Nuke Fix, Phase II

It's not just the weapons that were neglected.

By Megan Scully

For years, nuclear modernization was a back-burner issue for both the military and the American public.

Efforts to modernize the nuclear force, its support equipment, and related infrastructure received little attention. A skilled and knowledgeable workforce—once highly sought after and valued during the Cold War—was relegated to the background as the national laboratories began to show serious signs of age.

A confluence of events has now pushed the nation's nuclear inventory and enterprise into the spotlight, exposing problems with crumbling infrastructure. Many proponents of modernizing the nuclear force say the past neglect will require a decade-long investment plan to correct.

The series of problems with nuclear weapons and components in 2006 and 2007 led to renewed focus on the nuclear force and efforts to correct deficiencies affecting the service's nuclear weapons arsenal. This included the activation of Air Force Global Strike Command, dedicated strictly to nuclear matters. The major command has the weighty mission of providing for safe, secure, and effective forces for nuclear deterrence and for global strike, and it now oversees the nation's ICBMs and nuclear-capable bombers.

The State of the Arsenal

As the Air Force was righting its nuclear structures, intense political debate was under way concerning the New Strategic Arms Reduction Treaty with Russia. The state of the nuclear arsenal and infrastructure dominated debate as Republicans sought to secure greater long-term commitments from the White House to modernize aging missiles, labs, and other equipment.

Meanwhile, an engineering failure at Wyoming's F. E. Warren Air Force Base in October, which temporarily took a squadron of intercontinental ballistic missiles offline, helped push concerns about the nation's nuclear capabilities even higher.

The Air Force launched an investigation into the matter and stressed the incident was isolated. At no time, officials said, did the Air Force completely lose communications with the missile squadron, which could have been controlled by an airborne command and control platform if necessary.

USAF photos by SSgt. Chad Thompson

Above: A two-man maintenance crew is lowered into a launch training facility at F. E. Warren AFB, Wyo. Right: A maintainer from the 90th Missile Maintenance Squadron practices measuring procedures on a Minuteman III training missile. For years, the nuclear force's aging infrastructure received scant attention.

"The safety and security of the weapons system was never in doubt," Gen. Carrol H. Chandler, then Air Force vice chief of staff, said in October. "There are things we need to work on, there's no doubt about that."

Still, the widely publicized incident occurred at a crucial time for the Obama Administration, as it was trying to sell reluctant Republican senators on New START. Retired Lt. Gen. Arlen D. Jameson, who served as deputy commander of US Strategic Command in the mid-1990s and supported treaty ratification, called the incident at Warren an "isolated malfunction." He warned Congress in October against doing "something foolish like not ratify the New START because of this isolated occurrence."

In the end, the White House won 71 Senate votes to approve New START just before Congress adjourned for Christmas. But the lingering concerns about nuclear modernization—which Republicans hammered throughout the months-long debate on the accord—resulted in an additional $4.1 billion pledged for nuclear programs. The White House had already laid down a marker for an $80 billion investment over the next 10 years; the added $4 billion over five years came at the insistence of Republicans, many of whom still voted against the treaty.

Arizona Sen. Jon Kyl, the No. 2 Republican in the Senate and his party's point person on treaty negotiations, cited a litany of concerns in voting against the treaty. But he lauded the Administration's commitment to modernization funding and stressed debate on the treaty helped bring to light the needs of the aging nuclear force.

"I think as a result of focusing on our nuclear arsenal, which we had to do by looking at this treaty, we also learned that we have a very big challenge in this country," Kyl said just before the Senate voted on New START. "And fortunately and parallel with the treaty, we worked on this challenge, the issue of how we

USAF photo by SSgt. Chad Thompson

Left: A 47,000-pound missile support system is hoisted out of a launch training facility at Warren. While it's being repaired and refurbished, maintainers will perform corrosion control and other preventive maintenance in the silo. Below: An inert Minuteman III ICBM is lofted into space from Vandenberg AFB, Calif. Minuteman missiles are being upgraded and modernized.

can modernize our nuclear facilities and nuclear force and the delivery vehicles of the triad that would deliver those vehicles."

Exactly how the money should be spent remains to be seen, with Kyl and others acknowledging the need for flexibility in spending as the needs of the nuclear force become clearer each year. This is a far cry from the situation throughout much of the 1990s and 2000s, however, when nuclear infrastructure suffered from what can charitably be described as benign neglect.

"Nuclear folks felt like the red-headed stepchild" within the Air Force, said Adam B. Lowther, a research professor and analyst at the Air Force Research Institute at Maxwell AFB, Ala., in a recent interview. Airmen "began to buy into this view that 'we're not important anymore' " Lowther explained. The undercurrent was, "we were critical during the Cold War, but now that the Cold War is over, we're not important anymore."

The new investment is certainly welcome, but Lowther said it is "tough to say what is most in need because, for the most part, the entire nuclear enterprise is 40 years old or older."

What is clear, however, is that the list of funding needs for the nuclear force over the next decade will include a lot of support and test equipment—the unglamorous stuff essential to maintaining the arsenal.

At the Air Force Association conference in September 2009, Lt. Gen. Frank G. Klotz, then commander of Air Force Global Strike Command, acknowledged the Air Force has neglected some of those critical pieces of the nuclear enterprise. "Before you can load a bomb on a bomber or place a warhead on top of an ICBM, there is a series of checks of the weapon itself as well as the ... connections to the platform that all have to be performed by various types of test equipment," Klotz said. "It's not a very glamorous part of the business, but it's an absolutely key and essential aspect of the business, and quite frankly, we have underinvested in that."

A Positive Trend

Klotz, who retired and handed over Global Strike Command to Lt. Gen. James M. Kowalski in January, said the service was developing a roadmap for the Air Force's needs for test equipment, as well as loaders, vehicles, and trailers necessary to maintain the bomber and ICBM fleet.

But the pendulum may now be swinging in the other direction, with additional attention being paid to the second- and third-tier pieces of the nuclear arsenal that have gone largely ignored since the end of the Cold War, officials say. "I can see a very positive trend starting to happen out there as far as modernization for those things that ... we perceived [weren't] sexy," Brig. Gen. Everett H. Thomas, then commander of the Air Force Nuclear Weapons Center at Kirtland AFB, N.M., said in September 2010.

Pointing to Air Force successes, Thomas ticked off an investment of $8.5 billion to upgrade and modernize the ICBM arsenal, specifically the Fast-Rising B-Plug Kit security system for the Minuteman III and the new Environmental Control System, an improvement to the missiles' launch control centers, ensuring electronics and ground support systems are maintained at specified preset temperatures.

But Thomas, now vice commander of Global Strike Command, pointed to a lack of investment in operational test and evaluation, which has led to sustainment issues within the arsenal. Thomas said the Air Force is identifying all the pieces of its nuclear fleet that have been overlooked since the end of the Cold War—a task that will become all the more important as the United States prepares to cut the number of strategic nuclear weapons in its arsenal by about a third to adhere to New START.

"The smaller we get, the more attention we've got to pay ... to everything because it all needs to work," Thomas said.

Another investment area for the military's nuclear weapons is the decades-old national laboratories and facilities critical to sustaining nuclear weapons. "Everything in the labs themselves was

USAF photo by Joe Davila

built for the Manhattan Project and shortly thereafter," Lowther said. "Everything is old and in need of replacement."

During the September 2010 AFA conference, Gen. Kevin P. Chilton, then commander of US Strategic Command, did not mince words when he highlighted the poor state of some of the country's nuclear facilities.

"You would be appalled if you visited Oak Ridge, Tenn., and saw our uranium facility, which was built during the Manhattan Project," Chilton said. "That's how old it is." In addition to Oak Ridge, Chilton said the military must upgrade the Los Alamos National Laboratory in New Mexico, where plutonium research, development, and processing is done. "If you're going to have a nuclear weapons program, you must have a first-class plutonium and first-class uranium facility to do that," Chilton said. "That's just absolutely fundamental."

The directors of the country's three national laboratories—George H. Miller of the Lawrence Livermore National Laboratory, Michael R. Anastasio of the Los Alamos National Laboratory, and Paul J. Hommert of Sandia National Laboratories—have all raised concerns about long-term funding for nuclear programs. But in a Dec. 1 letter to the leaders of the Senate Foreign Relations Committee, the lab directors said their concerns have been assuaged by the additional $4.1 billion added to nuclear investment plans.

The laboratory directors said the additional dollars would "provide adequate support to sustain the safety, security, reliability, and effectiveness of America's nuclear deterrent within the limit of 1,550 deployed strategic warheads established by the New START treaty with adequate confidence and acceptable risk." The extra money—which would pay for enhanced surveillance, pensions, facility construction, and other items—"would establish a workable funding level for a balanced program that sustains the science, technology, and engineering base."

Chilton also sees a side benefit to modernizing labs: It would keep the highly skilled workforce at the aging facilities happy. "If you really want people to perform and do their job right, you take care of them in their workplace," he said. "You give them quality spaces to work and do their work."

The workforce itself is in need of investment, with many of the engineers and other workers trained during the Cold War nearing retirement age. With little emphasis placed on the nuclear arsenal for the last two decades, the military is having difficulty recruiting replacements. Losing too much skill from the workforce without time to properly train a new generation of experts would mean decades of human capital are lost.

USAF photo by SrA. Brittany Y. Bateman

Airmen from the 2nd Maintenance Squadron, Barksdale AFB, La., inspect a B-52 engine. With organizational changes largely complete, USAF is turning its attention to nuclear infrastructure.

Meaningful and Challenging Work

"If you let the expertise and the knowledge go away and all that's left are the books that they wrote, well, when you go back and look at those books you'll find out they weren't written very well because a lot of what they did was in their [heads]," Chilton said. The key, he added, is not only giving them quality workplaces, but also meaningful and challenging work.

Complicating that, Chilton acknowledged, is that the next crop of nuclear scientists will never be allowed to do weapons testing.

"In many respects, we will have a scientific base that has never seen a nuclear test," Lowther said. "The scientists are aging out."

With no tests on the horizon, the key to providing scientists with fulfilling work will be funding programs to make weapons safer and more effective and secure, Chilton said. The Nuclear Posture Review, released in 2010, reaffirmed the need for a nuclear deterrent and the sea-air-land triad and may go a long way to ensuring there will be a steady workflow for the next generation of the nuclear workforce.

"It calls for improvements in safety, security, and effectiveness, and it takes no options off the table for consideration by future engineers and scientists in providing what this country needs for future nuclear weapons in our inventory," Chilton said of the review.

Funding, however, may not be the only solution to sustaining the workforce. The Air Force, Lowther said, needs to change its cultural mindset regarding both the nuclear arsenal and the workforce that modernizes and sustains them.

"During the Cold War, if you worked in the nuclear enterprise, you knew what you were doing was criticial to the security of the nation," he said. "You were devoted to it because you knew how critical it was." The activation of Global Strike Command and the Administration's stated commitment to the triad in the Nuclear Posture Review have "gone a long way" to reaffirming the military's commitment to its nuclear force, Lowther said.

But with the country's focus on irregular warfare and nonstate enemies in the last 10 years, questions remain about what role nuclear weapons will play in the future of the country's defense, and how committed the nation will be to sustaining, maintaining, and modernizing them over time.

"A fundamental question, that has not been answered, is how important are [nuclear weapons] to the nation and the existence and survival of the nation," Lowther concluded. ■

Megan Scully is a national security reporter for National Journal *in Washington, D.C. Her most recent article for* Air Force *Magazine, "Thinking Outside the Wire," appeared in the August 2010 issue.*