no alternative to finishing the plant.

The plant also has opponents, who say that the Russians plan to “disposition” their plutonium in reactors that could be used to make more plutonium.

The factory [is part of an epic effort, begun in the mid-1990s](#), that included sending plutonium samples to France for conversion to reactor fuel [that could be tested in American power plants](#).

But the plutonium used in French reactors begins in a different physical form from the weapons plutonium.

The French material starts in an acid solution that is used to dissolve used fuel and separate the elements to recover the plutonium. The American plutonium begins as a metal that has been alloyed with another element, gallium, and other materials, that are added to stabilize it in the warhead. It also contains trace amounts of an element called americium, which is created when plutonium decays. All of that must be removed before the plutonium can go into reactor fuel, and then the material must be burned in a furnace



to turn it into an oxide instead of a metal.

Planners who made the original cost estimates appear not to have appreciated the expense of those steps.

In addition, the plant's design was changed after concrete had been poured, which some experts said added significantly to the expense. Changes during construction have been a perennial problem for Energy Department projects.

Another problem arose with the Energy Department's choice of contractors, Shaw, a Louisiana company, is also a contractor at Vogtle. Shaw has had trouble meeting nuclear quality standards. It was recently bought out by CB&I, formerly Chicago Bridge and Iron, which had been a subcontractor to Shaw on some jobs.

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