Senate ICBM Coalition

The Long Pole of the Nuclear Umbrella

A White Paper on the Criticality of the Intercontinental Ballistic Missile to United States Security

November 2009

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As members of the Senate ICBM Coalition, we feel now is the time to clearly state why we believe intercontinental ballistic missiles remain crucial to US national security. Though we value the local connection many of us have to the missile community, our support stems from a belief that ICBMs are fundamental to keeping Americans and our allies safe and secure. In the following pages we lay out why we hold such a belief.

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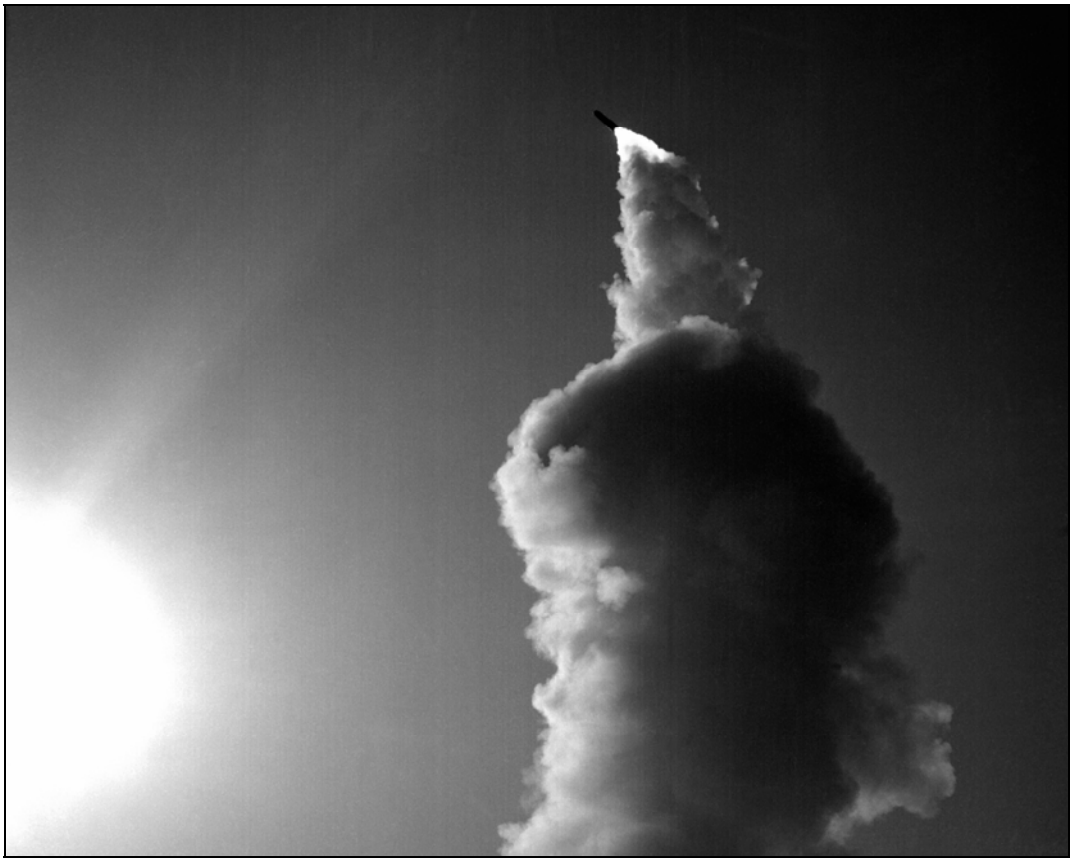

A Minuteman III Intercontinental Ballistic Missile Test Launch
Department of Defense Imagery

EXECUTIVE SUMMARY.

Of all the weapons of war ever conceived by man, none offers more terrible power than nuclear weapons. It is a power we may wish we did not have. But nuclear weapons also characterize a paradox we uncomfortably live with: the only way to protect ourselves from nuclear weapons is to possess nuclear weapons.

The US strategic triad—bombers, sea-based missiles and land-based intercontinental ballistic missiles (ICBMs)—has demonstrated its inherent stability through the last several decades and offers our best promise to maintain that stability into the future.

ICBMs are the most stabilizing part of the triad.

- Through widely dispersed locations, ICBMs pose an insurmountable challenge to any adversary and assure a credible response to any attack.
- ICBMs protect the survivability of the other legs of the triad. While bombers offer forward capabilities and submarines offer high survivability, the number and dispersion of ICBMs act as a critical deterrent for a disarming attack on these two legs of the triad.
- The obvious visible permanence of ICBMs offers the greatest assurance to our allies, which in turn decreases the likelihood they pursue their own nuclear arsenals.
- ICBMs represent the most cost-effective delivery system the United States possesses. Maintaining nuclear submarine and bomber technology will require continued significant investments. ICBMs have already been modernized to 2020 and will require only incremental investment to reach 2030.

ICBMs best achieve these effects under two conditions: we maintain a minimum number of 450 geographically dispersed ICBMs, and we arm each with only a single warhead.

There is no inconsistency between maintaining an ICBM force of 450 missiles and pursuing a follow-on to the START treaty that codifies the gains we have made and hope to make in reducing our reliance on nuclear weapons.

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INTRODUCTION.

Of all the weapons of war ever conceived by man, none offers more terrible power than nuclear weapons. It is a power we may wish we did not have. But nuclear weapons also characterize a paradox we uncomfortably live with: the best way to protect ourselves from nuclear weapons is to possess nuclear weapons.

Since the detonation of the world's first nuclear weapon in 1945, the security of the United States has been inextricably linked with its nuclear weapons. We relied on those weapons to keep us safe against the constant, chilling confrontation the Soviet Union's nuclear forces posed for almost 50 years.

When the Cold War ended, we seized the opportunity presented us. We succeeded in dramatically reducing America's strategic nuclear force. Under the Strategic Arms Reduction Treaty (START) of 1991, we agreed to reduce the number of missiles and bombers capable of delivering a nuclear weapon to less than 1,600—a 30 percent reduction of our forces. We set an even more ambitious goal for the nuclear warheads themselves, reducing them by nearly 80 percent. We achieved those goals in 2001. Since then, we have continued to unilaterally reduce the numbers of our own nuclear weapons.

In July 2009, President Barack Obama and President Dmitry Medvedev affirmed in a Joint Understanding between the United States and Russia that we are committed to working toward an agreement containing further reductions and limitations of strategic offensive arms to replace the expiring START.

Today, as we consider how to achieve the benefits of further reductions, we must retain a robust deterrent. Secretary of Defense Robert Gates summarized this dilemma in his speech at the Carnegie Endowment of Peace in October of 2008:

> "I should start by noting that three presidents I worked for during the Cold War – Jimmy Carter, Ronald Reagan, and George H.W. Bush – genuinely wanted to eliminate all nuclear weapons and said so publicly… But all have come up against the reality that as long as others have nuclear weapons, we must maintain some level of these weapons ourselves: to deter potential adversaries and to reassure over two dozen allies and partners who rely on our nuclear umbrella for their security – making it unnecessary for them to develop their own…
>
> "Try as we might, and hope as we will, the power of nuclear weapons and their strategic impact is a genie that cannot be put back in the bottle – at least for a very long time.

> While we have a long-term goal of abolishing nuclear weapons once and for all, given the world in which we live, we have to be realistic about that proposition."[1]

These are the circumstances we are in. These are the paradoxes we face. Our nuclear deterrent remains central to our national security. And we believe that deterrent must be composed of the traditional triad, including 450 intercontinental ballistic missiles (ICBMs), each armed with a single nuclear warhead.

THE TRIAD.

The fundamental basis of our nuclear posture for decades has been the nuclear triad. The US nuclear triad is composed of bombers, sea-based missiles, and land-based missiles. The triad interlocks the three capabilities so each leg balances a shortcoming of one or both of the other legs. Each leg of the triad offers its own advantages. Bombers project their power and presence forward. In times of crisis, they offer an intermediate step as our policymakers order them forward to demonstrate our resolve. Yet they can be recalled up to moments before an actual strike.

Our bombers are inherently flexible and responsive, and our sea-based missiles deployed in submarines hidden in the ocean's depths offer the greatest survivability. Finally, land-based missiles complement the characteristics of the other two legs by their permanence and responsiveness. Our ICBMs sit in their silos constantly ready, known but dispersed to ineluctably complicate targeting.

Combined, the triad presents a powerful stabilizing force. No single technological change could undermine all three legs. No targeting scheme can find and neutralize all three legs simultaneously. And each leg offers a different capability, giving our policymakers options in a crisis rather than the single unacceptable choice of yes or no.

The triad offers demonstrated past success in undermining all efforts of the Soviets to circumvent our nuclear posture and provides the best hedge against new developments in an uncertain future. Most experts conclude we must preserve the triad with its three legs. General Kevin Chilton, commander of US Strategic Command, stated: "The nuclear capability of the original Triad remains a vital part of our deterrence strategy."[2] An independent report by the Arms Control Association draws the same conclusion:

> "Throughout the Cold War the United States insisted on maintaining a triad of strategic nuclear delivery systems—bombers plus land-based and sea-based ballistic missiles—to avoid common failure modes and vulnerabilities. There is value in retaining this diversity as the total stockpile is decreased…"[3]

We accept these experts' conclusions and believe all three legs of the triad must be maintained in order to retain a highly reliable and credible nuclear force. Because each component of our nuclear force has unique and complementary capabilities, reducing our force to two or even one leg could be destabilizing in unpredictable ways.

THE ICBM: A STABILIZING FORCE.

The Minuteman III Intercontinental Ballistic Missile force is the most stabilizing leg of the American nuclear triad. It poses an insurmountable challenge to any adversary with widely dispersed locations and assures a credible response to any attack. It protects the survivability of the other legs of the triad. And it offers assurance to our allies with obvious visible permanence. ICBMs also represent the most cost-effective delivery systems the United States possesses. ICBMs best achieve these effects under two conditions: we maintain a minimum number of 450 and we arm each with only a single warhead.

ICBMs dramatically decrease the risk of nuclear war by providing a stabilizing and visible constant in our nuclear posture even while they provide the preponderance of our nation's day to day alert force—90 percent according to US Strategic Command, which is responsible for the operation of our nuclear weapons.[4]

The Minuteman III entered our nuclear forces in 1970 and it remains ready and relevant to our security. Today it is the only land-based intercontinental ballistic missile we deploy. The US Air Force is carrying out a modernization program that ensures the Minuteman III will remain operationally reliable through 2020, and legislation has already mandated actions to ensure the force remains reliably deployed until 2030. Section 139 of the John Warner National Defense Authorization Act for FY2007 (Public Law 109-362) says: "The Secretary of the Air Force shall modernize Minuteman III intercontinental ballistic missiles in the United States inventory as required to maintain a sufficient supply of launch test assets and spares to sustain the deployed force of such missiles through 2030."[5]

An Insurmountable Challenge.

The Minuteman III ICBM force is deployed in 450 separate locations spanning five states and an area of 34,600 square miles. Despite the fact that ICBMs are easy to individually target with publicly known silo locations, in today's world their vulnerability is only theoretical. In reality, the broad dispersion and sheer numbers of the ICBM force make a preemptive or disarming attack on the entire force nearly impossible. Any surviving ICBMs would pose an assured response because of their inherent characteristics. That combination has a tremendous deterrent effect.

The low warhead loading of the ICBM force makes a disarming attack even less plausible. Many critics argued that the heavily-loaded Cold War-era ICBM force presented attractive targets for a first strike by an adversary, and was therefore destabilizing. But following the retirement of the Peacekeeper force and the de-MIRVing of nearly all of the Minuteman force, our ICBM force now plays a dramatically different strategic role than it did in the past. Today, an adversary would have to target multiple warheads on each ICBM silo in order to guarantee the destruction of a single warhead.

If an enemy first strike failed to destroy every ICBM, the surviving missiles pose a highly credible assurance of a penetrating-counter-strike. They have long been touted by deterrence theorists as assured penetration because of their characteristics: "ICBM's rate of speed, combined with the current lack of effective countermeasures makes them nearly impossible to defend against."[6]

An adversary would have to have confidence that it could destroy 450 separate targets in order to risk attempting a disarming first strike. The size of the ICBM force relative to that of all nuclear powers other than Russia thus allows the United States the freedom to avoid any sort of "launch on warning" posture. If the United States and Russia both drew down nuclear forces to 1,500 warheads, a hypothetical attack would require almost two thirds of the total Russian force to target each US launch facility with two warheads, leaving very little margin for attacking the other two legs of the triad. Since there is no feasible scenario under which an adversary can threaten the entire ICBM force, the ICBM force compels deterrence.

Finally, the deterrent effect of the ICBM benefits uniquely from its location on sovereign US territory. That offers advantages in terms of security: ICBMs would be extremely difficult to attrit through stealth or surprise. An adversary, whether a government or a terrorist group, would need to covertly organize a large force on US soil, address site security measures that have been greatly tightened in the last decade, and overcome ICBM security forces that prepare for such an eventuality every day. Any attack on the ICBM force would therefore realistically have to be a direct, large-scale attack on the United States, and the adversary would have to recognize that retaliation would be certain. In contrast, a nuclear force relying on submarine-launched missiles could be quietly attrited over time or drastically depleted with very limited attacks on just a handful of aimpoints. These conditions might make an adversary more willing to assume the risk of aggression.

Again, we reach these conclusions based on the recommendations of experts. The subtitle of this section is taken from Lieutenant General Frank Klotz, commander of the Air Force's new Global Strike Command, who said recently:

> "Continuously on alert and deployed in 450 widely dispersed locations, the size and characteristics of the overall Minuteman III force presents any potential adversary with an almost insurmountable challenge should he contemplate attacking the United States. Because he cannot disarm the ICBM force without nearly exhausting his own forces in the process, and at the same time, leaving himself vulnerable to our sea-launched ballistic missiles and bombers, he has no incentive to strike in the first place. In this case, numbers do matter…and the ICBM thus contributes immeasurably to both deterrence and stability in a crisis."[7]

The Congressionally-chartered Commission on the Strategic Posture of the United States drew the same conclusion in its report:

> "The Intercontinental Ballistic Missile (ICBM) force imposes on a prospective aggressor the need to contemplate attacking only with very large number of nuclear weapons,

> substantially depleting its forces while ensuring a devastating response by the United States. The force is also immediately responsive in a highly controlled manner."[8]

In today's strategic environment, ICBMs in their silos protect the world from the horrific possibility of a nuclear attack.

Protecting Survivability.

Our ICBM force best ensures the survivability of the other legs of the triad. As a result, it is the most stabilizing leg of the triad.

An adversary would have to employ nearly all of its own arsenal to destroy our ICBMs. Submarine-based missiles ensure we retain a retaliatory capacity in case of this contingency. As of today, no technology can reliably and responsively find submarines hidden in the ocean's depths. This survivability has led some to argue we should place all of our nuclear deterrent into these submarine-based missiles.

Our ICBM force protects us from the danger of an "all our eggs in one basket" strategy. As survivable as our strategic submarines are, they have real limitations. Most notably, we have a very limited number of submarines, and they rely on an even more limited number of support bases. Without ICBMs, an adversary would have to destroy only 10 targets to destroy our entire submarine force. With our bombers located at only three continental bases, an adversary could target 13 locations and destroy all of our nuclear delivery systems except our ICBMs.

Although technology currently limits the risk of all of our deployed submarines being found, it is our ICBM forces that sustain that technological state. Since our ICBMs pose an insurmountable challenge, no adversary has or is inclined to embark on a focused effort to solve the problem of finding submarines. Even should they solve this problem, they would face 450 widely-dispersed ICBMs. But if those ICBMs were not deployed, the submarine targets would become so lucrative as to justify almost any effort. The Defense Science Board Task Force on Nuclear Deterrence noted this complementary effect in its report in 1998:

> "The SLBM leg remains the most survivable leg in the day-to-day posture. Still, the small number of platforms makes it unwise to vest an ever larger percent of the declining force in this leg of the Triad. Doing so could lead an adversary to seek an advantage by focusing intently on means to attrit this force over time, particularly since it might be done without attribution and would take years for the US to recover with new production."[9]

General Larry Welch, USAF (Retired), recently emphasized the dampening effect our ICBM force has on an adversary's efforts to undermine the survivability of our submarine force:

> "While we know that SLBMs are the most survivable of the legs of the Triad, the SLBMs can be attrited over time. There is no motivation to do so while there are significant numbers of ICBMs on alert. Further, there is no motivation to attack the ICBM force. When ICBMs had 10 warheads per ICBM launch vehicle, they were viewed as de-stabilizing because an enemy could attack each Peacekeeper missile with two or three

> warheads and get a potential 3 to 5 to 1 kill ratio. With the current configuration of single warhead ICBMs and arms control agreements that have drastically reduced the strategic warheads available for such an attack, ICBMs have become a stabilizing force."[10]

Without our ICBM force standing guard, an adversary would be highly incentivized to solve the technical hurdles to locating our strategic submarines. But as long as our ICBMs are deployed, they serve as stabilizing influences discouraging any effort to undermine the other legs of the triad.

Assuring Our Allies.

Our nuclear posture has long been designed to assure our allies, which in turn discourages them from pursuing their own nuclear arsenals. By accepting the responsibility of maintaining our nuclear weapons, we limit the number of nuclear states and help maintain nuclear stability. ICBMs serve as the most visible and permanent leg of our triad to reassure our allies. They are the long pole of our nuclear umbrella.

Ellen Tauscher, currently Under Secretary of State for Arms Control and International Security, summarized the critical role nuclear weapons play in assuring our allies:

> "There is one other fundamental role our nuclear weapons play, beyond deterring hostile nuclear powers. They provide an extended deterrent to our closest allies, reducing the need for them to maintain their own nuclear weapons. This directly reduces the number of nuclear weapons in the world, and represents a significant element of our non-proliferation efforts."[11]

It is not just public servants but academics who have noted this role of nuclear weapons. Writing in the prestigious international relations journal *International Security*, one scholar noted the case of not just Japan but many of our allies:

> "Japan currently has no nuclear weapons, but many states have been content to live under the US nuclear umbrella, even some facing a more hostile environment than Japan. Like Japan, neither South Korea, Taiwan, nor Italy has acquired nuclear weapons—none of these states are called antimilitarist. Japan's willingness to forgo nuclear weapons in exchange for protection under the US nuclear umbrella is neither exceptional nor surprising."[12]

Finally, and most persuasively, our own allies explicitly declare the same sentiments. At the June 2009 signing of the joint vision for the alliance of the United States and the Republic of Korea to take just one example, the President of South Korea, Lee Myung-bak, stressed the importance of the nuclear umbrella to his country's security: "President Obama reaffirmed this firm commitment to ensuring the security of South Korea through extended deterrence, which includes the nuclear umbrella"[13]

Each leg of the triad supports this aspect of our nuclear posture. But where submarines are hidden and bombers are inherently mobile—especially given the many conventional tasks we

demand of them in today's operational environment, ICBMs stand visibly ready and permanently tied to their silos. As long as we devote such a chunk of our own territory to our nuclear posture, our allies are assured that we are committed to preventing the unthinkable. Regardless of the words we use, our ICBMs represent a very solid and permanently-fixed commitment to nuclear security.

Cost-Effectiveness.

ICBMs are the cheapest leg of the triad and are likely to remain so for the foreseeable future. The Congressional Research Service (CRS) investigated the relative costs of the legs of our triad. Strategic nuclear submarines rely heavily on expensive technology demanded by their operating environment. CRS determined that the submarine leg of our triad accounted for 61 percent of the cost of our strategic forces. Bombers offer dual capability but require heavy operational costs to maintain our crews' skills. In contrast, ICBMs are the most cost-effective leg of our triad as the table below shows:

Cost per Warhead Comparison (in millions of dollars)

	Cost per Delivery Vehicle
Minuteman III	$2.971
Trident II	$10.530
Bombers	$10.355

Source: Congressional Research Service, "Comparative Funding for B-52H, B-2, Minuteman ICBMs, and Trident Submarines and Missiles," May 19, 2009, Table 3.

While keeping nuclear submarines and bombers up to the state of the art will continue to take significant investment, our ICBMs have already been modernized through 2020 and will require only incremental investment to reach 2030.

THE TWO CONDITIONS.

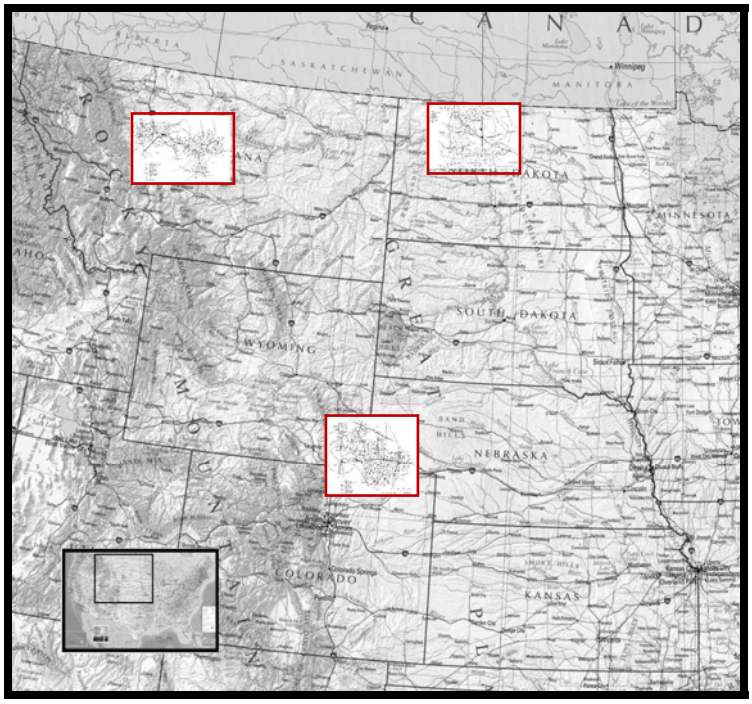
We have laid out clearly the reason for relying on the ICBM force: it is the most stabilizing part of our nuclear posture. But it will best remain the most stabilizing under two conditions. One, we must maintain a minimum force of 450 geographically dispersed missiles. Two, we should download each ICBM to a single warhead.

450 missiles

Our ICBM force derives its stabilizing effect from both its inherent ability to penetrate an adversary's defenses and its widespread dispersion, which deters an adversary from

contemplating an attack because of the overwhelming amount of its own arsenal necessary to neutralize our ICBMs.

To maintain that dispersion, we must maintain a force of 450 missiles. Currently our ICBM force is spread across an area about the size of Maine—an area larger than 11 US states. But through the reductions already undertaken, our force has lost hundreds of square miles of geographical distribution. Further reductions would require abandoning key silos, which best extend the dispersion of our force.



US ICBM Fields as of 2009

The current dispersion provides an important hedge against missiles with multiple warheads. Russia still relies on multiple warheads per delivery vehicle. Just last year, Russia announced a new intercontinental ballistic missile that would be equipped with multiple warheads.[14] Multiple warheads dramatically increase the destructive power of each delivery vehicle but do have limitations. Each additional warhead can only travel so much farther than the last. Our current force relies on three distinct missile wings of three squadrons each broadly dispersed across US territory to mitigate multiple warheads; an attacker would have to rely on many delivery vehicles and not just multiple warheads on a more limited number of vehicles. Each missile wing is also designed internally to counter multiple warheads by spacing silos to achieve the best possible dispersion, which requires a delicate balance as each mile of distance stresses the personnel who must man and maintain the alert and launch facilities.

The number of 450 is important absolutely as well as being necessary to achieve dispersion. 450 missiles ensure ICBMs pose an insurmountable challenge given the number of delivery vehicles and warheads currently being negotiated. Russian strategic forces currently include about 800

delivery vehicles.[15] Targeting demands at least two warheads are dedicated to attacking each ICBM silo. Our 450-missile ICBM force therefore creates a nearly insurmountable challenge for Russian delivery vehicles.

However, as we stated, Russia is likely to rely on multiple warheads per delivery system. The Joint Understanding signed by Presidents Obama and Medvedev this past June sets a goal of 1500-1675 warheads. 450 ICBMs would require nearly two-thirds of all Russian warheads—the most stressful case our deterrent faces. Other adversaries face an even more daunting burden. But that burden geometrically decreases with arithmetic reductions in the number of ICBMs. Each ICBM counters double the number of warheads. 450 ICBMs is the optimal number to ensure deterrence for our and other countries' current and planned nuclear postures.

Finally, we also face serious force development implications for the ICBM fleet if it is cut below its current force structure of 450 missiles divided into three wings of 150 missiles each. Such cuts would make it much more difficult to recruit, retain, and develop highly trained and motivated men and women to the missile force. That would have a tremendous impact on the attractiveness of serving as a missileer and, in turn, on the effectiveness of the force. A decision to cut below 450 missiles would put at risk the readiness, safety and surety of the remaining ICBM fleet.

One of the lessons of the Minot bomber incident and the Taiwan shipment incident that has been uniformly identified by all of the investigations and studies is that we need more sustained leadership attention to the nuclear force, and we need to be able to keep the best and the brightest in the nuclear force. The renewed attention that the Secretary of Defense and the Secretary and Chief of Staff of the Air Force have shown to the nuclear enterprise has instilled renewed confidence in this important mission. Reductions threatening the career development of missileers would run counter to this increased focus on the nuclear enterprise.

Single Warhead Loading

When multiple warheads were mounted on ICBMs, traditional deterrence theorists considered ICBMs a destabilizing force. So configured, a single offensive missile could take out multiple silos containing their ready missiles. In such a case, the state that launched its missiles first gained an advantage. We long ago determined to stop this destabilizing logic by downloading nearly all of our ICBMs to a single warhead. We must also seek to codify our own decision in treaty negotiations and seek out similar assurances from the Russians. Both nations have an incentive to create the most stabilizing configuration of our nuclear arsenals. We have taken the lead and must work to bring the Russians along as willing partners.

We must continue the effort to download warheads so all of our ICBMs carry one and only one. When our ICBMs stand guard each with its own warhead, our ICBM force will be the most stabilizing force our nuclear arsenal has.

NUCLEAR ARSENAL REDUCTIONS

We believe what we have laid out in this white paper is consistent with a sincere intent to reduce our reliance on nuclear weapons and their role in the world. We explicitly call for a reduction of nuclear warheads operationally mounted on ICBMs. We also note the significant, unilateral efforts the United States has already undertaken to reduce its number of delivery systems.

Our ongoing treaty negotiations can and should account for these changes. The arms control treaty governing nuclear weapons we hope to sign with Russia can include significant gains in the reduction of our nuclear arsenal.

We see no inconsistency between maintaining an ICBM force of 450 missiles and pursuing a follow-on to the START treaty that codifies the gains we have made and hope to make in reducing our reliance on nuclear weapons.

CONCLUSIONS AND RECOMMENDATIONS.

Retain the entire fleet of 450 ICBMs.
In many ways, the stabilizing effect of the ICBM is contingent on preserving the entire 450-missile force. The current three-wing, three-squadron force structure must be retained in order to maintain the effectiveness of our nuclear deterrent force. The inherent factors of the ICBM that make it such an effective deterrent – its broad dispersion, low warhead loading, and fleet size – would decrease exponentially with any reduction in the force.

Download to a single warhead.
The low warhead loading of the ICBM force is a key component of its deterrent value. Because an adversary would have to target multiple warheads on each ICBM silo in order to guarantee its destruction, an attack on the ICBM force is extremely unattractive. We should negotiate a requirement to download all 450 missiles to carry only one warhead and further decrease the feasibility of a first strike on the ICBM force.

Treaty Negotiations.
We see no inconsistency between maintaining an ICBM force of 450 missiles and pursuing a follow-on to the START treaty that codifies the gains we have made and hope to make in reducing our reliance on nuclear weapons.

Final thoughts.
A decision to cut below 450 missiles would be a decision to put at risk our entire nuclear posture. It would be unwise to eliminate any leg of the triad. It would be particularly unwise to put at risk the one that is the most stabilizing, the most assuring to our allies, and the most cost-effective.

NOTES

[1] Secretary Robert Gates, "GATES: NUCLEAR WEAPONS AND DETERRENCE IN THE 21ST CENTURY," Carnegie Endowment for Peace, October 28, 2008.

[2] General Kevin Chilton, USAF, Commander, USSTRATCOM, Testimony before the Senate Armed Services Committee Strategic Forces Subcommittee, March 12, 2008.

[3] Sidney Drell and James Goodby, "What Are Nuclear Weapons For? Recommendations for Restructuring US Strategic Nuclear Forces," An Arms Control Association Report, October 2007, p. 16.

[4] Major General Thomas Deppe, USAF, Speech to the National Defense University Foundation, Washington, DC, May 1, 2009.

[5] The John Warner National Defense Authorization Act for FY2007 (Public Law 109-362) Section 139

[6] John J. McGrath, ed, *An Army at War: Change in the Midst of Conflict*, 2005, p. 421

[7] Lieutenant General Frank Klotz, Commander, USAF Global Strike Command, Air Force Air & Space Conference and Technology Exposition, Washington, DC, September 16, 2009.

[8] William J. Perry and James Schlesinger, Chairmen, "America's Strategic Posture," Final Report of the Congressional Commission on the Strategic Posture of the United States," May 6, 2009, p. 25.

[9] Report of the Defense Science Board Task Force on Nuclear Deterrence, October 1998, p. 14

[10] General Larry Welch, USAF (Retired), Speech at National Defense University, June 21, 2008.

[11] Ellen Tauscher, "Constructing a 21st Century Nuclear Posture," Remarks at the Center for American Progress, November 17, 2008.

[12] Jennifer M. Lind, "Pacifism or Passing the Buck?: Testing Theories of Japanese Security Policy," *International Security* Volume 29, Number 1, Summer 2004, pp. 92-121

[13] Quoted in Richard Halloran, *Nuclear Umbrella*, Real Clear Politics, June 21, 2009.

[14] Vladimir Iszchenkov, "Russia Modernizes Missiles in Response to US Plans," Associated Press, October 22, 2008

[15] Daryl Kimball, "Current Strategic Nuclear Forces of the Former Soviet Union," Arms Control Association, April 2009.

Assured Stability

A Minuteman III Intercontinental Ballistic Missile in Silo
Department of Defense Imagery, Staff Sergeant Alan Wycheck