COUNCIL ON STRATEGIC RISKS

THE NOLAN CENTER

BRIEFER

No. 19 | May 19, 2021

The Next Great Idea in Arms Control: An End to Nuclear Sea-Launched Cruise Missiles

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INTRODUCTION

The international community is in need of new ideas for the future of nuclear arms control. Many arms control efforts of decades past, going back to the later years of the Cold War, succeeded in reducing nuclear weapons dangers. Some bilateral agreements between the United States and the Soviet Union/Russia have now ended. While there are many ideas for reducing nuclear risks, there is insufficient prioritization among dozens of possible steps and too few concepts that would limit or reduce specific nuclear weapon capabilities.

To fill this gap, the Council on Strategic Risks (CSR) has issued a strategic framework for the future of nuclear arms control that prioritizes focused measures that can be pursued in the near term.[1] This includes a series of concepts which, together or separately, can reinvigorate nuclear arms control. The steps articulated in this series focus on reducing or eliminating specific types of nuclear weapons, most importantly tactical and other non-strategic nuclear weapons whose characteristics heighten the odds of

[1] Rear Admiral John Gower and Christine Parthemore, "A Practical Strategy for Nuclear Risk Reduction and Disarmament: Fulfilling the Code of Nuclear Responsibility," The Council on Strategic Risks, April 19, 2021.

miscalculations and misinterpretations during a crisis. As such, these steps are likely to meet the mutual security interests of multiple countries, account for the interplay of new technologies, and prioritize measures that could reduce ambiguity and miscalculation risks.

This paper addresses one such type of nuclear weapon: nuclear-armed submarine launched cruise missiles (SLCM-N). This class of weapon was characterized by U.S. officials in the previous administration as vital to bridging the gap between U.S. and Russian nonstrategic forces, and defending against an alleged Russian policy that encourages a limited nuclear exchange to solidify victory in a conflict. However, critics assert that it is far more likely that these weapons have the paradoxical effect of weakening the U.S. nuclear deterrent, and may lower the threshold for nuclear use.[2] This brief therefore recommends the United States lead in next steps toward an end to SLCM-N by unilaterally ending its current plans to bring them back to the American nuclear arsenal. It further suggests that this step should be followed by work toward a political commitment from the permanent members of the United Nations Security Council (the P-5) to cap, eliminate, and permanently forgo SLCM-N's---a meaningful risk-reduction step that can then be extended internationally.

THE RISKS

The largest concern stemming from these weapons is that, when launched, SLCM-N are virtually indistinguishable from their conventional counterparts.[3] For example, there is almost no way to determine if submarine-launched cruise missiles heading toward the United States or its allies are armed with nuclear warheads until they detonate. In the fog of conflict, this ambiguity can heighten the chance of miscalculation: it may drive a "use them or lose them" mentality in which a state leader assumes an attack is nuclear and retaliates with nuclear weapons, despite not knowing the contents of the incoming missiles. Indeed, one scenario of significant concern among U.S. national security planners is that in a conflict, a Russian attack submarine off the American coast would launch a SLCM-N attack on Washington, DC. Given the near impossibility of defending against cruise missiles once they are launched, strategic places like the nation's capital would be incredibly vulnerable.

This dangerous similarity to conventional weapons is compounded by the regular use of conventional cruise missiles. For example, the United States has launched at least 2,199 cruise missiles since the beginning of its involvement in the 1991 Gulf War, including most recently in Yemen and Syria.[4] Depending on potential future changes in its doctrine for nuclear use, having nuclear variants of cruise missiles that are commonly deployed and used by the United States could introduce serious concerns, especially for miscalculation by other nuclear-armed states during conflicts.

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[2] Office of the Under Secretary of State for Arms Control and International Security, "Strengthening Deterrence and Reducing Nuclear Risks, Part II: The Sea-Launched Cruise Missile-Nuclear (SLCM-N)," Arms Control and International Security Papers, July 23, 2020.

[3] JASON, "Verification Technology: Unclassified Version," The MITRE Corporation, October 15, 1990.

[4] Niall McCarthy, "Countries Hit By U.S. Tomahawk Cruise Missiles Since Desert Storm [Infographic]," *Forbes*, April 7, 2017.

Further, because SLCM-N would likely be capable of lower nuclear yields than some other weapons types, there exists a fear that state leaders will be more inclined to use them, and thus more inclined to start a nuclear conflict, despite that "lower yield" being likely catastrophic.[5] These factors, and the fact that these weapons can be launched without warning, coalesce to create the perfect storm of destabilization that can easily escalate a conflict into an all-out nuclear war.[6]

WHY THESE WEAPONS?

Halting potential expansion of SLCM-N and working toward their elimination would be an effective and largely uncontroversial next step in arms control that could pave the way for more progressive initiatives in the future. Completely eliminating these weapons over time will reduce the likelihood of a nuclear conflict by eliminating the concerns cited above. With only conventional SLCMs in the world, the ambiguity of whether or not an incoming missile is carrying a nuclear payload would diminish, and with it the pressure for fast nuclear retaliation.

An agreement targeting SLCM-N may also be feasible because not many nuclear weapon states possess them. According to Hans Kristensen and Matt Korda of the Federation of American Scientists, China does not possess SLCM-N in its nuclear arsenal.[7] While submarine-launched *ballistic* missiles are the core of the French nuclear arsenal, France's only nuclear-armed *cruise* missiles are air-launched.[8] The United Kingdom (UK) carried out an extensive review assessing the pros and cons of developing SLCM-N, but ultimately decided they were "less capable than a ballistic missile system," due to reduced technical efficacy as well as the risk of an adversary mistaking a conventional cruise missile for a nuclear one.[9] While Pakistan is currently developing and testing its own SLCM-N,[10] there is a window for it to halt this work before they build or deploy them at scale. India has not confirmed if it is pursuing a similar capability.[11] Russia is the only state that has a confirmed stockpile of SLCM-N.[12]

An end to SLCM-N may also be easier than banning and eliminating many other classes of nuclear weapons, because they have been foregone (as in the UK case) or given up before. After the fall of the Soviet Union in 1991, U.S. President George H.W. Bush and Soviet President Mikhail Gorbachev agreed

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[5] Derek G. Kimball and Kingston A. Reif, "The New U.S. Nuclear Strategy Is Flawed and Dangerous. Here's Why," Arms Control Association, February 15, 2018.

[6] William J. Perry and Andy Weber, "Mr. President, Kill the New Cruise Missile," *The Washington Post*, October 5, 2015.

[7] Office of the Secretary of Defense, "Military and Security Developments Involving the People's Republic of China 2020," Annual Report to Congress, 2020.

[8] Hans M. Kristensen and Matt Korda, "French Nuclear Forces, 2019," *Bulletin of the Atomic Scientists* 75, no. 1, January 7, 2019, 51-55.

[9] United Kingdom Cabinet Office, "Trident Alternatives Review," July 16, 2013, 32.

[10] Hans M. Kristensen, Robert S. Norris, and Julia Diamond, "Pakistani Nuclear Forces, 2018." *Bulletin of the Atomic Scientists* 74, no. 5, August 31, 2018, 10.

[11] Hans M. Kristensen and Matt Korda, "Indian Nuclear Forces, 2018," *Bulletin of the Atomic Scientists* 74, no. 6, November 1, 2018, 361–66.

[12] Hans M. Kristensen and Matt Korda, "Russian Nuclear Forces, 2020," *Bulletin of the Atomic Scientists* 76, no. 2, March 3, 2020, 102–17.

to the Presidential Nuclear Initiatives (PNIs), a series of reciprocal unilateral assurances to reduce each state's respective arsenal of tactical nuclear weapons.[13] President Bush decided to unilaterally withdraw all U.S. SLCM-N---Tomahawk Land Attack Missiles, or TLAM-N---from its submarines and put them into storage as part of this initiative. In 2011, President Barack Obama finished the job by formally retiring and dismantling the TLAM-N series.[14] Because the PNIs are purely political moves that have no legal mechanism for verification or enforcement, it is difficult to assess whether or not Russia has completed all of its stated objectives under the initiative. Regardless, the actions taken by Presidents Bush and Obama illustrate that the United States has eliminated its SLCM-N stockpile before. Both presidents understood the perverse dynamic that possessing this type of nuclear weapon actually weakened the U.S. deterrent against nuclear attacks, as they can inadvertently convey to adversaries that the nation does not have the political will to use its strategic nuclear weapons arsenal even if it were engaged in significant conflict.

STATUS OF SLCM-N TODAY

Unfortunately, there is a current, renewed drive in the United States to bring back SLCM-N. For example, the 2018 Nuclear Posture Review announced that DoD would be pursuing a new SLCM-N, and Vice Adm. Johnny Wolfe Jr., then director of Strategic Systems Programs within the U.S. Navy, stated in January 2021 that design work could start as soon as 2022.[15]

This drive is fueled by some experts who believe deterrence requires like-for-like parity, mainly with Russia, or that the United States should bring them back as a bargaining chip to pressure Russia to give up some of its current nuclear capabilities. This perspective has been reinforced by Russia's process of updating its nonstrategic nuclear weapons force, which includes its cache of SLCM-N. A white paper published by the U.S. Office of the Undersecretary of State for Arms Control and International Security in July 2020 posited that because Russia is increasing its non-strategic nuclear weapons arsenal, so too should the U.S. to avoid asymmetry and to stabilize the security environment.[16] The report described SLCM-N as a "necessary supplement" to the already-robust current nuclear triad that would strengthen deterrence and pave a smoother path to arms control.

However, these are insufficient arguments. Parity across all nuclear capabilities is not required to effectively deter Russia. The assets it and other nations consider critical to regime survival can be held at risk with many combinations of nuclear and conventional weapons, and this diminishes the need for like-for-like parity across all weapons types. The argument is reminiscent of Cold War doctrines that caused both the United States and the former Soviet Union to wildly increase their nuclear arsenals, which

[13] Nuclear Threat Initiative, "Presidential Nuclear Initiatives: An Alternative Paradigm for Arms Control," Accessed April 23, 2021.
[14] Perry and Weber.
[15] Office of the Secretary of Defense, "Nuclear Posture Review," February 2018; Richard R. Burgess, "Wolfe: Navy Plans to Start Development of Nuclear Sea-Launched Cruise Missile in 2022," *Seapower* (blog), January 14, 2021.
[16] Office of the Under Secretary of State for Arms Control and International Security, "Strengthening Deterrence and Reducing Nuclear Risks, Part II: The Sea-Launched Cruise MIssile-Nuclear (SLCM-N)," Arms Control and International Security Papers, 2020.

severely destabilized the international security environment and brought the world to the brink of nuclear war multiple times.

Further, given the current U.S. nuclear arsenal and other modernization plans, it is difficult to make the case that SLCM-N enhance the country's nuclear capabilities. Indeed, as noted earlier, the existence of these weapons in the arsenal may actually erode U.S. nuclear deterrence.

Lastly, defenders of SLCM-N have argued that the primary purpose of building these weapons is to trade them as a bargaining chip in future arms control agreements. This undercuts the argument that these weapons are actually needed to strengthen deterrence against Russia or even China.

Due to their capacity to increase the likelihood of nuclear conflict and weaken U.S. nuclear deterrence, as well as their limited utility, it is crucial that those leading a new review of the U.S. nuclear posture halt the pursuit of a new SLCM-N---and use this sign of leadership in nuclear risk reduction as part of the diplomatic push that will be necessary to pursue related arms control steps with other nations.

THE CONCEPT

There are many potential paths forward for ending SLCM-N. The most promising goes back to lessons from President George H.W. Bush with the aforementioned PNIs - reciprocal unilateral assurances for reducing tactical nuclear weapons. In this context, the United States should take the first step by ending its plans to bring SLCM-N back into the U.S. nuclear arsenal. This should be made as a unilateral decision by the president, noting that it will be done out of a position of strength and a desire for a more stable global security environment.[17] To increase the likelihood of success, this decision should focus specifically on nuclear SLCM, and not at this time seek to limit or ban conventional variants given how many countries have conventional-only cruise missiles and lack of significant discourse surrounding their elimination.

This unilateral step is a benefit to the security of the United States and its allies. American nuclear and conventional capabilities are such that SLCM-N are redundant and unnecessary, on top of their destabilizing characteristics. Moreover, the nation needs options for signaling that the United States seeks to return to a position of responsible leadership in reducing international threats. Ending its revival of SLCM-N can be that type of signal.

Leading by example will lay the foundation for U.S. leadership on the issue internationally. Following an end to plans to bring SLCM-N into its arsenal, the U.S. should consult with allies and begin working on a political commitment from the permanent members of the United Nations Security Council (the P-5) to cap, eliminate, and permanently forgo SLCM-N. Ideally this would be announced at the Nuclear Non-proliferation Treaty Review Conference planned for August 2021.

[17] Natasha E. Bajema and Christine Parthemore, "The Next Great Idea in Nuclear Arms Control: Putting the 'N' Back in INF," The Council on Strategic Risks, February 2, 2021.

Engaging the P-5 will avoid the problems inherent in bilateral or trilateral approaches. Given the reluctance of the Chinese to engage on trilateral arms control with just the United States and Russia due to its significantly smaller nuclear arsenal, China may be more willing to engage on this matter if the United Kingdom and France were also involved. That way, China is not the only nuclear weapon state with a small arsenal committing to banning a class of nuclear weapons, and thus won't feel singled out. Additionally, China may be more willing to engage in arms control if the conversation is shifted to a class of nuclear weapons that they do not currently possess. This could be a great stepping stone to future arms control negotiations.

In congruence with these actions, seeking official political support by key nations like Germany, Japan, and Kazakhstan can bolster the argument for implementing a ban. This could take the form of a multilateral declaration or a similar format. More nations showing open support would illustrate real interest in getting rid of these weapons and thus make it more difficult for nuclear weapon states to reverse course and continue with deployment of or interest in pursuing SLCM-N.

This approach may also have the benefit of creating political space for advancing broader arms control work that brings Indo-Pacific nations into the fold. The region's broad security and nuclear-specific dynamics are incredibly complex, including due to India and Pakistan not being party to the Nuclear Non-proliferation Treaty, the extension of the U.S. nuclear umbrella to allies there, and the tensions driven by North Korea, among other factors. Future arms control in this region will require a highly layered approach. Countries in the region committing (whether politically or legally) to forego nuclear capabilities they do not yet have---rather than giving up those that they do---is likely a far more palatable option for nuclear weapon possessing nations. A ban on SLCM-N---possibly coupled with similar measures such as foregoing ground-launched, intermediate-range nuclear cruise missiles---could be a strong, feasible start.[18] This should be accompanied by strategic stability dialogue with Indo-Pacific nations with an early focus on the perils of nuclear-conventional ambiguity issues, even if such discussions may need to begin in a more informal Track 1.5 dialogue among government and nongovernmental experts.

TRUST AND VERIFICATION

While the United States has the full ability to take the first step outlined above unilaterally, it should still begin work toward the trust-building and verification measures that would be required for a global end to this class of nuclear weapons.

In terms of building trust, this should start with U.S. officials sharing plans for a unilateral halt to its revival of SLCM-N with its allies in NATO and the Indo-Pacific region. Changes in U.S. nuclear plans can be jarring to its allies if not communicated well, as was the case in the unexpected announcement of the PNIs in 1991. This can be addressed with quiet, high-level consultations, which should emphasize that there is no loss to deterrence given that the United States does not currently have these weapons and has

[18] Bajema and Parthemore; Andy Weber and Christine Parthemore, "The Future Of Arms Control Is Global: Reconsidering Nuclear Issues In The Indo-Pacific," *War on the Rocks*, February 8, 2019.

not deployed them for decades---and the immense gains for strategic stability in European and Asian neighborhoods that an end to these weapons would bring.

A supportive political commitment by other nations behind a unilateral halt to the resurgence of the SLCM-N, as noted above, would also help in trust-building. For the United States, working on this with allies could help reassure them that U.S. extended deterrence commitments remain unchanged. It could also signal that the United States is serious about its commitment to arms control if it is seen taking those extra steps to move forward by engaging its allies in the discussion.

The verification mechanisms of SLCM-N arms control agreements would not be very difficult to formulate and need not be excessively intrusive. In 1989, George Lewis, Sally Ride, and John Townsend published an article outlining a thorough, feasible verification regime for a ban on SLCM-N.[19] This regime includes the following: conducting data exchanges; setting up detection mechanisms, like perimeter portal monitors, to identify and monitor all SLCM leaving identified facilities until they reach verified destination facilities; constructing a special verification facility to help verify that both incoming and outgoing SLCM are non-nuclear; inspecting a random sample of SLCM to ensure only treaty-approved SLCM are being deployed; and providing limited challenge inspections of declared sites and suspected sites to decrease the likelihood of covert production of SLCM-N.

To supplement this, national technical means and open source collection can be used to augment on-the-ground inspections to verify the absence of nuclear warheads at key facilities and to monitor incoming systems to verify they are non-nuclear. Finally, parties could use non-intrusive means to verify that only warheads from those specific non-nuclear sites are loaded onto the submarines.

These verification measures should help build the confidence necessary to pursue a full, binding agreement by which countries would agree that SLCM-N should be eliminated and remain off the table in the future.

CONCLUSION

Now is the time for innovative approaches to nuclear arms control, with priority to measures that reduce the risks of nuclear war. A good way to start is by prioritizing steps that will halt current plans that would increase SLCM-N and seek their full elimination. Such steps will help to stabilize the international security environment by limiting the ability to use so-called "low-yield" - yet highly destructive - nonstrategic nuclear weapons. They can also be a stepping stone to further cooperation with China and the other P5 states, unhindered by the issue of disparity in numbers of each respective arsenal. Finally, such a ban is verifiable, and it could provide a foundation for building future nuclear arms control agreements involving more possessor states.

[19] George N. Lewis, Sally K. Ride, and John S. Townsend, "Dispelling Myths About Verification of Sea-Launched Cruise Missiles," *Science* 246, no. 4931, November 10, 1989, 765–70.

The United States should lead on this by halting its planned reintroduction of SLCM-N into its nuclear arsenal and proposing multilateral agreement to eliminate all SLCM-N, with political support from non-nuclear weapons possessing states. This bold move could help prevent further deterioration of the international security environment and reinvigorate arms control to meet the mutual security interests of many nations.

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This publication was made possible by a grant from Carnegie Corporation of New York. The statements made and views expressed are solely the responsibility of the authors.