



**JANNE E. NOLAN CENTER**  
COUNCIL ON STRATEGIC RISKS

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# ENDING TACTICAL NUCLEAR WEAPONS

## A BRIEF HISTORY AND A PATH FORWARD

**Catherine Dill, Jackson du Pont, Andrew Facini,  
John Moulton, Christine Parthemore, and Sahil V. Shah**

Edited by Francesco Femia and Andrew Weber

# **Ending Tactical Nuclear Weapons: A Brief History and a Path Forward**

August 2023

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**Cover photo:** A salvo of unarmed MGR-1B Honest John rocket artillery is launched at the U.S. Army Redstone Test Center, early 1960s. (U.S. Army / AMCOM / Redstone Arsenal)

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**A salvo of unarmed MGR-1B Honest John rocket artillery is launched at the U.S. Army Redstone Test Center, early 1960s.**

Source: U.S. Army / AMCOM / Redstone Arsenal

# Introduction

In February 2023, United Nations Secretary General António Guterres issued a public warning: “We are at the highest risk in decades of a nuclear war that could start by accident or design.” He followed with a call to action: “The so-called ‘tactical’ use of nuclear weapons is absurd. Nuclear-armed countries must renounce the use of these unconscionable weapons - anytime, anywhere.”<sup>1</sup>

In stark contrast, this spring, Belarusian President Aleksandr Lukashenka proudly announced that tactical nuclear weapons from Russia “more powerful than those dropped on Hiroshima and Nagasaki” had arrived to be stationed in his country.<sup>2</sup>

These events are part of an increasing focus on tactical nuclear weapons in various corners of the globe—both for their perceived utility and their dangers. The statements above showcase that we are at an inflection point that will shape the international security environment for decades. *Can the world end tactical nuclear weapons, or are we doomed to their expansion?*

To be sure, the latter path sharply raises the risks of nuclear weapons being used, whether intentionally in conflict or from the serious miscalculations that can occur in the fog of war.

The myriad security challenges shaping the global security environment today have given rise to some experts and officials calling for a ramp-up in tactical nuclear weapons and a return to the wider deployment of these systems that characterized the Cold War.

We argue the opposite. The vast and complex security threats that exist in the world today make tactical nuclear weapons *even more* dangerous than they

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1 António Guterres, “[We are at the highest risk in decades...](#),” Tweet, February 7, 2023.

2 Lidia Kelly and Andrew Osborn, “[Belarus has started taking delivery of Russian tactical nuclear weapons: president](#),” *Reuters*, June 14, 2023.



were during the last century—a landscape where many types of these weapons were deployed in multiple regions, poised for use in escalating battle across the nuclear threshold. Rather than contributing to strategic deterrence, we believe that tactical nuclear weapons actually undermine it—by enabling a lower threshold for nuclear weapons use through deploying weapons with a relatively lower yield which are sometimes erroneously portrayed as being “smaller” and thus more “acceptable,” “credible,” or potentially “controlled,” despite their enormously destructive potential.

The strategic and practical reasons that most nuclear-armed nations reduced, retired, and avoided deploying tactical nuclear weapons still hold today, and are perhaps even more important to nations navigating the current security environment than during the Cold War. We aim to show this by highlighting the history of tactical nuclear weapons across five nations—the United States, Russia, China, the United Kingdom, and France (the five treaty-accepted nuclear weapon states under the Nuclear Nonproliferation Treaty, or NPT)—and the reasons that these nations made incredible progress in reducing these nuclear capabilities around the world. The best path from the current inflection point is for the same nations to pursue further reductions and hopefully an end to these types of nuclear weapons.

This review contains three main chapters.

**What is a Tactical Nuclear Weapon?** A short description of what we, the authors, classify as tactical nuclear weapons, and notes regarding other commonly-used terms.

**A Brief History of the Rise and Decline of Tactical Nuclear Weapons.** In order to illuminate the policy path forward, this chapter presents a brief and clarifying history of how nuclear nations drove a dangerous expansion in tactical nuclear weapons, but then made significant progress for decades in moving away from these weapons capabilities due to military and technical decision-making, recognition of their unique risks, and geostrategic reasons. We describe how this brought the world toward a landscape mostly dominated

by nuclear-armed nations narrowing their roles to strategic deterrence purposes. However, this chapter also shows that the world is at an inflection point from which nations' actions could lead either to the further decline of these weapons or another Cold War-like expansion of them.

**Recommendations For Ending Tactical Nuclear Weapons.** Finally, taking lessons from this history and from the worrying trends of today, we recommend that countries prioritize finding ways to reduce the risks of tactical nuclear weapons, and move toward their end as an urgent priority.



**A nuclear explosion caused by a firing of a W9 Artillery Fired  
Atomic Projectile (AFAP), part of Operation Upshot-Knothole,  
May 25, 1953.**

Source: AEC / National Archives and Records Administration

# I. What is a Tactical Nuclear Weapon?

In reality, all nuclear weapons are strategic weapons, as any use of them would have strategic impacts and fundamentally change the character of a conflict. Yet, some nuclear systems are designed for potential use as part of a theretofore-conventional conflict. Through the nuclear age, many nations possessing these weapons have designed them with specific conflict utility in mind: demolition to help slow advances of opposing forces, air defense against another nation’s incoming nuclear bombers, to sink enemy ships, and more.

In the early decades of the Cold War, the nuclear weapons possessing nations of that era—the United States, United Kingdom, France, Soviet Union, and People’s Republic of China—developed several dozen types of tactical nuclear weapon capabilities. These weapons were generally, but not exclusively, lower-yield compared to other nuclear weapon capabilities being developed during the heights of the Cold War arms race. These weapons were often characterized as “theater” nuclear weapons (because their relatively shorter range meant they could only be used against targets in the theater where they were located), some as short- or intermediate-range systems, and other specialized devices ostensibly meant for a battlefield.

Still, definitions for tactical nuclear weapons systems can vary. For this analysis, we considered certain nuclear capabilities to be tactical based on several factors, including:

- Exclusion of these weapons in past treaties (i.e., where certain types were omitted as “non-strategic,” tactical, or otherwise not counted as strategic nuclear weapons)
- Intentions of the possessor nations, based on what is publicly known—the declared or assumed mission for a given weapon system
- How other countries likely interpret these nuclear capabilities



- Who would likely request their use—a battlefield or theater commander or one located outside of theater not directly involved in tactical decisions

In the text and graphics within this report, we also characterize some systems as “hybrid.” This designation is meant to indicate that certain capabilities have a blend of potential tactical intent or utility (either by the possessing nation or highly likely to be interpreted as such by other nations), and strategic intent (i.e., deterring nuclear attacks) even if they were not included in past treaties that limited strategic nuclear weapons.

Countries, and even different agencies and communities within those countries, vary in the terms they use. A February 2023 U.S. State Department report on Russian weapons acknowledges the lack of legal definitions for the terms *tactical* and *non-strategic*. For its purposes, the State Department does not currently use the term *tactical* “because the United States does not envision any use of nuclear weapons to be tactical in character or effect.”<sup>3</sup>

In France, systems analogous to what are considered *tactical* or *non-strategic* elsewhere were purposefully called “pre-strategic” starting in 1984, so as to “indicate their desired linkage to strategic nuclear arsenals rather than to conventional theater forces.”<sup>4</sup> In effect, these nuclear weapons were intended only to be deployed under a last-warning concept, to generate “a significant military effect to force the enemy to take notice and reflect” with the goal being “to give a clear warning of the imminent passage to the strategic nuclear level” if the opposing forces did not alter their actions that had driven a conflict to that level.<sup>5</sup>

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3 “Report to the Senate on the Status of Tactical (Nonstrategic) Nuclear Weapons Negotiations Pursuant to Subparagraph (a)(12)(B) of the Senate Resolution of Advice and Consent to Ratification of the New START Treaty,” Department of State, February 2023.

4 Pascal Boniface, “The Future of the French Nuclear Posture,” *Strategic Analysis* 23, no 8, November 1999.

5 Robert Grant, “French Tactical Nuclear Weapons,” in Robbin F. Laird and Betsy A. Jacobs, eds., *The Future of Deterrence*, 1990, 77.

Definitions and terminology have evolved over time along with the strategic landscape, changes in conventional military capabilities, the expansion of international cooperation and treaty alliance relationships, the rise of nuclear arms control in the mid-to-late 1900s, and other drivers.

Under the various terms used to describe them, the story of tactical nuclear weapons starts at the very beginning: the era during and immediately after the world wars. Chemical and biological weapons were used in these early decades of the century, and several nations sprinted to weaponize the atom as well. The first uses of nuclear arms in conflict were delivered by the United States against Japan in 1945.

After World War II, multiple nations expected that the next great war could be imminent, and that it would likely entail nuclear attacks launched against them via land, air, and sea. As such, the world entered a period of four nations engaging in concerted planning for nuclear attacks on their territories and those of their allies—how to stop such attacks, including with their own nuclear weapons, and possibly how to use nuclear weapons in combat.



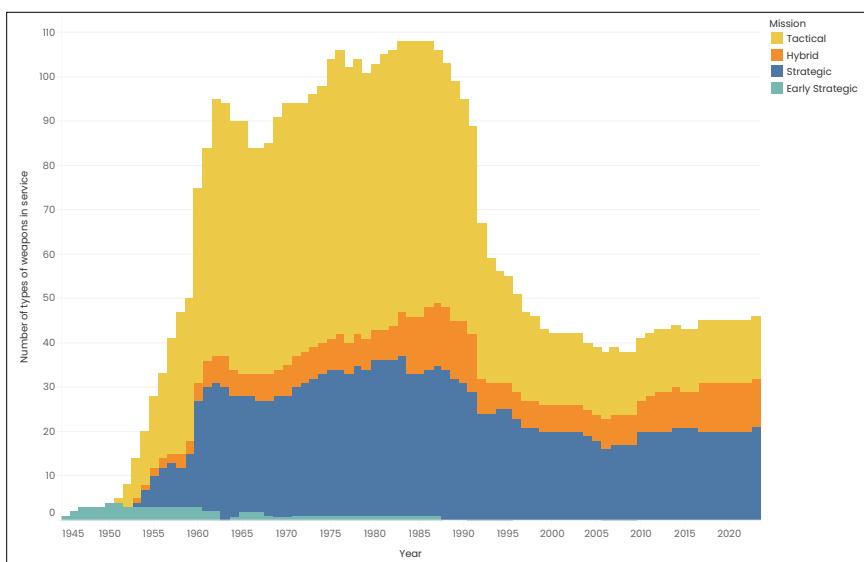
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**R-17 Elbrus (SS-1c Scud B) and OTR-23 Oka (SS-23 Spider)  
missiles and launchers on display at the National Museum of  
Military History, Bulgaria.**

Source: David Holt / CC BY-SA 2.0

## II. A Brief History of the Rise and Decline of Tactical Nuclear Weapons

To fully understand the current risks associated with tactical nuclear weapons, and to best inform policies for addressing those risks, it is important to understand the context in which several nations surged to develop and deploy dozens of types of these weapons and the uses for which they were envisioned. It is perhaps even more important to understand the unique risks and challenges that tactical nuclear weapons entail, and the multiple factors that drove momentum in the opposite direction and led some countries to restrain from developing them in the first place.

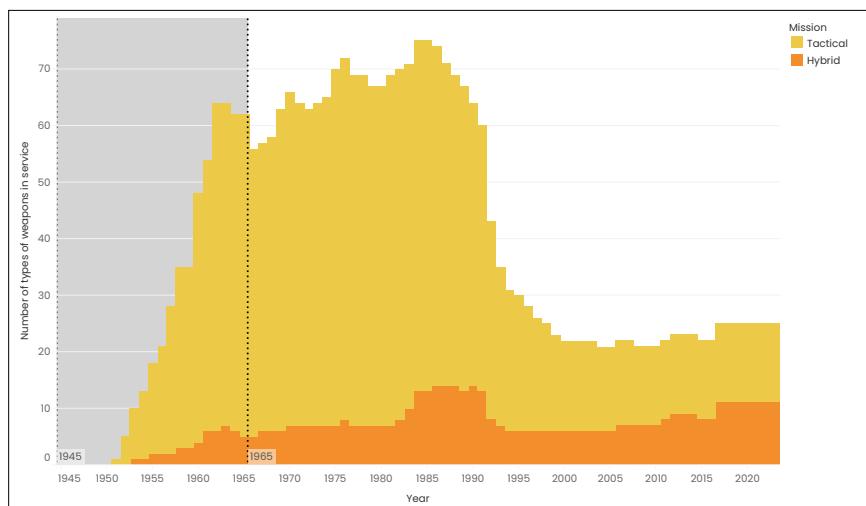


**Figure 1:** All types of in-service nuclear weapons systems of the P5 countries by year, showing the difference between strategic, hybrid, and tactical systems. Tactical and hybrid systems constituted the bulk of the Cold War arms race in terms of individual types of weapons. Despite a sharp drawdown after the fall of the Soviet Union, the number tactical and hybrid systems are again rising.

It is a history characterized by an initial surge of development, followed by decades of decisions to reduce and retire most of these weapons for military, technical, and political reasons, as decision-makers in many nations realized that tactical nuclear weapons were unhelpful in achieving key goals, could undermine strategic objectives, and could increase catastrophic risk to intolerable levels.

## The Early Rise of Tactical Nuclear Weapons (1945–1960s)

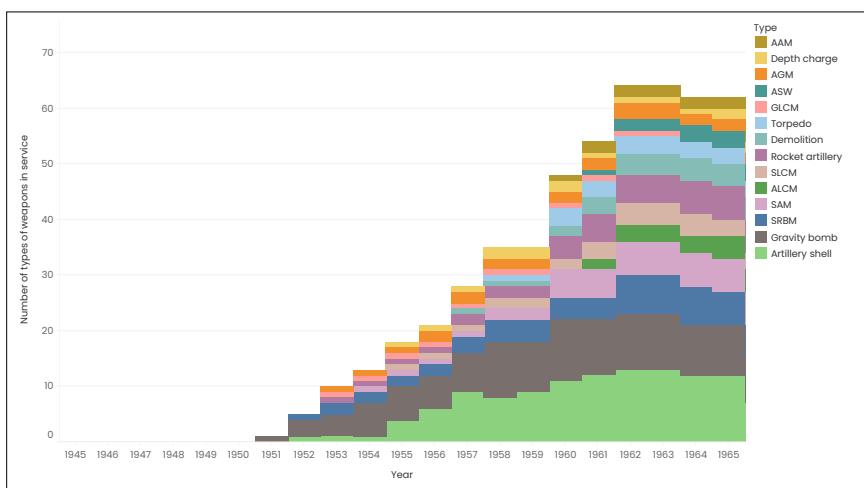
From the dawn of the nuclear age to the mid 1960s, four of the first five nuclear-armed nations developed and deployed at least 70 different types of tactical or hybrid nuclear weapon capabilities, from gravity bombs and artillery shells to anti-aircraft and early cruise missiles.<sup>6</sup>



**Figure 2A:** Number of types of in-service tactical and hybrid nuclear weapons systems of the P5 countries, 1945–1965 highlighted.

6 This figure is based on a CSR analysis of how nations have pursued, and in many cases retired, specific types of nuclear weapon systems from the start of the nuclear age to present. CSR will publicly share the data collected, and release an analysis of the broad trends and lessons this work revealed, in fall 2023. This report includes an authors' note at the end which cites many of the previous works on which we drew for this analysis, including how to account for tactical nuclear systems.

The United States led the way in this field. Some of its earliest concepts were nuclear gravity bombs intended for warfighting uses, including improvements on the Little Boy weapon used to devastate Hiroshima. One of the nation's first tactical nuclear bombs was the Mark 7, a relatively small weapon in size which was designed to look like a fuel tank attached externally on a fighter plane. Its intended tactical utility entailed new design challenges that showed how defense experts envisioned their use: as described in a later publication by Sandia National Laboratories, it required "tactical fuzes and other systems that would permit fighter pilots to deliver nuclear bombs at low altitudes and still escape the blast," such as the ability to detonate the weapon after it was dropped.<sup>7</sup>



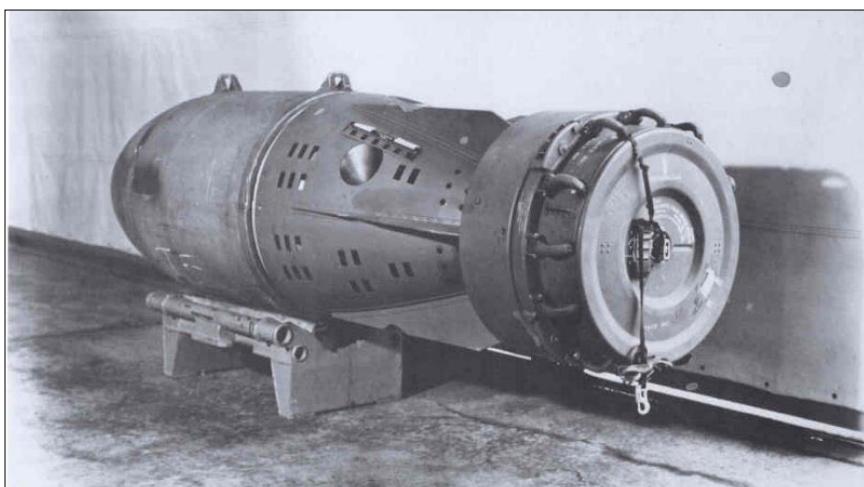
**Figure 2B:** Different types of in-service tactical and hybrid nuclear weapons systems of the P5 countries by year, 1945–1965.

Influenced by the Korean War, and President Eisenhower's "New Look" and Massive Retaliation strategies, the United States had developed multiple tactical nuclear capabilities by the mid-1950s. They included several types of gravity bombs; the W-9 artillery-fired atomic projectile (AFAP), which was the world's first nuclear artillery shell; the Army's MGM-5 Corporal short-range, nuclear-armed ballistic missile; the MGR-1 Honest John rocket artillery, considered the first operational tactical nuclear weapon; and the

<sup>7</sup> Leland Johnson, "Sandia National Laboratories: A History of Exceptional Service in the National Interest," *Sandia National Laboratories*, 1997: p. 40.

Mk-90 Betty nuclear depth charge, which was designed as part of the U.S. Navy's anti-submarine programs that were growing with urgency at the time.<sup>8</sup>

The defense planners and scientists driving the early U.S. nuclear program further expanded its plans to include additional varieties of these types of tactical capabilities through the remainder of the 1950s and well into the 1970s. It also continued expanding into additional types, including the first nuclear weapons intended for demolition and air defense, and torpedoes, air-to-air rockets, and a glide bomb.



The Mk-90 "Betty" depth charge, March 16, 1955. (DoD / DOE via National Declassification Center)

The Soviet Union was not far behind. Reflecting the changing security landscape, leveraging decades worth of investment into its rocket/missile industry, and perhaps mirroring what it could glean about the U.S. nuclear program, many of the earliest nuclear weapons it developed were envisioned with tactical utility. In the 1950s, many Soviet capabilities were similar to those developed by the United States, albeit with different emphasis. The Soviets developed multiple types of nuclear artillery shells and rockets within

<sup>8</sup> "History of the MK 7 Warhead," Sandia National Laboratories Information Research Division. Albuquerque: Sandia National Laboratory, April 1967, 2, 8-38, accessed via Pfeiffer Nuclear Weapon and National Security Archive.

just a few years, and expanded into nuclear cruise missiles. When former Soviet Premier Nikita Khrushchev reduced the Soviet Armed Forces in the mid-1950s, tactical nuclear weapons were given an increased role in military planning and became better integrated into conventional missions. However, during the 1960s, nuclear modernization efforts essentially solely focused on Soviet strategic missiles.<sup>9</sup>

The People's Republic of China (PRC), on the other hand, disavowed tactical nuclear weapons from the earliest years of its program and pledged no-first-use of nuclear weapons. Its nuclear doctrine was heavily informed by the ideology of Mao Zedong, which held that nuclear weapons were largely instruments of political coercion and that small numbers of nuclear weapons would be sufficient against larger arsenals. Many of the PRC's leadership denounced the threat of nuclear weapon use by the United States during the Korean War, and even when it finally developed its own nuclear weapon and conducted its first test in 1964, the PRC staunchly resisted pressures to build a peer-level stockpile compared to the United States and Soviet Union, and did not solidify nuclear strategy and operational plans until the early 1980s with the country's first ICBM deployment.<sup>10</sup> Despite likely fielding a limited number of gravity bombs which could be tactically employed by fighter-bomber aircraft beginning in the 1970s, Beijing has never officially acknowledged a tactical nuclear weapons capability and there is little evidence of tactical deployments.<sup>11</sup>

As for the other four countries, they were not just stockpiling tactical nuclear weapons, but deploying them across Europe and eventually parts of Asia. Starting in 1953 with the arrival of the U.S. M65 280mm Motorized Heavy Gun, known as Atomic Annie, tactical nuclear weapons "had begun to be deployed on the European Central Front for use in the land battle by NATO

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9 Nikolai Sokov, "[The Russian Nonstrategic Nuclear Posture: History, Missions](#)," *The James Martin Center for Nonproliferation Studies*, 2022, 19–50.

10 Jeffrey Lewis, *Paper Tigers: China's Nuclear Posture* (Oxon: Routledge, 2014).

11 Charles D. Ferguson, Evan S. Medeiros, and Phillip C. Saunders, "Chinese Tactical Nuclear Weapons," in Brian Alexander and Alistair Millar, eds., *Tactical Nuclear Weapons: Emergent Threats in an Evolving Security Environment* (London: Brassey's, 2003).

[North Atlantic Treaty Organization] ground forces.”<sup>12</sup> In 1957, the Soviet Union fielded its first tactical nuclear weapon with the deployment of the SS-1b Scud short-range ballistic missile (SRBM), dubbed the R-11 Zemlya by the Soviet Union).<sup>13</sup> Despite its targeting inaccuracy, the Scud gave the Soviets a theater-based, tactical nuclear weapon that could match U.S. and NATO forces at ranges up to 280 km.<sup>14</sup>

As described in *The Military Balance* series, first published by the International Institute for Strategic Studies (IISS) in 1965, the Soviet Union had by that time “given launchers for short-range tactical missiles to some of the Warsaw Pact countries,”<sup>15</sup> though at the time it was unknown whether nuclear warheads were deployed for these systems. As it stated at the time, “Tactical nuclear weapons are now organic to Soviet formations whether inside or outside the Soviet Union.”<sup>16</sup>

In the 1960s, NATO nations were deliberating on nuclear information sharing, decision making, possible joint operations, and other considerations, in addition to the United States deploying strategic and tactical nuclear weapons to Europe. As the 1965 *Military Balance*’s contemporaneous accounts of what was publicly known of the deployment landscape at the time explained:

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12 Simon Moody, “[The Surreal Mission: Tactical Nuclear Weapons, the British Army, and the Defence of the Central Front, 1945–1957](#)” (PHD diss., King’s College London), 58.

13 Thomas B. Cochran, William M. Arkin et al, *Nuclear Weapons Databook: Volume IV – Soviet Nuclear Weapons*, (Harper & Row, Publishers, New York), January 1, 1989, 3. In this report, we list the NATO designation of weapons systems first given this report’s English-language original format, followed by the native-nation’s designation if it differs from NATO’s common term.

14 CSIS Missile Threat, “[SS-1 ‘Scud’](#),” Center for Strategic and International Studies, Updated August 2, 2021.

15 IISS, “North Atlantic Treaty Organization” *The Military Balance* 1965, 2.

16 IISS, “North Atlantic Treaty Organization” *The Military Balance* 1965, 4–5.

“By June 1966 the number of tactical nuclear warheads stored in Western and Southern Europe will have increased by 100% over the level of 1961, and the units of delivery (missiles and tactical aircraft) now number about 2,500. The United States is the only ally which has produced nuclear warheads suitable for short-range missiles. She retains control of these in her own forces in Europe, and of nuclear bombs or warheads deployed in conjunction with the missiles and aircraft that are owned and operated by other national forces. Under this dual system of command, which has been reinforced by a ‘permissive link’ or electronic lock for larger weapons, the nuclear warheads can be fired only by the Supreme Commander [i.e. the NATO Supreme Allied Commander Europe], with the authority of the President of the United States and the agreement of the country owning the means of delivery.

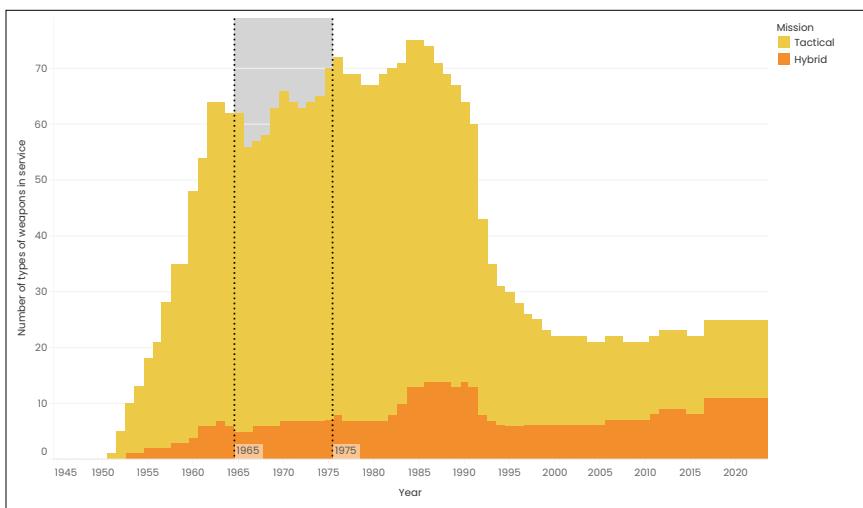
In the whole of NATO Europe, there are some 60 ‘assigned’ divisions, which could be augmented by about another 30 if an emergency permitted adequate time for mobilization, reinforcement, and deployment. Many of the assigned divisions (and in some cases brigades) have the Honest John nuclear missile (without nuclear warhead stocks in the case of Norway and Denmark), and the American and German forces have Sergeant and Pershing missiles at corps and army level. They are supported by some 5,500 tactical aircraft based on 220 standard NATO airfields, backed up by an elaborate system of jointly financed fuel pipelines and signal communications.”<sup>17</sup>

All of Europe thus became a landscape primed for nuclear weapons to be used if conflict broke out and escalated between the USSR and the United States, or allies of either nation. Luckily this was averted. However, the world became deeply aware of the disasters that could so quickly come to pass.

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17 IISS, “North Atlantic Treaty Organization” *The Military Balance 1965*, p. 13.

## Rising Risks & Early Changes to the Tactical Nuclear Weapons Landscape (1960s-1970s)



**Figure 3:** Number of types of in-service tactical and hybrid nuclear weapons systems of the P5 countries, 1965-1975 highlighted.

Given increasing deployments around the world, their characteristics and consequences if used, and other evolving factors, defense planners and other experts in several nations began to realize that tactical nuclear weapons created unique dangers, and shaped plans for them accordingly.

By the early 1970s, the United States began retiring some tactical nuclear capabilities due to the recognition that actually using some of these weapon systems would not achieve the goals sought by political and military leaders—or even work against those goals. As geographic focus of tactical nuclear forces shifted to Europe, for example, it became clearer that using the AIM-26A Falcon air-to-air missile, armed with a W-54 nuclear warhead, could entail detonating a nuclear weapon over allied territory. The air-to-air guided missile mission was

therefore shifted solely to conventional weapons, and the nuclear option was retired between 1967 and 1972.<sup>18</sup>

Another type of risk of tactical nuclear weapons was showcased by the M-28/M-29 Davy Crockett, a nuclear-capable recoilless rifle and one of the lowest-yield nuclear weapons the United States has ever developed. An often-discussed issue is the fear that if used, radioactivity would affect U.S. and allied forces, not just their opponents. Equally worrisome: the command and control of these weapons would reside in-theater. The danger was that front-line troops could accidentally (or intentionally) launch one of these weapons and trigger nuclear escalation without a clear decision from top leaders. As such, Davy Crockets were deployed to Europe, Guam, Okinawa, and South Korea in 1961 but the United States began redeploying them in 1967, with its complete retirement by 1971.<sup>19</sup>

The French also experienced similar risk/reward considerations following the deployment of their first, and only, tactical system. The Pluton short-range ballistic missile was designed to respond to a massive conventional attack from the Soviet Union and had an effective range of 120 km.<sup>20</sup> Before these tactical missiles entered into service, French and West German leaders even discussed deploying Pluton missiles to German territory.<sup>21</sup> Yet, with its short range, it became clear that France's use of these weapons could mean detonating a nuclear weapon within its own territory or that of their NATO allies—a policy that led to contention with West Germany, which was considered one of the likeliest locations for a system like Pluton to be used.<sup>22</sup>

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18 John Lonnquest and David Winkler, "To Defend and Deter: The Legacy of the United States Cold War Missile Program," *USACERL Special Report* 97, no. 1, 1996, 177, 182.

19 "[The M28/M29 Davy Crockett Nuclear Weapon System](#)," *The Campaign for the National Museum of the United States Army*, accessed July 21, 2023, .

20 Bruno Tertrais, "[French Nuclear Deterrence Policy, Forces, And Future: A Handbook](#)," Fondation pour la Recherche Stratégique, 2020, 11.

21 U.S. National Security Council, Memorandum For Mr. Kissinger from Helmut Sonnenfeldt, "[SUBJECT: French Initiative for French-German Military Cooperation, Including on Tactical Nuclear Weapons](#)," November 1970.

22 Jozef Goldblat, *Arms Control: The New Guide to Negotiations and Agreements*, SAGE, Nov 18, 2002, 98.



Whereas the United States initially deployed theater tactical nuclear weapons to Western Europe largely as a cost-savings measure rather than having to increase the size of the Army so enough ground forces could be forward deployed to Europe to counter a potential Soviet invasion, the Soviet Union developed its tactical nuclear doctrine from the start for the purpose of integrating with and augmenting its warfighting capabilities. In the 1950s, the Soviets responded to American-deployed nuclear capable artillery with an effort to field their own. Yet these 310mm and 420mm atomic artillery systems proved to be heavy, unwieldy, and possibly dangerous to friendly troops with their limited range—mirroring concerns in the West.<sup>23</sup> Writing in his memoir, Khrushchev explained the limitations of Soviet nuclear artillery:

“Our military people were able to get the government to give them the funds to develop a nuclear cannon of our own. We used to haul it out for parades on Red Square. It had an enormous barrel and always made a powerful impression, but we weren’t very enthusiastic about it. The thing was terribly heavy and difficult to transport; it was hard to camouflage; its range was very short; it performed badly on the testing range and required a great expense and huge quantities of raw [fissionable] material to make one small warhead. In short, it was good for nothing.”<sup>24</sup>

Nevertheless, as the Cold War intensified and Soviet doctrine changed following Khrushchev’s ousting, Soviet theater forces began to widely adopt nuclear artillery, rockets, and missiles into their battleplans. A simultaneous push for better solid-fuel missiles also contributed to the development of an updated and more diverse tactical nuclear weapons arsenal.<sup>25</sup>

Here we find a central component of tactical nuclear weapons. Unlike their solely-strategic counterparts, tactical nuclear weapons are designed for the battlefield, or as President Eisenhower said in 1955, “just exactly as you

<sup>23</sup> Douglas M. Hart and Dennis M. Gormley, “The Evolution of Soviet Interest in Atomic Artillery,” *RUSI* 128, no. 2 (June 1, 1983), pg. 25.

<sup>24</sup> Nikita Khrushchev, *Khrushchev Remembers: The Last Testament*, ed. and trans. Strobe Talbott (Little, Brown, and Company, Boston) 1974, 52–53.

<sup>25</sup> Sokov, “The Russian Nonstrategic Nuclear Posture: History, Missions,” 26.

would a bullet.”<sup>26</sup> In Western Europe, Soviet tactical systems were not only deployed to offset and strike NATO tactical systems, but were considered aids in ground force operations where forces could maneuver and strike following a tactical nuclear bombardment. One Soviet commentator stated in 1972 that “development of atomic shells has made artillery a versatile weapon of modern war.”<sup>27</sup> In this way, tactical nuclear weapons not only failed to contribute to the type of strategic stability that was developing—but actively undermined it. Deployment of tactical nuclear weapons both lowered the threshold for nuclear use and gave legitimacy to battlefield plans which increased escalation risk. Soviet nuclear artillery remained on the battlefield until Gorbachev announced their removal in 1991 in response to President George H.W. Bush’s Presidential Nuclear Initiatives (described later in this report).<sup>28</sup>

In one especially harrowing moment during the Cuban Missile Crisis, a Soviet submarine captain nearly launched a nuclear-tipped torpedo against U.S. naval vessels enforcing the blockade of Cuba.<sup>29</sup> A Soviet document prior to the Crisis outlined the submarine’s mission: “In order to protect the [Soviet transport trip] on the passage to Cuba, [send] a Project 627-a nuclear torpedo submarine armed with [redacted] torpedoes, of which one has special ammunition, fully-armed.”<sup>30</sup> These weapons, unbeknownst to the Americans, were not deployed as deterrence but defense. If not for the intervention of Vasili Archipov, another Soviet officer on board, tactical nuclear weapons may have very well been used in combat, taking the crisis in a very different direction. This case exemplifies a specific danger of tactical nuclear weapons: when nuclear command and control gets delegated to individual commanders, who

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26 Office of the Historian, “Editorial Note 15: Foreign Relations of the United States, 1955–1957, National Policy, Volume XIX,” Department of State.

27 Hart and Gormley, “The Evolution of Soviet Interest in Atomic Artillery,” 30.

28 Jozef Goldblat, *Arms Control: The New Guide to Negotiations and Agreements*, Sage Publications, 2002, 98.

29 Svetlana Savranskaya, ed., “The Underwater Cuban Missile Crisis at 60,” The National Security Archive, Oct 3, 2022.

30 “Report from General Zakharov and Admiral Fokin to the Presidium, Central Committee, Communist Party of the Soviet Union,” Sep 25, 1962, via The National Security Archive.

may be isolated and not able to effectively communicate with their chain of command, the likelihood of use increases.

As various weapons systems were developed, there were also growing issues of entanglement: the same or similar systems being used to carry nuclear and non-nuclear weapons, which heightened ambiguity that could become a glidepath to miscalculations during a conflict. Some U.S. and Soviet tactical delivery systems could carry nuclear warheads as well as conventional high-explosive warheads or chemical weapons.<sup>31</sup>

The Honest John artillery rocket systems of the United Kingdom and United States were a major example of such entanglement. The United States initially sped up development of this weapon in reaction to the Korean War, and then accelerated its operationalization and deployment based on Soviet advances in its nuclear program. Conventionally-armed U.S. units had already been deployed to Europe, with nuclear warheads and adaptation kits to fit them to the rockets delivered beginning in 1954. Nuclear-capable and some nuclear-armed Honest Johns would eventually be deployed to thirteen nations, including South Korea. Starting in 1960, the British Army of the Rhine also operated the Honest John system in West Germany.<sup>32</sup>

As noted above, NATO allies Norway and Denmark had only conventionally-armed Honest John units. Yet European nations hosting them knew that the Soviets would likely assume that they held both conventional and nuclear Honest Johns—meaning that the Soviets could not know with certainty if an attack from them would carry a nuclear payload. The reverse also held true for the Warsaw Pact nations that hosted Soviet dual-capable systems on their soil.

Leaders of the nuclear armed states recognized these conditions, and were acutely aware of the threats poised against them. The 1970 *Military Balance* described the situation as it was regarded at that time:

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31 IISS, "USSR: Missiles," *The Military Balance* 1970, 8.

32 Robert S. Norris and Hans M. Kristensen, "[The British nuclear stockpile, 1953–2013](#)," *Bulletin of Atomic Scientists* 69, no. 4, (2013), 70.

“NATO has some 7,000 nuclear warheads, deliverable by a variety of vehicles, over 2,250 in all, aircraft, short-range missiles and artillery... There are also nuclear mines. Yields are variable but are mainly in the low kiloton range. The ground-based missile launchers and guns are in formations down to divisions and are operated both by American and allied troops, but in the latter case warheads are under double key. The figure for Soviet warheads is probably about 3,500, similarly delivered by aircraft and missile systems...Soviet warheads are thought to be somewhat larger, on average, than those of NATO. Some of the delivery vehicles, but not the warheads, are in the hands of non-Soviet Warsaw Pact forces.

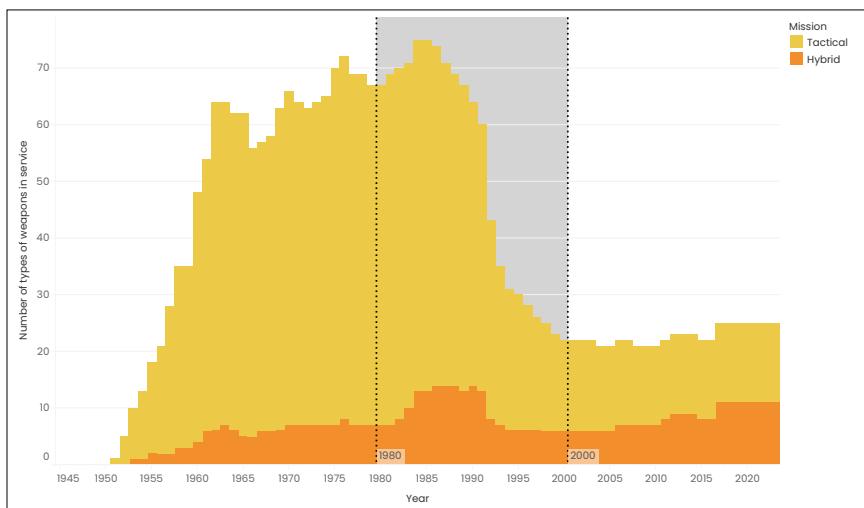
This comparison of nuclear warheads must not be looked at in quite the same light as the conventional comparisons...since on the NATO side the strategic doctrine is not, and cannot be, based on the use of such weapons on this sort of scale. These numbers were accumulated to implement an earlier, predominantly nuclear, strategy, and an inventory of this size now has the chief merit of affording a wide range of choice of weapons, yield and delivery system if controlled escalation has to be contemplated. A point that does emerge from the comparison, however, is that the Soviet Union has the ability to launch a battlefield nuclear offensive on a massive scale if she chooses, or to match any NATO escalation with broadly similar options.”<sup>33</sup>

The threats both sides posed to one another were clear, and were increasing overall despite decisions by individual nations and allies to retire some tactical nuclear systems because of their unique risks. A few decades into the Cold War nuclear arms race, officials of NATO and Warsaw Pact nations all began considering more formal approaches to addressing this challenge.

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33 IISS, “NATO and the Warsaw Pact,” *The Military Balance* 1970, 85–101.

## The Extension of Tactical Nuclear Weapon Reductions (1980s-1990s)



**Figure 4:** Number of types of in-service tactical and hybrid nuclear weapons systems of the P5 countries, 1980–2000 highlighted.

Through the 1970s, the rise of test bans, arms control, norm-setting, and confidence-building was accelerating in the world as concrete options for pursuing national and mutual security goals, including among Soviet and U.S. leaders. Progress occurred on and off for many years, with the game-changing Treaty on the Non-Proliferation of Nuclear Weapons (NPT) serving as an early hallmark of this era when it entered into force in 1970.

The earliest years of nations considering how to implement the NPT—and achieve greater stability for themselves—focused heavily on halting arms-racing with regard to what each country considered *strategic* nuclear weapons, including by limiting numbers of intercontinental ballistic missiles and submarine-launched ballistic missiles. The Soviet Union and the United States raised some prospects for covering other types of weapons systems in early talks, but often pivoted most energy back to capping strategic capabilities. One driver was that verification concepts were quite new. Verifying if a

country was complying with measures to reduce or eliminate strategic systems was perceived as an easier approach than verifying tactical systems, because of challenges including dual-use, size, mobility, and entanglement concerns.

But the threat perception nations had regarding such systems continued to worsen. Some of the top concerns on each side were ground-launched systems of short and intermediate ranges being deployed in such a way that indicated they were being poised for ready use. A later-declassified U.S. intelligence assessment from 1983 describes the situation:

“Soviet plans for conducting a war in Central Europe divide responsibility for nuclear operations between strategic forces and front tactical forces. A front is the major Warsaw Pact field command...If a NATO Warsaw Pact war were nuclear from the outset, fronts in East Germany and Czechoslovakia would have nuclear targeting responsibility for about a third of West Germany. Strategic forces in the USSR would attack the rest of Central Europe...Once the Soviets decided that large-scale use of nuclear weapons was inevitable, they would prepare initial tactical nuclear strikes that would be massive, coordinated with strategic strikes, and delivered by fighter bombers, short-range surface-to-surface missiles and rockets, and nuclear artillery...We estimate that Soviet nuclear forces and warhead inventories in East Germany, Poland, and Czechoslovakia are more than adequate for massive tactical strikes.”<sup>34</sup>

This was how the landscape of the era was viewed. NATO nations assessed that they remained weak relative to the Soviet Union and its allies in terms of conventional capabilities. If these tensions were not already bad enough, the Soviets deployed SS-20 Saber (RDS-10 Pioneer) missiles in the late 1970s and early 1980s that were considerably more advanced than the systems they claimed to replace. This would be viewed by the world as a pivotal change. According to a U.S. State Department account, the Saber was “mobile,

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34 Office of Soviet Analysis, “[Soviet Planning for Front Nuclear Operations in Central Europe](#),” National Intelligence Council, June 1983.

accurate, and capable of being concealed and rapidly redeployed.”<sup>35</sup> It qualitatively changed from its predecessor systems: it was able to launch a missile with three independently targetable warheads and could reach further. A 1983 *Washington Post* article described U.S. official assessments that these systems were intended in part to take out NATO nuclear systems based in Europe, and summarized the arms racing behavior this led to.

“Six years ago, the Soviet Union began replacing its aging SS-4 and SS-5 medium-range nuclear missiles aimed at targets in western Europe with new, more capable, SS-20 missiles. NATO responded by approving the stationing of new American Pershing II and ground-launched cruise missiles in western Europe beginning this December. The Soviets say that they will deploy more SS-20s in reaction to the American deployment. In addition, they are threatening another basic policy change: moving a significant number of nuclear warheads for short-range systems from the Soviet Union into Warsaw Pact countries. These steps are producing the same type of concern among the Soviet Union’s Warsaw Pact allies that the United States has faced in western Europe over introduction of its nuclear weapons. Meanwhile, Washington and Moscow are accusing each other of stepping up the arms race.”<sup>36</sup>

This precarious situation triggered efforts to envision what arms control agreements covering intermediate-range and tactical nuclear weapons could look like, and concerted technical work on how such agreements could be verified. After years of talks, the Soviet Union and the United States signed the Intermediate-Range Nuclear Forces Treaty (INF Treaty) in 1987. It required the elimination of ground-launched ballistic and cruise missiles with ranges of between 500 and 5,500 kilometers within three years, along with relevant launchers and

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<sup>35</sup> [Treaty Between The United States Of America And The Union Of Soviet Socialist Republics On The Elimination Of Their Intermediate-Range And Shorter-Range Missiles \(INF Treaty\)](#), Accessed from the Department of State, Signed December 8, 1987.

<sup>36</sup> Walter Pincus, “[Soviets’ Posture Shifts as SS20s Deployed](#),” *The Washington Post*, October 25, 1983.

equipment. In a unique quirk, it covered nuclear, conventional, and dual-use systems, some of which could be considered strictly tactical in mission.<sup>37</sup>



MGM-31 Pershing II MRBMs preparing for a salvo test shot at the White Sands Missile Test Range, New Mexico, December 1, 1987.  
(U.S. Army Photo / Frank Trevino)

The INF Treaty became the first to eliminate an entire class of nuclear weapons. For the United States, they included the MGM-31 Pershing I and II ballistic missiles and BGM-109G Gryphon GLCM. For the Soviet Union, it eliminated the SS-20, its predecessor SS-4 Sandal (R-12 Dvina), the soon-to-be deployed SSC-X-4 Slingshot (RK-55 Relief) GLCM (but not its sea-based variant, Granat), as well as the SS-12 Speed (TR-1 Temp) and SS-23 Spider (OTR-23 Oka) SRBMs.<sup>38</sup>

Some of these nuclear capabilities were considered by both sides to be strategic, and others were considered to have tactical or operational utility. Based on the

37 For this analysis, we consider several of the covered systems to be a hybrid of tactical and strategic purposes. Though the treaty definitions came to focus on the intermediate ranges of the weapons in question, the INF Treaty became in effect the first and one of the most important cooperative arrangements for reducing the risk from nuclear weapons which could be tactically used.

38 *Treaty Between The United States Of America And The Union Of Soviet Socialist Republics On The Elimination Of Their Intermediate-Range And Shorter-Range Missiles (INF Treaty)*, 1987.

combination of the missile's range and location of the missile launcher, many were considered to be both (which we describe as hybrid in this report).

The early years of the INF Treaty's implementation would bridge the breakup of the Soviet Union, and its transition to the Russian Federation as several nations became newly independent. This launched a time of dramatic reconsideration of how nations perceived the political and military landscape, and how they would defend themselves and deter aggression.



President Reagan and General Secretary Gorbachev at the signing of the INF Treaty in The East Room, December 8, 1987. (White House Photo)

The world's major nuclear powers and their allies were moving away from viewing nuclear weapons as having warfighting utility and more toward nuclear weapons serving the narrower purpose of deterrence. The 1989 fall of the Berlin Wall and 1991 breakup of the Soviet Union would accelerate this shift, although it would take the form of unilateral and allied decisions given the geopolitical turmoil.

For example, in the mid-to-late 1980s, French Prime Minister Jaques Chirac considered a doctrinal shift toward more flexible military responses including the battlefield use of tactical nuclear weapons. However, French President

François Mitterrand maintained that tactical nuclear forces fell into a “pre-strategic” category, intending them to be used as a “warning shot” prior to a full scale nuclear response.<sup>39</sup> The tension between the President and his Prime Minister over the role of tactical nuclear weapons underscored the inherent ambiguity of this weapon type. These internal divisions rose to public debate during the 1995 French presidential election, and led each candidate (including Chirac) to endorse continuity rather than a shift in strategy.<sup>40</sup> After becoming president, Chirac noted in the fall of 1995:

“Small weapons are extremely dangerous because we could be more tempted to use them than large weapons. This is why this new generation of small weapons, which would require small-scale tests to be carried out in France or elsewhere, is very dangerous. The stand that I have taken since June [1995] is that France would not accept the development of a new generation of weapons, all the more dangerous because they are small and there is more temptation to use them.”<sup>41</sup>

Based on several presidential decisions made in 1990-91, the United States canceled plans for replacing the MGM-52 Lance SRBM and modernization of the nuclear artillery systems that were deployed in Europe at the time, followed by a NATO strategy update that entailed removing all remaining nuclear field artillery from the continent.<sup>42</sup> The decisions were informed by U.S. and NATO views on changing security needs, the risks tactical nuclear weapons posed within Europe, the costs of modernizing the Lance and other systems, and the U.S. military services’ focus on costs and operational challenges of deploying tactical nuclear systems.

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39 Marina Louise Caparini, “[The Politics of Franco–German Relations, 1981–1993](#),” *The University of Calgary*, 1998, 106.

40 Ibid.

41 Pascal Boniface, “[French Nuclear Weapons Policy After the Cold War](#),” *The Atlantic Council* (August 1998), 7.

42 Susan J. Koch, *The Presidential Nuclear Initiatives of 1991–1992*, Center for the Study of Weapons of Mass Destruction, National Defense University (September 2012), 2.

Next, in speeches to the public and Congress in September 1991 and January 1992, respectively, President George H.W. Bush announced a series of unilateral steps the United States would make to reduce nuclear tensions and specific weapons risks, and called on Russia to reciprocate. These decisions would be labeled the Presidential Nuclear Initiatives, or PNIs, reflecting that they were made largely at the highest level. As Dr. Susan Koch has described in her comprehensive history of the PNIs:

“All U.S. ground-launched tactical nuclear weapons—about 1,000 artillery rounds and 700 Lance surface-to-surface missile warheads—would be removed from Europe. Those, and another 400 nuclear artillery and Lance warheads in the United States, would all be destroyed. All nuclear weapons would be removed from surface ships, attack submarines, and land based naval aircraft. Those included: 100 nuclear TLAM-N [the U.S. Navy’s nuclear-armed Tomahawk Land Attack Missile] that were routinely deployed; Mark 57 and Mark 61 naval nuclear bombs; and nuclear depth bombs associated with land-based nuclear naval P-3 aircraft and carrier-based S-3 aircraft. All in this latter category—approximately half of the total naval tactical nuclear stockpile—would be destroyed. The remainder, including all TLAM-N, would be put in storage.”<sup>43</sup>

The PNIs also included canceling the tactical air-to-surface SRAM-T missile, and was followed quickly by decisions to halve the remaining deployed hybrid tactical-strategic nuclear weapons (B61 gravity bombs) in Europe. Additional cuts were simultaneously made to the U.S. strategic nuclear arsenal and plans.

As noted above, movement to retire some U.S. tactical nuclear weapons was already underway before the 1990s due to shifts to conventional alternatives, safety issues with some nuclear warheads and delivery systems, and the operational costs and complications of deploying them. Yet, these decisions drove monumental changes. And they were made based on strategic and security calculations that built on the technical and military calculations that were already driving change.

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43 Koch, *The Presidential Nuclear Initiatives of 1991–1992*, 11.

President Bush and his immediate advisors were driven by numerous factors. They saw a strong pivot from the heights of Cold War nuclear dangers as a way for the United States and NATO to set a global agenda that would best serve their own nations' interests, even if such steps also benefited the security of other nations. They were concerned about predictability of command and control as the Soviet Union contracted into the Russian Federation, given coup attempts and other internal turmoil. Soviet tactical nuclear weapons were their chief concern, as their size and dispersal could make them easier for bad actors to find and transport. Bush and some of his closest advisors, such as National Security Advisor Brent Scowcroft, saw NATO nations drawing back tactical nuclear weapons and taking strategic weapons off of their high-alert status, and challenging Soviet leaders to reciprocate, as ways of avoiding nuclear weapons use or loss. Bush and his advisors also took seriously that many military leaders viewed the current, deployed tactical nuclear weapons as adding costs and operational difficulties with diminishing added value given the increasing precision and power of conventional weapons.<sup>44</sup>

Spurred by unilateral actions from the United States and the new security environment following the Cold War, France, the United Kingdom, and Russian Federation also significantly reduced their tactical nuclear arsenals. France retired its only tactical nuclear weapon system, the Pluton SRBM, in 1993 and canceled its replacement, the Hadès missile.<sup>45</sup>

The United Kingdom meanwhile retired the last of its active WE.177 gravity bombs along with U.S.-provided tactical nuclear weapon systems.<sup>46</sup> By 1998, the Trident II SLBM stood as the sole nuclear system in the British arsenal.<sup>47</sup> With this decision, the United Kingdom became the first nuclear-armed nation in the world to reduce their arsenal to a single weapon system.

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44 Susan J. Koch, *The Presidential Nuclear Initiatives of 1991–1992*, Center for the Study of Weapons of Mass Destruction, National Defense University (September 2012).

45 Jozef Goldblat, *Arms Control: The New Guide to Negotiations and Agreements*, Sage Publications, 2002, 98.

46 Goldblat, 98.

47 Claire Mills (2016), “[Replacing the UK’s ‘Trident’ Nuclear Deterrent](#),” House of Commons Briefing Paper 7353, 14.

The U.K.’s 1998 Strategic Deterrence Review defined this new post-Cold War posture as “the minimum necessary to deter any threat to our vital interests...we can safely make further significant reductions from Cold War levels, both in the number of weapons and in our day-to-day operating posture.”<sup>48</sup> Following these drawdowns, the U.K. estimated in 1998 that “the potential explosive power of the deterrent will have fallen by more than 70 percent since the end of the Cold War.”<sup>49</sup> The United Kingdom still maintains a low-yield nuclear option with the Trident II system, though the nation’s leaders continue to reaffirm that this is solely a strategic nuclear capability, and that with this capability its nuclear weapons maintain the ability to provide a sufficient combination of credibility, signaling, and ambiguity to deter an adversary.<sup>50</sup>

The newly established Russian Federation also made important strides to remove tactical systems from deployment. On October 5, 1991, President Gorbachev announced that tactical nuclear weapons in the forms of anti-ship mines, artillery, and naval weapons would be removed from service—and in many cases, destroyed.<sup>51</sup> Later, Russian military leaders disclosed that the promised reductions in Russia’s tactical nuclear arsenal from this period were surpassed and actually amounted to around three-fourths.<sup>52</sup>

The United States would later conclude one aspect of Bush’s PNIs: in 2010, the Obama Administration announced via its Nuclear Posture Review the full retirement of the TLAM-N which had been in storage since the early 1990s and slated it for dismantlement. These nuclear weapons were finally dismantled by 2011.

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48 Tom Dodd and Mark Oakes, *The Strategic Defence Review White Paper*, House of Commons Research Paper 98, no. 91, (October 15, 1998), 31.

49 Ibid, 31.

50 David Cullen, “*Extreme Circumstances: The UK’s New Nuclear Warhead in Context*,” Nuclear Information Service, August 2022, 15.

51 Jozef Goldblat, *Arms Control: The New Guide to Negotiations and Agreements*, Sage Publications, 2002, 98.

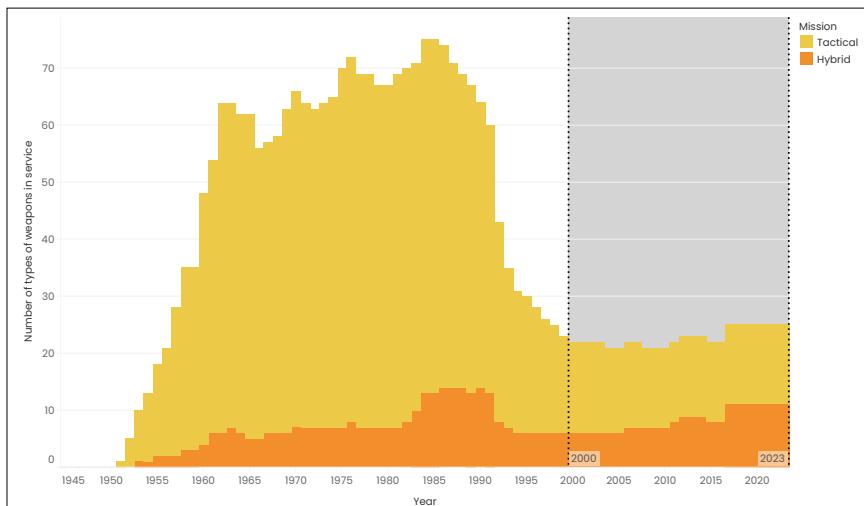
52 Nikolai Poroskov, “Takticheskii Yadernyi Kozyr [A Tactical Nuclear Ace],” *Vremya Novostei*, September 7, 2007.

The combination of these initiatives from the world's major nuclear-armed powers greatly contributed to the strategic stability which emerged following the Cold War. The sharp reduction in the types of tactical and hybrid nuclear weapons deployed in the world is seen clearly in Figure 4 above.

In the intervening years, Russia and the United States made further progress in numerically reducing strategic nuclear weapons systems, increasing information-sharing to reduce miscalculations, and other positive steps. The global landscape of tactical nuclear weapons stayed relatively stable for years.

Another major shift in this era involved planners, theoreticians, and political leaders questioning the untested logic of controlled or managed escalation as it related to nuclear conflict, and far more public recognition of the risks inherent in relying on such concepts holding true through future geopolitical changes and conflicts. Many nations' leaders began to acknowledge that nuclear escalation is unpredictable, and that all sides will suffer tremendous, possibly catastrophic losses if any level of nuclear warfighting ensues. This helped prompt nations to reduce tactical nuclear capabilities and pursue further limits to strategic nuclear weapons.

## Today's Inflection Point



**Figure 5:** Number of types of in-service tactical and hybrid nuclear weapons systems of the P5 countries, 2000–2023 highlighted.

In the current landscape of increasing complexity in the character of conflict, in drivers of uncertainty, and in the tools for inflicting damage among nations, it is worth noting that the situation could be even worse. Indeed, further decreases in stability have likely been contained by the fact that several countries largely worked to remove tactical nuclear weapons from potential conflict front lines and eliminate many of them from their arsenals. Wise world leaders realized that not only did tactical nuclear options undermine the stability of deterrence, but that they could also drive uniquely risky conditions, including for their own nations or allies. Additionally, many defense and technical experts who had to deal with operational and readiness practicalities, maintain the weapons, address safety issues, and contend with budgetary challenges, viewed tactical nuclear weapons as more trouble than any perceived tactical advantage or deterrent effect they might add alongside their broader nuclear and conventional arsenals.

Now, some of the earliest-envisioned uses of tactical nuclear weapons have largely been taken off of the complex security chessboard nations face today.

Examples include nuclear air defense, demolition, and artillery. Though Russia maintains far more types of tactical nuclear weapons than all other nations combined, its past steps to significantly reduce the numbers of these weapons have contributed to stability. The result is that nations that are concerned about nuclear weapons use against them, and that themselves may consider use of nuclear weapons in some circumstances, have a narrower problem set and less ambiguity in their calculations than at any point since the nuclear era began.

However, the world is at an inflection point.

The opposing 2023 events of the UN Secretary General calling for an end to tactical nuclear weapons and Russia deploying them to Belarus (and threatening their use in Ukraine) show clearly that the world can continue building on decades of progress in reducing these weapons—or it may pivot back to the Cold War-era risks highlighted in this report. Pathways to both futures are clearly set on the geopolitical table; both trajectories are real possibilities.

Unraveling of formal commitments is part of the story, including events that resulted in the end of the INF Treaty. A bigger driver is the fact that the world is experiencing a dramatic worsening of the international security environment, and some nations heavily involved in nuclear decision-making must grapple with a greater sense of threats to their security and risks of conflict than in decades.

There are troubling signs that multiple nuclear-armed nations may be considering moving back toward tactical nuclear weapons. For example, some U.S. and multinational experts and officials are explicitly calling for an increase in tactical nuclear weapon capabilities. Based on our years of monitoring this discourse, proponents of a re-expansion of tactical nuclear weapons most frequently emphasize variations of a few main arguments.

First, there is a rising public discussion of whether Russia standing alone in holding onto Cold War-era concepts of the utility of tactical nuclear weapons,

and having so many tactical nuclear systems, creates a “deterrence gap” of some kind for other nations. For those who believe such a gap exists, they often argue that the United States or other nations must mimic Russia’s behavior regarding tactical nuclear weapons—despite Russia being mostly isolated in this behavior—and pursue new capabilities to match it. This discourse is now echoed in Congressional debates, such as by Senator Angus King when he stated in earlier 2023 that “I think we have to take cognizance of the way the world has changed since that Nuclear Posture Review was prepared, particularly given Russia’s continuous discussion of the use of tactical nuclear weapons. We don’t want to be in a situation where our only response is a massive one, which isn’t credible given a lower level of utilization.”<sup>53</sup>

For better or worse, the idea that the United States does not possess lower-yield nuclear capabilities is factually incorrect, despite this misconception spreading. It also harkens back to a time in history when NATO nations deployed much larger numbers of tactical nuclear systems to compensate for conventional shortfalls that no longer exist. Perhaps more importantly, the idea that parity in types of nuclear capabilities must be pursued or else deterrence is ineffective contradicts long-held concepts by most nations and lessons from the Cold War.

Second, and related, today’s debates often include claims that nations expanding tactical nuclear weapons would enhance deterrence by increasing pressure and ambiguity among potential adversaries. However, history shows that any such gains and benefits to such a nation’s security are usually short lived. For tactical nuclear weapons, the world saw over and over again that these dynamics, more than anything, convince other nations that they have their own deterrence gaps and incite arms racing behavior, leaving the nations involved ultimately worse off in the security dilemmas they faced.

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53 U.S. Congress, Senate Committee on Armed Services, “[Hearing To Receive Testimony On The Department Of Energy’s Atomic Energy Defense Activities And Department Of Defense Nuclear Weapons Programs In Review Of The Defense Authorization Request for Fiscal Year 2024 and the Future Years Defense Program](#),” Stenographic Transcript, April 18, 2023, 64.



Airmen load a B-52H Stratofortress with AGM-86B ALCMs during Prairie Vigilance, an exercise conducted by the 5th Bomb Wing at Minot Air Force Base, North Dakota, Sept. 16, 2022. (U.S. Air Force Photo / SrA Evan Lichtenhan)

Third, many who argue for an increase in tactical nuclear weapons claim that they do not lower the threshold for nuclear weapons being used. However, this is inconsistent with the growing sentiment raised by officials and experts that, in fact, tactical nuclear options are needed because strategic options “self-deter” possessor nations from using them. When the United States and NATO had far more of these types of weapons during the height of the Cold War, they were deployed and intended to be used to counter an invasion; in many cases, today’s discourse reveals that usability remains a key rationale.

In some scenarios regularly described publicly, there is concern that a conflict with Russia or on the Korean peninsula could escalate with extreme speed, and that the leadership in question may not respond to conventional means of deterring such escalation. As the argument goes, the United States should be prepared to make a lower-yield nuclear strike to prove to an adversary that they risk further nuclear attacks. Notably, this entails assumptions that nuclear escalation would then be relatively manageable—an assumption we believe is incorrect and, given that no one can truly predict this untested scenario, irresponsibly dangerous.

Currently, the debate emerging in the United States and with some of its allies focuses mostly on one specific tactical nuclear capability. The administration of President Donald Trump sought to bring back the nuclear sea-launched cruise missile (dubbed SLCM-N) that several prior presidents removed from the active force, beginning with the PNIs of President George H.W. Bush.

We count SLCM-N as a tactical nuclear weapon for several reasons: it was classified as nonstrategic in past U.S.-Russia arms control agreements, public U.S. government rationale for developing it lean toward tactical utility, and the command and control construct of the platforms which would deploy with SLCM-N. A 2020 U.S. State Department paper that sought to justify bringing back the SLCM-N described its purpose as being to “restore a degree of balance in nonstrategic nuclear weapons” vis-à-vis Russia.<sup>54</sup> Usability is also actively described as part of the rationale. According to the same document, “If a crisis escalates, leaders will have a wider range of options available in the event that the use of nuclear weapons is necessary to restore deterrence.”<sup>55</sup>

The U.S. debate around a new SLCM-N originally emerged in part as a reaction to Russia’s posture and doctrine, including diverging views regarding whether it holds an “escalate to de-escalate” policy which would almost certainly entail Russian use of tactical nuclear weapons if executed. One 2020 analysis by U.S. Center for Naval Analyses experts came to the conclusion that, compared to decades past, Russia has slid its doctrine regarding use of tactical nuclear weapons to the right on the spectrum of conflict, and may now reserve them for roles in a regional or large-scale conflict. However, if the study is correct, Russia still sees its tactical nuclear weapons as having a range of uses, including for “demonstration; against a target in a third country; or against deployed adversary forces,” and that “In a large-scale war, the Russian military expects

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<sup>54</sup> Office of the Under Secretary of State for Arms Control and International Security, “[Strengthening Deterrence and Reducing Nuclear Risks Part II: The Sea-Launched Cruise Missile-Nuclear \(SLCM-N\)](#),” *The Department of State Arms Control and International Security Papers* 1, no. 11 (July 23, 2020), 1.

<sup>55</sup> *Ibid*, p. 3.

that its forces will use nonstrategic nuclear weapons in warfighting, together with limited use of strategic nuclear weapons.”<sup>56</sup>

This report cites just a few of the primary arguments being made in favor of tactical nuclear weapons. What is most important is the fact that this is a rising debate, and it is beginning to influence decisions regarding the pursuit of new nuclear capabilities. The risks inherent in these weapons, and the arms-racing effects that such actions could bring, would reverse decades of progress in nations seeking strategic stability by limiting these effects.

## The Opportunity to Halt a Reversal of Progress

Notwithstanding debates about expanding this part of the U.S. arsenal and some debate in other nations, today Russia remains mostly isolated in holding this wide-ranging warfighting utility for its tactical nuclear weapons (unless public perceptions regarding its doctrine are incorrect). While not the sole possessor of tactical nuclear weapons remaining in the world, it is the primary one, with a selection of ground- and submarine-launched cruise missiles, anti-ship weapons, surface to air missiles, depth charges, and torpedoes. Additionally, Russia has recently deployed dual-capable ground-based missiles including the 9K720 Iskander (SS-26 Stone).<sup>57</sup>

Beyond the P5 nations that are the primary focus of this report, Pakistan’s development of tactical nuclear weapons is troubling. The concerns overlap with those that informed decreases in tactical nuclear weapons by other nations in the past, including the security of the weapons, ambiguity regarding whether

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56 Michael Kofman and Anya Loukianova Fink, “Escalation Management, And Nuclear Employment In Russian Military Strategy,” *War on the Rocks*, September 19, 2022.

57 Vasco Cotovio and Anna Chernova, “Russian Defense Minister claims Belarus aircraft have been upgraded to carry out Nuclear Strikes,” *CNN*, April 4, 2023.

field commanders were pre-authorized to use them, and greater opportunities for miscalculations to lead to nuclear escalation.

The rising international concerns regarding Pakistan's posture are a good indication that, by and large, most nations continue to see little to no utility for tactical nuclear capabilities, and are maintaining the firm line held by the UK, France, and others that all nuclear weapons are political-strategic rather than warfighting weapons. Still, the P5 in particular are in a malleable phase where this foundational view may either continue or change dramatically.

The positive news is that this uptick is—so far—relatively small. This indicates that the rationale that led countries away from pursuing tactical nuclear weapons for warfighting is mostly holding for now. As such, addressing the risks of tactical nuclear weapons, preventing their increase across different regions, and potentially moving toward their end globally may be one area where there is common ground among nations. At minimum, the idea is worth far more serious exploration than it has received to date.

The scenarios and questions that are driving a renewed focus on tactical nuclear weapons are cause for serious concern. As for the U.S. debate over the SLCM-N, even considering its perceived utility is driving some experts and officials to broaden how they view the roles of nuclear weapons—and many are beginning to embrace conceptions that limited nuclear war is feasible and predictable, possibly even inevitable. Deploying tactical nuclear weapons in certain ways also has the effect of normalizing thinking about them as valid options in conflict, without considering their adverse impact on achieving political goals or eroding the longstanding taboo against the use of nuclear weapons at any level. This dangerously conditions the domestic and international political environments for any nation to use a single, relatively lower yield nuclear weapon.

Just as U.S. debate is being shaped by Russia, and is often driven by concepts that center on matching specific Russian weapons types and doctrine, the debate within the United States will almost certainly influence the calculations

of other nations and regions. This is edging the world closer to a renewed spread of tactical nuclear weapons, a possible proliferation of their capabilities that are no longer present on the world stage, further shifts in changes to multiple nations' nuclear postures and doctrines that could further decrease stability, and even arms racing behavior with tactical nuclear weapons.

Rather than justifying a return to these behaviors of the Cold War, we argue that today's security environment makes the risks that drove nations away from these types of nuclear weapons even more acute and dangerous. A 2020 article by longtime nuclear and countering-weapons of mass destruction expert Dr. Rebecca Hersman describes a key lesson that policymakers should apply to the rising debate about tactical nuclear weapons:

“Unlike traditional concepts of escalation, which suggest linear and somewhat predictable patterns from low-level crisis to all-out nuclear war, escalatory pathways in this new era of strategic competition will be less predictable. Indeed, increasingly sophisticated sub-conventional tactics such as disinformation and weaponized social media, the blurring of nuclear-conventional firebreaks, and the continuing diffusion of global power to regional nuclear states are adding new challenges and additional complexity to crisis management even as an increasingly competitive and contested security environment fuels greater coercive risk-taking among nuclear-armed states, in particular, the United States, Russia, and China.”<sup>58</sup>

Luckily, there are numerous options for how countries can move forward regarding the future fate of tactical nuclear weapons in ways that both reflect this reality and seek to reduce risks where possible.

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<sup>58</sup> Rebecca Hersman, “[Wormhole Escalation in the New Nuclear Age](#),” *The Texas National Security Review*, Summer 2020.



Ambassador Eileen Malloy, chief of the arms control unit at the U.S. Embassy Moscow, is pictured at the destruction site in Saryozek, Kazakhstan, where the last Soviet short-range missiles under the INF Treaty were eliminated, May 11, 1990.

Source: State Dept. / American Foreign Service Association

# III. Recommendations For Ending Tactical Nuclear Weapons

Recent events make clear that it is time for serious dialogue with the public and among governments around the world about how to prevent a return to the destabilizing, Cold War-era reliance on tactical nuclear weapons. Several urgent steps should be taken.

First, nuclear-armed nations need to begin discussing pathways away from tactical nuclear weapons in their doctrine, posture, and arsenals. This sounds more difficult than it may actually be: few countries have or rely heavily on them, as this report has described. Further, the tenuous landscape of the Cold War should make it clear that the security of all nations, nuclear-armed or not, would benefit from avoiding a world where tactical nuclear weapons are once again deployed widely and poised for quick use.

Additionally, the U.S. Department of State has made clear that it is interested in addressing tactical or non-strategic nuclear weapons in bilateral arms control agreements that may develop post-New START. While the war in Ukraine and other issues make prospects seem dim between the two countries, it is worth recalling that past arms control progress has also often come at forbidding times in relations among nations.

This leaves Russia as the primary possessor of the largest number and types of tactical nuclear weapons today, and indications that Moscow may continue to grow its arsenal. This is no small challenge to be sure. Yet it also shows that other nations have an opportunity at the current moment to solidify their past decisions to reduce or avoid this category of nuclear weapon and find ways to encourage Russia to follow suit. If most countries unite behind the principle that their individual security benefits from an end to tactical nuclear weapons,



there is always a possibility that Russian leaders or their successors will begin to see how this would apply to their security too and, eventually, follow the paths others have taken in ways that help them become less diplomatically and economically isolated.

For those who may consider how to reduce the dangers from tactical nuclear weapons, they will benefit from there being many directions these options could take. In an ideal situation, all nuclear-armed nations would agree to pursue an end to tactical nuclear weapons altogether, which the UN Secretary General has advocated. While not impossible, in the near term this is probably highly unlikely. Additional options include for all or some nations to:

- Pursue a freeze in tactical nuclear weapons systems
- Agree to reductions in specific capabilities, possibly alongside certain nations agreeing not to develop these capabilities if they do not yet have them
- Pledge not to deploy them beyond the current status quo and/or agree to future discussions on redeployments

There are likewise many tools and mechanisms that could be used to pursue these objectives. These could take the form of parallel political pledges made by each relevant nation, a more formal agreement, or a legally binding instrument. Discussions regarding paths forward could take place among a few nations, the P5 nations, all nuclear-armed nations, or any number of broader collectives. Commitments could be time-bound or meant to endure perpetually. Given the challenges facing the world today, those leading this work should take every opportunity to discuss and advance it with flexibility in mind, rather than feeling compelled to stick to a prescribed path from which each deviation is considered a setback.

In particular, the P5 nuclear weapons states under the NPT would be the most decisive group of countries in terms of shaping what trajectory this issue takes. As parties to the NPT, they have already taken on the obligation to make meaningful progress on disarmament and risk reduction. As the P5

nations continue to convene, it is crucial that they are given the time and space to gain a full understanding of the risks they seek to reduce. As part of that conversation, the role that tactical systems play in influencing each country's threat perceptions, and in turn, risk assessments, should be on the agenda.

Of course, some challenges to the road ahead are already clear, and can be accommodated early. The relevant countries may continue to disagree to some extent regarding the definition of tactical nuclear weapons. As seen through history, cooperative measures that entail verification will have to handle the technical and trust-related details of these activities. Short of a global agreement, many nations will still worry about North Korea and potentially others defying the path to restraint. These and other nuclear questions are ubiquitous, and should not be seen as excuses not to pursue steps to reduce the larger risks of tactical nuclear weapons.

Second, the United Nations should build on the Secretary General's call for nations to end tactical nuclear weapons. The UN has multiple mechanisms for doing so and should exercise them, including the Open-Ended Working Group process and the Secretary General's New Agenda for Peace, in the process emphasizing that individual nations must stand up as champions for this cause. UN officials can also continue to reinforce the Article VI commitments of the NPT by which nuclear weapons-possessing states parties agreed to pursue decreases and an eventual end to all nuclear weapons. The NPT process must also continue to be a central forum for reinforcing that nearly all nations agree on the necessity of progress in reducing nuclear risks and sharing ideas for how to do so. Indeed, the 2020 Review Conference (which concluded in 2022 due to the COVID-19 pandemic) would have produced a strong final consensus report on such principles, had otherwise unanimous consent not been blocked by Russia.

Finally, civil society groups must play a strong role in supporting stabilizing policies. Officials in government and international organizations are sorely pressed for time given the world's active conflicts and work to avert others. Experts without the urgency of daily events on their plates are ideally



positioned to explore how the world might move in this direction, and what it would take to get there.

For our part, the Janne E. Nolan Center on Strategic Weapons at the Council on Strategic Risks will continue to raise awareness about the distinct risks of tactical nuclear weapons—and the opportunity that exists in the present moment to continue building on decades of progress in reducing these risks. We will foster dialogue, and continue our long-running efforts to examine where nations might find common ground on this subject. This work is part of a larger effort to showcase the benefits of nations narrowing the types of nuclear weapon capabilities they possess over many decades, and explore potential options for nations to pursue restraint, responsible behavior, and risk reduction in order to avoid the use of nuclear weapons.

## Conclusion

It is a dangerous time in history, and the complexity of security risks is not likely to diminish anytime soon. Yet normalizing nuclear threats, and possibly the use of nuclear weapons, is not the answer. Indeed, it is a trend that renders the world more dangerous, and at serious risk of conflict escalating to a civilization-threatening nuclear exchange. To avoid this fate, it is time to bring an end to tactical nuclear weapons.

# Authors' note

This report is part of a more expansive analysis by the Janne E. Nolan Center on Strategic Weapons at the Council on Strategic Risks that seeks to show historical trends in the types of nuclear weapon capabilities that nations possess, how they have evolved, the potential risks of certain types of weapons, the positive security benefits of reducing them, and lessons for today's leaders. We believe that a qualitative approach to addressing nuclear weapons threats offers a unique perspective and new opportunities for cooperation and effective risk reduction undertakings.

The Nolan Center's analysis benefited greatly from the transparency that many nuclear-armed nations have shown regarding their nuclear arsenals, postures, and historical decision-making. While it is understandable that specific aspects of *how* a military capability would be employed are often not made publicly available, we applaud those countries who contribute to strategic stability by making public the *what* and the *why* behind their military capabilities, especially when keeping in mind the leaders of the P5 nations committed their countries to "strengthen stability and predictability [and] increase mutual understanding and confidence" in January 2022.<sup>59</sup>

We would also like to express our gratitude to many experts who have worked to compile and share data and information regarding the world's nuclear weapons history. This work forms an irreplaceable contribution to international security via the previously mentioned stability, predictability, mutual understanding, and confidence, in addition to their utility for analyses like this one. For this we recognize the role of the Office of the Secretary of Defense, the National Nuclear Security Administration, Defense Intelligence Agency, National Air and Space Intelligence Command, Sandia National

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<sup>59</sup> "Joint Statement of the Leaders of the Five Nuclear-Weapon States on Preventing Nuclear War and Avoiding Arms Races," January 3, 2022.

Laboratories, Los Alamos National Laboratory, and Lawrence Livermore National Laboratory.

We would especially like to express gratitude for historical and contemporary information published by several experts across various nations, renowned institutions, and international organizations. They include the International Institute for Strategic Studies for its long-running and irreplaceable *The Military Balance* series; the Federation of Atomic Scientists, and specifically years of data analysis by our expert colleagues Hans Kristensen, Matthew Korda, and others; Dr. Susan Koch for chronicling substantial historical events, informed by her leadership in government service; the late Chuck Hansen for his multi-decade research effort compiled in *The Swords of Armageddon*; and other experts such as John Walker, Bruno Tertrais, Pavel Podvig, Dmitry Stefanovich, and others.

## Abbreviations

<b>P5</b>	The five permanent UN Security Council members—the United States, China, France, Russia, and the United Kingdom. Also the five nuclear weapons states recognized by the Nuclear Non-Proliferation Treaty.
<b>AAM</b>	Air-to-air missile
<b>AGM</b>	Air-to-ground missile
<b>SAM</b>	Surface-to-air missile
<b>ICBM</b>	Intercontinental ballistic missile
<b>IRBM</b>	Intermediate-range ballistic missile
<b>MRBM</b>	Medium-range ballistic missile
<b>SRBM</b>	Short-range ballistic missile
<b>ALBM</b>	Air-launched ballistic missile
<b>SLBM</b>	Submarine-launched ballistic missile
<b>ALCM</b>	Air-launched cruise missile
<b>GLCM</b>	Ground-launched cruise missile
<b>SLCM</b>	Sea-launched cruise missile
<b>ASW</b>	Anti-submarine warfare



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