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In addition to violently roiling the Air Force for months, the infamous “Minot Incident” of August 2007 did something else. It highlighted a new view of the future of nuclear-armed cruise missiles.

That event saw B-52H bombers unwittingly fly operational Advanced Cruise Missiles from Minot AFB, N.D., down to Barksdale AFB, La. Mostly unremarked is that weapons were being taken south for decommissioning. The Defense Department is retiring the nuclear-armed AGM-129 ACM entirely.

As a result of strategic nuclear arms treaty obligations, the Pentagon scrapped planned life extension programs for the ACM. DOD moved to eliminate the ACM entirely and dramatically cut back its inventory of earlier generation AGM-86 Air Launched Cruise Missiles.

The net result of these decisions was to greatly reduce the number and profile of nuclear cruise missiles in the US arsenal.

Recent developments could limit the Air Force’s cruise missile capability even further. Reductions in the ALCM fleet, reducing its numbers from 1,142 to 528, and complete elimination of the



The Cruise Missile Question

By James Kitfield

Will arms control and tighter budgets finish off the nuclear armed version?

ACM inventory were critical to reaching even the 2002 Moscow Treaty limits of 2,200 operationally deployed nuclear warheads by 2012.

Nuclear weapons trends are likely to further constrain nuclear cruise missile inventories. The Obama Administration is pursuing an aggressive arms control agenda that portends further cuts in coming years, in both nuclear weapons and their delivery systems.

Left: ALCMs on the pylon of a B-52. Below: Members of a nuclear surety staff and airmen from the 5th Aircraft Maintenance Squadron review serial numbers at Minot AFB, N.D.



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President Obama and Russian President Dmitry Medvedev have agreed in principle to go down to no more than 1,675 and perhaps as few as 1,500 warheads in a follow-up to the START I arms accord. This treaty expired Dec. 5, but both sides have agreed to abide by its provisions while bilateral negotiations continue.

In addition, the number of nuclear weapons “carriers” would notionally fall to between 500 and 1,100 delivery vehicles.

“These program changes, taken together, raise serious questions about the future of nuclear-armed cruise missiles and nuclear-capable bombers in the US strategic force,” concluded a 2009 Congressional Research Service report “US Strategic Nuclear Forces: Background, Developments, and Issues.”

Contrived Counting Rules

For reasons that have to do with “counting” formulas, both nuclear-capable cruise missiles and bombers could prove increasingly vulnerable in follow-on strategic nuclear arms reduction treaties.

“Under the original START arithmetic, a bomber was counted based on the maximum number of cruise missiles it can carry,” said Amy F. Woolf, the CRS researcher who wrote the report. Thus, she went on, “you could achieve significant reductions [in warhead numbers] by simply making bombers into conventional weapons carriers without paying a high political or monetary cost.”

The Air Force is well aware of how contrived counting rules have affected nuclear inventories, however. “We’ve learned a lot about counting rules,” said one official involved in arms control discussions, and the service does not want arbitrary rules to “hinder us in the future.”

Under a new START agreement, says this person, future cuts in nuclear cruise missiles will likely be reflected in the final tally, independent of bombers—potentially making the missiles tempting targets for negotiators.

The fates of the strategic cruise missiles and the B-52 have been inextricably linked ever since the Air Launched Cruise Missile was specifically designed to extend the useful life of the bomber as a standoff nuclear weapons delivery platform.

By the late 1970s, the B-52 was seen as becoming more vulnerable to advancing defenses, and the cruise missile was a way to extend weapons range while keeping the bomber itself out of harm’s way. The B-52H can carry ALCMs both on underwing pylons and on an internal rotary launcher.

First operational in 1982, the ALCM (or AGM-86B) deploys its own folded wings and turbofan jet engine upon launch, finding its way to targets via a terrain-following guidance system while flying at low altitudes to evade radar detection. Armed with a W80 nuclear warhead, the ALCM is not stealthy, but is designed to evade air- and ground-based defenses to strike targets at any location within an enemy’s territory.

When the Air Force became worried that the ALCM would have trouble penetrating future Soviet air defenses utilizing “look down” radars, USAF developed the stealthy and longer-range Advanced Cruise Missile, which was first tested in 1985. ACM procurement, however, was halted at 460 missiles in lieu of the originally planned 1,460. The last missile was delivered in 1993, and the Air Force is retiring the ACM because of reliability issues and higher maintenance costs.

In the decades since the cruise missiles became available, B-52H bombers



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SSgt. Deonta Griffin (l) and A1C Ethan Payne load weapons at Minot AFB, N.D.

have provided the bulk of the strategic bomber force's nuclear firepower.

The B-1 bomber was never equipped to carry nuclear cruise missiles, for instance, and in 1997 the Air Force converted it entirely into a conventional bomber to meet START obligations.

The service's small fleet of 20 B-2 bombers can penetrate air defenses by virtue of its low observable characteristics, and can therefore be expected to accurately deliver nuclear gravity bombs against heavily defended targets. But the tiny stealth bomber inventory leaves the Air Force heavily reliant on its force of B-52Hs.

Politically Expendable?

"The B-52 itself is good until 2040, so 2018 [the proposed in-service date for the now-deferred next generation bomber] is not tied to the airframe. That date [is] tied to some of the weapons" used to perform the deep strike mission, said now-retired Lt. Gen. Robert J. Elder Jr. in 2009. At the time, Elder was commander of 8th Air Force, USAF's nuclear bomber force.

Specifically, he said, 2018 had to do with "when the ALCM is getting ready to go out of the inventory."

Air Force officials say all of the stealthy ACMs will be demilitarized by 2013, and USAF now has a program funded to keep the ALCM in service out to 2020. The Air Force is also currently studying how to keep the ALCM in service as a viable weapon until 2030.

However, "the results of service life extension program (SLEP) studies identified system components that cannot be sustained beyond the standard service life," according to Defense Department budget planning documents.

Missile components and ALCM support equipment are becoming nonsupportable, but a SLEP of this "critical weapon" remains "essential" to meet global commitments, documents state.

Areas of concern include the long-term health of the ALCM's arming and fuzing subsystems, the navigation and guidance systems, and the electrical distribution system. Because the ALCM will soon be the only nuclear cruise missile left in service, the Air Force needs to identify "aging trends prior to failures in fielded components that would result in fleetwide reliability and supportability problems."

The diminishing and old fleet of B-52s, ALCMs, and ACMs—coupled with delays in the Air Force's development of a new strategic bomber—has raised continuing questions about the service's commitment to the strategic bombing mission altogether. According to the Congressional Research Service report, during the 2006 QDR, some officials argued for removing all B-52 bombers from the nuclear mission.

The mission survived but the debate, in conjunction with expected future cuts in the size of the US nuclear arsenal, raises the distinct possibility that one leg of the nuclear triad (long-range bombers, Trident submarines, and intercontinental ballistic missiles) could become expendable for either political or financial reasons.

This problem recently was spotlighted in a paper published by the Mitchell Institute for Airpower Studies. Written by Northrop Grumman analysts Dana J. Johnson, Christopher J. Bowie, and

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An Air Launched Cruise Missile is loaded onto a Barksdale AFB, La.-based B-52H. The venerable bombers should last until 2040, but ALCMs are slated for retirement much sooner.



USAF photo by TSgt. Lee A. Osberry Jr.

Airmen from the 5th Aircraft Maintenance Squadron run through weapons loading procedures during a nuclear surety inspection at Minot.

Robert P. Haffa, it was released in December.

“The aging ALCM calls into question the value of the B-52 fleet, while the modernized but very small B-2 force is assuming a niche role,” wrote Johnson, Bowie, and Haffa. “In short, the United States will soon field a de facto nuclear dyad.”

According to CRS, “most discussions about the bomber force focus on how many bombers, and what types of bomber weapons, the United States needs to bolster its conventional long-range strike capability. There is little, if any, discussion about the role that bombers may play in either nuclear deterrence, or, if deterrence fails, in the launch of US nuclear weapons,” the report reads.

Air Force leaders readily concede that the upcoming QDR and accompanying Nuclear Posture Review, coupled with the outcome of ongoing arms reduction talks between the United States and Russia, will have a lot to say about the future of the nuclear cruise missile and strategic bomber force.

The Air Force is betting that its new Global Strike Command will bring greater coherence to the strategic nuclear role, and act as a much needed internal advocate for a next generation nuclear cruise missile and bomber. Global Strike Command will take responsibility for long-range bombers from Air Combat Command in February and assumed oversight of the ICBM force from Air Force Space Command this past December.

The service also plans to designate one of its B-52 wings to focus almost entirely on training and exercising for the nuclear mission for one-year intervals on a rotational basis.

To succeed, Global Strike Command will have to elevate the prominence of the strategic bombing leg of the nuclear triad once again to a level many experts believe it has not had since the elimination of the Strategic Air Command in 1992, following the end of the Cold War.

Weaknesses Can Be Strengths

The current proliferation of rogue states with small arsenals of weapons of mass destruction actually plays to the strength of the bomber leg of the strategic triad.

“The long-standing argument for a nuclear triad is that each leg has different strengths and weaknesses,” noted the CRS’ Woolf. “The current environment, where the threat is likely to be a handful of nuclear facilities or WMD sites that you want to threaten discreetly, plays to the bomber’s strengths.”

A bomber armed with nuclear cruise missiles is very survivable, it keeps a human in the loop, and it provides the flexibility to threaten relatively small, individual targets. Johnson, Bowie, and Haffa laud the merits of the triad, and state that they prefer to maintain the three distinct delivery methods. In their

paper, though, they argue that, realistically, the decline of the air-based leg may be irreversible.

They consequently recommend that the US phase the B-52 out of the nuclear role as ALCMs are retired from service, and begin concentrating funding and attention on maximizing conventional long-range strike capabilities.

The Air Force should “divest any planned investments dedicated to keeping the B-52 in a nuclear role and put them into a new conventional bomber,” the authors wrote. This divestiture would also include research and development dedicated to a new nuclear-capable cruise missile.

“Although conventional long-range strike capabilities will be even more important in the emerging security environment, the research and development of a new nuclear cruise missile and a new nuclear bomber do not appear to be prudent investments in an era of nuclear force reductions.”

This conclusion is vigorously contested by bomber advocates who note the ALCM can be modernized and improved even beyond a service life extension. The diversity of the bomber leg of the triad also protects the US deterrent from any possible revolution in ballistic missile defenses, which could conceivably reduce the effectiveness of both ICBMs and SLBMs.

Further, bomber advocates note, a next generation long-range strike system is garnering support for a wide variety of reasons. The cost of giving it a nuclear capability would be but an incremental addition to the overall cost of the program.

Bowie acknowledged that it may make sense for the Air Force to design its next generation bomber in such a way that nuclear missions could be added to its repertoire at a later date, if warranted.

“Even the bomber’s weakness of being relatively slow in comparison to ICBMs can be a strength,” said the CRS’ Woolf.

“In the buildup to a crisis with a rogue state that doesn’t involve the threat of a first strike, you may want time to ratchet up pressure slowly, and the bomber is the only leg of the triad that you can recall once its in the air,” she said. “But if the Pentagon wants to retain the bomber leg of the nuclear triad it’s going to have to develop a new nuclear cruise missile soon.” ■

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