

# A Threat Analysis on Russian Use of Low Yield Battlefield Nuclear Weapons

A Monograph

by

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## Abstract

A Threat Analysis on Russian Use of Low Yield Battlefield Nuclear Weapons, by MAJ Stephen G. Redmon, 58 pages.

There is a significant amount of literature discussing the “Russian way of war” and what strategic goals the Russians would attain using non-strategic nuclear weapons (NSNW). In contrast, there is almost no literature exploring what the use of these weapons would look like at the operational or tactical level against NATO ground forces. This analysis focuses on why and how Russia would employ low-yield battlefield nuclear weapons (LYBNW), a specific subset of NSNW. It explores in what context the Russian military would use LYBNW in a tactical sense to achieve strategic objectives and what that risk is to NATO forces. Specifically, the research answers: How should the US and NATO ground forces understand and respond to the threat posed by Russian LYBNW in the EUCOM area of responsibility?

To answer how and if Russia will employ LYBNW against ground forces, a threat analysis methodology is used. This method analyzes two concepts: intent and capability. A brief risk assessment with a hypothetical scenario is conducted to synthesize and contextualize the threat analysis. The scenario will aid in assessing the likelihood and consequences of the Russian use of low-yield battlefield nuclear weapons.

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## Abbreviations

|       |                                       |
|-------|---------------------------------------|
| A2AD  | Anti-Access and Area Denial           |
| BNW   | Battlefield Nuclear Weapon            |
| ERW   | Enhanced Radiation Weapons            |
| kt    | Kiloton                               |
| IADS  | Integrated Air Defense Systems        |
| IPW   | Initial Period of War                 |
| LYBNW | Low Yield Battlefield Nuclear Weapons |
| NSNW  | Nonstrategic Nuclear Weapons          |



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# Introduction

## Background

During the Cold War, Russia in the form of the Soviet Union enjoyed a position as one of two global powers and the local hegemon in Eastern Europe. To support this balance of power against NATO and the US, the USSR maintained a large military that included strategic and non-strategic nuclear weapons (NSNW). After the fall of the USSR, Russia had the most extensive inventory of NSNW in the world, with estimates ranging between 20,000 and 25,000.<sup>1</sup>

In the post-Soviet era, Russia went through a period of retreat from the international community. During this withdrawal, NATO and the US extended their influence within Russia's near abroad. At the time, Russia saw and continues to see this as a security threat.<sup>2</sup> Many in the Russian government saw this as a betrayal. Some in the Russian government believed the US promised to restrict NATO enlargement during the negotiations to reunify Germany. However, this was not the case. Since the end of the Cold War, NATO has added 14 member states, with four of them bordering Russia.<sup>3</sup> NATO expansion not only exacerbated Russia's mistrust of NATO and the US but inflamed Russia's feelings of insecurity during a time of transition. While Russia was in its state of retreat, the Russian military lost any ability to achieve parity with NATO forces, reinforcing Russia's diminished role in international politics.

Over the past two decades, Russia has reasserted its influence in Central and Eastern Europe and is actively working to counter what it perceives as NATO encroachment. To counter

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<sup>1</sup> Amy Woolf, *Nonstrategic Nuclear Weapons* (Washington, DC: Congressional Research Service, 2020), 11.

<sup>2</sup> Russian Federation Presidential Edict 683, *The Russian Federation's National Security Strategy* (Moscow, December 31, 2015), 4, accessed December 17, 2020, <https://www.ieee.es/Galerias/fichero/OtrasPublicaciones/Internacional/2016/Russian-National-Security-Strategy-31Dec2015.pdf>.

<sup>3</sup> Stanley R. Sloan, *Permanent Alliance: NATO and the Transatlantic Bargain from Truman to Obama* (New York: Bloomberg, 2010), 130; North Atlantic Treaty Organization, "Member Nations," accessed December 8, 2020, [https://www.nato.int/cps/en/natohq/topics\\_52044.htm](https://www.nato.int/cps/en/natohq/topics_52044.htm); North Atlantic Treaty Organization, "NATO on the Map," accessed December 8, 2020, <https://www.nato.int/nato-on-the-map/#lat=53.25718495852529&lon=22.174970774517835&zoom=0&layer=1>.

this encroachment, Russia is reasserting itself militarily, including threatening the use of non-strategic nuclear weapons. This threat is credible as Russia has modernized its nuclear force, incorporated nuclear capability into large scale military exercises, and terminated the Cold War-era “no-first-use” policy. Russia replaced the “no-first-use policy” with a limited first use policy that would seek to “escalate to de-escalate” potential conflict in cases Russia perceived as an existential threat.<sup>4</sup>

## Significance and Definitions

Russia has shown a renewed desire to compete with the US and NATO. To mitigate the escalation risk, NATO must maintain a credible deterrence threat in both conventional and unconventional capabilities. Deterrence is optimized if the target does not see how they may achieve a relative overmatch in a given area. Currently, it stands that Russia has a relative overmatch in non-strategic nuclear weapons.<sup>5</sup>

This report will analyze a particular class of non-strategic nuclear weapons: low-yield battlefield nuclear weapons (LYBNW). At its most basic, analysts often define NSNW as a nuclear weapon delivered by short and intermediate-range delivery systems. The 2010 New Strategic Arms Reduction Treaty defines strategic nuclear arms as anything delivered by intercontinental ballistic missiles, sea-launched ballistic missiles, or heavy bombers.<sup>6</sup> In 2020, the author of the US Congressional Research Service’s report on non-strategic nuclear weapons, Amy Woolf, classifies a nuclear weapon based on the type of target.<sup>7</sup> This report will use Woolf’s definition of non-strategic nuclear weapons.

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<sup>4</sup> Woolf, *Nonstrategic Nuclear Weapons*, 23-24.

<sup>5</sup> Ibid., Summary.

<sup>6</sup> Amy Woolf, *Russia’s Nuclear Weapons: Doctrine, Forces, and Modernization* (Washington, DC: Congressional Research Service, 2020), 20; Woolf, *Nonstrategic Nuclear Weapons*, 23-24.

<sup>7</sup> Woolf, *Nonstrategic Nuclear Weapons*, 23-24.

Additionally, a battlefield nuclear weapon (BNW), as discussed in a 1988 monograph from Michael Cannon, is an NSNW employed against ground forces to achieve tactical or operational effects.<sup>8</sup> This report will use the terms “low-yield” and “very low-yield” to increase the specificity of the analysis subject of BNW use. Specifically, a low-yield nuclear weapon has an explosive yield below ten kilotons (kt) of TNT and a very low-yield nuclear weapon below 1 kt.<sup>9</sup> This analysis will focus on the employment of very low-yield and low-yield battlefield nuclear weapons. However, both BNW and non-strategic nuclear weapons are discussed throughout the report to explain how LYBNW fit into the non-strategic nuclear war construct.

Relative to Russia, NATO has a small inventory of non-strategic nuclear weapons. Furthermore, should NATO lack air supremacy or fail to achieve any air superiority, Russia can significantly mitigate or even deny NATO’s ability to employ NSNW. Whereas the employment of Russian non-strategic nuclear weapons is not dependent on air or naval supremacy; instead, it can deliver with ground-based missile systems like the Iskander or cannon artillery.<sup>10</sup>

Additionally, over the last 20 years, US and NATO forces have operated mostly against insurgencies and countering terrorism. The focus of NATO and US forces against non-state adversaries has atrophied their ability to operate within a chemical or nuclear environment. This atrophy places NATO at greater risk and Russia in a position of greater relative advantage in the use of non-strategic nuclear weapons. The Russian advantage is most pronounced in the realm of

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<sup>8</sup> Michael Cannon, “Battlefield Nuclear Weapons And Tactical Gridlock In Europe” (Monograph, School of Advanced Military Studies, 1988), 35.

<sup>9</sup> Office of the Deputy Secretary of Defense for Nuclear Matters, *Nuclear Matters Handbook* (Washington, DC: Government Publishing Office, 2020), 226, accessed December 17, 2020, <https://www.acq.osd.mil/ncbdp/nm/nmhb/index.htm>.

<sup>10</sup> Hans Kristensen and Matt Korda, “Tactical Nuclear Weapons, 2019,” *Bulletin of the Atomic Scientists* 75, no. 5 (September 2019): 252-253, accessed December 17, 2020, <https://doi.org/10.1080/00963402.2019.1654273>.

LYBNW, which they developed to service tactical level targets with the expectation that America would not escalate to strategic nuclear weapons..<sup>11</sup>

## Research Question, Problem Statement, and Hypothesis

There is a significant amount of literature discussing the “Russian way of war” and what strategic goals the Russians would attempt to attain using non-strategic nuclear weapons. In contrast, there is almost no literature exploring what the use of these weapons would look like at the operational or tactical level against NATO ground forces. This research focuses on why and how Russia would employ low-yield battlefield nuclear weapons. It explores in what context the Russian military would use battlefield nuclear weapons to achieve strategic objectives and what that risk is to NATO forces. Specifically, the research answers: How should the US and NATO ground forces understand and respond to the threat posed by Russian low-yield battlefield nuclear weapons in the EUCOM area of responsibility?

To understand how Russia will employ LYBNW, one must not merely reference the latest Russian doctrine and estimate whether Russia would use low-yield nuclear weapons in an offensive or defensive operation. Instead, it is important to analyze the Russian use of low-yield battlefield nuclear weapons in a larger context. One must examine how Russia would avoid a global backlash that would threaten the Russian political regime while simultaneously achieving policy objectives. Additionally, for Russia, the use of battlefield nuclear weapons may be the answer to their problem statement of, “How does Russia bring a favorable conclusion to an armed conflict against a conventionally superior NATO force before NATO brings the full weight of their military power against Russian forces?”<sup>12</sup>

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<sup>11</sup> Katarzyna Zysk, “Escalation and Nuclear Weapons in Russia’s Military Strategy,” *The RUSI Journal* 163, no. 2 (May 2018): 7, accessed December 17, 2020, <https://doi.org/10.1080/03071847.2018.1469267>.

<sup>12</sup> *Ibid.*, 4-5.

Given what we know, if Russia would employ LYBNW it would likely be in the early stages of a conflict to deny NATO's ability to disrupt Russian anti-access and area denial (A2AD) capabilities. Russia views its A2AD capability as essential for victory in a conventional war. Russia will employ low-yield nuclear weapons in conjunction with an information campaign to diffuse global backlash and reduce the possibility of nuclear escalation. The Russian theories and practice of escalate to de-escalate and new generation warfare are the Russian strategic concepts at the root of the paper's argument. Additionally, Russia likely views non-strategic nuclear weapons as a key decisive offset available to the Russian military to achieve a relative advantage.

## Methodology

To answer how and if Russia will employ LYBNW against ground forces, a threat analysis methodology is used and provides the paper's structure. This method analyzes two concepts: intent and capability. A brief risk assessment is conducted to synthesize and contextualize the threat analysis, centered on a hypothetical scenario. The scenario will aid in assessing the likelihood and consequences of the Russian use of low-yield battlefield nuclear weapons.<sup>13</sup>

The first third of this report analyzes Russian intent to use low-yield battlefield nuclear weapons. The analysis of intent consists of analyzing the desire and expected degree of success of employing low-yield battlefield nuclear weapons. The second third of this paper analyzes Russian LYBNW capability over two sections. Specifically, the sections will analyze Russian low-yield nuclear weapon resources and knowledge.<sup>14</sup> The final third is the modified risk assessment with a brief scenario followed by the conclusion and recommendations. Figure 1 graphically depicts the

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<sup>13</sup> Hank Prunkun, *Scientific Methods of Inquiry for Intelligence Analysis*, 2nd ed. (Lanham, MD: Rowland and Littlefield), 283-302.

<sup>14</sup> *Ibid.*, 289.

linkages of the intent and capability along with their components. Table 5 on page 37 provides a summary of the report’s conclusions.

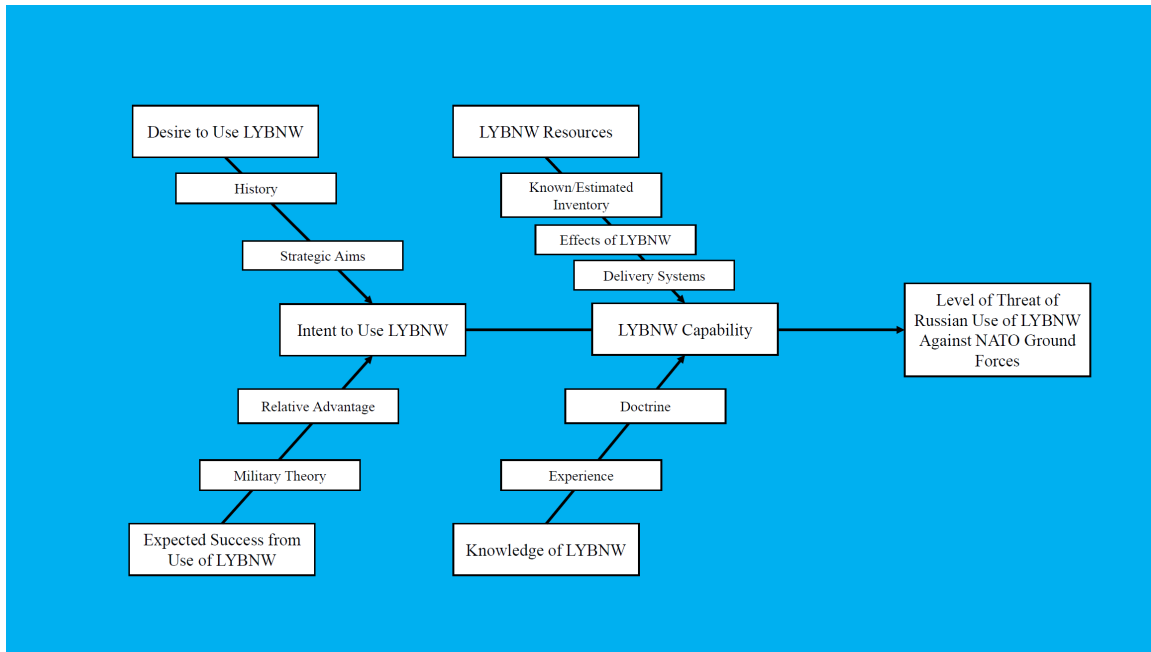


Figure 1. Threat Analysis of Russian Use of LYBNW Fishbone Diagram. Created by author based on Hank Prunkun, *Scientific Methods of Inquiry for Intelligence Analysis* (Lanham, MD: Rowland and Littlefield), 184 and 286.

## Russian Desire to Employ LYBNW

Russia will use low-yield battlefield nuclear weapons in the pursuit of three political aims: to preserve Russian sovereignty, to recapture regional hegemony, and to prevent the success of NATO ground force operations in Central Europe.<sup>15</sup> The Russian government views these weapons as a method to achieve its strategic objectives during ground force operations. LYBNW provide an option for the Russian military to achieve strategic objectives as these weapons serve as a counter to NATO’s perceived conventional weapons overmatch.

<sup>15</sup> Russian Federation Presidential Decree 2876, *The Military Doctrine of The Russian Federation* (Moscow, December 25, 2014), accessed December 17, 2020, <https://rusemb.org.uk/press/2029>; Russian Federation Presidential Edict 683, *The Russian Federation’s National Security Strategy*, 4; Zysk, “Escalation and Nuclear Weapons,” 9-10.



## A Change of Relative Advantage and Limited War

Understanding how the Russian government views security is vital to comprehend why Russia desires to employ nuclear weapons at the tactical level. Throughout Russian history, foreign powers have repeatedly invaded Russia's territory, with Russia suffering massive casualties. The most recent was World War II, during which the Soviet Union's civilians and military sustained an estimated 24 million casualties. That is well over one-third of the estimated global deaths due to World War II.<sup>16</sup> Before the Cold War, Russia's most significant defensive advantage was the vastness of its territory and its population's size. These two factors have preserved the Russian nation from collapse before Napoleon's time through Hitler's invasion. However, in the last fifty years, these advantages have eroded. With the fall of the USSR, Russia lost territory that it viewed not only as Russian or Russian protectorates but a security buffer.<sup>17</sup> The second factor that has and is changing is the Russian population. The population is aging. Russia's median age rose six years over the last thirty years, from 33 years in 1990 to 39.6 years in 2020. Russia's current population growth rate of -0.16 percent ranks 205 of 237 countries in the CIA World Factbook.<sup>18</sup> Overall, Russia can no longer count on being able to overwhelm a potential invader with people as it has in the past. Due to its critical geographic and demographic

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<sup>16</sup> National World War II Museum, New Orleans, "Research Starters: Worldwide Deaths in World War II," accessed November 25, 2020, <https://www.nationalww2museum.org/students-teachers/student-resources/research-starters/research-starters-worldwide-deaths-world-war>.

<sup>17</sup> Hani Zaitoun, "28 Years After Restoring Independence, the Shadow of the Russian Bear Is Still Swirling Over Estonia," Pulitzer Center, November 20, 2019, accessed December 17, 2020, <https://pulitzercenter.org/reporting/28-years-after-restoring-independence-shadow-russian-bear-still-swirling-over-estonia>; Ben Stiel, "Russian Clash with the West Is About Geography not Ideology," *Foreign Policy*, February 12, 2018, accessed December 17, 2020, <https://foreignpolicy.com/2018/02/12/russias-clash-with-the-west-is-about-geography-not-ideology/>.

<sup>18</sup> Worldometer, "Population of Russia (2020 and Historical)," accessed December 10, 2020, <https://www.worldometers.info/world-population/russia-population/>; US Central Intelligence Agency, "Population Growth Rate," CIA World Factbook, accessed December 10, 2020, <https://www.cia.gov/library/publications/the-world-factbook/fields/344rank.html>.

changes, Russia no longer enjoys the quantitative advantages contributing to its military successes in the past.<sup>19</sup>

Traditional Russian military thought contrasts warfare by attrition and annihilation. The latter, also called destruction by Aleksandr A. Svechin, is the preferred method by many Russian theorists and historical figures such as Lenin or Stalin. A war of annihilation brings a swift and decisive strike destroying the enemy deep within his territory.<sup>20</sup> However, theorists such as Svechin argued that the path to achieving destruction is very narrow and resource-intensive. In contrast, attrition can be accomplished in a multitude of ways and is a war of limited aims not focused on the destruction of the enemy's army like annihilation. These aims must also address the enemy's political and economic capacity.<sup>21</sup> As in the US wars in Afghanistan and Vietnam, US adversaries maintained their political will, which enabled their continued fighting despite military losses.<sup>22</sup> Although Russian military theorists prefer destruction, attrition seems to be the more likely of the two warfare methods, and thus the one Russia will prepare to fight against NATO.

NATO's perceived conventional weapons and economic overmatch, along with the loss of the USSR's territory and demographic changes, automatically prohibit Russia from conducting a war of annihilation. Instead, to attain their ends, Russia will use a war of attrition that attempts to leverage specific abilities to achieve a relative advantage to achieve limited objectives. Russia will leverage its information capabilities to exacerbate political divisions within NATO member

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<sup>19</sup> Michael Koffman, "Russian Demographics and Power, Does the Kremlin Have a Long Game?" *War on the Rocks*, February 4, 2020, accessed December 17, 2020, <https://warontherocks.com/2020/02/russian-demographics-and-power-does-the-kremlin-have-a-long-game/>.

<sup>20</sup> Timothy L. Thomas, *Russian Military Thought: Concepts and Elements* (McLean, VA: MITRE Corporation, 2019), 17.

<sup>21</sup> Aleksandar Svechin, *Strategy*, ed. and trans. Kent D. Lee (Minneapolis: East View, 1992), 240-250 (Originally published as *Strategiia*. Moscow: Voennyi vestnik, 1927).

<sup>22</sup> Anthony H. Cordesman, *Afghanistan as Vietnam Redux: Bomb, Declare Peace, and Leave?* (Washington, DC: Center for Strategic and International Studies, January 2018), accessed December 17, 2020, <https://www.csis.org/analysis/afghanistan-vietnam-redux-bomb-declare-peace-and-leave>.

states and between NATO members.<sup>23</sup> If a conflict becomes a shooting war, Russia will need to exercise and exploit the weakness of a more powerful NATO. In this regard, Russia believes it has an important advantage with respect to the use of nuclear weapons.<sup>24</sup>

## New Generation Warfare, Reflexive Control, and the Initial Period of War

Often referred to as the “Gerasimov Doctrine” or new generation warfare, General Valery Gerasimov has laid out methods to achieve tactical overmatch against an adversary to attain limited goals. Whether or not Gerasimov intended to create a new doctrine is irrelevant; instead, it is relevant because he discusses how he and many Russian military thinkers view warfare.<sup>25</sup> In Gerasimov’s 2013 article, he makes three key points on the current trend of warfare and Russia’s way forward relevant to the discussion of LYBNW. The first is the importance of the information domain in today’s conflicts. Gerasimov argues the information space can reduce the options for an enemy in war. Information warfare is rooted in Russian military tradition, notably in the form of reflexive control.<sup>26</sup> The second is “high-precision weaponry is taking on a mass character.”<sup>27</sup> This concept is central to assessing Russian intent to use battlefield nuclear weapons as the Russian government views NATO as possessing a relative advantage in conventional weapons

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<sup>23</sup> Ben Connable, Stephanie Young, Stephanie Pezard, Andrew Radin, Raphael S. Cohel, Katya Migacheva, and James Sladden, *Russia Hostile Measures: Countering Russian Gray Zone Aggression Against NATO in Contact, Blunt, and Surge Layers of Competition* (Santa Monica, CA: RAND Corporation, 2020), ix, 48-50, 55.

<sup>24</sup> US Central Intelligence Agency, Office of Transnational Issues, *Evidence of Russian Development of New Subkiloton Nuclear Warheads*, *Intelligence Memorandum* (Washington, DC: Central Intelligence Agency, August 2000), 7.

<sup>25</sup> Mark Galeotti, “The ‘Gerasimov Doctrine’ and Russian Non-Linear War,” *In Moscow’s Shadow* (blog), July 6, 2014, accessed December 17, 2020, <https://inmoscowsshadows.wordpress.com/2014/07/06/the-gerasimov-doctrine-and-russian-non-linear-war/>.

<sup>26</sup> Keir Giles, James Sherr, and Anthony Seaboyer, *Russian Reflexive Control* (Ontario: Royal Military College of Canada, 2018), 45, accessed December 17, 2020, [https://www.researchgate.net/profile/Keir\\_Giles/publication/328562833\\_Russian\\_Reflexive\\_Control/links/5bd4b1714585150b2b8b2a21/Russian-Reflexive-Control.pdf](https://www.researchgate.net/profile/Keir_Giles/publication/328562833_Russian_Reflexive_Control/links/5bd4b1714585150b2b8b2a21/Russian-Reflexive-Control.pdf).

<sup>27</sup> Valery Gerasimov, “The Value of Science Is in the Foresight: New Challenges Demand Rethinking the Forms and Methods of Carrying out Combat Operations,” trans. Robert Coalson, *Military Review* 96, no. 1 (January-February 2016): 23-29, originally published in *Military-Industrial Kurier* (February 2013).

technology. Specifically, NATO and particularly the US have an advantage in precision weapons used in the initial period of war (IPW) to destroy adversary critical capability. The third point discusses how Russia can overcome its disadvantages. Gerasimov states, “[Russia] must not copy foreign experience and chase after leading countries, but we must outstrip them and occupy leading positions ourselves.” These positions occupied would be relative to NATO’s perceived vulnerabilities, which Gerasimov assures in his 2013 paper that no matter how strong Russia’s opponents seem, they all have vulnerabilities.<sup>28</sup>

Gerasimov echoed these thoughts at a speech to the Academy of Military Sciences in March 2019. There he discusses the importance of military thinkers developing new ways of thinking about the employment of Russian forces. Gerasimov reinforces his point with a quote from Svechin on how no one can predict war or its form, nor can someone make specific preparations to counter a future adversary. In the Russian strategic situation, this calls on Russian military planners not to be slaves to Russia’s historical military doctrine. Instead, it empowers planners to consider a more comprehensive array of options. Gerasimov asks military planners and theorists to look at the current strategic environment and provide ideas and capabilities to give commanders at echelon greater latitude for action, not reduce it.<sup>29</sup> Historically and recently, Russia has had the potential for overmatch capability in information warfare and tactical nuclear capability. These are two parts of a larger form of warfare.<sup>30</sup>

## Escalate to De-Escalate, Strategy, and Policy

Russia has not expressed a theory of “escalate to de-escalate” directly, but one sees it in practice and government rhetoric. Many Western observers of Russia use the phrase “escalate to

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<sup>28</sup> Gerasimov, “The Value of Science,” 24-29.

<sup>29</sup> Roger McDermott, “Gerasimov Appeals for Military Science to Create New Forms of Combat Arms,” *Eurasia Daily Monitor* 16, no. 34 (March 2019), accessed November 30, 2020, <https://jamestown.org/program/gerasimov-appeals-for-military-science-to-forge-new-forms-of-combat/>.

<sup>30</sup> Stephen Covington, “The Culture of Strategic Thought Behind Russia’s Modern Approaches to Warfare” (Paper, Belfer Center for Science and International Affairs, Harvard Kennedy School, 2016), 12; Kristensen and Korda, “Tactical Nuclear Weapons, 2019,” 252-253.

de-escalate” to describe Russia’s actions in the foreign policy arena and explain the Russian government’s rhetoric and preparation for potential conflicts. W. Michael Guillot makes a convincing argument in his 2019 journal article in *Strategic Studies Quarterly* that the United States’ adversaries have seen a trend in American responses to de-escalate a situation to reduce the possibility of a military conflict. He uses examples from the 1968 capture of the *USS Pueblo* by the North Koreans to the Russian occupation of Eastern Ukraine and Crimea. The concern of American actions escalating war were critical narratives during the US wars in Vietnam and Korea.<sup>31</sup> A 2003 Russian Ministry of Defense whitepaper lays out a strategy of escalating a conflict with conventional or nuclear weapons employment to de-escalate a conflict that would surpass the Russian military’s capacity to defend.<sup>32</sup>

The President of the Russian Federation, Vladimir Putin, has expressed his concerns about NATO’s expansion to Russia’s borders. He explicitly states this concern in his 2007 speech to the Bundestag in Munich and the 2014 Russian National Security Strategy. In 2007, he expressly poses the question of, “Against whom is this expansion intended? And what happened to the assurances of our western partners made after the dissolution of the Warsaw Pact?”<sup>33</sup> Secondly, during the same speech, Putin states he will not act without UN sanction unless it is in self-defense, which is allowed under UN law.<sup>34</sup> Viewing NATO as a threat to Russia and espousing self-defense as permissible under international law are common trends in Putin’s rhetoric and actions. The essential part of this, however, is Putin’s understanding of what constitutes “self-defense.” Putin’s stated logic for the Russian invasion of Ukraine was Russia

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<sup>31</sup> W. Michael Guillot, “Why De-escalation Is Bad Policy,” *Strategic Studies Quarterly* 13, no. 3 (Fall 2019): 3-6, accessed December 17, 2020, <https://www.jstor.org/stable/10.2307/26760125>.

<sup>32</sup> Zysk, “Escalation and Nuclear Weapons,” 5.

<sup>33</sup> Vladimir Putin, speaking to the Munich Conference on Security Policy, to the 43rd Munich Conference, February 10, 2007, accessed October 20, 2020, <http://en.kremlin.ru/events/president/transcripts/24034>.

<sup>34</sup> Ibid., 22.

was defending ethnic Russians. This logic clearly shows Putin defines “self-defense” to include defending the “nation” of Russia, not just the Russian Federation.<sup>35</sup> Additionally, Russian military and political theorists continually express that the West, particularly the US, is interested in regime change throughout the world, pointing to the “color revolutions.”<sup>36</sup> Using the Russian Federation’s security concerns as context, the statement below takes a new meaning. “The Russian Federation reserves the right to use nuclear weapons in response to use against it and (or) its allies of nuclear and other weapons of mass destruction, as well as in the case of aggression against the Russian Federation with the use of conventional weapons when under threat the very existence of the state.”<sup>37</sup>

The statement of a “threat to the very existence of the state” takes new meaning as the Russian government may see an existential threat should they perceive NATO actively intervening in their right to “self-defense” of ethnic Russians. The Russian government further developed this logic in a document approved by Putin in June 2020, *The Basic Principles of the Russian Federation on Nuclear Deterrence*. It states the Russian Federation may use nuclear weapons in response to the use of nuclear weapons or a weapon of mass destruction against Russia or “its allies.”<sup>38</sup> Non-strategic nuclear weapons present an opportunity for Russia to achieve a physical overmatch relative to the NATO militaries. Non-strategic nuclear weapons provide Russia with an overmatch, not in themselves; instead, it is in concert with other Russian capabilities to include information and integrated air defense systems (IADS).

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<sup>35</sup> Josh Rubin, “NATO Fears this Town Will Be the Epicenter of the Conflict with Russia,” *The Atlantic*, January 24, 2019, accessed December 17, 2020, <https://www.theatlantic.com/international/archive/2019/01/narva-scenario-nato-conflict-russia-estonia/581089/>.

<sup>36</sup> Steven Rosefielde, “Russia’s Military-Industrial Resurgence: Evidence and Potential,” in *The Russian Military in Contemporary Perspective*, ed. Stephen J. Blank (Carlisle Barracks, PA: US Army War College Press, 2019): 133-134.

<sup>37</sup> Russian Federation Presidential Decree 2876, *The Military Doctrine*.

<sup>38</sup> Russian Federation Presidential Executive Order No 355, *Fundamentals of Russia’s Nuclear Deterrence State Policy* (Moscow, June 2, 2020): 2-5, accessed December 17, 2020, [https://www.mid.ru/en/foreign\\_policy/international\\_safety/disarmament/-/asset\\_publisher/rp0fiUBmANaH/content/id/4152094](https://www.mid.ru/en/foreign_policy/international_safety/disarmament/-/asset_publisher/rp0fiUBmANaH/content/id/4152094).

# Russian Expectation of Success Employing LYBNW

## Overview

Four themes influence and display Russian desire to use non-strategic nuclear weapons: changes to Russian strategic resources, the Russian theory of escalating to de-escalate, Russian strategy aims to further its security and influence, and the published Russian policy of using nuclear weapons to achieve those aims. The Russian military believes employing low-yield nuclear weapons against NATO ground forces present a high probability of success for two reasons. The US and Western Europe have shown they will de-escalate conflict if threatened with a broader war that threatens wider European security. Secondly, Russia believes its advantage in low-yield nuclear weapon capability and information warfare will escalate a conflict to the point that NATO will de-escalate. General Gerasimov's perspective on modern warfare stresses the importance of leveraging advantages during the initial period of war.

## Nuclear Escalation to Achieve Limited Aims

Russia believes “escalate to de-escalate” will succeed and that nuclear weapons are instrumental to it. From an August 2000 declassified CIA report, Russia's former Atomic Energy Minister made statements in 1996 and 1999. He stated developments in NSNW would blur the lines between “conventional and nuclear war,” and low-yield nuclear weapons will “lower the psychological threshold of nuclear weapons use and would increase the likelihood of a nuclear strike in a local conflict.” During that same timeframe, Russian military officers advocated for the employment of NSNW in non-lethal strikes early in a war to de-escalate a conflict.<sup>39</sup>

Recently, Russia practiced “escalate to de-escalate” in Ukraine. During the Ukraine invasion, Russian rhetoric and actions projected an image of a Russia ready to utilize nuclear force, if necessary, to prevent intervention by NATO or the US. During a press conference, the

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<sup>39</sup> CIA, Office of Transnational Issues, *Subkiloton Nuclear Warheads*, 7.

Russian Foreign Minister referenced Russia's stated ability to use nuclear weapons in the Russian Federation Military Doctrine.<sup>40</sup> This statement was against the backdrop of increased patrols by nuclear-capable aircraft within or near Ukraine and NATO members' territories.<sup>41</sup> Additionally, this fell directly in line with a 2011 statement by the previous Russian Chief of the General Staff to the Russian Duma. He stated,

The possibility of local armed conflicts virtually along the entire perimeter of the border has grown dramatically. I cannot rule out that, in certain circumstances, local and regional armed conflicts could grow into a large-scale war, possibly even with nuclear weapons.<sup>42</sup>

As already argued and seen in Ukraine, Russia's limited military objective is to affect America or NATO's desire to escalate a war into a broader conflict that would threaten Western Europe politically or economically. Possibly Russia would even pursue an objective that would disintegrate the trans-Atlantic bond of NATO and have the US population question the economic or political viability of conducting a conventional or any war in Russia's near abroad. Nuclear weapons will play a significant role in the Russian operating concept to achieve these strategic aims.

## Asymmetry of Action and Nuclear Weapons

In 2013, the same year Gerasimov wrote his article, two Russian military theorists authored an article for the Russian journal, *Military Thought*. Their paper, "The Nature and Content of a New Generation-War," outlines the role and importance of information operations,

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<sup>40</sup> Zachary Keck, "Russia Threatens Nuclear Strikes Over Crimea," *The Diplomat*, July 11, 2014, accessed December 17, 2020, <https://thediplomat.com/2014/07/russia-threatens-nuclear-strikes-over-crimea/>; Russian Federation Presidential Decree, *The Military Doctrine of The Russian Federation* (Moscow, February 5, 2010), accessed December 17, 2020, [https://carnegieendowment.org/files/2010russia\\_military\\_doctrine.pdf](https://carnegieendowment.org/files/2010russia_military_doctrine.pdf); Jacek Durkalec, "Nuclear Backed 'Little Green Men': Nuclear Messaging in the Ukraine Crisis" (Report, The Polish Institute of Foreign Affairs, Warsaw, July 2015), 7-8, accessed December 17, 2020, <https://www.files.ethz.ch/isn/193514/Nuclear%20Backed%20%E2%80%9CLittle%20Green%20Men%E2%80%9D%20Nuclear%20Messaging%20in%20the%20Ukraine%20Crisis.pdf>.

<sup>41</sup> Durkalec, "Nuclear Backed 'Little Green Men'," 9-13.

<sup>42</sup> Keck, "Russia Threatens Nuclear Strikes."



precision munitions, and “asymmetry of action” that one can leverage against an adversary where the aggressor will use all agencies to attack an enemy. Specifically, the last point on “asymmetry of action,” the authors describe how military actions should have a moral and psychological effect on the enemy population and the military.<sup>43</sup> Russian nuclear weapons provided an “asymmetry of action” during the Ukraine conflict more than any other Russian military capability. Russia’s possession of more NSNW than the other European powers or the US makes its deterrence and strike capability more credible. Many assess NATO as having a greater conventional military ability, but officials see non-strategic nuclear weapons as one of Russia’s few advantages in overcoming NATO.<sup>44</sup>

To understand the Russian nuclear posture in Ukraine, one must see it through Russia’s military theorists’ lens. They saw the need to leverage information operations and Russian relative advantages to affect their opponents’ psychology and prevent Western interference. Russian theorists and Gerasimov continually highlight this need in military journals and speeches. Additionally, the information operations begin before hostilities start to set conditions to achieve the desired effects. Charles Bartles argues that from Gerasimov’s point of view, in the modern version of warfare, belligerents use non-military to military means in a ratio of 4 to 1.<sup>45</sup> Russia leveraged nuclear weapons in this manner in 2014. As mentioned previously, Russian civilian and military officials made public statements about Russia’s ability and their right to use nuclear weapons to defend its sovereignty, even before the initiation of hostilities, such as the 2011

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<sup>43</sup> Sergey G. Chekinov and Sergey A. Bogdanov, “The Nature and Content of a New-Generation War,” *Military Thought*, no. 4 (2013), 12-23, accessed December 17, 2020, <https://www.usni.org/sites/default/files/inline-files/Chekinov-Bogdanov%20Military%20Thought%202013.pdf>.

<sup>44</sup> Kristensen and Korda, “Tactical Nuclear Weapons, 2019,” 252-253; CIA, Office of Transnational Issues, *Subkiloton Nuclear Warheads*, 7.

<sup>45</sup> Charles K. Bartles, “Getting Gerasimov Right,” *Military Review* 96, no 1 (January-February 2016): 33-36, accessed December 17, 2020, [https://www.armyupress.army.mil/Portals/7/military-review/Archives/English/MilitaryReview\\_20160228\\_art001.pdf](https://www.armyupress.army.mil/Portals/7/military-review/Archives/English/MilitaryReview_20160228_art001.pdf).

statement from Russia's Chief of the General Staff.<sup>46</sup> Coupled with the increased overflights of Ukraine and other territories outside of Russia by nuclear-capable bombers, Russia sent a clear message about its ability to use nuclear weapons, with the intent to prevent interference by Western nations' interference in Ukraine. Although one cannot prove a negative, this messaging likely played a significant role in Russia's success in annexing Crimea and its Ukrainian intervention while preventing intervention by Western nations.<sup>47</sup> If deterrence failed, Russia placed itself in a position to use non-strategic weapons within the initial period of a potential war to counter Western European intervention and some of their military advantages.

## Conclusion on Russian Intent to Use Non-Strategic Nuclear Weapons

The previous two sections argue that Russia's military and government intend to use nuclear weapons to achieve their strategic aims. Russia expects NSNW to achieve the limited objective of escalating a conflict to the point that NATO member states will have no appetite to escalate further. It is not the Russian military's view that they can accomplish a Svechin war of annihilation against NATO; instead, they must execute a war of attrition and achieve limited aims. Additionally, as the rest of the analysis will discuss, Russia's leadership does not intend to use non-strategic nuclear weapons to make a wasteland of Europe. Rather, it will use low-yield nuclear weapons with low collateral damage to target NATO ground forces and affect NATO's psyche.

## Russian Low-Yield Battlefield Nuclear Weapons

### Overview

The 2014 invasion of Ukraine showed Russian willingness to use nuclear weapons to achieve its ends. The next two sections discuss Russia's resources and knowledge to carry out

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<sup>46</sup> Keck, "Russia Threatens Nuclear Strikes"; Durkalec, "Nuclear Backed 'Little Green Men'," 7-8.

<sup>47</sup> Durkalec, "Nuclear Backed 'Little Green Men'," 5-6.

nuclear warfare with LYBNW. Russia's posturing in Ukraine in 2014 was only convincing because Russia had the know-how, the resources, and displayed the intent to use nuclear weapons to achieve its ends. However, this is not to assert that Russia was stating its intention to use so-called strategic nuclear weapons to achieve its goals. Instead, it would employ nuclear devices at the tactical or operational level to achieve its ends.

Within this threat analysis, resources and knowledge are components of the concept of "capability." The analysis of Russian LYBNW resources will address Russia's material resources and their experience and skills. This section will show that Russia currently has the material resources to engage NATO ground forces with a low-yield nuclear weapon, and they have programs that are modernizing their non-strategic nuclear weapons technologies. These recent programs do not start from ground zero; instead, they improve upon the world's most extensive estimated non-strategic nuclear weapons inventory.<sup>48</sup> The analysis on resources will discuss estimated amounts of Russian NSNW, the tactical benefits of enhanced radiation nuclear weapons (ERW), Russia's development of ERW technology, and overall modernization of Russian non-strategic nuclear weapons capability.

## Current Estimates of Russian NSNW Inventory and Systems

In the 1980s, the USSR had between 15,000 to 25,000 non-strategic nuclear weapons compared to the American inventory of no more than 6,000. In May 2020, the US *Nuclear Posture Review* assesses Russia as possessing from 1,000 to 6,000 non-strategic nuclear weapons. In comparison, the US has dismantled some of the 500 non-strategic nuclear weapons it possessed at the beginning of the 21st century.<sup>49</sup> In a 2019 report from the *Bulletin for Atomic Scientists*, the author estimates the US has 230 NSNW, and Russia has 1,830. The author breaks his estimate down further, stating the Russian Army has between 80 and 100 non-strategic

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<sup>48</sup> Kristensen and Korda, "Tactical Nuclear Weapons, 2019," 252-253.

<sup>49</sup> Woolf, *Nonstrategic Nuclear Weapons*, summary.

nuclear weapons. He further breaks down his assessment to short-range ballistic missiles, ground-launched cruise missiles, artillery munitions, and possibly land mines. Also relevant for ground forces are the Russian Air Force's estimated 530 NSNW various gravity bombs, air-launched ballistic missiles, and air-launched cruise missiles.<sup>50</sup>

## The Enhanced Radiation Weapon and Tactical Utility

Nuclear weapons have three basic physics packages: fission, fission-fusion, and fission-fusion-fission. The purpose of this short description of nuclear reactions is to help the reader frame the reactions' effects and understand how operational artists would incorporate low-yield nuclear weapons into tactical action. The first type of nuclear weapon to discuss is a fission weapon. Fission is the same reaction used in the original atomic bomb. It produces a blast and heat effect from the fission reaction of radioactive material. The second reaction, fission-fusion, generates its effects by creating high-velocity neutrons from the fusion of hydrogen isotopes and nuclear material with the initial fission reaction's energy. This reaction creates a radiological effect by releasing high-speed neutrons, gamma radiation, and x-ray radiation. This reaction and its effects are vital for understanding the potential of LYBNW. The final reaction to discuss is fission-fusion-fission. It is like the fission reaction discussed earlier. It generates the majority of its effects from the thermal and blast effects from the second fission event. However, the energy input from the fusion reaction's high-speed neutrons results in a higher efficiency fission event.<sup>51</sup>

The fission-fusion reaction is central to this discussion. Enhanced radiation weapons (ERW), or what is often called "neutron bombs," result from the fission-fusion reaction. Scientists originally developed the technology in 1958 at Lawrence Livermore Laboratory.

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<sup>50</sup> Kristensen and Korda, "Tactical Nuclear Weapons, 2019," 252-253.

<sup>51</sup> Office of the Deputy Secretary of Defense for Nuclear Matters, *Nuclear Matters Handbook*, 221-224; Donald M. Snow, "The Strategic Implication of Enhanced Radiation Weapons," *Air University Review* 30, no. 5 (July-August 1979): 3-4.

Neutron bombs entered the public debate in the 1970s when the US began fielding the technology with forces deployed in Europe.<sup>52</sup>

Enhanced radiation weapons have three major advantages. They have reduced “radiation fallout” due to the fusion reaction consuming some fission material. The radiological effects produced by neutron bombs come from high-velocity neutrons and gamma radiation. The neutrons and radiation penetrate most materials and disproportionately negatively affect biological material. Lastly, enhanced radiation weapons’ gamma radiation affects electronics that disrupt or even destroy their ability to function. The reduced “radiological fallout” makes it possible for forces to maneuver through an area shortly after an ERW was employed. The enhanced radiation weapon’s main effect is not the blast or thermal effects but the scattering of high-speed neutrons. The reduced blast and thermal effects reduce collateral damage while the neutron and gamma radiation effects still destroy or neutralize human targets.

Additionally, an enhanced radiation weapon would have the same radiological lethality as a fission reaction five times a neutron bomb’s blast effect. Still, the use of armor or hardened structures does not significantly mitigate enhanced radiation weapons effects.<sup>53</sup> ERW’s ability to overcome armor’s protection was why the American government would employ these weapons against the Soviets if needed. The logic behind the use of neutron bombs was the Soviets had an advantage in armored formations. It would serve as an equalizer while mitigating collateral damage and nuclear fallout. Ironically, the Russian military sees the same opportunity to use ERW against NATO forces in today’s operational environment.<sup>54</sup> Especially when considering the third tactical benefit of using these weapons is their effects on electronics. The gamma and x-ray radiation produced by a neutron bomb affect electronics, disrupting electrons’ proper flow

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<sup>52</sup> Snow, “Enhanced Radiation Weapons,” 3-4.

<sup>53</sup> Ibid., 5.

<sup>54</sup> Snow, “Enhanced Radiation Weapons,” 5-7; John T. Correll, “The Neutron Bomb,” *Air Force Magazine*, October 30, 2017, accessed December 17, 2020, <https://www.airforcemag.com/article/the-neutron-bomb/>.

within a circuit. Gamma radiation can significantly affect the operation of communication equipment..<sup>55</sup>

## Development and Modernization of ERW and NSNW Technology

When examining Russian rhetoric, military discussion, and posturing, as discussed earlier, it appears that the Russian government and military intend to maintain a tactical nuclear weapon capability to offset NATO's relative advantage in conventional weapons capability. Russia believes it can achieve this offset at a relatively low cost..<sup>56</sup> However, Russian belief in its non-strategic nuclear weapons' utility becomes even more apparent when examining Russia's nuclear weapons research and development. Declassified CIA reports from June 1999 and August 2000 show the Russian government was actively developing new tactical nuclear weapons capabilities. The reports discussed a Russian program that developed a nuclear weapon with a yield of .3 kt tailored radiation yields; hard x-rays, also known as gamma radiation; and soft x-rays. The 1999 and 2000 reports explicitly state these weapons would serve well against ground forces and reduce collateral damage in a war Russians estimate would take place within their territory..<sup>57</sup> A key concern that both US and Russian planners have had is the fallout and collateral damage of battlefield nuclear weapons (BNW). In his 1988 monograph on the subject of tactical nuclear weapons, Michael Cannon argues that the two factors above would make the use of BNW prohibitive. However, he made that estimation on the belief that the vast majority of US BNW

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<sup>55</sup> James C. Petrosky, Professor of Nuclear Engineering, Air Force Institute of Technology, virtual blackboard meeting with author, November 3, 2020; CIA, Office of Transnational Issues, *Subkiloton Nuclear Warheads*, 5.

<sup>56</sup> Leonid Polyakov, "Aspects of The Current Russian Perspective on Tactical Nuclear Weapons," in *Tactical Nuclear Weapons and NATO*, ed. Tom Nichols, Douglas Stuart, and Jeffrey D. McCausland (Carlisle Barracks, PA: Strategic Studies Institute, 2012), 155.

<sup>57</sup> CIA, Office of Transnational Issues, *Subkiloton Nuclear Warheads*, 1-2; US Central Intelligence Agency, *Senior Executive Intelligence Brief June 4, 1999* (Washington, DC: Central Intelligence Agency, 1999), 4.

had a yield well over one kt and that all of the Soviet battlefield nuclear weapons were over one kt, even reaching one megaton.<sup>58</sup>

Russia is not only mitigating the risk of collateral damage by minimizing yield but increasing precision as well. The 1999 CIA report suggests Russia was developing high precision weapons to be delivered by its Iskander rocket and developing new air-launched cruise missiles. According to this CIA report, the purpose of this capability is to deter superior NATO conventional capability.<sup>59</sup> These declassified CIA reports clearly show the US government assesses Russia as modernizing its non-strategic nuclear weapon capability. In 2019, Ellen Lord, the Under Secretary of Defense for Acquisition and Sustainment, bolstered this assessment in her statements to the Senate's Strategic Forces Subcommittee:

Russia also is modernizing and expanding its arsenal of approximately 2,000 non-strategic nuclear weapons, including nuclear torpedoes, nuclear air and missile defense interceptors, nuclear depth charges, nuclear landmines, and nuclear artillery shells—more than a dozen types.<sup>60</sup>

## Summation of Russian LYBNW Resources

The US nuclear posture review, US officials, and independent analysts express that Russia has significantly more non-strategic nuclear weapons than the US and its NATO allies. Russian officials have stated Russia can accomplish a comparative military advantage over NATO at a relatively low cost with NSNW. Based on the military capabilities that enhanced radiation weapons provide, it appears that these non-strategic nuclear weapons could help the Russian military achieve its limited objective of escalating to de-escalate a conflict with NATO. However, it would require Russian leaders to employ these weapons in a very deliberate fashion.

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<sup>58</sup> Cannon, "Battlefield Nuclear Weapons," 28-33.

<sup>59</sup> CIA, Office of Transnational Issues, *Subkiloton Nuclear Warheads*, 3.

<sup>60</sup> Honorable Ellen M. Lord, Under Secretary of Defense for Acquisition and Sustainment, *Statement Before the Strategic Forces Subcommittee Committee on Armed Services United States Senate: US Nuclear Weapons Policy, Programs, and Strategy in Review of the Defense Authorization Request for Fiscal Year 2020 and the Future Years Defense Program*, 116th Cong., 1st sess., May 1, 2019.

The next is an analysis of Russian doctrine contextualized with Russian military thought, government rhetoric, strategic aims, and low yield nuclear weapons. It will demonstrate how a Russian military would employ LYBNW against NATO ground forces.

## Doctrine and Historical Knowledge of LYBNW

### Overview

Russian military doctrine is the heir to the Soviet doctrinal understanding of employing BNW to achieve tactical and operational success. Russia's military doctrine has continued to evolve and develop since the USSR's fall almost 30 years ago. Not only do battlefield nuclear weapons have a place in Russian doctrine historically, but their use has a place in new generation warfare as well. The Russian military's integration of nuclear weapons into its recent military exercises displays nuclear weapons' prominence in current Russian military thought and practice. Furthermore, the number of dual-capable platforms within and available to Russian ground forces makes it easier to integrate low-yield nuclear weapons into Russian ground force military operations. Additionally, information operations campaigns are critical to the proper integration of LYBNW into Russia's military operations. Information operations set conditions with Russia's adversaries and the international community to achieve Russia's desired effect in support of strategic aims.

Integral to new generation warfare is the incorporating of information operations and information capabilities. It is not merely an integration that is additive; instead, an ability that amplifies the effects of military operations to achieve their aims while mitigating their risk. New generation warfare is an acknowledgment of what Svechin illustrates in his 1920 book, *Strategy*, that military conflict will not resolve till "a solution has been reached on the political and economic fronts."<sup>61</sup> To generate these solutions, Russia will employ low-yield nuclear weapons

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<sup>61</sup> Svechin, *Strategy*, 249.



integrated with its information operations, specifically timed within operations, and against specific NATO ground forces.

## Optimizing Nuclear Weapons Effects on Politics

Through its plans to employ tactical nuclear weapons, Russia aims to change underlying assumptions of the relationship between NATO and Russia. This change challenges the underlying belief that NATO's conventional capability can prevent Russia from achieving strategic goals. By changing which weapons are available to use short of strategic nuclear war, Russia estimates it can dictate terms in "[t]he process of the shaping a new polycentric model of the world order."<sup>62</sup> According to Russia's 2015 *National Security Strategy*, Russian strategic goals include countering NATO's further expansion and Russia asserting itself into the resolution of global problems. The Russian strategic document directly asserts that "The role of force in international relations is not a declining factor."<sup>63</sup> Russia developed its low-yield battlefield nuclear weapon doctrine to deal with the operational environment described in its 2015 *National Strategic Strategy*. The key characteristics of the environment are NATO is the primary threat, a new world order is forming, and force "is not a declining factor" in international relations.<sup>64</sup>

To deal with this environment, Russia is investing in and modernizing its information capabilities, which will work in concert with the Russian military's conventional and nuclear capabilities.<sup>65</sup> Figure 2 displays three vital elements of Gerasimov's perspective on interstate conflict: the proper ratio between non-military to military operations, the "conduct [of] information conflict" bridges the gap between military and non-military operations, and military operations occur in six phases. All this centers on the fact that the Russian government and

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<sup>62</sup> Everett Carl Doleman, *Pure Strategy* (Oxon: Taylor and Francis, 2005), 4; Russian Federation Presidential Edict 683, *National Security Strategy*, 4.

<sup>63</sup> Russian Federation Presidential Edict 683, *National Security Strategy*, 4.

<sup>64</sup> Ibid.

<sup>65</sup> Giles, Sherr, and Seaboyer, *Russian Reflexive Control*, 45.

military must address economic and political issues to resolve conflicts.<sup>66</sup> Russia can best exploit the advantages of low-yield nuclear weapons against ground forces early in Gerasimov's phase 5 "resolution" or during the "seize the initiative" phase, in figure 3. Russian timing would focus on preventing NATO or US forces from bringing the entirety of its military might into the "dominate" phase (figure 3).<sup>67</sup>

To prevent a full-scale conventional war, Russia must achieve three information goals. The first and second are that a NATO conflict with Russia would incur a high cost of human life, and conventional or nuclear war will not achieve NATO aims. Last is that NATO members' domestic audiences would prefer Russia to achieve its strategic aims to a NATO military intervention. Low-yield nuclear weapons would serve as tools to reinforce these information objectives. The difference in effects between strategic and low-yield nuclear weapons would further inject confusion into the information environment and decision-making cycles. Suppose the effects of battlefield nuclear weapons use are limited to NATO military assets with no significant collateral damage. The question then opens if the US or its NATO allies are willing to employ non-low yield nuclear weapons and further escalate a conflict from a "conventional" to a "nuclear" war.

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<sup>66</sup> Bartles, "Getting Gerasimov Right," 34-35; Svechin, *Strategy*, 91.

<sup>67</sup> The NATO phasing construct used here is from US doctrine because NATO's doctrine, called Allied Joint Doctrine, does not have a phasing construct. NATO doctrine only discusses an operational framework concept that is not to be considered sequentially or in phases. US Department of Defense, Joint Staff, Joint Publication (JP) 3-0, *Joint Operations* (Washington, DC: Government Publishing Office, 2017), V-10-V-13; North Atlantic Treaty Organization, Allied Joint Publication (AJP) 1-0, *Allied Joint Doctrine* (Brussels: NATO Standardization Office (NSO), 2017), 4-6.

## The Role of Nonmilitary Methods in the Resolution of Interstate Conflicts

The primary phases (stages) of conflict development

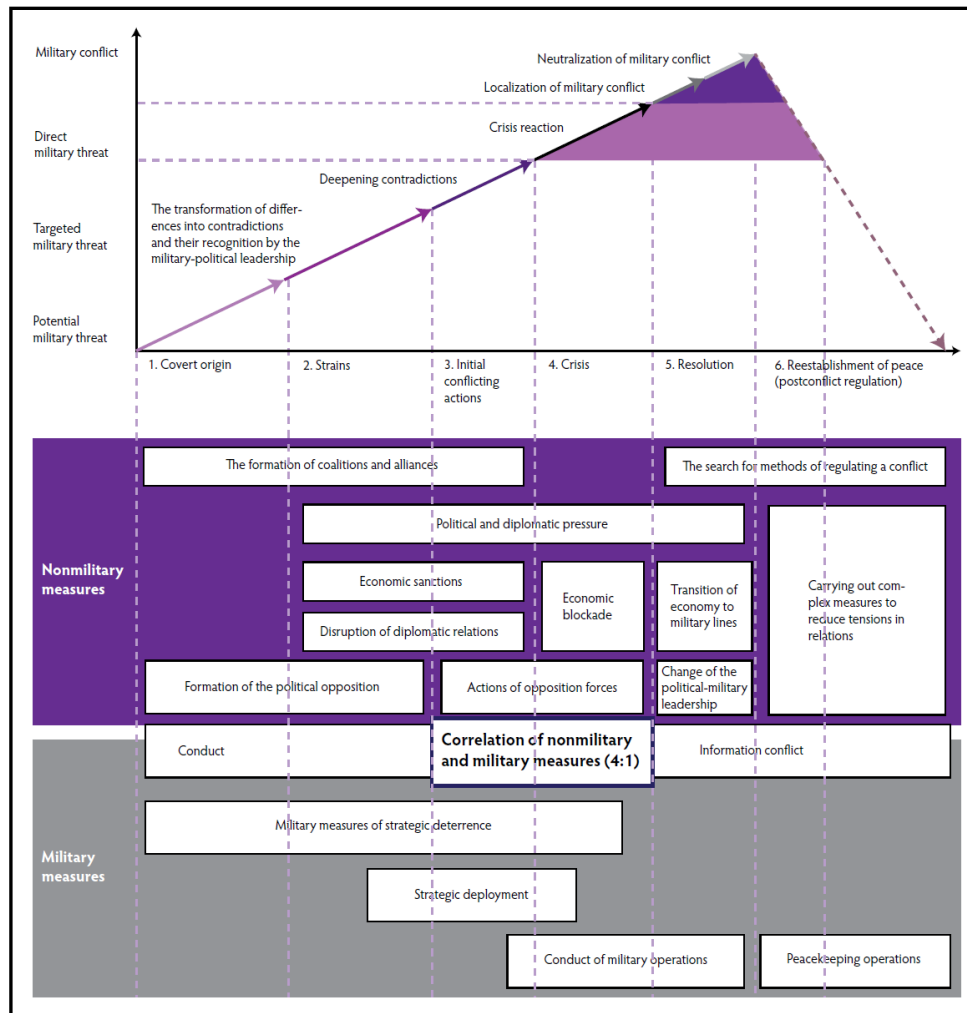


Figure 2. Gerasimov's Vision of Warfare translated by Charles Bartles. Valery Gerasimov, "The Value of Science Is in the Foresight: New Challenges Demand Rethinking the Forms and Methods of Carrying out Combat Operations," trans. Robert Coalson, *Military Review* 96, no. 1 (January-February 2016): 23-29.

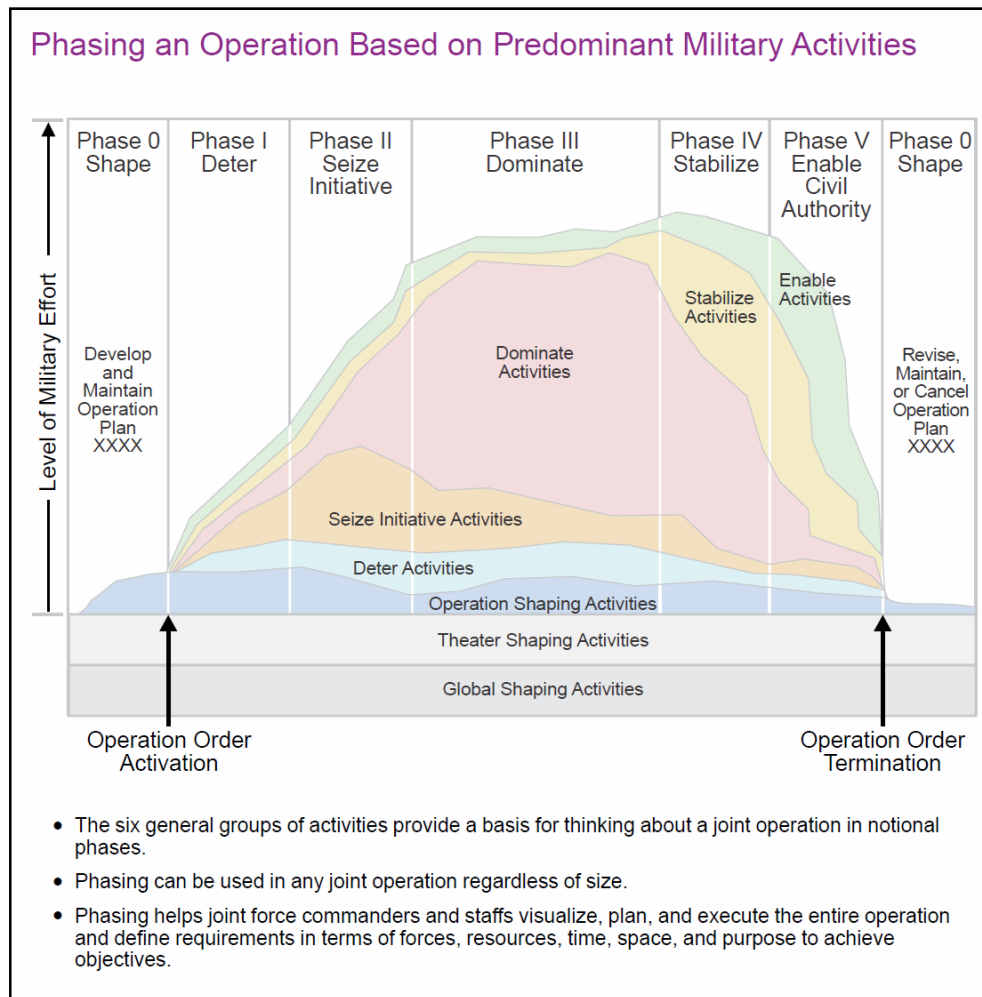


Figure 3. Phasing and Operation Based on Predominant Military Activities. US Department of Defense, Joint Staff, Joint Publication (JP) 3-0, *Joint Operations* (Washington, DC: Government Publishing Office, 2017), V-13.

## Targets and Disposition of LYBNW Capable Forces

It is in the Russian military's interest to strike early in the "resolution" phase, as depicted in figure 2, and before the US or NATO can reach the "dominate" phase in figure 3. Striking before the "dominate" phase is key as the US, who is the largest contributor to NATO's military capability, will have to fight a war expeditionary in nature. Currently, the US has three maneuver brigades in Europe: one light infantry, one cavalry reconnaissance, and one mechanized.<sup>68</sup> The

<sup>68</sup> US Department of the Army, "7th Army Training Command," US Army Europe-Africa, accessed December 17, 2020, <https://www.7atc.army.mil/>; US Department of the Army, "Info Graph for Atlantic Resolve," US Army Europe-Africa, accessed December 17, 2020,

US force is not enough to meet the requirements of facing 14 Russian maneuver brigades organized in army groups and an additional four maneuver divisions on Russia's border with the rest of Europe (figure 4).<sup>69</sup> The force ratio will require the US to move forces from outside the European theater to meet Russia in any form of conventional armed conflict involving ground forces. Additionally, only five NATO allies border Russia: Norway, Poland, Lithuania, Latvia, and Estonia with four NATO battalion-sized battle groups.<sup>70</sup> The battlegroups are in Estonia, Latvia, Lithuania, and Poland, led by the UK, Canada, Germany, and the US.<sup>71</sup> Outside of those battle groups, the remaining forces will need to move forward to meet Russia near its border, with the US and Canada having to move their troops' preponderance across the Atlantic.



Figure 4. Russian Ground Force Disposition Map. Lester W. Grau and Charles K. Bartles, *The Russian Way of War* (Fort Leavenworth, KS: Foreign Military Studies Office, 2016), 29.

<https://www.europeafrica.army.mil/Portals/19/documents/Infographics/2020.11.20.Atlantic%20Resolve%20infographic.smaller.pdf?ver=si2i1JyqVJbM275TgJ6Jg%3d%3d>.

<sup>69</sup> Lester W. Grau and Charles K. Bartles, *The Russian Way of War* (Fort Leavenworth, KS: Foreign Military Studies Office, 2016), 29.

<sup>70</sup> North Atlantic Treaty Organization, "NATO on the Map," accessed December 8, 2020, <https://www.nato.int/nato-on-the-map/#lat=69.50343270831053&lon=38.35411255973336&zoom=-1&layer=1>.

<sup>71</sup> North Atlantic Treaty Organization, "Boosting NATO's Presence in the East And Southeast," updated October 20, 2020, accessed December 17, 2020, [https://www.nato.int/cps/en/natohq/topics\\_136388.htm](https://www.nato.int/cps/en/natohq/topics_136388.htm).

The necessity for NATO to move troops to a potential conflict zone near Russia's border highlights Russia's relative advantage in its ability to develop defensive positions before the significant buildup of NATO forces. Russia's advantage increases with their existent anti-access area denial (A2AD) capabilities, which will hinder NATO and the US's ability to establish a foothold in an area of conflict. Due to Russia's perception of NATO's conventional weapon's superiority and its analysis of US operations in Iraq and Kosovo, Russian planners emphasize the initial period of war in their doctrine.<sup>72</sup> Russian military analysts and theorists determined that the US and NATO set conditions for operational success during the initial period of war. In American military doctrine, the IPW is the "seize the initiative" and early in the "dominate" phases. The United States achieves an advantage through the employment of aerial and precision strike capability.<sup>73</sup> Russian success in the IPW would seek to deny NATO forces access to critical infrastructure for the reception, staging, onward movement, and integration of troops into an area of conflict. It would also deny any ground avenues of approach for NATO ground forces to move into a potential conflict zone and restrict NATO's ability to achieve any periods of air superiority or air supremacy. The key to denying NATO air superiority is Russia maintaining its air defense capability. Russian air defense capability is not only useful in denying its adversaries the use of aircraft but can defeat cruise missiles as well.<sup>74</sup> US military doctrine employs a mix of ground-based surface to surface fires and air to surface delivery systems to disrupt adversarial air defense capability.<sup>75</sup> The US Army employs weapon systems such as the multiple launch rocket system

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<sup>72</sup> US Defense Intelligence Agency, *Russia Military Power: Building a Military to Support Great Power Aspirations* (Washington, DC: Government Publishing Office, 2017), 33.

<sup>73</sup> DIA, *Russia Military Power*, 33; Chekinov and Bogdanov, "New-Generation War," 15; Timothy L. Thomas, "Russia's Expanding Cyber Activities: Exerting Civilian Control While Enhancing Military Reform," in *The Russian Military in Contemporary Perspective*, ed. Stephen J. Blank (Carlisle Barracks, PA: US Army War College Press, 2019), 530; US Joint Staff, JP 3-0 (2017), V-10.

<sup>74</sup> DIA, *Russia Military Power*, 33.

<sup>75</sup> US Department of Defense, Joint Staff, Joint Publication (JP) 3-01, *Counter Air and Missile Threats* (Washington, DC: Government Publishing Office, 2019), V-12-V-15.

(MLRS) to defeat an adversary's air defense capability. Russian doctrine task organizes to address these threats specifically.

According to a 2019 report by Hans Kristensen, Russia has three different nuclear-capable munitions for its Iskander missile system. This short-range ballistic missile (SRBM) launcher is employed at the Russian army group level, organized into Iskander brigades. These brigades have a total of 12 Iskander launchers. Russia has one brigade deployed in the Kaliningrad region, placing a tactical nuclear-capable system between two NATO countries, Poland and Lithuania. With the Iskander's reported ability to range 500 km, Russia can range most of Poland and just over the German border from the Kaliningrad Oblast.<sup>76</sup> Additionally, Russia may easily modify the Iskander to range over 500 km.<sup>77</sup>

In addition to the Iskander system, Russia also has aircraft capable of delivering non-strategic nuclear weapons, such as the Tu-22M3M, Tu 22M3, Tu-22, Su 24/34/57, and MiG-31K (see Table 1). With these aircraft, the Russian military can deliver NSNW with air-launched cruise missiles, air-delivered ballistic missiles, and bombs. Along with delivering nuclear weapons with a howitzer, Russia can deliver LYBNW to its adversaries across various weapons systems.

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<sup>76</sup> Grau and Bartles, *Russian Way of War*, 264; Google, "Kaliningrad Oblast Map," Google Maps, accessed December 2, 2020, <https://www.google.com/maps/place/Kaliningrad+Oblast,+Russia/@55.7785166,18.293895,6.28z/data=!4m5!3m4!1s0x46e39c45442e0be3:0x1e2558c4d03a027b!8m2!3d54.8235292!4d21.4816162>.

<sup>77</sup> Grau and Bartles, *Russian Way of War*, 264.

Table 1. Estimates of Russian Airforce and Army NSNW

| Russian Airforce and Army Non-Strategic Nuclear Capability   |                       |  |        |
|--|-----------------------|--|--------|
| Service/Type   | Dual Capable Launcher | Platform                                 | Number |
| Airforce   |                       |  | 530    |
| AS-4(Kh-22) ASM  | Yes                   | Tu-22M3 bomber                           |        |
| (Kh-32 ASM)*   | Yes                   | Tu-22M3M bomber                          |        |
| (Kinzhal (Kh-47M2) ALBM )*   | No                    | MiG-31k, Tu-22M3M                        |        |
| Bombs  | No                    | Tu-22 bomber, Su-24/34/57 fighter-bomber |        |
| Army   |                       |  | 80-100 |
| SS-21 SRBM   | Yes                   | Tochka TEL                               |        |
| SS-26 SRBM   | Yes                   | Iskander TEL                             |        |
| SSC-8 GLCM   | Yes                   | Mod-Iskander TEL                         |        |
| (SSC-7 GLCM)   | Yes                   | Iskander TEL                             |        |
| SSC-9 GLCM*  | ?                     | ?  |        |
| (Artillery)  | Yes                   | Howitzer                                 |        |
| (Landmine)   | ?                     | ?  |        |
| ASM = air-to-surface missile; ALBM = air-launched ballistic missile; SRBM = short-range ballistic missile; GLCM = ground-launched cruise missile; TEL = transporter erector launcher |                       |  |        |
| * Indicates in development; () Indicates weapon not certain to be nuclear-capable  |                       |  |        |
| The table does not include Russian Air/Missile/Costal Defense or Naval NSNW.   |                       |  |        |

Created by the author from Hans Kristensen and Matt Korda, "Tactical Nuclear Weapons, 2019," *Bulletin of the Atomic Scientists* 75, no. 5 (September 2019): 253.

## A History of Doctrine and Exercising

Russian capability goes beyond resources. Russia has a history of planning the employment of battlefield nuclear weapons. In the 1960s, Russian doctrine planned to use nuclear weapons to create a hole in a prepared defense that Soviet mechanized forces could exploit. In the 1980s, Soviet doctrine identified multiple battlefield nuclear weapons employment would result in highly restricted terrain due to excessive cratering. This estimate drove Soviet doctrine to recommend employing tactical nuclear weapons on the enemy's second echelon or reserves. In addition to the Soviet's incorporating tactical nuclear weapons into their doctrine, the Soviet



military made plans for a two-phased nuclear operation that employed thousands of nuclear weapons. NATO discovered copies of the plan after German unification, which the USSR left behind in East Germany.<sup>78</sup>

Russia possesses multiple aircraft that can deliver non-strategic nuclear weapons. Russian military theorists determined aircraft used against tactical targets would achieve greater success than using aircraft to strike “strategic” targets based on the Russian experience in World War II and Russian analysis of the Spanish Civil War.<sup>79</sup> Understanding that Russia views aircraft as essential in supporting ground forces and as a critical weapon to oppose enemy ground forces, some of the planning for the air delivered NSNW likely intends to achieve tactical victories against NATO ground forces.

Recently, Russia exercised nuclear capabilities during military exercises. Notably, in the 2009 Zapad Exercise, Russia employed a simulated nuclear strike using aircraft while conducting an amphibious assault on a simulated Polish beach in Kaliningrad.<sup>80</sup> In 2016, Russia reportedly simulated the launch of cruise missiles with non-strategic nuclear weapons during the Kavkaz military exercise. That same year, NATO reported that Russia had conducted an exercise in 2013 where Russian simulated nuclear weapons delivery against targets in Sweden.<sup>81</sup> In August 2020, during a snap drill, Russia exercised the Iskander missiles systems in their nuclear capacity in the Russian Southern Military District along with conventional Russian forces.<sup>82</sup> Russia not only has

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<sup>78</sup> Grau and Bartles, *Russian Way of War*, 204-207.

<sup>79</sup> Ibid., 384-386.

<sup>80</sup> Matthew Day, “Russia ‘Simulates’ Nuclear Attack on Poland,” *The Telegraph*, November 1, 2009, accessed December 17, 2020, <https://www.telegraph.co.uk/news/worldnews/europe/poland/6480227/Russia-simulates-nuclear-attack-on-Poland.html>.

<sup>81</sup> Mark B. Schneider, “Will Russia Further Lower Its Nuclear Weapons Use Threshold?” *Real Clear Defense*, September 19, 2020, accessed December 17, 2020, [https://www.realcleardefense.com/articles/2020/09/19/will\\_russia\\_further\\_lower\\_its\\_nuclear\\_weapons\\_use\\_threshold\\_577995.html](https://www.realcleardefense.com/articles/2020/09/19/will_russia_further_lower_its_nuclear_weapons_use_threshold_577995.html); Roland Oliphant, “Russia ‘Simulated a Nuclear Strike on Sweden’ NATO Admits,” *The Telegraph*, February 4, 2016, accessed December 17, 2020, <https://www.telegraph.co.uk/news/worldnews/europe/russia/12139943/Russia-simulated-a-nuclear-strike-against-Sweden-Nato-admits.html>.

<sup>82</sup> Schneider, “Will Russia Lower Threshold?”

a history of planning for nuclear weapons on the tactical and operational level but is currently exercising and planning for these capabilities on the battlefield.

## Russian LYBNW Capabilities Conclusion

Russia has continued to develop nuclear capabilities inherited from the Soviet Union and maintained the tradition of nuclear planning as seen in their exercises. US government reports, Russian government rhetoric, and Russian military exercises indicate Russian modernization in its non-strategic nuclear weapon capability. Russia's military has acknowledged NATO and the US militaries' advantage in conventional munitions capabilities and identified a need to achieve an offset. Nuclear weapons provide that capability. During the Cold War, both the US and the Soviet Union planned to use tactical nuclear weapons in the event of a conventional war in Europe. The fact that both militaries saw battlefield nuclear weapons as something to plan and resource, it stands to reason both militaries saw the use of nuclear weapons on the battlefield did not necessarily lead to the use of "strategic" nuclear weapons. Instead, some military planners and strategists believed that militaries could use nuclear weapons at the tactical and operational level without escalating to using strategic nuclear weapons against population centers. Whether or not that assessment is valid is not significant for this analysis. Because if that estimate remains a planning assumption with key Russian military planners, it leaves the window open to the use of battlefield nuclear weapons regardless of it actually escalating to strategic nuclear weapons. The Russian government's belief that it can use BNW without necessarily escalating to strategic nuclear weapons is evident as Russia continues its research, development, exercising, and modernizing of Russian NSNW capabilities. Russia's modernization of its tactical nuclear capability is the most substantial evidence of its intent to use it and a clear demonstration of Russia's high degree of threat with its low yield battlefield nuclear weapons.

# Risk Assessment of Russian Use of LYBNW

## Overview

This section will assess the risk presented to NATO ground forces in a conventional war against the Russian military on the European continent. The scenario provided will give a limited context to analyze the likelihood and the consequence of Russian employment of low-yield nuclear weapons against NATO ground forces. This risk assessment is based on Hank Prunkun's approach in his book, *The Scientific Methods of Inquiry for Intelligence Analysis*. The analysis examines the likelihood of employment of LYBNW in a scenario, and the consequences should it occur.<sup>83</sup>

To best analyze the risk to NATO ground forces from low-yield nuclear weapons, the analysis starts with NATO and Russia already involved in a major armed conflict. This assumption means an assessment of Russia and NATO's likelihood of going to a "shooting" war is not required, allowing the assessment to focus on the risk of Russia's employment of low-yield nuclear weapons against NATO ground forces in a conventional war once shooting has commenced. Secondly, the risk assessment will measure the consequences of said employment at the tactical, operational, and strategic levels of war. The focus will largely be on the operational and strategic levels. Lastly, reference the below tables to define the five levels of likelihood and the five levels of consequence used for the risk analysis.

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<sup>83</sup> Prunkun, *Scientific Methods of Inquiry*, 295-302.

Table 2. Likelihood scale used for risk assessment

| Definitions of Levels of Likelihood |                |   |
|-------------------------------------|----------------|---|
| Rank                                | Likelihood     | Descriptor  |
| A                                   | Almost Certain | The situation is expected to happen.                            |
| B                                   | Likely         | The situation will probably occur.                              |
| C                                   | Possible       | The situation should occur at some time.                        |
| D                                   | Unlikely       | The situation could occur at some time.                         |
| E                                   | Rare           | The situation would occur under only exceptional circumstances. |

Created by the author based on Hank Prunkun, *Scientific Methods of Inquiry for Intelligence Analysis* (Lanham, MD: Rowland and Littlefield), 300.

Table 3. Consequence scale for risk assessment

| Definitions of Levels of Consequence |               |  |
|--------------------------------------|---------------|--|
| Rank                                 | Consequence   | Descriptor   |
| 1                                    | Insignificant | Will only have a small impact.                                 |
| 2                                    | Minor         | Will have a minor level of impact.                             |
| 3                                    | Moderate      | Will cause considerable impact.                                |
| 4                                    | Major         | Will cause noticeable impact.                                  |
| 5                                    | Catastrophic  | Will cause systems and/or operations to fail with high impact. |

Created by the author based on Hank Prunkun, *Scientific Methods of Inquiry for Intelligence Analysis* (Lanham, MD: Rowland and Littlefield), 300.

Table 4. Risk Rating Matrix

| Risk Assessment Matrix |                    |            |               |            |                   |
|------------------------|--------------------|------------|---------------|------------|-------------------|
| Likelihood             | Consequence        |            |               |            |                   |
|                        | 1<br>Insignificant | 2<br>Minor | 3<br>Moderate | 4<br>Major | 5<br>Catastrophic |
| A<br>Almost Certain    | Moderate           | High       | Extreme       | Extreme    | Extreme           |
| B<br>Likely            | Moderate           | High       | High          | Extreme    | Extreme           |
| C<br>Possible          | Low                | Moderate   | High          | Extreme    | Extreme           |
| D<br>Unlikely          | Low                | Low        | Moderate      | High       | Extreme           |
| E<br>Rare              | Low                | Low        | Moderate      | High       | High              |

Created by the author based on Hank Prunkun, *Scientific Methods of Inquiry for Intelligence Analysis* (Lanham, MD: Rowland and Littlefield), 301.

## The Scenario

In the summer of 2024, the Russian military has moved into the Estonian city of Narva. The city has an ethnic Russian majority. The city is an industrial city where many of the residents cannot get Estonian citizenship due to their inability to speak Estonian, a prerequisite for Estonian citizenship. Russia claims it is merely coming to protect an ethnic Russian population that desires to be part of the Russian Federation.<sup>84</sup> According to Russia, the people of Narva held a referendum and voted overwhelmingly to become a part of the Russian Federation.

The Russian government uses the result of the referendum to move its military forces into Narva. Putin states his only desire is to protect the Russian people in the city and enforce the referendum's "democratic" outcome. The Russian military inserted troops into the city without a shot fired and established security and control points without any armed struggle. After a brief period of political negotiations, Russian and Estonian forces engage in a short military engagement. Immediately, Russia claims Estonia attacked a territory of Russia's people, which is now part of the Russian Federation through a democratic referendum. Russia argues it did not attack Estonia; instead, Estonia attacked Russia. Russia thereby undermined "Article V" from the

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<sup>84</sup> Rubin, "NATO Fears of Conflict."

Washington Treaty. In the scenario, some members question the validity of “Article V” in this context and do not support its invocation.

The two primary Russian strategic aims are to destabilize the NATO military alliance and firmly establish the Russian position in a multipolar world. An operational objective to achieve these ends is to localize Estonia’s conflict and prevent all NATO allies from entering the conflict. The second operational objective is to cause NATO forces to culminate militarily in the initial period of war due to military attrition, political division, and lack of economic resolve. A pivotal element to Russia’s operational art is information operations. Before the seizure of Narva, Russia began its information operations to achieve Russian information goals. The first goal is to convince NATO that it will not reach its strategic aims through a conventional or nuclear war with Russia without incurring a significant loss of life. Second, it is preferable to let Russia achieve its political aims as opposed to NATO military intervention. Third, Russia will attempt to convince NATO members that their national political interests are so divergent that NATO is not viable or mutually beneficial. The fourth goal is, Russia will view any significant NATO military action as an existential threat. Russia will reference the history of regime change in the “color revolutions” and US operations in the Middle East to make a case for existential threat.

## Assessing the Likelihood and Consequences

This risk analysis scenario assumes Russia met some of its information operation goals. Due to Russia managing the information space, not all NATO member states support military intervention and do not enter the conflict. As discussed in the Russian doctrine section, Russia would view NATO airstrikes and cruise missile attacks as decisive to subsequent NATO operations. To prevent the US or NATO from capitalizing on these strikes, Russia would employ its integrated air defense against NATO aircraft and standoff munitions. In this scenario, NATO would likely use a ground-based surface to surface fires assets to attack Russian air defense systems. Russia would likely employ a low-yield nuclear weapon against the ground-based

surface-to-surface systems to destroy this capability. Russia would see non-strategic nuclear weapons as a relative advantage compared to the US and NATO's precision strike capability. An offset that Russia would have trouble achieving with other assets. A likely US system Russia would target is the ground-based multiple launch rocket system, which the United States has a brigade worth stationed in Germany currently.<sup>85</sup> Russia could deliver low-yield battlefield nuclear weapons from various systems, from an air-to-surface missile, from the Iskander or both to overwhelm NATO air defenses against these systems.

On the tactical level, the consequences would be catastrophic, major on an operational level, and major on a strategic level. It would be catastrophic on the tactical level as the delivery of a 1kt weapon could kill or incapacitate personnel in a 2 km radius or 12.5 sq km and affect electronics in a similar area.<sup>86</sup> That is enough to account for at least one-half of a field artillery battalion's position area. A US artillery battalion is approximately 350 personnel. On an operational level, it would have a major impact or have a noticeable impact due to not only the physical effect on NATO's ability to suppress or destroy Russian air defense capability, but it would significantly impact NATO military morale. It will not be catastrophic on the operational level as NATO may achieve similar effects through other weapon systems. On a strategic level, it would have a major consequence. It would support the Russian narrative that a military conflict with Russia would have a significant level of casualties for NATO militaries and would not be worth the human cost. The NATO casualties would likely, have adverse political and economic effects on NATO member nations. The strategic consequences are not catastrophic as the impact is largely military. However, they are not insignificant as a high casualty rate in a single engagement would likely cause NATO members to question military intervention.

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<sup>85</sup> US Department of the Army, "Bavaria US Military Combat Units," US Army Europe, accessed December 2, 2020, <https://home.army.mil/bavaria/index.php/units>.

<sup>86</sup> Snow, "Enhanced Radiation Weapons," 4-5; Office of the Deputy Secretary of Defense for Nuclear Matters, *Nuclear Matters Handbook*, 228.

On the tactical level, NATO, specifically the US, would have difficulty retaliating to a LYBNW with a NSNW. American non-strategic nuclear weapons are gravity bombs delivered via dual-capable aircraft, sea-launched ballistic missiles, or sea-launched cruise missiles.<sup>87</sup> According to a Defense Intelligence Agency Report, “Russia employs what is considered to be among the very best of modern military integrated air defense systems (IADS).” Russian IADS are not only optimized against aircraft but cruise missiles as well.<sup>88</sup> Russian IADS will make delivering a non-strategic nuclear weapon from NATO or the US difficult. NATO will have difficulty delivering enough conventional munitions to achieve similar effects as low-yield nuclear weapons without using hypersonics or strategic nuclear munitions. Russia has stated hypersonic munitions are a threat worthy of “nuclear deterrence.”<sup>89</sup> Based on this assessment, Russian low-yield nuclear weapons present an extreme risk to NATO ground forces if a conventional war occurs between Russia and NATO and requires mitigation.

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<sup>87</sup> Kristensen and Korda, “Tactical Nuclear Weapons, 2019,” 258-259.

<sup>88</sup> DIA, *Russia Military Power*, 33, 62-65.

<sup>89</sup> Russian Federation Presidential Executive Order No 355, *Nuclear Deterrence State Policy*.



Table 5. Threat coefficient analysis table

| Threat Coefficient Analysis   |       |       |
|---|-------|-------|
| Scale   | Score | Tally |
| Desire  |       |       |
| Negligible  | 1     | 3     |
| Minimal   | 2     |       |
| Medium  | 3     |       |
| High  | 4     |       |
| Acute   | 5     |       |
| Expectation   |       |       |
| Negligible  | 1     | 4     |
| Minimal   | 2     |       |
| Medium  | 3     |       |
| High  | 4     |       |
| Acute   | 5     |       |
| Total Threat Intent Coefficient: 7  |       |       |
| Resources   |       |       |
| Negligible  | 1     | 5     |
| Minimal   | 2     |       |
| Medium  | 3     |       |
| High  | 4     |       |
| Acute   | 5     |       |
| Knowledge   |       |       |
| Negligible  | 1     | 5     |
| Minimal   | 2     |       |
| Medium  | 3     |       |
| High  | 4     |       |
| Acute   | 5     |       |
| Total Threat Capability Coefficient: 10                                   |       |       |
| Total Threat Coefficient: 17 (High)                                       |       |       |
| Negligible: 4-6; Moderate: 7-10; Medium: 11-15; High: 16-18; Acute: 19-20 |       |       |

Created by the author based on Hank Prunkun, *Scientific Methods of Inquiry for Intelligence Analysis* (Lanham, MD: Rowland and Littlefield), 287-288.

## Conclusion and Recommendations

### Summary of Threat Analysis

The Russian military's use of LYBNW presents a high threat level, which leads to an extreme level of risk to NATO ground forces should NATO and Russia enter an armed conflict on the European continent. Table 5 attempts to display quantitatively the qualitative threat Russia's low-yield battlefield nuclear weapons program presents to NATO ground forces.

The major driving force behind the high threat level is the Russian military's unmatched capability in the realm of LYBNW. Russia has the most extensive inventory of non-strategic nuclear weapons in the world and a doctrinal understanding of their use.<sup>90</sup> The acute threat that

<sup>90</sup> Woolf, *Nonstrategic Nuclear Weapons*, 5; Kristensen and Korda, "Tactical Nuclear Weapons, 2019."

Russian low-yield nuclear weapons present is especially concerning when contrasted with the lack of NATO capability in non-strategic nuclear weapons or NATO's past reactions to Russian nuclear threats.<sup>91</sup> Russia's capability is especially concerning due to the fact they openly exercise this ability.<sup>92</sup>

However, the belief that Russia can de-escalate a conflict by escalating first is central to the Russian expectation that low-yield nuclear weapons will succeed.<sup>93</sup> The lack of interference from the US or other European powers during the Russian invasion of Ukraine reinforced escalate to de-escalate.<sup>94</sup> Specifically, Russia threatened the use of nuclear weapons during the Ukraine crisis.<sup>95</sup>

Additionally, Russia expects precision-guided non-strategic nuclear weapons will provide a relative advantage to their military. The advantage in NSNW is necessary to offset the NATO and US advantage in long-range precision munitions. Russian military observers have seen the US employ precision strike munitions heavily in the initial period of war to set conditions for US subsequent operational success in achieving US strategic aims. Russia's integrated air defense capability may amplify the advantage of Russia's non-strategic nuclear weapons. If Russia can deny NATO's precision strike capability while Russia employs NSNW against NATO targets, the asymmetry in destructive force will negatively affect NATO's psychology and morale.

Politically, Russia's desire to employ these weapons lies not necessarily in their belief in nuclear weapons as ends in themselves. Instead, non-strategic nuclear weapons are means to achieve Russian political aims of ensuring Russia's current government's survival in the face of

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<sup>91</sup> Kristensen and Korda, "Tactical Nuclear Weapons, 2019," 258-259; Jacek Durkalec, "NATO Strategy to Counter Nuclear Intimidation," in *Recalibrating NATO Nuclear Policy*, ed. Andrea Gilli (Rome: NATO Defense College, 2020): 9-10.

<sup>92</sup> Day, "Russia 'Simulates' Nuclear Attack"; Oliphant, "Simulated Strike on Sweden."

<sup>93</sup> Durkalec, "Nuclear Backed 'Little Green Men'," 9-13.

<sup>94</sup> Guillot, "Why De-escalation Is Bad Policy," 3-4.

<sup>95</sup> Keck, "Russia Threatens Nuclear Strikes"; Durkalec, "Nuclear Backed 'Little Green Men'," 7-8.

an expanding NATO. Also, nuclear weapons, in all forms, provide an opportunity for Russia to expand its influence in an increasingly multipolar world.

The extreme level of risk LYBNW present at all three levels of war is rooted in the tactical level's catastrophic consequences. As discussed earlier, battlefield nuclear weapons in the form of enhanced radiation weapons have high-speed neutrons, which are highly lethal to humans. The US may mitigate this risk in two ways at the tactical level: prevent the delivery of the battlefield nuclear weapons on tactical formation through interdiction of munitions delivery or provide protection to likely affected personnel from neutron radiation.

Additionally, at the operational and strategic level, the US can further mitigate the risk by disrupting or preventing Russia from achieving its information operations objectives. On page 24, Figure 2 shows how Gerasimov depicts "conduct information conflict" as bridging between military and non-military actions.<sup>96</sup> In the case of the battlefield nuclear weapons, the operational and strategic effects are not reliant solely on the military operations' effects of destroying critical enemy capability during the initial period of war.<sup>97</sup> More importantly, it strikes at Russia's enemies' political sphere. The Russian government has calculated that the US and some NATO members have erred on the side of de-escalation. Some in the Russian government assess this is due to Western fears of a conflict escalating out of control, coupled with a fear of high casualties.<sup>98</sup> A single engagement resulting in hundreds of casualties before NATO initiates a ground offensive would likely validate the belief that war with Russia has a high and unnecessary human and economic cost.

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<sup>96</sup> Gerasimov, "The Value of Science," 29.

<sup>97</sup> Thomas, *Russian Military Thought*, 8-6, 8-8.

<sup>98</sup> Guillot, "Why De-escalation Is Bad Policy," 5.

## Recommendations

This paper has four major recommendations to lower the threat presented by Russia's potential use of low-yield nuclear weapons against NATO ground forces and lower the overall risk level should an armed conflict occur between NATO and Russian military forces. The recommendations fall into three areas: protect the force, information operations, and NSNW strike capability.

The first recommendation is to develop a wider range of highly mobile short and medium-range air defense assets capable of defeating aircraft, cruise missiles, and ballistic missiles. Ensure these assets can be distributed throughout the battlefield to ensure Russia cannot capitalize on their denial of NATO air assets but destroy any Russian systems capable of delivering a BNW.

Second, develop; update; and exercise tactics, techniques, and procedures for dealing with nuclear use. In this same vein, conduct research and development to deal with the issue of neutron absorption to decrease the effects of enhanced radiation weapon technology. By reducing the consequences of the successful use of LYBNW on NATO ground forces, these weapons' overall utility will decrease.

Thirdly, NATO needs to develop and execute information operations that deny Russia's information operations objectives. These operations should not only strengthen or protect NATO member nations' resolve to support Article V of The Washington Treaty but weaken Russian political resolve to use "force as a factor" in Russian international relations.<sup>99</sup> Even more vital is to facilitate the belief among Russian military strategists that the use of NSNW would not provide an asymmetric advantage. With a standard internet search, one can easily find a significant portion of NATO and US doctrine. NATO and US militaries publish doctrines for both their militaries' consumption and that of a larger global audience. NATO and the US can leverage

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<sup>99</sup> Russian Federation Presidential Edict 683, *National Security Strategy*, 4.

doctrine to communicate how their militaries are ready to address the issue of battlefield nuclear weapons.

Lastly, research and develop LYBNW capability and delivery systems that can defeat Russian air defenses. This will provide a clear option to retaliate against a Russian use of low-yield nuclear weapons or any non-strategic nuclear weapons. Developing NATO's low-yield battlefield nuclear weapons capability is not merely an issue of "tit for tat," but one that is about removing any illusion that the Russian military has any relative advantage in terms of munitions capability. All these recommendations aim to increase tactical and operational options available to achieve strategic aims while limiting options available to Russian strategists who see NATO's growth and vitality as antithetical to their strategic aims.

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