

# Strengthening Deterrence and Reducing Nuclear Risks: The Supplemental Low-Yield U.S. Submarine-Launched Warhead



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# Strengthening Deterrence and Reducing Nuclear Risks: The Supplemental Low-Yield U.S. Submarine-Launched Warhead

This latest monograph in the Arms Control and International Security Paper Series – produced by the State Department’s Bureau of Arms Control, Verification and Compliance, and with an introduction by Assistant Secretary Ford – explains U.S. thinking behind the supplemental low-yield W76-2 Submarine-Launched Ballistic Missile (SLBM).

## Introduction: U.S. Nuclear Innovation for Deterrence

The [2018 Nuclear Posture Review](#) (NPR) outlined several ways in which the U.S. Government is working to meet its deterrence needs, and those of its Allies, through prudent and thoughtful answers to the challenges presented by the rapid deterioration of the global threat environment that has occurred since the publication of the previous NPR in 2010. Coming as it did at the outset of a period in which the United States was beginning to throw off a generation of post-Cold War complacency about great-power competition and explicitly to embrace competitive strategy in reaction to the provocations and military build-ups being undertaken by the Russian Federation and the People’s Republic of China (PRC), the 2018 NPR was a seminal document. It both highlighted some fundamental continuities in nuclear strategy that have been shared by successive U.S. administrations, and outlined modest innovations that had become necessary by these changing circumstances.

Some of the innovations we announced in the NPR took effect immediately, such as the greater clarity we brought to U.S. declaratory policy by specifying that the “extreme circumstances” under which the United States does not *a priori* rule out the possibility of using nuclear weapons include the threat of “significant, non-nuclear strategic attacks” (SNNSAs). These attacks, the NPR made clear, “include, but are not limited to, attacks on the U.S., allied, or partner civilian population or infrastructure, and attacks on U.S. or allied nuclear forces, their command and control, or warning and attack assessment capabilities.” This change did not expand the range of circumstances in which the United States might use nuclear weapons. Rather, it clarified the strategic nature of the adversary actions that might elicit an American nuclear response. We also made clear that we reserve the right to modify U.S. nuclear declaratory policy in any way “that may be warranted by the evolution and proliferation of non-nuclear strategic attack technologies and U.S. capabilities to counter that threat.”

This declaratory policy clarification was necessary because ours is an age in which non-nuclear capabilities have the potential to wreak havoc in some respects comparable to a nuclear attack, or to directly degrade the nuclear forces upon which we and our Allies rely in order to deter nuclear or large-scale conventional aggression. It is also, alas, an age in which both Russia and the PRC are developing just the sort of capabilities that such SNNSAs would require. To some extent, a commitment to deterring SNNSAs may have been *de facto* U.S. policy for many years under prior statements that the United States would only consider nuclear weapons use under “extreme circumstances.” No previous U.S. administration, however, had been willing to offer any insight into what such longstanding comments about “extreme circumstances” actually meant. In a global environment of great power competition and accelerating threats in emergent battlespace domains, however, we opted for honesty and for clarity in order to enhance deterrence and reduce the risk of miscalculation.

Some of the other innovations of the 2018 NPR will not materialize for some time. Our development and deployment of a “modern, nuclear-armed sea-launched cruise missile” as called for in the NPR, for instance – a capability needed to sustain deterrence in the face of modern threats by replacing the Tomahawk nuclear-equipped, sea-launched cruise missile system that was unilaterally retired by the Obama administration – will take years. Our ongoing modernization of the legacy capabilities of the basic U.S. nuclear “Triad” of land-based missiles, heavy bombers, and sea-based ballistic missiles is now well underway, but it will also take years to complete.

Other innovations in current U.S. nuclear weapons-related policy do not represent adjustments in strategy or capability but are instead diplomatic initiatives. These include our inauguration of a new, security-focused multilateral dialogue aimed at exploring potential real-world answers to future nuclear disarmament challenges – the “Creating an Environment for Nuclear Disarmament” initiative – and President Trump’s pathbreaking call for an entirely new, trilateral arms control framework involving both Moscow and Beijing to head off the nuclear arms race that might otherwise be sparked by the Russian and Chinese nuclear buildups currently underway.

In February 2020, however, the United States announced that it had completed another piece of the nuclear weapons policy agenda spelled out in the 2018 NPR: the fielding of a low-yield device on U.S. submarines: the W76-2 warhead. As the NPR made clear, this modification of an existing submarine-launched ballistic missile (SLBM) warhead had been made necessary by the development of new threats – specifically, by Russia’s fielding of a broad range of non-strategic nuclear capabilities in search of coercive advantages at lower levels of conflict. (The NPR did not explicitly mention PRC capabilities in this context, but a similar point can be made about them as well.)

Both Moscow *and* Beijing have worked hard in recent years to develop the ability to confront the United States in a crisis with sub-strategic nuclear threats. By design, these capabilities threatened to present us with an insuperable problem in the early stages of an escalating conflict. If they undertook low-yield nuclear use limited to the theater of conflict – something apparently embraced by Russian doctrine, for instance, and for which Russian forces train – we must ensure that we do not have to choose between mounting a greatly disproportionate nuclear attack in response, or allowing Russian or PRC aggression to accomplish its objectives.

An asymmetry of options would not only present potential escalation problems in wartime but, more importantly, also pointed to a potential “failure mode” for peacetime deterrence. To the degree that either Russia or the PRC calculated that the United States would not possess assured proportionate response options in such circumstances and might thus capitulate out of fear of the catastrophic consequences that might follow, the efficacy of our nuclear deterrent would be undermined, and aggression – and great power war – would become more likely.

This was the dilemma to which the 2018 NPR proposed a partial solution, in the form of the supplemental low-yield SLBM warhead. And it was, in my view, a sound choice.

Having gained much experience with small, forward-deployed nuclear weapons during the Cold War, we knew full well how such deployments ultimately tended to be more destabilizing than stabilizing. We learned, after much study and NATO wargaming in the late 1970s and early 1980s, that tactical weapons deployed far forward in

the battlespace turned out to offer little deterrence value, were vulnerable to being overrun by the adversary's conventional forces, and threatened to create terrible command-and-control – or loss of control – problems in wartime. (That's why we strongly urge other nuclear weapons possessors, such as Pakistan and India, *not* to continue down the dangerous path of small, forward-deployed weapons.) So even as the Russians and the PRC built up their non-strategic arsenals, we were determined *not* to return to the days of forward-deployed U.S. ground-based systems such as nuclear artillery, nuclear land mines, or the short-range "Davy Crockett" vehicle-mounted missile.

Instead, we opted to give ourselves a low-yield option that *wasn't* forward deployed, and thus demonstrably avoided the preemption, command-and-control, and other problems presented by Davy Crockett-style weaponry.

By providing an additional, highly effective low yield response option in the event of Russian or Chinese theater nuclear use, we make such use both less tempting and less likely. This effectively *raises* the adversary's nuclear threshold, as well as making it less likely that deterrence will fail in the first place.

The supplemental low-yield SLBM capability thus represents an important step in support of nuclear deterrence, and in reducing net nuclear risks. In sharp contrast with the provocative and destabilizing Russian and Chinese nuclear buildups currently underway, moreover, this is a step that the United States has taken without any increase in the overall number of U.S. nuclear weapons. Additionally, the low-yield SLBM does not circumvent the New START Treaty. It is, in short, a success story.

To further illuminate many of the details of the U.S. reasoning behind the W76-2 in a clear public forum, I am pleased to offer the reader this paper prepared by the State Department's Bureau of Arms Control, Verification and Compliance. It is an excellent addition to our *Arms Control and International Security* paper series, and I hope you enjoy it.

– Dr. Christopher Ford

*Assistant Secretary of State*

*Performing the Duties of the Under Secretary for Arms Control and International Security*



## The W76-2 Low-Yield Option

prepared by the  
Bureau of Arms Control, Verification and Compliance  
U.S. Department of State

In February 2020, the United States announced the deployment of submarine-launched ballistic missiles (SLBMs) armed with the low-yield W76-2 warhead. In the 2018 Nuclear Posture Review (NPR), we identified the low-yield SLBM as a low-cost and expedient means for strengthening deterrence and assuring our allies in the face of a more threatening strategic landscape. This supplemental capability is fully compliant with our arms control obligations and does not require building and deploying more nuclear weapons or delivery vehicles. In an impressive display of strategic adaptability, the United States implemented this force structure modification in two years.

Yet the decision to lower the yield on a small portion of U.S. SLBMs has generated vociferous opposition in some quarters. Critics continue to argue that it makes nuclear war more likely and is uniquely dangerous. In other words, they assert that the United States is not acting as a responsible nuclear-weapon state by deploying the low-yield SLBM.

These are serious but incorrect allegations. Given our unique role in extending nuclear deterrence to over 30 other countries, our commitment to creating the conditions for nuclear disarmament, and our responsibility to prevent nuclear war, these allegations merit a thorough response.

In our judgement, the low-yield SLBM reduces the risks of nuclear war by reinforcing extended deterrence and assurance. To better illuminate why this is case, we need to first step back and review U.S. strategy for deterring limited nuclear attack, the alternative strategies, and how the low-yield SLBM fits into U.S. strategy. This context then enables an evaluation of the strategic and operational arguments against the low-yield SLBM.

### I. The Risk of Limited Nuclear Attack

The highest priority of U.S. nuclear policy is to deter potential adversaries from nuclear attack of any scale. Any use of a nuclear weapon against the United States and its allies would fundamentally alter the nature of a conflict. This is not solely a U.S. view, but one that NATO shares. U.S. strategy for deterring nuclear attack on the United States and our allies encompasses much more than nuclear weapons and military forces; however, nuclear weapons play a critical role, and it is necessary to elaborate on this role in more detail to set the context for the low-yield SLBM.

While we continue to posture our forces to deter large-scale nuclear attacks, the 2018 NPR also highlighted the importance of deterring limited nuclear attacks on allies and deployed U.S. forces – something both the Obama and Trump Administrations considered more likely than a “bolt-out-of-the-blue” attack. This deterrence requirement is not new, but it has taken on greater urgency in light of the return of great power competition, our assessment of Russian and North Korean nuclear strategy, and China’s continued military modernization, including the expansion of its theater- and strategic-range nuclear forces. China’s modernization also includes exploration of low-yield nuclear weapons.

For nuclear deterrence to be credible, we must also prepare to respond effectively, in ways that would achieve U.S. objectives and protect U.S. and allied interests, if deterrence were to fail. U.S. nuclear operations would adhere to the law of armed conflict. When it comes to limited nuclear attacks, the relationship between credible deterrence and effective response options is particularly important. If an adversary uses several nuclear weapons and has hundreds or thousands more ready for use, having a strategy to prevent further nuclear use will be an overwhelming objective for the United States. While some argue that planning for these types of scenarios makes them more likely to occur, the United States does not have

the luxury of putting in place a deterrence strategy that simply ignores the possibility that it may fail – that would be the very definition of best-case scenario planning. It would be irresponsible for the United States to extend global security commitments without accounting for the possibility that potential adversaries may resort to nuclear coercion in a military crisis. If the United States and its allies were unprepared to counter nuclear coercion, potential adversaries may conclude that a strategy of nuclear brinkmanship would succeed, both encouraging aggression and risking nuclear escalation in the ensuing conflict.

Thus, as long as the threat of limited nuclear attacks remains, the United States must have an effective strategy to deter such attacks.

U.S. strategy is best described as a counter to a limited nuclear war strategy: we aim to convince potential adversaries that any limited nuclear attack will fundamentally alter the nature of the conflict and fail to achieve its objectives. Further, such an attack will result in an American response that imposes unacceptable costs, risking catastrophic consequences. This strategy is intended to reduce potential adversaries' confidence in their ability to wage a successful limited nuclear war, strengthening deterrence and ensuring no adversary is tempted to cross the nuclear threshold.

To illuminate how the strategy works in practice, it is useful to first contrast it with two competing strategies the United States has rejected.

### A. Massive Retaliation Strategy

A massive retaliation strategy relies solely on the threat of a massive nuclear response to a nuclear attack of any size. Massive retaliation could take the form of either a massed response with many nuclear weapons or a response with a smaller number of weapons carrying very high-yield warheads. This is not a credible strategy for deterring Russia or China from employing a limited nuclear attack. Because these countries possess sophisticated, diverse and survivable strategic-range nuclear forces, there is a risk they would conclude that, if the United States only possessed massive response options, it would be unlikely to use them in response to a limited nuclear attack on allied territory, as doing so would invite retaliation against the U.S. homeland.

For example, if Russia used one or two nuclear weapons in Europe, the most effective strategy for limiting damage against the United States and its allies would be to reestablish nuclear deterrence, an objective for which massive nuclear retaliation would be disproportionate and ineffective. Thus, a massive retaliation strategy does not provide effective response options for meeting U.S. objectives after deterrence of a limited nuclear attack fails. It is not credible, and for that reason the United States has not had a massive retaliation strategy since President Eisenhower. There is too high a risk that potential adversaries would choose to test it in a crisis.

### B. Mirror Image Strategy

The second road not taken is to mirror the approach Russia has adopted. This strategy would essentially try to match Russia weapon-for-weapon at the non-strategic or theater-level. In other words, we would deploy up to 2,000 ground-, air-, and sea-based non-strategic nuclear weapons, for the purpose of defeating Russian general purpose and theater nuclear forces.

The perils and limitations of this strategy are numerous and obvious. Because the United States has taken steps to reduce the role of nuclear weapons in its national security strategy, we no longer possess the numbers and types of short-range nuclear weapons that this approach to deterrence calls for, and it would be massively expensive and take years to build an arsenal of non-strategic nuclear weapons of this scale. Fortunately, the United States has no need for a massive build-up.

Resource requirements to the side, this strategy is still flawed. It undermines extended deterrence and assurance by suggesting that if Russia uses nuclear weapons against U.S. and allied deployed forces, the United States will only respond in kind, granting the vast Russian homeland as a sanctuary as long as it does not fire nuclear weapons at the U.S. homeland. Qualifying extended deterrence in this way risks lowering Russia's nuclear threshold. It also evinces a dangerous overconfidence in the ability to control nuclear escalation, as if somehow the use of nuclear weapons on the battlefield, so to speak, reduces the likelihood of catastrophic nuclear escalation, making Europe "safe for limited nuclear war." Even the use of the term battlefield is misleading, a bad euphemism for the national territory of U.S. allies.

## II. Deterring Limited Nuclear Attack

In contrast to these alternatives, our strategy seeks to convince potential adversary leadership that it cannot predict the course of nuclear escalation because it will not be able to predict where, when, or how the United States will respond. They only know that a U.S. response will be effective and impose unacceptable costs, the consequences severe but ultimately incalculable ahead of time. The essence of our strategy is that the United States will have options for responding to nuclear attack at a time and place of its choosing, against assets that an aggressor values, and in a way that reinforces the broader U.S. and allied strategy and objectives in the war.

Too often, public discussion of this issue immediately fixates on “strategic” versus “battlefield” weapons and targets without sufficient attention to the overarching framework that guides how we evaluate nuclear force structure and targeting requirements. These excursions are typically laden with undefined jargon and miss the point of our strategy entirely: The leadership of any country that chooses to use nuclear weapons against the United States and its allies in a limited way should not feel confident that some high-value assets are off limits so long as they are not detonating weapons over U.S. territory.

We do not specify exactly how we would respond in standing declaratory policy. Instead, the United States would assess all the different elements of a response option, including the target or targets, through the prism of its objectives and the circumstances at the time. Much of this would hinge on the specific situation at hand, but the 2018 NPR does provide insight into our guiding principles:

- Reestablish deterrence: If the country that used nuclear weapons had many more survivable weapons, preventing further nuclear attacks would be an objective. A failure to reestablish nuclear deterrence would likely result in more nuclear attacks on U.S. forces and allies (unless we capitulated). Thus, we would consider the adversary’s intentions in conducting the limited nuclear strike and then construct a response option that conveys our resolve to the adversary while also signaling restraint in U.S. aims and military operations. Demonstrating both resolve and restraint would be necessary in order to convince the adversary that using nuclear weapons again is its worst option. The United States would

seek to reestablish deterrence at the lowest level of damage possible.

- Integrate nuclear and non-nuclear military operations: U.S. nuclear response options would need to avoid hindering critical U.S. non-nuclear military operations that are underway after an adversary nuclear attack. Depending on the military situation in the war, we may also respond in a way that reinforces U.S. non-nuclear military operations, not to achieve tactical goals that conventional weapons could accomplish, but to achieve a decisive impact that furthers the political-military aims of the United States and its allies.

In this sense, our strategy for deterring limited nuclear war is not target-based; it is capacity-based: we deter limited nuclear attack by sustaining an effective military posture to protect the vital interests of the United States and its allies in the face of nuclear-backed aggression.

### A. Nuclear Forces Supporting U.S. Strategy

In practice, all U.S. military capabilities underpin this strategy, but U.S. nuclear forces play a unique and critical role. The United States fields forces that hold a variety of potential adversary assets at risk with multiple types of delivery vehicles and warhead yields. A high degree of flexibility in our nuclear forces is essential, otherwise our underlying deterrence message would ring hollow. The United States does not need thousands of non-strategic nuclear weapons for our strategy because we are explicitly rejecting the notion of a war of attrition via short-range nuclear weapons. It does, however, need credible limited nuclear response options: the ability to effectively and reliably respond to limited use in an unpredictable variety of ways, including responding with a small number of weapons with low warhead yields. The need for limited response options to demonstrate resolve and restraint is a longstanding and bipartisan principle of U.S. nuclear policy and strategy.

Transparency about U.S. nuclear forces during peacetime reinforces our strategy for deterring limited nuclear attack. The flexibility of U.S. nuclear forces signals to allies and potential adversaries that we have the capacity and willingness to counter nuclear coercion under any circumstances.

## B. Flawed Criticism

Critiques of limited nuclear options and low-yield warheads often take aim at the weapon systems themselves instead of the underlying strategy they enable. For example, they argue that:

- limited nuclear options are flawed because there is no guarantee that their use in a war would not trigger further escalation;
- possessing low-yield nuclear weapons actually weakens deterrence by lowering the potential costs of nuclear use; and
- low-yield warheads reflect a deliberate U.S. effort to lower the nuclear threshold.

In isolation, there is an intuitive appeal to each of these assertions, yet these arguments in a strategic context are unpersuasive and counterintuitive.

It is certainly true that there is no guarantee a limited nuclear option with a low-yield weapon, in response to a nuclear attack, would prevent further nuclear attacks. We have to be clear eyed that nobody knows what would happen in a nuclear war. This uncertainty about the potential for further escalation is in fact a part of our nuclear deterrence strategy. But we can be confident that, while limited response options are not guaranteed to work, a massive response to a limited attack is even less likely to restore deterrence and more likely to spur further nuclear escalation that could devastate the world. Thus, if we accept that the United States should prepare to prevent additional nuclear attacks after an adversary has crossed the nuclear threshold, eschewing limited response options forecloses that possibility, turning the risk of further nuclear escalation into a certainty.

But the priority of U.S. policy is to deter, not fight, a nuclear war. Thus, what about the argument that low-yield weapons weaken deterrence by signaling that the United States will respond in a limited, perhaps even tactical, fashion?

This critique is flawed because it conflates the possession of low-yield weapons with a doctrine of responding symmetrically to limited nuclear attacks. The United States has no such doctrine. The full spectrum of adversary assets would be at risk if an adversary uses

nuclear weapons first, and the full array of U.S. nuclear forces is available to strike those assets if deterrence fails. It is important to remember that even though a low-yield nuclear weapon is less destructive than a high-yield nuclear weapon, it is still capable of inflicting unacceptable costs. But because it is capable of providing an effective response with less collateral damage than a very high-yield weapon, potential adversaries may perceive it as a more credible response to a limited attack and thus a more credible deterrent to a strategy that seeks to split the United States from its allies. This is why we see the low-yield SLBM as raising potential adversaries' thresholds for nuclear first-use.

The preceding discussion demonstrates that the final critique is simply false. U.S. low-yield nuclear weapons do not reflect an embrace of nuclear war fighting. We are not seeking to make U.S. employment of nuclear weapons easier. We are seeking to make our potential adversaries' decision-making more complex and less certain when they consider the use of nuclear weapons against us and our allies.

## III. Rationale for the Low-Yield SLBM

The United States needs to retain effective limited, low-yield responses to support its strategy for deterring limited nuclear attacks and coercion. Prior to the recent deployment of the low-yield SLBM, U.S. low-yield options were concentrated in bombers and dual-capable aircraft. These systems will continue to play an important and unique role. U.S. nuclear-capable bombers provide both penetrating and standoff response options; they are survivable against counterforce attacks when they are armed with weapons, alerted, and dispersed; and we can visibly signal with them in peacetime and military crises. Dual-capable aircraft are also valuable for signaling and their forward deployment in allied territory is a tangible demonstration of the extended deterrent link between the United States and its allies.

Yet there are several distinct attributes of SLBMs that our air-based nuclear forces do not possess. Ballistic missiles are unmatched in their ability to reliably penetrate defenses. They are more prompt than air-delivered nuclear forces. And because we keep a portion of our ballistic missile submarines continuously deployed at sea, the low-yield SLBM provides a response option that is operationally survivable day-to-day and always ready.

Thus, unlike our bombers and dual-capable aircraft, which are not armed, alerted, and dispersed day-to-day, we do not need to generate the low-yield SLBM in a crisis.

There is a misconception that we chose to modify the W76 warhead to increase the overall number of low-yield weapons in the U.S. stockpile. In reality, we judged that having a small number of low-yield warheads on delivery vehicles with these attributes enhances our deterrence strategy in a number of ways, and our judgement rested on both near- and longer-term considerations.

The low-yield SLBM enabled the United States to quickly strengthen its forces for deterring limited nuclear attack. The decision to supplement existing forces with the low-yield SLBM reflects a qualitative judgement we made after an intensive, year-long assessment. We judged that enhancing the forces that support our strategy was the right and prudent step in light of the more dangerous security environment we and our allies now face. Russian strategy and its expansive modernization of its nuclear arsenal was a key near-term factor in our decision. This decision is based on more than simply a narrow analysis of weapons on targets. As stated earlier, U.S. deterrence strategy requires an effective military posture to protect the vital interests of the United States and its allies in the face of nuclear-backed aggression. We considered the overall capacity of the United States for deterring and responding to limited nuclear attacks across peacetime through fluid military crises and conflicts.

The introduction of a low-yield option that is faster, less vulnerable to air defenses, and operationally ready every day guarantees the United States can respond to a limited nuclear attack regardless of the circumstances; as examples, if U.S. nuclear-capable bombers and dual-capable aircraft are committed to other missions or have been destroyed, or if there is an operational imperative to hit a target more quickly than air-based assets are capable of carrying out the strike. Fundamentally, this capability helps prevent Russia from miscalculating that the United States would lack the capacity to achieve its political-military objectives after a limited nuclear attack against NATO, or more precisely, that Russia could deny the United States the capacity to achieve its objectives after a limited nuclear attack against NATO.

Further, the low-yield SLBM increases the resiliency of U.S. nuclear forces to geopolitical and technological challenges. Russian and Chinese air defenses will be more

lethal in the future, as will their overall suite of capabilities for contesting U.S. forces in their respective regions. We have confidence that our next-generation air-based nuclear forces will be effective, but they will not be available for years. Every assessment of offense-defense dynamics between future capabilities must account for myriad uncertainties. The low-yield SLBM hedges the United States against a more demanding combat environment emerging in the coming decades. Even if Russian and Chinese anti-access and area-denial forces improve beyond our current assessments, the United States will have effective limited response options to deter limited nuclear use. The reason we are hedging is that penetrability is essential to deterring limited attacks. If the only way we could reliably penetrate defenses is through saturation or mass suppression of defenses, the profile of our response would be much larger; it would not appear limited to potential adversaries, while a more limited response might not be deemed credible.

The United States is only deploying a small number of the W76-2 warheads. It is a testament to the wisdom of previous administrations that invested in and retained the strategic triad of delivery systems, including bombers, intercontinental ballistic missiles, and submarine-launched ballistic missiles, that the Trump Administration concluded only modest supplements were necessary to update the U.S. strategic nuclear deterrent despite a significant worsening of the security environment.

#### **IV. Debunking the Critique**

A popular argument against the low-yield SLBM is that the system is a uniquely dangerous weapon due to the so called “discrimination problem.” According to this argument, the launch of a U.S. low-yield SLBM in a war would precipitate a foe’s decision to immediately launch a massive nuclear attack against the United States before the low-yield SLBM reaches its target. The rationale for this claim is that a foe’s early warning system may be incapable of distinguishing between an SLBM carrying a low-yield warhead and an SLBM carrying one or several high-yield warheads. As a result, the foe’s leadership would simply assume that it must launch a massive nuclear strike upon detection of a single SLBM launch.

As with the arguments against low-yield nuclear weapons, the discrimination problem has an intuitive



appeal; however, its underlying analysis and subsequent risk assessment is unpersuasive for three reasons.

First, the discrimination problem implies that none of the other U.S. strategic nuclear forces possess a flexible range of yield options, which is incorrect. As stated in the 2018 NPR, the gravity bombs carried by B-2A bombers and the air-launched cruise missiles carried by B-52H bombers also provide multiple yield options. Thus, while a foe's early warning system would not be able to determine the yield of the warhead on a ballistic missile that it detects, it would not be able to determine the yield of the weapons on a U.S. bomber or air-launched cruise missile either. In this sense, the low-yield SLBM is not unique. For example, Russia has long had to account for the fact that not all U.S. strategic delivery vehicles only carry high-yield weapons, and this operational uncertainty reinforces our deterrence objective of undermining Russian confidence that it can control escalation in a nuclear war.

Second, foreign leaders now have ample reason to conclude that some U.S. SLBMs carry low-yield warheads. The United States has been transparent since the release of the NPR in 2018 that it will arm a small number of SLBMs with the W76-2 warhead. We have actually sat across the table from our Russian counterparts in bilateral dialogues to explain what we are doing and why. Russia also has insight regarding both the total number of warheads loaded onto deployed U.S. SLBMs and the number of warheads on individual SLBMs through the New START Treaty's verification regime. If leaders in Russia or another nation adopt a standard operating procedure of assuming that every U.S. SLBM is armed with the maximum number of high-yield warheads it could carry, they would be selectively disregarding additional information about how the United States actually operates its SLBM force.

Third, there is no strategic rationale for an adversary to use nuclear weapons in a limited way and then launch a massive nuclear attack upon detection of a single SLBM, triggering the unlimited war it is trying to avoid.

In Russia's case, its early warning system would enable its leadership to assess the scale of the attack, specifically that it is a single ballistic missile and not a multiple missile launch, and the probable destination

based on its trajectory. Therefore, Russia will have data to support the conclusion that the attack does not represent an existential threat. Moreover, the rationale for launching before the U.S. SLBM reached its target would be to use Russian nuclear weapons before the bulk of its nuclear forces or its nuclear command and control has been destroyed. Yet one SLBM, even one armed with as many high-yield warheads as it could carry, would not pose a comprehensive counterforce threat to Russia's nuclear deterrent. Russia has invested in a modern force with a significant number of mobile delivery vehicles, the point of which is to have weapons that would survive a dedicated large-scale attack. There would be no operational need for Russia to escalate to a massive attack on the U.S. homeland upon detection of a single SLBM after it had used nuclear weapons first, and doing so would result in an unacceptable strategic outcome for Russia.

To be clear, there is no such thing as a safe nuclear war or a low-risk nuclear strike, regardless of its magnitude. That is why we devote significant attention and effort to deterring the use of nuclear weapons and have adopted a strategy for deterring, not fighting, limited nuclear war. Rather, the point is that there is nothing uniquely dangerous about the low-yield SLBM that would preclude us from deploying it, given the valuable role it plays in our strategy for deterring the use of nuclear weapons in the first place.

## V. Conclusion

Sustaining an effective deterrence strategy is central to our goal of ensuring that a nuclear war will not be fought. Nuclear deterrence is the least bad option and not our first choice. The United States is ready to work cooperatively with the international community to reduce nuclear dangers through effective arms control, non-proliferation, transparency, and diplomacy. As long as nuclear weapons exist, the United States will retain an effective nuclear deterrent and be transparent about the nuclear weapons it possesses and the reasons for changes to its force structure. As a nuclear-weapon state, we have a responsibility to do no less, and we encourage Russia and China to do the same.



## **Arms Control and International Security Papers**

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