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Revitalizing America's Low-Yield Deterrent

Alex Kleitz

*An array of low-yield weapons will play a vital role in integrated deterrence. *The following essay, submitted in June 2022, earned the Junior Division USSTRATCOM General Larry D. Welch Deterrence Writing Award.*

The ongoing war in Eastern Europe has focused considerable public attention on a topic largely forgotten in the peaceful bliss of the post-Cold War era: low-yield nuclear weapons. Many fear Russian use of such weapons to salvage their clearly troubled conventional campaign, while even more are concerned about the risk of spillover leading to NATO involvement which escalates into a nuclear exchange. Though the theoretical usage of low-yield weapons in an otherwise conventional war has gained more popular attention in recent months, American military thinkers and policy makers have grappled with the issue of determining what role these weapons play in the modern era ever since the fall of the USSR. Over the last three decades, America's low-yield arsenal has steadily dwindled in size and has not been significantly modernized. Today it is based almost entirely around gravity bombs delivered by F-16s, Tornados, and F-35s. As our adversaries pursue larger arsenals, greater capabilities, and more aggressive foreign policies, we must reverse course. Expanding and modernizing the American low-yield nuclear arsenal will promote peace by lowering the chances of both conventional and limited nuclear war involving the United States.

To begin, it is important to establish several basic definitions. Expansion in this context refers to an increased number of low-yield weapons ready for combat use in short order at an increased number of locations around the world. Modernization is meant to imply new capabilities which enhance combat effectiveness, not simply life-extending existing low-yield weapons. In this case, low-yield refers to a variety of nuclear weapons which have the primary purpose of destroying enemy conventional military capabilities on the battlefield during a major war. Often called "tactical nukes," they contrast with strategic nuclear weapons in that the latter generally produce yields in excess of 100 kilotons and are intended to destroy the enemy's nuclear arsenal, leadership, industry, and/or population using deep strikes against the enemy's homeland. As low-yield weapons play a significant role in strategy, the term "tactical" will be used sparingly in reference to them.

Low-yield weapons are not a new phenomenon. Of course, the weapons dropped on Japan may fit the modern definition of low-yield in terms of destructive power, though they were used for a countervalue attack on the Japanese homeland. Still, even at the time American leaders contemplated using Fat Man-type bombs to soften up Japanese beach

defenses, and the theoretical use cases of low-yield weapons only grew from that point on (Giangreco). Low-yield nuclear weapons were planned to be employed in anti-air, anti-submarine, anti-ship, field artillery, and various other roles by both sides throughout the Cold War.

Most notably, the US and her NATO allies planned to make extensive use of low-yield weapons against Warsaw Pact forces in the event of war in Europe. This was for good reason. The communists possessed a significant advantage in conventional arms along the Iron Curtain, and it was believed that only nuclear weapons could hope to stem the tide of Soviet tanks pouring into West Germany (Snook). NATO's intent was made clear to the Soviets and the US kept sufficient nuclear weapons in theatre so as to make a disarming strike impossible. Any thoughts of the Red Army withstanding the nuclear blow were unreasonable. Importantly, European allies were brought into the nuclear sharing program, diminishing Soviet confidence that the US would not risk nuclear escalation over issues an ocean away (Snook). As a result, despite a clear conventional advantage and a stated national goal of achieving global communism through the defeat of "imperialist" Western forces, the Soviets never attempted an invasion of Western Europe.

The deterrent effects of Cold War low-yield weapons were not confined to the European theatre. The US based such weapons in East Asian countries such as Taiwan and South Korea (Smith). Despite the overwhelming numerical superiority the Communist Chinese could have brought to bear against American forces in the region, the presence of low-yield nuclear weapons made clear that attempts at conquest were futile, even given the PRC's assured strategic second strike capabilities. Though these weapons were gradually withdrawn, their role was filled in the relatively low-threat post-Cold War environment by other resources in region such as TLAM-Ns aboard naval vessels. The value of these weapons was demonstrated by the Japanese and South Korean outrage at their eventual withdrawal, and the actions the US took to continue a regional presence via forward basing of bombers (Regehr). Since the recent outbreak of war in Europe and increasingly aggressive actions by the PRC, there have been calls in Japan for renewed basing of low-yield weapons within that country (Johnson). In short, though not as clear-cut as the European situation, low-yield weapons have demonstrated deterrent effects in East Asia and there is general agreement among our allies as to their importance.

Given the historically demonstrated value of low-yield weapons for shaping adversary decision making about conventional war, it is no surprise that Russia continues to appreciate their value in this role. While US policy has deemphasized the use of low-yield weapons since the fall of the USSR, Russian policy makers have taken the opposite course. Much has been made over the Russian concept of "escalate to deescalate" in which the Russian Armed Forces would strike NATO formations with nuclear weapons in order to coerce a settlement in the event that Russia faces conventional defeat (Schneider). Even in the current war there has been some discussion about the possibility of Russia making use of nuclear weapons to achieve results on the battlefield as their initial campaign has faltered

and, at least in the north, collapsed (Wainer).

While many Western commentators' kneejerk reaction is to decry the "escalate to deescalate" policy as insane and dangerous, the theory is logically sound. Such action would create immense pressure on NATO leaders to accept a ceasefire as, given Russia's significant "tactical" nuclear capabilities and arsenal size, it is doubtful that NATO conventional forces could hope to fight through a nuclear onslaught to victory. This is the same fact which we ourselves relied upon during the 20th century in our plans to defeat the conventionally superior Warsaw Pact. Responding with strategic nuclear strikes inside Russia would invite an equivalent response as Russia would certainly retain an assured strategic second-strike capability. The option of accepting the *status quo ante*, as unthinkable as that may be in the face of enemy nuclear first use, may be the most reasonable course of action.

That is unless the US has the ability to respond in-kind, destroying the conventional power of the enemy. Conventional strength deters conventional attack and strategic nuclear strength deters strategic nuclear attack. In the same vein, low-yield nuclear strength can deter Russia, or any other adversary, from believing that first use of low-yield weaponry would be to their advantage, or that they could succeed in a conventional invasion of an American ally. Any invasion could be made unacceptably costly by use of low-yield weapons, and any nuclear usage from a single low-yield detonation on the battlefield to an attempted disarming first-strike could be met with an effective response.

Of course, the US does still have low-yield weapons deployed, albeit far fewer than Russia, and one may ask why the current posture is not sufficient to counter Russian policy and deter war. The US low-yield options are effectively limited at this time to fighter-bombers equipped with around 100 forward deployed B-61s operating from a small number of bases in Europe (Snook). Strikes by these aircraft could be supplemented with B-52s launching ALCMs or B-2s delivering B-61s on long-range missions. The low-yield SLBM option exists as well, though this program may be rolled back by the current administration given political controversy over its wisdom (Woolf). Given the paltry state of this force, it is clear that expansion and modernization consistent with earlier definitions will significantly enhance deterrence.

Perhaps most obviously, it is necessary to expand the number of weapons readily deployable. More weapons assigned to a target increase the probability that one will make it through, an important factor when our primary means of delivery are aircraft which are vulnerable to the extensive Russian and Chinese integrated air defense systems (IADS) (Pułaskiego and Smura). Having more weapons will also increase the number of targets which can be held at risk, ensuring the destruction of the enemy's forces to an acceptable degree. Additionally, this lowers the burden on strategic bombers to lend support to the in-theatre fighter-bombers and the low-yield mission at a time when it would certainly be desirable to hold as much of our nuclear-capable strategic bomber force in reserve for strategic missions in case the need arose. Finally, the message of willpower sent by a numerical increase in our low-yield deployments should not be underestimated. After years

of watching us neglect the low-yield mission and hearing our politicians decry low-yield weapons as destabilizing, a reconstitution of this force would unmistakably demonstrate to our foes our willingness to employ these weapons if necessary. After all, our adversaries' impression of our will underpins our deterrence.

Numerical expansion must be accompanied by basing expansion. In our current configuration, with B-61s deployed at fewer than a dozen bases in Europe, it is rather easy to envision a Russian first-strike which completely eliminates our in-theatre low-yield arsenal. Expanding to more bases would complicate adversary targeting and reduce their confidence in their ability to neutralize our low-yield capability via first-strike, therefore reducing the temptation to attempt to do so during a crisis and thus reducing the risk of war. Further, new bases for low-yield weapons must be added outside of the European theatre. As we face the specter of war with China, the need to be as prepared to deter and fight in the Pacific as we are in Europe is self-evident. The new calls from our Asian allies for a return to nuclear basing in the region should awaken us to this capability gap. Finally, as with numerical expansion, the basing of low-yield weapons throughout the Pacific, which could be done using existing bases in the region, would send a clear message to Beijing as to the futility of any aggressive war against an American ally.

Though expansion would go a long way towards correcting current deficiencies, modernization must not be overlooked. As noted earlier, reliance upon air-delivered gravity weapons creates many problems in the face of an enemy with sophisticated air defenses. Though the low-yield SLBM is an attractive option for its mobility, promptness, and penetration ability, there are significant issues with exposing the location of an SSBN in order to carry out a low-yield strike during a major crisis where we would likely desire to retain with the highest confidence our strategic second strike capability. More options are necessary. New standoff weapons, sea-launched cruise missiles, short to intermediate range ballistic missiles, and other delivery systems should be developed and deployed to give the US a wide array of capabilities when facing the need to fight a limited nuclear war. A variety of options will also allow the US to project power without the diplomatic difficulties of basing in foreign nations. Hypersonics, in particular, present a unique opportunity owing to their range, promptness, and surety of air defense penetration (Cummings).

Despite the clear advantages of this revitalization program, there are legitimate concerns surrounding the concept of increasing the role of low-yield weapons in our defense strategy. Many have expressed a fear that as low-yield weapons are more "usable" than strategic nuclear weapons, having them in large quantities would increase the chances of a nuclear war (Reif). This argument lacks historical backing. The deployment of thousands of such weapons by both sides during the Cold War prevented the outbreak of any conventional war which would lead to their use, as usage would defeat any offensive conventional action. Additionally, it is questionable whether a fear of "usability" makes sense if our objective is American national security. We may one day face a situation where our leadership determines that usage of low-yield weapons is a preferable outcome to the alternatives of

conventional defeat or strategic nuclear escalation. To tie the hands of our future selves now would be unwise and only encourage our adversaries to utilize low-yield weapons knowing we would have no appropriate response. It should go without saying that we need usable weapons and should not base our security off of unusable weapons.

There is also a reasonable concern that a reconstitution of our low-yield force would lead to an arms race. This concern should not stop us. With regard to Russia, it is unclear what we have to lose from engaging in an arms race considering how severely the Russians currently outmatch us in the low-yield realm (Weitz). To not build up would not avert a race, it would simply constitute our acceptance of our defeat in the race. That said, China may present a different situation, given their small arsenal relative to our own. A large build up in the Pacific would almost certainly provoke a Chinese response. However, this does not doom us to a never-ending game of one-upmanship. We need not concern ourselves with matching adversary numbers one-to-one. We need only maintain a capability which is survivable under attack and presents a credible means of defeating any conventional aggression and responding to any low-yield nuclear escalation decisively. Accepting these objectives rather than becoming concerned with some relative balance on paper will prevent a costly arms race.

Low-yield weapons play a vital role in integrated deterrence. This fact was obvious during the Cold War and is still understood today by our adversaries. We must not forget it ourselves. As war wages in Europe and nuclear rhetoric escalates, the need for the US to revitalize her low-yield arsenal only grows. Expansion and modernization are necessary to prevent war by making clear to any enemy that they cannot achieve strategic objectives through aggression, for they will be met with an overwhelming response. Failing to reconstitute our low-yield forces to meet the challenges of the modern era will only encourage hostile powers to strike first and leave us with no options other than surrender or mutual destruction. Revitalization of our low-yield arsenal will preserve both deterrence and decision space, keeping America and her allies secure.

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Works Cited

- Cummings, Alan. "High Speed, Low-Yield: A U.S. Dual-Use Hypersonic Weapon." *War on the Rocks*, 17 Sept. 2020, warontherocks.com/2020/09/high-speed-low-yield-a-u-s-dual-use-hypersonic-weapon/. Accessed 12 Feb. 2022.
- Giangreco, D. M. "Operation Downfall: The Devil Was in the Details." *Apps.dtic.mil*, 1 Jan. 1995, apps.dtic.mil/sti/citations/ADA528442.
- Johnson, Jesse. "Japan at Crossroads as Stage Set for Dramatic Rethink of Defense Policy." *The Japan Times*, 14 Apr. 2022, www.japantimes.co.jp/news/2022/04/14/national/japan-nuclear-sharing-strike-capability/. Accessed 26 Apr. 2022.
- Pałaskiego, Komentarz, and Tomasz Smura. *Pulaski Policy Papers Russian Anti-Access Area Denial (A2AD) Capabilities - Implications for NATO*. 2016.
- Regehr, E. "Extended Deterrence Will Remain, but US Nukes Could Leave Europe." *Centre for International Governance Innovation*, 2010, www.cigionline.org/articles/extended-deterrence-will-remain-us-nukes-could-leave-europe/. Accessed 20 Apr. 2022.
- Reif, Kingston. "Congress Funds Low-Yield Nuclear Warhead." *Arms Control Today*, vol. 48, no. 9, Nov. 2018, pp. 27–28.
- Schneider, Mark B. "Russian Nuclear 'De-Escalation' of Future War." *Comparative Strategy*, vol. 37, no. 5, 20 Oct. 2018, pp. 361–372, 10.1080/01495933.2018.1526558. Accessed 12 Feb. 2022.
- Smith, David. "THE US EXPERIENCE with TACTICAL NUCLEAR WEAPONS: LESSONS for SOUTH ASIA." *CTC Journal*, vol. 4, no. 6, 2011, www.stimson.org/wp-content/files/file-attachments/David_Smith_Tactical_Nuclear_Weapons.pdf.
- Snook, Walter. "PRODIGAL NUKES: A CASE STUDY of U.S. TACTICAL NUCLEAR WEAPONS in EUROPE." *Princeton Woodrow Wilson School*, 10 July 2013, dataspace.princeton.edu/handle/88435/dsp01g732d906k. Accessed 20 Apr. 2022.
- Wainer, David. "How Russia Has Revived Fears of Nuclear War in Europe." *The Washington Post*, 26 Apr. 2022, How Russia Has Revived Fears of Nuclear War in Europe. Accessed 27 Apr. 2022.
- Weitz, Richard. "RUSSIAN TACTICAL NUCLEAR WEAPONS: CURRENT POLICIES and FUTURE TREND." *Strategic Studies Institute, US Army War College*, 2011, www.jstor.org/stable/pdf/resrep12072.12.pdf. Accessed 20 Apr. 2022.
- Woolf, Amy. "A Low-Yield, Submarine-Launched Nuclear Warhead: Overview of the Expert Debate." 2020.

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