

## Reporting by Foreign Affairs and the Center for Public Integrity

A confidential study by the U.S. Energy Department has concluded that completing a controversial nuclear fuel factory in South Carolina may cost billions of dollars more than the department has previously promised, according to government officials and industry sources briefed on its results.

The study, conducted for Energy Secretary Ernest Moniz, also found that finishing and then operating the factory to help get rid of Cold War-era plutonium as part of a nonproliferation arrangement with Russia would likely cost a total of \$25 billion to \$30 billion on top of the \$4 billion spent on its construction so far, the sources said.

That amount is so high, the officials said, that Barack Obama's administration is leaning toward embracing what one described as "some other option" for dealing with the 34 tons of weapons plutonium that the so-called Mixed Oxide (MOX) Fuel Fabrication Facility at Savannah River was supposed to help eliminate. The problem is that walking away from the plant won't be easy, politically or diplomatically.

Many officials now agree that "it's time for a shifting of gears," said an administration official, who requested that he not be named because he was not authorized to speak about the report. He added that accommodating such an expensive project within federal budgets that will be constrained for years to come is not considered feasible.

But no clear alternative to the fuel factory has been chosen, much less announced. As a result, officials said, the administration will likely propose to keep funding the plant's construction in fiscal 2015, albeit at a level below the roughly \$343 million appropriated in 2014. The plant's builders have sought \$600 million to \$700 million a year to keep construction on schedule.

This decision in turn means that in its forthcoming new budget proposal, the Energy Department will advocate spending hundreds of millions of dollars to continue work on a factory unlikely to fulfill its initial goal -- on top of the billions it has already spent.

Asked about the report, a spokesman for the contractor building the plant referred questions about it to the Energy Department. Keri Fulton, a spokeswoman for the National Nuclear Security Administration, the arm of the department responsible for the MOX project, said the agency would not comment.

Deputy Energy Secretary Dan Poneman declined to comment on the projected costs Friday, Feb. 14. But he told the Center for Public Integrity at a nuclear weapons conference in Arlington, Va., that "we are taking very, very seriously obviously the MOX program. We've had a hard look at it. We're going to continue to examine what all of our options are."

Kevin Bishop, a spokesman for Sen. Lindsey Graham (R-S.C.) -- the principal champion of keeping the MOX project alive -- said his office did not have a copy of the report and offered no comment.

Graham, who sits on the Senate Armed Services Committee, held up Moniz's confirmation in 2013 while demanding a new pledge from the White House that the plant, which employs 2,100 workers in his state, would be finished. His spokesman said any notion that he accepts the need to embrace an alternative would be "incorrect."

But senior administration officials have said they would support the completion and operation of the MOX plant only if its construction costs could be substantially reduced.

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As a result, the department has engaged in protracted private negotiations with Shaw Areva MOX Services, the French- and Dutch-owned consortium responsible for building and running the plant, to revise the contract in a way that would limit the company's profits and boost its responsibility for cost overruns.

"Areva should know that if it makes mistakes, it should suffer the consequences," one government critic of the program said, noting past construction problems that have boosted the project's costs. But the negotiations have so far stalemated, with the company refusing to accept Energy Department's demands, government and industry sources said. That's why the administration is now moving to embrace other solutions in the coming year, they said.

Initially, U.S. officials expected that Russia -- which committed years ago to a similar program to convert its plutonium into reactor fuel -- would object to any American decision to abandon the project. But one government official said that in private diplomatic discussions, the Russians had indicated they might support a U.S. decision to instead transform the plutonium metal into a less explosive powder -- partly through oxidization -- and then bury it deep underground in concrete containers. Among the alternatives that have been studied by the department over the past year, this idea was the cheapest, several sources said. One said it would cost only \$6 billion and take only five years.

The speed with which that U.S. effort could be completed was attractive to the Russians, the official said.

The department's study was conducted by John MacWilliams, a Harvard University-trained lawyer and partner at a Boston-area private investment fund. He also has been studying other multibillion-dollar department programs plagued by cost overruns. MacWilliams did not respond to email and phone requests for an interview.

Moniz, who has spent most of his career as a professor of physics at the Massachusetts Institute of Technology, helped broker the agreement with the Russians that called for joint efforts to dispose of 34 tons each of plutonium, one of two principal fuels used to power nuclear arms. The plutonium came from tens of thousands of warheads dismantled at the end of the Cold War.

The MOX plant was designed to crush the plutonium cores, or "pits," of those warheads, bake the powder, and oxidize it -- but then do even more: It was to mix it with oxidized uranium to make a so-called "mixed oxide" fuel that would be burned in commercial reactors.

So far no commercial reactor operators have pledged that they would burn the fuel, however. And one reason the plant's lifetime operating costs were estimated in the department's report to be so high -- a total of up to \$34 billion -- is that the Energy Department would have to pay the operators a fee to use the MOX fuel, officials said.

Due to cost overruns and funding shortages, the White House last spring slowed construction work on the fuel facility, which is about two-thirds finished, and submitted a budget that would have eliminated construction funding starting later this year. Just over \$4 billion has already been spent on the facility, according to the department's latest public estimate.

Matthew Bunn, now at Harvard's Kennedy School of Government, was a White House official during Bill Clinton's administration, when he helped develop the plutonium disposal program, and has followed it closely ever since. Bunn hasn't seen the latest Energy agency report, but said that the cost of the Savannah River MOX plant has spun out of control.

"The things we're trying to accomplish aren't worth that amount of money," he said Feb. 13. "To me, in an environment of extreme budget constraints and sequesters, there has got to be a better way."

One of the other alternatives MacWilliams studied was disposing the plutonium in 3-mile-deep "boreholes" drilled deep into the bedrock. A second option, officials said, was mixing the plutonium with high-level radioactive waste and storing it in a future long-term storage facility.

If oxidized plutonium is to be buried, the most likely site is the department's Waste Isolation Pilot Plant near Carlsbad, N.M., a network of salt-lined caves deep underground. Doing so might require the site's expansion, several sources said, which in

turn would require gaining local permission to do so. That creates some uncertainty about the political viability of that option, several sources said.