

Testimony  
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House Armed Services Committee Hearing on Outside Perspectives on Nuclear  
Deterrence Policy and Posture  
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Chairman Smith, Ranking Member Thornberry and other distinguished members, I am honored and grateful for this opportunity to testify today.

## **Overview**

Like many Americans of my generation I first learned about nuclear weapons in 1962 when President John F. Kennedy threatened to unleash the full might of U.S. nuclear forces against the Soviet Union if we were hit by nuclear-tipped missiles fired from Cuba. I was relieved to learn we had a secure second-strike force capable of inflicting unacceptable damage in retaliation to a Soviet attack.

I learned that simply being able to destroy Russia as a viable country was not, in fact, the reality of our nuclear weapons policy when I became a U.S. Air Force Minuteman missile launch officer and support officer for the Strategic Air Command's (SAC) "Looking Glass" airborne command post. Our planners saw nuclear weapons not simply as tools of deterrence but also as tools for actual or coercive use during a nuclear conflict.

By far the majority of our targets were the adversary's nuclear forces, and that remains true today in the case of Russia. Back then, as now, thousands of strategic nuclear weapons aimed largely at each other stood ready for immediate first use or launch on warning. Back then, as now, the president would have just a few minutes to authorize launch on warning, and he would be pressured, "jammed," to do so on the basis of early-warning information that could be false or misleading, today possibly due to cyber interference. We spent, and still spend, billions of dollars on space and undersea surveillance and attack submarines to track and target the most survivable components of Russia's and China's strategic deterrent – their mobile intercontinental ballistic missiles (ICBMs) and their strategic ballistic-missile submarines (SSBNs). Then, as now, our war planners devised a warfighting posture that makes bald assumptions about command and control, seeing through the fog of war and dominating escalation while hundreds or thousands of nuclear weapons are exploding on the territory of the belligerents.

This warfighting strategy may look good on paper, but it is infeasible. All it really accomplished was to fuel an arms race and increase the chances of nuclear war by design or accident. Our hair-trigger launch posture, which the Russians matched, continues to run the risk that fear, misperception, miscalculation, accident or false warning could trigger a nuclear exchange. This risk of blundering into a nuclear war, rather than a cold-blooded sudden attack, presents what is by far the greatest immediate physical threat to the United States today.<sup>1</sup>

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<sup>1</sup> William J. Perry, *My Journey at the Nuclear Brink* (Stanford: Stanford University Press, 2015).

I propose that we return to first principles and design a posture for assured retaliation that is smaller but more survivable and stable than the one currently planned. This posture would hold at risk Russia's, China's and North Korea's key elements of state power, economy and leadership. I estimate there are about 450 primary aimpoints in these categories in total for these three countries – the only ones that could conceivably threaten to use nuclear weapons against the United States in the foreseeable future. Assuring retaliation against these key elements would easily meet any reasonable judgment of actual deterrent requirements.

Pivoting away from targeting opposing nuclear forces and from the fantasy of controlling escalation would allow us to eliminate most of the four thousand weapons in the current active stockpile. Only five or six of the planned fleet of 12 new Columbia-class SSBNs would need to be built in order to credibly threaten the destruction of our potential adversaries' key elements of state control. All other existing and planned U.S. nuclear weapons could be scrapped, including the destabilizing new missiles slated for deployment in vulnerable old silos, and the so-called "low-yield" weapons allegedly needed to neutralize Russia's doctrine of "escalate to de-escalate." The result, besides huge savings, would be more stability and less danger of blundering into a nuclear conflict.

Defenders of the Triad claim that the ICBM force is essential, but a vulnerable leg does not strengthen the Triad, it weakens it. If you want a strong and stable Triad that includes ICBMs, then a mobile basing mode is required.

Proponents of the so-called "low-yield" weapon in the pipeline for deployment on Trident II missiles on SSBNs also have not thought it through. Never mind that a 5-kiloton weapon like the one being planned would kill 80 thousand people and injure 120 thousand if exploded above the White House right now.<sup>2</sup> If the Russians use such a "low-yield" weapon or two in a conventional conflict in a bid to "escalate to de-escalate," chances are they are losing that conflict. It is their conventional inferiority that drives them to consider such use. There is no more evidence that the Russians are seeking to exploit some "yield gap" any more than they would a mine-shaft gap. Russian weakness has driven them toward overreliance on nuclear weapons and strenuous and successful effort has been made to create viable non-nuclear options to supplant "escalate to de-escalate." In any case, the United States possesses ample conventional and nuclear weapons with which to respond effectively to the use of one or two Russian "low-yield" nuclear weapons.

Pivoting away from warfighting also means adopting "No First Use" (NFU). NFU is axiomatic in true nuclear deterrence, which means threatening to respond to a nuclear attack, not initiate one. Universal NFU would have a stabilizing effect during a crisis,

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<sup>2</sup> Estimates based off a burst height of 400 m. Alex Wellerstein, "Nukemap," accessed February 25, 2019, [https://nuclearsecrecy.com/nukemap/?&kt=5&lat=38.89742&lng=-77.0365211&hob\\_opt=2&hob\\_psi=5&hob\\_ft=1312&casualties=1&psi=20,5,1&zm=14](https://nuclearsecrecy.com/nukemap/?&kt=5&lat=38.89742&lng=-77.0365211&hob_opt=2&hob_psi=5&hob_ft=1312&casualties=1&psi=20,5,1&zm=14).

relieving pressure on both sides to launch first before the other side does and reducing the risk of launching on false warning.

NFU is further justified by the absence of foreseeable scenarios that would convince a U.S. president that the first use of nuclear weapons is warranted. Our allies need to understand this but they can be assured that our conventional capabilities and commitment to second-strike deterrence will provide for both their and our defense.

The most important project will be fixing our vulnerable and deficient Command, Control, Communications and Intelligence (C3I) systems. C3I has long been the Achilles' heel of our nuclear posture. When I was attached to the unit that maintained the last-ditch "Looking Glass" airborne command post, we harbored real doubt about our ability to retaliate at all to a Soviet attack, even though the general onboard possessed pre-delegated nuclear launch authority. Any notion that the airborne post-attack command and control system could orchestrate a strategy of escalation dominance was completely unrealistic, indeed ludicrous.

Those doubts persist even today. C3I would likely collapse within a few hours of nuclear conflict. Fixing this is essential to supporting assured retaliation and enabling the president to intelligently choose a response if deterrence should fail. Instead of modernizing overkill, increasing presidential decision time should be our top priority. One goal is to increase C3I endurance to a period of months in order to match the endurance of our SSBN force.

Members of Congress, you and the American people are being asked to fund a makeover of our nuclear forces at a cost of at least 1.7 trillion dollars.<sup>3</sup> The time has therefore come to choose between these competing worldviews. Should unrealistic and dangerous notions of warfighting continue to drive our nuclear investments and shape our posture, or should we pivot to a secure second-strike deterrent posture and leave warfighting to other weapons?

The latter is the more feasible and prudent approach to reducing nuclear risk. It is time to jettison nuclear 'first use,' hair-trigger alert, launch on warning and other destabilizing features and fantasies of our current warfighting posture.

### **True Deterrence: First Principles**

The major strands of mainstream American thinking about the role of nuclear weapons are the following:

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<sup>3</sup> In 2017, the Congressional Budget Office estimated the cost of nuclear forces from 2017 to 2046 at \$1.2 trillion in 2017 dollars (\$1.7 trillion with inflation). Congress of the United States, Congressional Budget Office, *Approaches for Managing the Costs of U.S. Nuclear Forces, 2017 to 2046* (Washington, DC, October 2017), 1, <https://www.cbo.gov/system/files?file=115th-congress-2017-2018/reports/53211-nuclearforces.pdf>.

- The sole purpose of nuclear weapons is to deter their use by others;
- It is legitimate to respond to a nuclear attack, but not to initiate one; ‘No First Use’ is axiomatic in the schema of deterrence;
- A nuclear weapon is a nuclear weapon. An atomic weapon with one-third the explosive power of the Hiroshima bomb should not be considered “low yield” as some describe it. It would be a very powerful and lethal device that could inflict horrendous devastation;<sup>4</sup>
- Crossing the nuclear threshold is cataclysmic and fraught with risk of escalation to large-scale nuclear conflict causing the deaths of at least tens of millions of innocent civilians;
- The first use of these weapons is strictly a civilian political decision that should never be driven by military expediency;
- “A nuclear war cannot be won and must never be fought,” in the immortal words of Presidents Ronald Reagan and Mikhail Gorbachev;<sup>5</sup>
- Deterring a rational adversary can be assured with a relatively small number of nuclear weapons;<sup>6</sup>
- We should deploy survivable forces backed by robust C3I systems capable of inflicting unacceptable damage in retaliation to a nuclear attack.<sup>7</sup> Deterrence calls

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<sup>4</sup> Consider the 5-kiloton atomic weapon being built today for deployment on SSBNs and look at the scale of destruction it could produce if detonated above the White House on a typical weekday morning. A single weapon would destroy practically the whole of downtown Washington, D.C., kill 80 thousand people and injure another 120 thousand. Wellerstein, “Nukemap,” op. cit. It is clearly a misnomer to call such a device a “low-yield” weapon.

<sup>5</sup> “Joint Soviet-United States Statement on the Summit Meeting in Geneva,” (November 21, 1985), Ronald Reagan Presidential Library & Museum, <https://www.reaganlibrary.gov/research/speeches/112185a>.

<sup>6</sup> In 2019, no nuclear-armed state has strong intrinsic reason to attack the United States. Nevertheless, the world remains anarchic and the United States considers deterrence a sine qua non of its security and that of its allies. Deterrence is clear about the need for significant, extreme damage. Deterrence works because an adversary will feel pain. So much pain that they will not attack if they are rational.

The number of nuclear weapons and the consequent scale of second-strike destruction required to deter is inherently subjective and cannot be precisely determined but our understanding of what motivates other states and our adversaries makes clear the number need not necessarily be large – certainly less than the 4,000 plus weapons in the current U.S. stockpile (1,550 allowed under the New START agreement with Russia plus additional “backups” in the hedge or active reserve stockpile), much less the 30,000 weapons we once deployed during the Cold War. Today’s arsenal carries the explosive power equivalent to 80 thousand Hiroshima bombs (a 15-kiloton atomic bomb). The numbers we maintain remain a longstanding anachronism from the Cold War-era of nuclear overkill.

<sup>7</sup> C3I includes early-warning sensors (satellites and ground radar) designed to detect the launch and flight of ballistic and other missiles. A long-range ballistic missile can fly halfway across the planet in 30 minutes. Infrared satellites detect the hot plume of the missile’s rocket motor during the boost phase of flight. Ground radar sites detect the metal frame of the missile and/or its reentry vehicles.

for a secure second-strike force able to deliver significant destructive capability even after an adversary has attacked; this capability to respond forcefully is essential to ensuring that no one dares launch a nuclear first strike against the United States and its allies;

- This threat of “assured destruction” if replicated on the other side creates a state of mutual assured destruction, or MAD, which works to stabilize both the strategic nuclear balance and U.S. relations with its potential nuclear adversaries. MAD is robust against evolving changes in the U.S., Russian and Chinese nuclear arsenals;
- The limitations imposed and the verification and inspection rights provided by nuclear arms control agreements are invaluable in ensuring that any major developments that could upset the strategic balance will be detected in time to counter them.

Those core beliefs remain alive today. Opinion surveys show overwhelming American public support for maintaining a secure second-strike capability so that the United States could always retaliate with a major nuclear strike. At least two-thirds of the public also eschew the first use of U.S. nuclear weapons.<sup>8</sup>

If this consensus had actually guided our nuclear actions, our nuclear arsenal today would be much smaller and more survivable than it is and our nuclear posture would be more stable and run lower risks. But it was sidetracked by a “nuclear priesthood” who, partly thanks to excessive secrecy that kept their plans in the dark and beyond public scrutiny, pursued a very different course described below as a nuclear-warfighting posture.<sup>9</sup>

I propose in my 2018 Alternative U.S. Nuclear Posture Review that we return to the original, and generally accepted, basic premise of nuclear weapons emphasizing secure second-strike forces and assured retaliation.<sup>10</sup> The analysis lays out a new force posture that is more survivable and stable than ever achieved – whether during the Cold War, under the present force or under the nuclear modernization program envisioned by the Trump administration.

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<sup>8</sup> YouGov/Huffington Post, “Poll Results: Nuclear Weapons,” August 4-7, 2016, YouGov, <https://today.yougov.com/topics/politics/articles-reports/2016/08/11/poll-results-nuclear-weapons>.

<sup>9</sup> By “nuclear priesthood” I mean the inner precincts of the nuclear-planning community, mostly confined to the Joint Strategic Target Planning Staff (JSTPS) based at Offutt AFB near Omaha and parts of the Joint Chiefs of Staff Joint Staff in Washington, D.C., but also certain key civilian leaders within the Department of Defense and some defense intellectuals affiliated with government-funded think tanks such as the RAND Corporation. In almost all cases these individuals possessed clearances for access to special compartmented intelligence (SCI) known as Single Integrated Operational Plan (SIOP) Extremely Sensitive Information (ESI). This rarefied information was strictly off limits to the vast majority of U.S. government officials responsible for defense and security programs and evaded oversight and scrutiny by broader government officialdom in all branches.

<sup>10</sup> Bruce G. Blair with Emma Claire Foley and Jessica Sleight, *The End of Nuclear Warfighting: Moving to a Deterrence-Only Posture* (Washington, DC: Global Zero, 2018).

My proposed posture requires a much smaller arsenal than currently planned, reflecting its essential role in protecting the sovereignty of the United States and our allies from nuclear aggression but leaving warfighting to other forces. It also recognizes the miniscule contribution of nuclear weapons to solving emerging 21<sup>st</sup>-century security challenges ranging from cyberwarfare to terrorism to mass migration and border security. But while smaller, it reflects a conservative view of deterrent requirements and fully satisfies the Pentagon's current targeting objectives for holding at risk Russia's, China's and North Korea's key elements of state control, power, wealth, economy and leadership. It thus provides for the capability to credibly threaten unacceptable damage in response to an adversary's nuclear aggression even in a worst-case context of full-scale enemy attack.

The proposed new force posture includes a mix of conventional and nuclear forces. The high lethality of modern U.S. conventional weapons (supplemented by offensive cyber capabilities) with pinpoint accuracy enables large-scale strikes against targets in urban areas to conform to the laws of war. The proposed posture also vastly upgrades C3I performance and endurance to allow the president to respond intelligently and deliberately if deterrence should fail.

### **The Tenacious Grip of the Nuclear Warfighters**

Unfortunately, the mainstream American view of deterrence was rejected by our nuclear war planners in favor of developing intricate but infeasible plans for warfighting. Their agenda took us to a completely different place, a universe I once occupied in the Strategic Air Command that went well beyond a policy of assured retaliation by a secure second-strike force and resulted in the deployment of a massive, globally-dispersed nuclear arsenal oriented to a strategy of "escalation dominance" and "deterrence by denial." This required inflicting high levels of "damage expectancy" against opposing nuclear forces, a "counterforce" operation into which the bulk of historical investment in U.S. nuclear forces and related programs was channeled. Related programs in this warfighting enterprise included space surveillance and attack submarines assigned to track and hold at risk the adversaries' strategic deterrent forces such as mobile ICBMs and SSBNs.

This warfighting ethos is alive and well and rests on tenets that are antithetical to the original fundamental understanding of the role of nuclear weapons. They are as follows:

- It is legitimate and rational to entertain the first use of nuclear weapons out of military expediency, indeed to pressure presidents at critical moments to put military expediency first in their nuclear deliberations.<sup>11</sup> In my view, nuclear first use would transport us to a world its leaders – politicians and generals alike – know virtually nothing about. No one has ever fought a nuclear war in which the other side also has nuclear weapons. The societal and geopolitical shock would be tremendous and global, likely much greater than the shock of the terrorist attacks

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<sup>11</sup> I am referring here to the military pressuring ("jamming") the president to get approval to use nuclear weapons under circumstances of apparent large-scale enemy nuclear attack. See discussion below on launch-on-warning procedures. See also the corroborating interview with General (ret.) George Lee Butler in Jonathan Schell, *The Gift of Time*, (New York: H. Holt & Co., 1998).

on September 11, 2001 even if only a single nuclear weapon explodes. There would be enormous unanticipated aftershocks. The decision to cross the nuclear Rubicon must therefore never be taken out of military expediency.

- Warfighters assume, incorrectly, that a president can be assured that the underlying intelligence supporting a first-use decision would be foolproof, that only nuclear weapons and not conventional or cyber weapons could do the job, that losses to innocent civilians would be acceptable, and that first use would not escalate to cataclysmic proportions. In reality, it is extremely doubtful that all of these premises would be true simultaneously. There are no foreseeable scenarios that would pass all these tests and convince a rational U.S. president that the first use of nuclear weapons was warranted. (A rational Russian leader contemplating first use against the United States or China would also have reason to fear that such use would trigger catastrophic escalation.)
- Warfighters incautiously require U.S. strategic forces to be constantly ready to initiate an attack to destroy opposing strategic forces. Such threats undermine stability. They would exert pressure on both sides to jump the gun and launch a preemptive strike during a crisis out of fear of the consequences of allowing the other side to go first. First-strike plans and capabilities are highly destabilizing and hold out hopes of escaping devastating retaliation that are likely to be false.
- Warfighters unrealistically plan to seek bargaining advantage and dominate escalation in the midst of a nuclear conflict in order to persuade an adversary that it has more to lose than gain by prolonging the conflict. This is the essence of the warfighter's philosophy and strategy of "escalation dominance" and "deterrence by denial." It is the subject of prolific armchair speculation about climbing the "ladder of escalation" and succeeding in coercing an enemy to throw in the towel in the middle of a nuclear war.

But it ignores the fact that the C3I networks on both sides are nowhere close to being capable and survivable enough to support such a strategy. Also, top U.S. political leaders rarely study and understand the potential consequences of their own nuclear choices.<sup>12</sup> Although presidential launch protocol involves a briefing by the head of Strategic Command (or a subordinate) on the president's options and their consequences, it is a "quick and dirty" briefing that may confuse or mislead.<sup>13</sup> During the Cold War, a president who ordered a major nuclear-strike

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<sup>12</sup> In the words of Richard Betts: "Although theorists and bureaucrats have speculated ad nauseam about nuclear strategy and the situations in which nuclear weapons could or should come into play, top political leaders have rarely dwelt on these questions at any length or in any detail, or seriously pondered in advance what to do in a crisis. Nor have the circumstances of particular crises been congruent with theorists' scenarios." Richard K. Betts, *Nuclear Blackmail and Nuclear Balance* (Washington, DC: Brookings Institution Press, 1987), 19.

<sup>13</sup> The president's military aide carrying the satchel known as the 'football' which contains details of the nuclear war plans is also trained to explain the options and their consequences. Until the tail end of the Cold War, U.S. military planners refused access to the "football" to civilians wishing to ensure the options

option that supposedly avoided Soviet cities in a bid to end a nuclear conflict before it escalated to all-out proportions would have been in for a big surprise. He would have discovered that all major Soviet cities had been obliterated due to ill-designed target plans.<sup>14</sup> Furthermore, we cannot predict an adversary's mindset, resolve, wartime aims and game plan if nuclear war erupts.<sup>15</sup> We do not even know what leaders in Moscow and Beijing were thinking during past Cold War crises involving U.S. attempts to threaten nuclear use to coerce them.<sup>16</sup> It would be foolhardy in the extreme to presume that we could anticipate President Vladimir Putin's, President Xi Jinping's or Leader Kim Jong-un's nuclear behavior in wartime.

- Warfighters believe victory is possible in nuclear war and a "victory" that leaves tens of millions of American civilians dead is considered by some to be acceptable under some circumstances.<sup>17</sup> This view is stunning in its cavalier

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outlined in it matched the actual war plans. See Bruce G. Blair, "Mad Fiction," *Non-Proliferation Review* Vol 21, No. 2, (2014): 3.

<sup>14</sup> Ibid. The imperfect execution of a launch order could have the same consequence. The entry of a single wrong digit into the launch computer during execution could have spelled the difference between striking opposing nuclear forces and destroying cities wholesale.

<sup>15</sup> It is difficult to envision how a nuclear warfighting strategy designed for dominating escalation would unfold. Perhaps a personal anecdote will help illustrate past internal thinking about how to achieve such dominance and thereby impose 'deterrence by denial.'

During my stints in SAC, the nuclear war plan called for a series of massive salvos punctuated by pauses over the course of two days. Regardless of which side struck first, the initial U.S. strike was to be directed against thousands of Soviet nuclear forces at the outset of strategic nuclear conflict. Then we would have suspended execution for several hours. If the Soviets did not throw in the towel during this firebreak, we would have launched a huge salvo against Soviet industrial facilities like steel plants and oil refineries. Pause again. No one expected the war to end there either, at which point we planned to escalate to the hilt and destroy all Soviet leadership facilities, including the Kremlin in the heart of Moscow.

In all our training and exercises these scenarios always ended in an all-out exchange, an apocalypse that would kill more than 100 million people on each side and leave our countries and much of Europe in total ruin. In all likelihood, soot rising into the stratosphere would block out the sun for years and lower the global temperature to a level that would cause frosts during the growing season and therefore starvation of many more. Despite our attempted preparations for limiting escalation at some point short of all-out nuclear war, nobody I knew in the operations world believed it was realistic to terminate a conflict on terms favorable to the United States, in part because of the vulnerabilities, weaknesses and likely early collapse of the U.S. post-attack nuclear C3I networks. For 24 hours after the onset of the conflict, the last-ditch airborne command system would operate largely in the dark, unable to orchestrate a coherent strategy of phased escalation keyed to Soviet behavior. After 24 hours, the system would cease functioning and no leader would have been able to direct U.S. nuclear forces to coherent national purpose. Also, de-classified Soviet documents show clearly that this U.S. strategy of "escalation dominance" was completely out of sync with Soviet nuclear strategy and that escalation to full-scale nuclear war was almost inevitable. See documents at the Nuclear Security Archives under William Burr's curation, including William Burr and Svetlana Savranskaya, eds, "Previously Classified Interviews with Former Soviet Officials Reveal U.S. Strategic Intelligence Failure Over Decades," *The National Security Archive*, September 11, 2009, <https://nsarchive2.gwu.edu/nukevault/ebb285/index.htm>.

<sup>16</sup> Betts, op. cit., 18.

<sup>17</sup> See Colin S. Gray and Keith Payne "Victory is Possible," *Foreign Policy*, No. 39 (Summer 1980): 14-27; and interview with Charles Kupperman (current U.S. Deputy National Security Advisor) in Robert



attitude toward human suffering and citizens of a democratic polity would doubtless categorically reject any such definition of victory. Underlying this warfighter's view are two controversial assumptions usually kept hidden from public view: (1) the big advantage in gaining an upper hand in warfighting goes to the side that can pull off a massive surprise strike against vulnerable opposing nuclear forces and (2) losing that advantage can be partially offset by launching one's own vulnerable forces on warning before they are destroyed on the ground by the side that jumped the gun. These tactics are potential catalysts for igniting a nuclear war by fear, miscalculation or misinformation. But both remain central features of the U.S. (and Russian) nuclear posture.

- Warfighters contend that asymmetries in nuclear capabilities such as so-called low-yield weapons may be exploitable by an adversary such as Russia. But history is not kind to this assertion. The top scholars of Cold War history have not found a single example of an effective Soviet nuclear threat during a crisis. Indeed, these threats were counterproductive.<sup>18</sup> The overall balance of strategic capabilities was far more influential than any asymmetry in specific types of nuclear weapons. Furthermore, this history also shows that although U.S. presidents regularly played nuclear brinkmanship with the Soviets and Chinese, they relied most on incautious risk-taking and political resolve rather than any assessment of the nuclear balance.<sup>19</sup>

If Russia used a “low-yield” weapon or two in a conventional conflict in a bid to “escalate to de-escalate,” chances are it is losing that conflict. It is their conventional inferiority that drives them to consider such use. There is no evidence that the Russians consider a “yield gap” to be exploitable and in any case the United States possesses ample countervailing weapons.

The U.S. would have three basic choices in response. It could continue to win the conventional war, because one or two Russian nuclear weapons will not fundamentally change the course of battle, and keep the ball of nuclear escalation in Russia's court. Or the U.S. could respond by using one or two of its own “low-yield” weapons, of which it already possesses many hundreds. Or a risk-prone U.S. president could respond with a high-yield weapon – our own version of “escalate to deescalate.” If the Russians believe in this doctrine, they must surely recognize that nothing prevents an adversary from playing the same game, upping the ante and putting both sides on a path of further escalation toward full-scale nuclear war. The final step on the escalation to de-escalate ladder would be an all-out strike resulting in massive destruction. But all these steps are the inventions of armchair nuclear theorists whose imaginations have outrun the realities of C3I and elided the enormously high risk that a nuclear conflict once started would rapidly spin out of control. Every Russian I have discussed this with understands

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Scheer, *With Enough Shovels: Reagan, Bush, and Nuclear War* (New York: Random House, 1982), 130-31.

<sup>18</sup> Betts, *op. cit.*, 218.

<sup>19</sup> *Ibid.*, 13.

full well that the risks of “escalate to de-escalate” outweigh any conceivable advantage. This doctrine is a weak reed on which to hang our weapons programs.

Indeed, it is also a severe liability for Russia, which has strived with considerable success to escape its reliance on the early first use of nuclear weapons by developing viable non-nuclear options. Enormous effort and resources have been invested in a “hybrid-warfare” doctrine and implementing tools designed to paralyze critical civilian infrastructure in the West. Cyber, special operations, and conventional forces would attack civilian energy, communications, financial and transportation grids with the aim of galvanizing people to demand a cessation of conflict with Russia. This sophisticated and potent capability has allowed Russian planners to put nuclear “escalate to de-escalate” on the back burner.

- Warfighters believe vulnerable forces can contribute to “escalation dominance” by planning and enabling them to be launched quickly on warning if sensors report an incoming attack, despite the grave risks entailed of triggering a nuclear war on the basis of false warning due to human or technical mistakes, or the corruption of early-warning data by cyber intrusion.<sup>20</sup>
- And last, a warfighting strategy derives U.S. strategic requirements from the size of opposing nuclear forces, even though this approach spurs arms racing that once led the United States to deploy nearly 30,000 nuclear weapons aimed at 16,000 targets in the Soviet bloc. Throughout the Cold War, and to this day, U.S. strategic forces have been primarily aimed at opposing nuclear forces.<sup>21</sup> Warfighters sought and still seek far more capacity for destruction than just being

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<sup>20</sup> The United States experienced several false alarms during the Cold War that brought it close to the brink of inadvertent nuclear war with the Soviet Union, but none rose to the level of presidential notification in real time. In recent years, however, ambiguous ballistic missile threats have resulted on multiple occasions in real-time notifications of the president and the initiation of the early stage of launch authorization procedures. These alarms have stemmed from the widespread proliferation of ballistic missiles around the world, the lack of adequate pre-launch notification agreements and the advent of ballistic and cruise missile maneuvering technology that renders problematic the prediction of impact points and arrival times. (Russia has also experienced false alarms in recent years, typically caused by Chinese launches). Cyber vulnerabilities compound the risks. Critical C3I electronic components are suspect and cannot be certified as ‘bug-free’ throughout the early-warning network and chain of nuclear command down to the level of components in individual warheads.

<sup>21</sup> I estimate that the current nuclear war plans against the countries of interest (Russia, China, and North Korea) specify almost 1,500 aimpoints (including 900 primary and 600 secondary) including 100 aimpoints in the greater Moscow metropolis. (I assume Iran and Syria were targeted for much of this decade with about 50 aimpoints in each country. They quite possibly have been removed from U.S. nuclear war plans as a result of Iran’s accession to the Joint Comprehensive Plan of Action and Syria’s relinquishment of the bulk of its chemical weapons.) Most of the primary aimpoints consist of opposing nuclear forces and other weapons of mass destruction. During the Cold War, planners designated 400 aimpoints in the Moscow area, including one aimpoint (the Pushkino Anti-Ballistic-Missile battle management facility) in the Moscow suburbs that planners assigned 69 nuclear warheads to strike. See Bruce G. Blair, “Trapped in the Nuclear Math”, *New York Times*, June 13, 2000. This op-ed instigated the first and only joint Democratic-Republican Senate hearing to receive a highly classified SIOP briefing. The briefing was given at the Capitol by the then-head of Strategic Command Admiral Richard W. Mies and the Under Secretary of Defense Walter B. Slocombe. The source of the 69 warheads assigned to Pushkino is a former senior officer in Strategic Command.

able to destroy in retaliation a nuclear aggressor's leadership, economy and other mechanisms of state control and power.

### **Implications for Congress' Nuclear Agenda**

This committee and Congress as a whole are being asked to fund a wholesale makeover of our nuclear forces at a cost of at least 1.7 trillion dollars. The time has therefore come to choose between these competing nuclear worldviews. Should expansive notions of warfighting continue to drive our nuclear investments and posture, or should we pivot to a deterrence posture that reflects mainstream American thinking and values about the narrow and limited role of nuclear weapons and leave warfighting to conventional weapons?

The implications of this choice are profound. If you choose the mainstream path, the Congressional agenda would look like the following:

- Seek to codify the principle that deterrence does not countenance initiating nuclear attack and, therefore, ensure the adoption of NFU. Congress also has a role in supporting diplomatic and military-to-military efforts to reassure allies that the United States remains fully committed to and capable of (1) extending deterrence to defend them against conventional aggression using non-nuclear U.S. forces and (2) deterring nuclear aggression against them by maintaining U.S. nuclear capabilities to respond to any Russian, Chinese or North Korean nuclear strike. NFU will apply whether the United States is under attack by non-nuclear weapons or U.S. allies are under attack. The same rule applies to all.
  
- Eliminate destabilizing weapons systems and operational plans associated with warfighting. This means cancelling weapons the warfighters incorrectly claim are needed for managing nuclear escalation – namely, the “low-yield” submarine-launched ballistic missile warheads and the cruise missile weapons in the pipeline. There is no need for these weapons in light of the infeasibility of maintaining control over escalation during a nuclear conflict. In any case, there already exists thousands of lethal conventional and “low-yield” nuclear weapons sitting in the current U.S. stockpile.<sup>22</sup>

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<sup>22</sup> The United States already possesses about 1,000 weapons (air-launched cruise missiles and gravity bombs) that can be dialed down to the same 5-kiloton yield of the new sea-launched ballistic missile (SLBM) “low-yield” warhead, or even lower. The aggregate explosive power of this stockpile of existing “low-yield” weapons is equal to all the bombs dropped by the United States and Great Britain on Europe and Japan during World War II. The 600 cruise missiles are also more accurate than the new sea-launched ballistic missile (SLBM), and the 500 gravity bombs will also become more accurate than the new SLBM as they are modified with tail fins rendering them a precision-guided munition. The gravity bombs also can be dialed down to 300 tons of explosive yield, or one-twentieth of the power of the Hiroshima bomb, compared to the new SLBM warhead's yield of one-third of the Hiroshima bomb. Furthermore, the United States possesses thousands of conventional weapons such as the Tomahawk IV cruise missile that are more accurate than the new SLBM weapon and capable of destroying the full spectrum of targets including very hard missile silos. The exception to this assessment is deeply buried targets such as command posts inside mountains; conventional weapons cannot destroy them with high confidence but they can severely degrade

- Scrap the vulnerable, destabilizing silo-based Minuteman missile force. In projecting a preemptive first-strike threat to Russian land-based rockets and C3I and posing tempting targets for Russian or other missiles, Minuteman missiles undermine mutual restraint and encourage preemption by an adversary during a crisis. The claim that this force of 400 missiles in silos adds redundancy and stability to a nuclear Triad succumbs to the fact that its vulnerability represents a weakness, not a strength. In fact, this third leg undermines the Triad's overall stability.<sup>23</sup> This weakness forces the other legs to compensate in ways that degrade their own capabilities. That the silo-based ICBM force is kept on hair-trigger alert and runs the risk of triggering a mistaken launch is no less a liability. It depends on quick launch for its survival, a tactic that would exert tremendous pressure on the entire nuclear chain of command to act at warp speed. That includes the president, who could be rushed into a decision authorizing their use on the basis of false warning.<sup>24</sup> Many of the close calls for accidental nuclear war have come because of the systemic pressure on leaders to use vulnerable land-based forces before they can be destroyed. Last, the Minuteman force is inflexible

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their functionality by destroying their entrances and disabling their external communications. Deeply protected radio transmitters, such as the Very Low Frequency transmitter inside Kozvinski Mountain where the Russian Strategic Rocket Forces maintain their last-ditch semi-automatic 'Dead Hand' doomsday device, are less vulnerable to conventional strikes and may require a nuclear strike to disable. Numbers and yields of U.S. low-yield nuclear weapons from personal communication with Hans M. Kristensen, February 15, 2019.

<sup>23</sup> The related claim that the 400 silos present a very large target set for the attacker to destroy is also misleading in that (a) the 40 primary launch centers in the missile fields are even more vulnerable than the silos and (b) the destruction of the three main Minuteman bases would severely degrade the ability to maintain the missiles and launch centers in the field beyond a day or so.

<sup>24</sup> Under the current launch-on-warning authorization and execution protocol, the timelines imposed at all levels are extremely compressed. The early-warning teams in Colorado and Nebraska are expected to declare their level of confidence that North America is under attack within three minutes. The president and his/her key advisors must be notified immediately if confidence is medium or high. The one and only "talker" in the emergency missile attack conference is the head of the Strategic Command (or the duty officer if the four-star head or his deputy are unavailable), who must brief the president on the nature of the enemy attack, the president's response options and their consequences and his recommendation. This briefing may have to be given in less than a minute, at which time the president would have between 5-12 minutes for "deliberation" and consultation with advisors before deciding whether and how to respond. (In exercises with presidential stand-ins the decision-maker is typically "jammed" by the military commanders to quickly approve a nuclear counter-strike.) A few seconds are then allotted for the president to authenticate his/her identity with the Pentagon "war room" or its alternate, using so-called Gold Codes, whereupon the war room takes a couple of minutes to prepare and transmit the launch order (replete with authorization and unlock codes) through multiple communications channels directly to the individual commanders of the Minuteman silo-based missiles, strategic bombers and submarines. These commanders would be under intense pressure to fire quickly after receiving the order which has fewer characters than a 'tweet.' Minuteman missiles are on hair-trigger readiness meaning they would fire instantly upon receiving several short bursts of computer code from underground or airborne launch crews. The underground crews are required to be able to fire up to all 50 missiles in their squadron within three minutes. The submarine crews would take an additional 12 minutes to begin firing their missiles out of undersea tubes. In short, this entire checklist-driven process must be executed within about 20 minutes. Once the president gives the order, missiles would start flying out of underground silos within approximately five minutes. There is no way to recall them. See Dave Merrill, Nafeesa Syeed and Brittany Harris, "To Launch a Nuclear Strike, President Trump Would Take These Steps," *Bloomberg*, January 20, 2017, <https://www.bloomberg.com/politics/graphics/2016-nuclear-weapon-launch/>.

and is not needed to cover the targets in the current U.S. nuclear war plans.<sup>25</sup>

- Reallocate funding for programs geared to supporting launch-on-warning to C3I programs designed to increase the time available to the president to decide whether and how to respond to enemy attacks. Decision time should be increased from the current time frame of minutes to a much longer period measured in days, weeks or months.
- Greatly scale back the current nuclear weapons modernization plan while scaling up programs to rectify the dire condition of our nuclear C3I systems.

Let me elaborate on these last two implications of pivoting to a true deterrence policy, beginning with fixing the C3I system.

### **The Urgency of C3I Modernization**

Vulnerabilities and other deficiencies in this system have long been the bane of any nuclear strategy.<sup>26</sup> It has certainly been an Achilles' heel for warfighting which requires at minimum a sophisticated high-performance and enduring C3I system. But it has also been the weak link in basic deterrence. During the Cold War, those intimately familiar with its deficiencies doubted whether the United States could respond at all to Soviet nuclear strike, including a small-scale surgical strike aimed at key C3I assets, even though the pre-delegation of presidential launch authority to dispersed senior military commanders was widespread.<sup>27</sup>

After the Cold War ended, the C3I system was allowed to atrophy over the subsequent decades of neglect except for an infusion in the 1980s. Now the bill has come due. The vintage system is in terrible shape.<sup>28</sup> Fixing it must therefore become the top priority of

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<sup>25</sup> SSBNs and bombers by comparison do not have to fly over Russia to strike targets in China, North Korea and Iran, and thus offer much greater flexibility in their target programming.

<sup>26</sup> The word 'system' masks what in reality is a patchwork of more than 100 distinct mostly obsolete subsystems cobbled together to form a complex, almost unfathomable hodgepodge that often requires emergency workarounds to keep operational and that regularly fails to perform satisfactorily in exercises.

<sup>27</sup> This acute vulnerability (which existed on the Soviet side as well) was a greater source of instability than the vulnerability of the strategic forces themselves throughout the Cold War. It led to the extensive pre-delegation of presidential launch authority to senior military commanders. Every president from Dwight Eisenhower to Ronald Reagan signed pre-delegation instructions. I once worked for a SAC officer who was promoted to a senior position and given pre-delegated authority to order the execution of the full SIOP under conditions of communications outage with the president (or legal successors) and confirmed nuclear detonations on U.S. soil. A general with pre-delegated authority was always onboard "Looking Glass," the most survivable high-level command post in the nuclear C3I system, but the level of confidence was low that even this "last-ditch" link to the surviving nuclear forces would survive a nuclear war long enough to successfully transmit the "go-code" (execution message). (Pre-delegation was rolled back in the early 1990s). C3I vulnerability also bore considerable responsibility for the heavy U.S. reliance on launch on warning and for the compressed timeline of the presidential nuclear-use authorization procedures described earlier. See Bruce G. Blair, *Strategic Command and Control* (Washington, DC: Brookings Institution Press, 1985); *Logic of Accidental Nuclear War* (Washington, DC: Brookings Institution Press, 1993).

<sup>28</sup> The obsolescence of critical parts is illustrated by the fact that the ICBM launch control computers use 1950s technology in a time-sharing protocol that was responsible for the black out in 2010 of 50 ICBMs for

our nuclear modernization plans regardless of the nuclear posture pursued in the future. C3I deserves to take precedence over building more weapons. If C3I fails, nothing else matters.<sup>29</sup>

This project will need to be comprehensive in providing for continuity of government including protection of successors and robust military command and communications at all levels. A critical deficiency is the C3I system's lack of endurance, which severely shortens presidential decision time. Under the stress of a large-scale nuclear and cyberattack it can be expected to collapse by the 24-hour mark if not earlier, while SSBNs at sea – the backbone of the survivable U.S. strategic forces – could survive for months. This gap needs to be closed without resorting to pre-delegation.

By extending decision time well into a post-attack environment, a president would be better equipped to reassess the situation, determine national objectives and intelligently and deliberately direct the operations of surviving forces if deterrence should fail. This would require capabilities to reconstitute an elaborate 'thin-line' C3I network.

This is a daunting but feasible project that will need to address myriad emerging threats ranging from cyber to anti-satellite warfare to stealthy vehicles capable of severely degrading, perhaps even decapitating, today's C3I system. It will be expensive. The effort will require increasing our current annual spending on C3I from \$8 billion to perhaps \$12 billion or more, even if we substantially reduce the size and diversity of our nuclear forces and pivot to a deterrence-only posture.<sup>30</sup>

A robust enduring C3I system would improve situational awareness and enable the president to intelligently choose a response but this is not to suggest that a strategy of escalation control and dominance could be supported regardless of the scale of investment. The basic challenge of the C3I system is to underwrite assured retaliation. Anything much more sophisticated than that is beyond realistic aspiration. Exquisite warfighting is the stuff of armchair theory that has scant relevance to the real world.

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almost an hour, during which time the missiles could not be monitored, launched on authorized command or prevented from unauthorized launch. The elimination of the ICBM force would significantly simplify C3I modernization. Noah Shachtman, "Communication with 50 Nuke Missiles Dropped in ICBM Snafu," *Wired*, October 26, 2010, <https://www.wired.com/2010/10/communications-dropped-to-50-nuke-missiles-in-icbm-snafu/>.

<sup>29</sup> In the recent words of Admiral (ret.) Dennis Blair, "Without reliable and secure surveillance and communications systems, our leaders may find themselves well-armed, but blind and dumb. A weakness in our nation's sensing and communications systems undermines the entire deterrent." Admiral Dennis C. Blair (ret.), "Why the US must accelerate all elements of space-based nuclear deterrence," *Defense News*, February 7, 2019, <https://www.defensenews.com/opinion/commentary/2019/02/07/why-the-us-must-accelerate-all-elements-of-space-based-nuclear-deterrence/>.

<sup>30</sup> Estimated annual spending on C3I from Congress of the United States, Congressional Budget Office, "Year-by-Year Data Underlying CBO's Estimate of Nuclear Costs," *Congressional Budget Office*, January 24, 2019, <https://www.cbo.gov/publication/54914>.

## Future Nuclear Force Structure Under True Deterrence

Regarding the U.S. nuclear modernization plan, a pivot toward true deterrence would result in the elimination of most of the four thousand weapons in the current active stockpile including the vulnerable and destabilizing silo-based missile force deployed in the western Plains states. It would also produce savings of many hundreds of billions of dollars (a chunk of which should be re-allocated to fixing C3I).

Only about one-half of the planned fleet of 12 new Columbia-class SSBNs would need to be built.<sup>31</sup> All the rest of the weapons programs dedicated to nuclear missions could be cancelled: 642 new land-based missiles (Ground-Based Strategic Deterrent), 400 of which are slated for deployment in old vulnerable silos; 100 new stealthy B-21 bombers (putting aside any built strictly for conventional missions, which the Air Force contends would actually justify building all 100); 75 older B-52s slated for refurbishment (which the Air Force also contends would be needed for conventional missions); plus hundreds of new nuclear cruise missiles as well as those new “low-yield” weapons meant to make nuclear weapons more usable at an early stage of conflict. None of these are needed on top of a small fleet of SSBNs.

The analysis behind these conclusions is grounded in the Pentagon’s own targeting requirements. If the United States would acknowledge that a nuclear war cannot be won, only deterred, and concentrate solely on deterring such a war, then we would need only about five or six new SSBNs. The firepower on board these survivable boats would be sufficient to destroy in retaliation the vital elements of state control, power and wealth in Russia, China and North Korea. While reduced by 75 percent, this threat of “assured destruction” could still hold at risk many dozens of the adversaries’ major cities and thus deter any conceivable nuclear attack by a rational adversary against the United States or its allies.

The Pentagon’s current target requirements assign U.S. strategic forces to strike an estimated 905 primary aimpoints in those countries, of which 450 are war-sustaining industries and leadership.<sup>32</sup> This target set of 450 can be reliably held at risk with a smaller and far more secure and affordable nuclear force. Roughly speaking, these missions could be carried out successfully using less than one-eighth of the firepower in the current U.S. arsenal. Four new SSBNs deployed survivably at sea would alone be capable of responding at the required scale of destruction. And in light of the fact that most of the targets are vulnerable to precision-guided conventional weapons and cyber attack, the at-sea SSBN force could be reduced to three.<sup>33</sup> A fleet of 5-6 SSBNs could maintain three at sea at all times.

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<sup>31</sup> Blair, “End of Nuclear Warfighting,” *op. cit.*, 7.

<sup>32</sup> *Ibid.*

<sup>33</sup> I conservatively estimate that at least one-third of the aimpoints could be severely damaged by U.S. conventional and cyber weapons deployed currently. Financial networks and other critical infrastructure could be easily disabled with non-nuclear weapons. *Ibid.*, 84.

This shift of posture to a monad comprised of SSBNs does raise legitimate concern about their long-term invulnerability. The fear that breakthroughs in intelligence, surveillance and reconnaissance (ISR) and big data analysis tied to advances in anti-submarine warfare might render the oceans transparent and put the U.S. SSBN force at risk is likely a long way off. Informed experts heavily discount this prospect. (The U.S. already puts Russian and Chinese SSBNs at considerable risk due to high-performance ISR and anti-submarine warfare capabilities.)

However, an insurance policy may be warranted. One option worth considering involves modernizing the strategic bomber force and its weapons payloads to form a nuclear reserve force. This hedge would consist of 40 bombers (half new B-21s and half refurbished B-52s) kept off alert with 450 nuclear payloads in national storage unless and until an emergency involving the SSBN force dictated increasing the bomber force's readiness from reserve to full-alert status.<sup>34</sup>

As a consequence of shifting to a primary deterrent force consisting of 5-6 SSBNs backed up by a reserve force of 40 bombers, U.S. strategic nuclear arms could be reduced to a level of approximately 1,000 total U.S. nuclear weapons – 640 operationally deployed submarine warheads and 450 bomber weapons stored in reserve.<sup>35</sup> This stockpile would be augmented by highly lethal U.S. conventional capabilities such as Tomahawk IV cruise missiles, which could provide non-nuclear options to minimize non-combatant casualties in urban areas.

About 1,000 weapons capable of delivering the equivalent of 20 thousand Hiroshima bombs, which could destroy the key elements of state control, economy and leadership in Russia, China, and North Korea, would surely be deemed 'more than enough' to meet reasonable deterrence requirements. This pivot to true deterrence reinstating the primacy of "assured destruction" over warfighting would allow the United States to reduce its warhead stockpile by 75 percent, cut the number of weapons types by half, and require a much less costly warhead-production and maintenance complex in terms of weapons surveillance, warhead life extensions and possible plutonium pit production. Putting the U.S. complex on a sustainable footing would finally be within reach if broad bipartisan support can be mustered.

If the current warfighting strategy is kept intact against the advice of this witness, the modernization program still can and should be scaled down. It is a little-known fact that the United States today has far greater nuclear firepower than is needed to meet the Pentagon's own targeting requirements for Russia, China and North Korea combined, and in future these same requirements could be fully satisfied with a fraction of the strategic forces now planned.<sup>36</sup>

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<sup>34</sup> Ibid, 10. The main national storage site is located near Albuquerque. Strategic bombers are currently deployed to three main bases in North Dakota, Louisiana and Missouri and could be dispersed to multiple bases in a crisis.

<sup>35</sup> Ibid, 7, 10.

<sup>36</sup> The Pentagon could hold its complete target set at risk using only ten or fewer SSBNs, dispensing altogether with the silo-based Minuteman missile force and the strategic bomber fleet. This number of



## Conclusion

For more than half a century a general understanding of the fundamental purpose of nuclear weapons has been rooted in our civic institutions and body politic.<sup>37</sup> These terrible weapons are for deterrence – the mission is to dissuade attacks that cannot be physically prevented. Warfighting, on the other hand, should be left to other weapons.

Unfortunately, these “maxims” did not prevail within the professional nuclear-planning community, which pursued nuclear-warfighting goals such as “escalation dominance” and, in doing so, increased the risk of nuclear war erupting by design or inadvertence. I respectfully propose that we return to first principles and design a nuclear posture that is smaller but more survivable and stable than today’s posture and the one currently planned.

This proposal may enjoy popular support but it goes against the grain of insider thinking. The major general in charge today of maintaining all U.S. Minuteman forces in launch-ready condition recently referred to this force’s “maturing identity as a competing force, rather than a deterring force.”<sup>38</sup> For over 50 years, this warfighting mindset has not only provided esprit de corps to nuclear operations personnel but also has driven the size, posture and war plans well outside and beyond the mainstream public and political understanding of the proper role of nuclear weapons. It is time for Congress to return our nuclear thinking and policy to the basic principles that gelled in American society a long time ago. The nation needs only a small but secure second strike force whose sole purpose is to deter. It does not need to continue its costly, futile and destabilizing preparations to prevail in a nuclear conflict.

The cornerstone of U.S. deterrence policy should be to adopt No First Use and deploy only survivable forces and C3I systems capable of inflicting unacceptable damage in retaliation to any enemy nuclear attack.

Assured destruction is an unsatisfactory solution compared to a world without nuclear weapons, but it offers a more stable and reliable approach to nuclear security than the infeasible and risk-prone alternative posture of warfighting. And a No First Use policy is a prerequisite for any serious pursuit of a nuclear-weapon-free world.

Thank you again for inviting me and I look forward to your questions.

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SSBNs alone would suffice to cover the 900-plus nuclear and other weapons of mass destruction, war-sustaining industry and leadership primary aimpoints in the current warfighting operations plans. Ibid, 9.

<sup>37</sup> I am referring to the prevailing view in general public discourse and the major institutions of American society – the media, academia, Congress, etc.

<sup>38</sup> Major General Ferdinand B. Stoss III, “The Proud Heritage of the ICBM Mission,” *Air Force Missileers Newsletter* Vol. 26, No. 4 (December 2018): 8. Also see Major Alex Rich, “Why I Don’t Deter (and Never Did),” *Air Force Missileers Newsletter* Vol. 26, No. 4 (December 2018): 8.