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From the Los Angeles Times

Program to refurbish aging nuclear warheads faces setbacks

Technical problems and an erosion of scientific expertise are blamed for delays in the effort to replace thousands of parts that have aged since the bombs left the factory decades ago.

By Ralph Vartabedian

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A decadelong effort to refurbish thousands of aging nuclear warheads has run into serious technical problems that have forced delays and exacerbated concerns about the Energy Department's ability to maintain the nation's strategic deterrent.

The program involves a type of warhead known as the W76, which is used on the Navy's Trident missile system and makes up more than half of the deployed warheads in the U.S. stockpile.

The refurbishment program is aimed at replacing thousands of parts that have aged since the bombs left the factory 20 and 30 years ago.

The $200-million-a-year program is a cornerstone of America's nuclear deterrent strategy, and the Energy Department has been under growing pressure from the military and Congress to meet tough deadlines to get the weapons ready.

In February, the department's National Nuclear Security Administration announced that the "first refurbished W76 nuclear warhead had been accepted into the U.S. nuclear weapons stockpile by the Navy."

But no delivery was ever made. The warhead is in pieces inside a production cell at the Energy Department's Pantex plant in Amarillo, Texas, according to an engineer at the facility.

The delay in retrofitting the warheads appears to validate long-standing concerns about an erosion of technical expertise at the Energy Department, as Cold War-era scientists and engineers retire and take with them detailed knowledge about the bombs.

Although the nation's nuclear weapons are functional and reliable, the W76 issue represents one of the most serious setbacks in the nuclear weapons program at least since the end of the Cold War and raises questions about the future, several experts told The Times.

"I wouldn't say the deterrent has been affected at all," said Philip Coyle, a former deputy director at the Lawrence Livermore National Laboratory and former assistant secretary of Defense. "It is, however, a reminder that expertise about nuclear weapons is a precious thing and needs to be maintained."

He said the W76 problem underscored concerns experts have long raised about maintaining nuclear weapons decades after they were designed, manufactured and tested.

As the nation reduces the size of its stockpile under treaty agreements with Russia, he said, the reliability of the remaining weapons becomes more important.

Damien LaVera, a spokesman for the National Nuclear Security Administration, said the department had not lost its crucial skills, but he acknowledged that retaining experienced weapons scientists and training a new generation of scientists were "an ongoing concern."

At issue with the W76, at least in part, is a classified component that was used in the original weapon but that engineers and scientists at the Energy Department's plant in Oak Ridge, Tenn., could not duplicate in a series of efforts over the last several years.

The component, known by the code word "fogbank," is thought to be made of an exotic material and is crucial to a hydrogen bomb reaching its designed energy level in the microseconds before it blows apart.

The W76 is designed to release energy equal to about 100 kilotons of TNT, through both fission and fusion of atoms.

When it came time to make new batches of fogbank for the refurbishment program, the current workforce was unable to duplicate the characteristics of the batches made in the 1970s and 1980s, according to a March report by the Government Accountability Office.

"I don't know how this happened that we forgot how to make fogbank," Coyle said. "It should not have happened, but it did."

Given the problems, the technical staff at the Pantex plant was stunned by the Energy Department announcement in February that the warhead had been delivered to the Navy, according to an engineer who spoke on condition of anonymity.

B&W Pantex, the private company that operates the plant, was still awaiting delivery of a classified part from another facility and cannot assemble the warhead, the engineer said.

Navy spokesman Lt. Clay Doss told The Times on Thursday: "We have not received delivery of any refurbished W76 warheads. The answer is none."

LaVera defended the accuracy of the February announcement, saying a federal council had decided to accept the final design of the weapon and therefore it was technically a part of the stockpile.

The failure of the Energy Department to actually deliver a W76 was brought to the attention of The Times by the Project on Government Oversight, a Washington-based watchdog group that has long expressed concern about poor performance at the nation's weapon sites.

"NNSA gets away with producing shoddy work . . . and even lying to the public," said Danielle Brian, the group's executive director. "Our confidence in the stockpile cannot depend on lies."

The technical problems with the W76 were also partially disclosed in the report from the GAO, which said the Energy Department had failed to "effectively manage cost, schedule and technical risks" not only on the W76 program but on another refurbishment effort for a warhead known as the B61.

In the case of the B61, the Energy Department boasted that it had completed the job ahead of schedule and under cost, even though it sharply reduced the number of bombs that it rebuilt and curtailed the scope of the work on each bomb, the GAO said. The cost of refurbishing each bomb doubled, the office said.

LaVera said all issues with fogbank had been resolved. The only remaining W76 issue involves potential minor defects in its arming, fusing and firing system, the safety controls that prepare a nuclear weapon for detonation.

He said the existing design of the arming system had been certified, though the department was continuing to examine the issue.

"It is inaccurate to say that we are unable to ship the weapons because there is an issue or problem," LaVera said.

Not everybody agrees that the fogbank problem raises broad concerns about a loss of expertise.

Since the late 1990s, the nation has embarked on a program to invest billions of dollars in scientific research to keep the old weapons viable.

The issue is highly sensitive because many arms control advocates worry that such a loss could become a rationale for a resumption of nuclear testing.

The Energy Department's scientific program to support the stockpile "has done very well so far. Most people would say it has been a terrific success," said Sydney Drell, a nuclear weapons expert at Stanford University.

The department plans to deliver the first batch of W76s in late fall, LaVera said.

That would put it about two years behind schedule, a delay that has caused logistical problems for the Navy, the GAO said.

It is not yet clear how long it will take for the department to refurbish all 2,000 warheads in its current plan, but the process of gradually taking warheads out of service, refurbishing them and returning them to service could take an additional 10 years.

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