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DELIBERATE NUCLEAR USE IN A WAR OVER TAIWAN:

Scenarios and Considerations for the United States

Matthew Kroenig



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Cover photo: The *Ohio*-class ballistic-missile submarine USS *Maine* (SSBN 741) departs from Naval Base Guam, April 18. It is a launch platform for submarine-launched ballistic missiles, providing the United States with its most survivable leg of the nuclear triad against a China first-use scenario over Taiwan. Photo by US Navy/ Mass Communication Specialist Seaman Darek Leary

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INTRODUCTION

The potential for a Chinese invasion of Taiwan may be the most critical flash point for a military conflict for the United States in the next five to ten years. Both the United States and China would be highly resolved not to lose such a conflict. For the United States, a defeat over Taiwan could call into question US security guarantees globally, which underpin the US-led, rules-based international order and the unprecedented period of peace and prosperity it has sustained since the end of World War II. For Beijing, restoring China to a position as a leading world power is key to the legitimacy of the governing Chinese Communist Party (CCP) and its general secretary, Xi Jinping. According to the work report delivered at the CCP's Twentieth National Congress in October 2022, unification with Taiwan is required “for realizing the rejuvenation of the Chinese nation.”¹

A US-China war over Taiwan would be the first direct military conflagration between two nuclear-armed superpowers, and the shadow of nuclear use would hang over the conflict. Given the high stakes, either side could possibly decide to use a nuclear weapon in such a conflict. While China espouses a declaratory policy of no first use of nuclear weapons, the US Department of Defense states bluntly that Chinese nuclear first use is possible.² China, for instance, could decide to employ a few nuclear weapons against critical nodes in the US Indo-Pacific defense architecture as an early war-winning strategy. Alternatively, if China was losing, CCP leadership could order a nuclear strike to stave off defeat and compel a settlement. China is engaged in the most significant expansion of its nuclear force in the country's history as a nuclear state, “allowing it potentially to adopt a broader range of strategies to achieve its objectives, to include nuclear coercion and limited nuclear first use,” according to the 2022 Nuclear Posture Review.³

The United States also reserves the right to threaten the use of nuclear weapons to deter a strategic attack against itself or its allies and partners and, if deterrence fails, to employ strategic weapons to achieve presidential objectives.⁴ While the United States is investing in conventional capabilities to deter and, if necessary, defeat a Chinese invasion of Taiwan, a window could open in which China possesses capabilities for an invasion but the United States has not yet acquired the capabilities to deny the attack. In this instance, the United States might choose to use nuclear weapons against the Chinese invasion force to prevent the conquest of Taiwan.

In the event of the use of a single or a handful of nuclear weapons in such a conflict, an extended nuclear exchange could occur. US strategists would need to carefully calibrate a US response to Chinese nuclear first use to make clear that Chinese leadership could not achieve its goals by further nuclear escalation, while minimizing the risk of unintended escalation. US nuclear first use could make threading that needle more difficult. While the goal of limited US nuclear use would be to convince China not to retaliate with nuclear weapons, an extended exchange—perhaps including strategic nuclear forces—could plausibly result.

The United States should shape its Indo-Pacific force posture to reduce the risk of Chinese nuclear use, including by developing robust conventional forces and hardening and dispersing forces to make a nuclear strike minimally advantageous for China. US policy makers should also consider formally extending the US nuclear umbrella over Taiwan. The United States should consider whether existing forces are best suited to provide options to limit nuclear escalation in this conflict and, if not, which new forces would be helpful (e.g., theater-based, low-yield weapons capable of striking moving maritime targets). Because such a war could escalate, intentionally or otherwise, to an extended nuclear exchange, the United States should consider further investments in homeland missile

1 Bonny Lin et al., “China's 20th Party Congress Report: Doubling Down in the Face of External Threats,” Center for Strategic and International Studies, October 19, 2022, <https://www.csis.org/analysis/chinas-20th-party-congress-report-doubling-down-face-external-threats/>.

2 Kawala Xie, “China underlines ‘no first use’ nuclear weapons policy as it seeks stronger power to deter,” *South China Morning Post*, October 19, 2022, <https://www.scmp.com/news/china/military/article/3196530/china-underlines-no-first-use-nuclear-weapons-policy-it-seeks-stronger-power-deter>; Office of the US Secretary of Defense, *Military and Security Developments Involving the People's Republic of China 2021*, Annual Report to Congress, November 2021, <https://media.defense.gov/2021/Nov/03/2002885874/-1/-1/0/2021-CMPR-FINAL.PDF>.

3 Office of the US Secretary of Defense, *2022 Nuclear Posture Review*, October 27, 2022, 11, <https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF>.

4 Ibid.; US Department of Defense, “Fact Sheet: 2022 Nuclear Posture Review and Missile Defense Review,” March 28, 2022, <https://media.defense.gov/2022/Mar/29/2002965339/-1/-1/1/FACT-SHEET-2022-NUCLEAR-POSTURE-REVIEW-AND-MISSILE-DEFENSE-REVIEW.PDF>.



A December 2010 photo of a nuclear-powered Type 094A *Jin*-class ballistic missile submarine of the Chinese People's Liberation Army (PLA) Navy. Credit: CRS by Navy Office of Legislative Affairs.

defense, strategic offensive nuclear forces, and/or advanced conventional forces capable of nuclear counterforce operations. Finally, the United States should work with allies and partners such as Taiwan to prepare them for the risk of nuclear use against them and to train their militaries to better operate in a nuclear environment and mitigate civilian harm from nuclear effects.

Other scholars have recognized the risk of a US-China war over Taiwan inadvertently escalating to nuclear use, but few have thought through each party's rational incentives to deliberately employ nuclear weapons and how a nuclear exchange might play out. For instance, some scholars have considered how a high-intensity conventional US-China war could inadvertently generate nuclear escalatory pressures.⁵ But inadvertent escalation is not a necessary, or even the most likely, path to a US-China nuclear exchange in a Taiwan contingency.⁶ This paper is one of the few detailed treatments of deliberate nuclear use in a Taiwan Strait conflict as a part of a rational and deliberate strategy. This paper will lay out scenarios for deliberate Chinese or US nuclear use, evaluate the prospects for an extended nuclear exchange arising from such use, and consider recommendations for

the United States to better prepare to deter and, if necessary, respond to nuclear use.

STRATEGIC CONTEXT

The US government has emphasized that China's growing military power and malign behavior pose a significant national security challenge to the United States. The US Department of Defense has recognized China as its "pacing challenge."⁷ The 2022 National Security Strategy proclaims that "[China] is the only competitor with both the intent to reshape the international order and, increasingly, the economic, diplomatic, military, and technological power to do it. Beijing has ambitions to create an enhanced sphere of influence in the Indo-Pacific and to become the world's leading power."⁸

The United States is most concerned about a possible Chinese attack aimed at conquering Taiwan, a self-governing democracy that has never been under PRC control. Xi has been increasingly clear that achieving "reunification" with Taiwan is a nonnegotiable goal; a recent CCP white paper spelled out the party's position that China "will

5 Caitlin Talmadge, "Would China Go Nuclear? Assessing the Risk of Chinese Nuclear Escalation in a Conventional War with the United States," *International Security* 41 (4): 50-92, https://doi.org/10.1162/ISEC_a_00274.

6 Matthew Kroenig and Mark J. Massa, *Are Dual-Capable Weapon Systems Destabilizing? Questioning Nuclear-Conventional Entanglement and Inadvertent Escalation*, *Atlantic Council*, June 16, 2021, <https://www.atlanticcouncil.org/in-depth-research-reports/issue-brief/are-dual-capable-weapon-systems-destabilizing/>.

7 David Vergun, "China Remains 'Pacing Challenge' for US, Pentagon Press Secretary Says," *DOD News*, November 16, 2021, <https://www.defense.gov/News/News-Stories/Article/Article/2845661/china-remains-pacing-challenge-for-us-pentagon-press-secretary-says/>.

8 White House, *National Security Strategy*, October 2022, 23, <https://www.whitehouse.gov/wp-content/uploads/2022/10/Biden-Harris-Administrations-National-Security-Strategy-10.2022.pdf>.



The Dongfeng-31 nuclear missile launcher on display at the Military Museum of the Chinese People's Revolution. Credit: Wikimedia user Tyg728.

not renounce the use of force [to take Taiwan], and... reserve[s] the option of taking all necessary measures.”⁹ US military and defense leaders and experts have suggested that such an attack could occur in the next five years—or perhaps earlier.¹⁰

China's ongoing expansion of its nuclear arsenal (which is expected to reach one thousand five hundred deliverable nuclear weapons by 2035) exacerbates this problem.¹¹ This expansion puts China in a better position for nuclear coercion in a Taiwan Strait contingency because of the improved overall nuclear balance and greater number of flexible options for limited nuclear use. With an improved nuclear balance, China may be more willing to initiate militarized crises with the United States and to introduce nuclear threats in those crises.¹² Further, China is developing nuclear-armed

and dual-capable mobile surface-to-surface and anti-ship ballistic and cruise missiles, which are especially suitable to use in a limited manner in a theater scenario.¹³ Finally, developments in China's nuclear strategy (including a possible move to a launch-on-warning posture) and ancillary capabilities (such as early warning satellites and improving air and missile defenses) will likely give it more confidence in the survivability of its force, likely making the country more willing to initiate a nuclear crisis.¹⁴

If the United States did decide to defend Taiwan against a Chinese invasion, both the United States and China would be highly resolved to avoid losing.

A successful Chinese conquest of Taiwan would have serious ramifications for US national security

9 State Council, People's Republic of China, "China releases white paper on Taiwan question, reunification in new era," August 10, 2022, https://english.www.gov.cn/archive/whitepaper/202208/10/content_WS62f34f46c6d02e533532f0ac.html.

10 "How will the US Navy navigate an uncertain security environment? A conversation with ADM Mike Gilday," Atlantic Council, October 19, 2022, <https://www.atlanticcouncil.org/event/how-will-the-us-navy-navigate-an-uncertain-security-environment/>.

11 Office of the Secretary of Defense, *Military and Security Developments Involving the People's Republic of China 2022*, Annual Report to Congress, <https://media.defense.gov/2022/Nov/29/2003122279/-1/-1/2022-MILITARY-AND-SECURITY-DEVELOPMENTS-INVOLVING-THE-PEOPLES-REPUBLIC-OF-CHINA.PDF>.

12 Matthew Kroenig, *The Logic of American Nuclear Strategy: Why Strategic Superiority Matters* (New York: Oxford University Press, 2018).

13 Minnie Chan, "China Airs Footage of Aircraft Carrier Killer Nuclear Missiles 'In Warning to US,'" *South China Morning Post*, October 4, 2022, <https://www.scmp.com/news/china/military/article/3194806/china-air-footage-anti-ship-carrier-killer-nuclear-missiles>.

14 *Military and Security Developments Involving the People's Republic of China 2021*; Ottawa Sanders, *The Impact of the Evolving Sino-Russian Relationship on Chinese Military Modernization and the Implications for Deterrence in the Indo-Pacific*, Atlantic Council, May 2022.

interests. It would be devastating to the global economy. It would put China in a better position to threaten other US allies and dominate the Indo-Pacific region. And it would call into question the very foundations of the rules-based international order.

The loss of Taiwan would have negative consequences for US economic interests. China and Taiwan are both major US trading partners; a war involving these countries would be devastating for the US and global economies. Moreover, Taiwan's microchip industry is responsible for "65% of the world's semiconductors and almost 90% of the advanced chips," strategic commodities that are essential to everything from advanced manufacturing to precision-guided munitions to consumer products like dishwashers.¹⁵ It is unlikely that China could seize this production for itself, as the human and physical capital essential to such industries is unlikely to emerge unscathed from an invasion. Still, their denial to the rest of the world would be deleterious.

Moreover, under Chinese control, Taiwan would serve as a potent forward operating base for the People's Liberation Army (PLA), increasing its power-projection capabilities across the Western Pacific and severely complicating US plans to defend allies and partners from the South China Sea to Japan.¹⁶ China, for instance, has an active territorial dispute with Japan over the Senkaku/Diaoyu Islands, and China's military position vis-à-vis these islands would be improved with access to bases in Taiwan.

A key goal of US foreign and national security policy since World War II has been to prevent any hostile power from dominating key regions of the world—such as East Asia, Europe, or the Middle East. A Chinese conquest of Taiwan would move China closer to dominating the Western Pacific,

including for the economic and security reasons mentioned above.

Finally, a Chinese conquest of Taiwan would call into question the foundations of the rules-based international order. The United States has long maintained a policy of "strategic ambiguity" as to whether its commitments to Taiwan constitute a pledge to provide military forces to defend it against an invasion. Still, recent statements by US President Joe Biden seem to imply that the United States indeed would come to Taiwan's defense.¹⁷ US allies and partners might view US inaction as a sign of decreased US will and capability to defend them. Even in the absence of a formal mutual-defense pact, a Chinese invasion of Taiwan would challenge the notion, key to the rules-based international order, that disputes over borders should not be resolved by force. Because the rules-based international order has been key to global peace, prosperity, and freedom since the end of World War II, the United States would have strong incentives to preserve it by defending Taiwan.

Chinese leadership, too, would likely have enormous resolve to prevail in a conflict over Taiwan. With significant economic and public-health-related disruptions posing challenges to the legitimacy of the CCP, Chinese leadership is increasingly turning to nationalism as a source of legitimacy—and the prospect of "reunification" with Taiwan is a key goal of Chinese militarism-nationalism.¹⁸ As such, members of Chinese leadership might regard a failed attempt to conquer Taiwan as a risk to the continuity of the CCP and, possibly, to their personal survival.

In sum, both sides would likely be willing to undertake significant risks, including the threat or use of nuclear weapons.¹⁹

15 Saibal Dasgupta, "Race for Semiconductors Influences Taiwan Conflict," *Voice of America*, August 10, 2022, <https://www.voanews.com/a/race-for-semiconductors-influences-taiwan-conflict-/6696432.html>.

16 Brendan Rittenhouse Green and Caitlin Talmadge, "The Consequences of Conquest: Why Indo-Pacific Power Hinges on Taiwan," *Foreign Affairs*, July/August 2022, <https://www.foreignaffairs.com/articles/china/2022-06-16/consequences-conquest-taiwan-indo-pacific>.

17 David Sacks, "What Biden's Big Shift on Taiwan Means," *Asia Unbound*, May 24, 2022, <https://www.cfr.org/blog/what-bidens-big-shift-taiwan-means>.

18 Dan Blumenthal, "China's Aggressive Tactics Aim to Bolster the Communist Party's Legitimacy," *National Interest*, September 28, 2020, <https://www.aei.org/articles/chinas-aggressive-tactics-aim-to-bolster-the-communist-partys-legitimacy/>; Dexter Tiff Roberts, "How much support does the Chinese Communist Party really have?" *New Atlanticist*, April 14, 2021, <https://www.atlanticcouncil.org/blogs/new-atlanticist/how-much-support-does-the-chinese-communist-party-really-have/>; Anthony Toh Han Yang and Jonghyuk Lee, "Xi Jinping's Legitimacy Malaise Is Bad News for Cross-Strait Relations," *Diplomat*, May 11, 2022, <https://thediplomat.com/2022/05/xi-jinpings-legitimacy-malaise-is-bad-news-for-cross-strait-relations/>.

19 Matthew Kroenig, *Deterring Chinese Strategic Attack: Grappling with the Implications of China's Strategic Forces Buildup*, *Atlantic Council*, November 2, 2021, <https://www.atlanticcouncil.org/in-depth-research-reports/report/deterring-chinese-strategic-attack-grappling-with-the-implications-of-chinas-strategic-forces-buildup/>.



The Dongfeng-17 missile launch vehicle on exhibition. China could use regional missiles in a first-use scenario. Credit: Wikimedia user 颐园居.

SCENARIOS FOR DELIBERATE NUCLEAR USE

In the event of a US-China war over Taiwan, there are plausible scenarios in which either China or the United States would logically consider using nuclear weapons in a limited fashion, given the high stakes. Limited nuclear use is defined as a nuclear attack short of a large-scale nuclear exchange designed to eliminate a large fraction of an adversary state's military forces, industrial production, or population. This section will lay out the plausible scenarios for either side's deliberate nuclear use across the spectrum of employment—from signaling to an attack on an operationally relevant target to an extended nuclear exchange.

Scenarios for Chinese Limited Nuclear First Use

There are at least four scenarios for Chinese limited nuclear first use in a conflict with the United States over Taiwan: nuclear signaling and threats, a nuclear demonstration with no military effect, a nuclear attack on Taiwan, or a nuclear attack on the forces

or territory of the United States or one or more of its regional allies.

Some might respond that these scenarios are implausible, given China's pledge not to use nuclear weapons first in a conflict, but there are reasons to doubt China's stated policy. In fact, China's nuclear strategy plausibly permits a variety of nuclear uses, and the country unequivocally possesses the capability to conduct a nuclear first strike. Moreover, US statements and documents cast doubt on China's no-first-use policy.²⁰ In addition, policy can change in the midst of a crisis or conflict, and there is technically nothing about China's nuclear command and control that would prohibit first use. The United States must plan against this possibility.

Signaling

In a crisis or a conflict over Taiwan, Chinese leadership might use nuclear signaling to stop or limit a US intervention. This signaling could take a variety of forms. Chinese leadership or state media could issue threats—vague or specific, public or private—that warn of “catastrophic consequences” for the United States if it interfered with Chinese “internal matters.” The Chinese military could visibly alert its nuclear forces, including by dispatching

20 Paul McLeary, “I Don't Believe China's Serious About Nuke No First Use: DASD Nukes Soofer,” *Breaking Defense*, September 2, 2020, <https://breakingdefense.com/2020/09/i-dont-believe-china-is-serious-about-nuke-no-first-use-dasd-nukes-soofer/>; *Military and Security Developments Involving the People's Republic of China 2021*.

mobile missiles from garrison, dispersing bombers to different airfields, and perhaps even releasing warheads from central storage to operational units. China could also test its nuclear delivery vehicles. This could be through a routine test like an intercontinental ballistic missile (ICBM) launch in its western test ranges. China could perhaps also test a new capability, like its August 2021 test of a boost-glide hypersonic missile with fractional orbital bombardment capability, which reportedly took US defense officials by surprise and was “very close” to a “Sputnik moment” in the words of Chairman of the Joint Chiefs of Staff Gen. Mark Milley.²¹ Perhaps interpreting Russian nuclear threats against Ukraine as successful in dissuading direct US and NATO intervention, China could believe that raising the salience of nuclear weapons would deter the United States and its allies from joining the war on Taiwan’s side.

Demonstration

The Chinese military could conduct a nuclear demonstration. It could take a step up from nuclear signaling by actually detonating a nuclear device without having direct military effects. The least provocative demonstration would be a test at an existing Chinese test range. China has not conducted a nuclear weapons test since its 1996 signature of the Comprehensive Test Ban Treaty, which it has not ratified. The purpose of such a test would aim to convince Taiwanese, US, and allied governments and publics of China’s seriousness about the conflict and its willingness to escalate to nuclear use. A more provocative nuclear demonstration could occur above the waters surrounding Taiwan or perhaps even above international waters in the vicinity of a US military base in the Western Pacific.

Nuclear Attack on Taiwan

A nuclear attack against Taiwan itself could target Taiwanese military or leadership facilities—possibly before the United States has committed troops to Taiwan’s defense—as a gambit to collapse Taiwan’s defenses, decapitate its leadership, and deter the United States and its allies from supporting Taiwan. In recent years, experts have recommended that Taiwan transform its military into a distributed force capable of a “porcupine defense” less vulnerable

to air and missile bombardment. Still, there are significant Taiwanese military facilities (air bases, ports, and army bases) or naval vessels that might present attractive targets for a nuclear attack. The Chinese military could use nuclear weapons to strike some of these facilities with minimal collateral damage to the Taiwanese populace or economy. By contrast, China could also consider a decapitating nuclear strike against Taiwanese national leadership in Taipei or against Taiwanese continuity-of-government locations. The goal of these attacks would be, first, to collapse Taiwanese government and, second, to signal to the Taiwanese population and the wider world that China is willing to escalate to the highest levels to achieve its goal of conquering Taiwan. A strike against an urban center would bring especially grave diplomatic and reputational repercussions for China and damage the postwar value of Taiwan to Beijing.

In either instance, a nuclear strike could be carried out before the United States or other countries had committed forces to the conflict, presenting those nations with the difficult choice of declaring war on a China that had already demonstrated its willingness to use nuclear weapons to prevail.

Nuclear Attack on US Forces, Allies, or Territory

China could use nuclear weapons against US or allied forces or territory if it judged that nuclear use could confer a significant advantage.

If the United States and its allies and partners did decide to come to the aid of Taiwan with military force, China could elect to use nuclear weapons in a limited way against US or allied forces, US military facilities on the territory of allies engaged in the fight, or even US territory. Targets for nuclear use could include US or allied forces in the region, such as US carrier strike groups or surface action groups. A Chinese response might also include attacks on US military facilities located on the territory of allies, such as Kadena Air Base located on Okinawa, Japan. Finally, such a strike could target US military facilities on US territory, most notably Andersen Air Force Base (AFB) on Guam. Even if the United States or its allies had not yet declared their intent to support Taiwan against a Chinese invasion with military force, Chinese leadership could still

21 Demetri Sevastopulo and Kathrin Hille, “China Tests New Space Capability with Hypersonic Missile,” *Financial Times*, October 16, 2021, <https://www.ft.com/content/ba0a3cde-719b-4040-93cb-a486e1f843fb>; Sara Sorcher and Karoun Demirjian, “Top US General Calls China’s Hypersonic Weapon Test Very Close to a ‘Sputnik Moment,’” *Washington Post*, October 27, 2021, <https://www.washingtonpost.com/nation/2021/10/27/mark-milley-china-hypersonic-weapon-sputnik/>.

decide that such intervention was likely and decide to engage in nuclear use early, motivated by the possibility of significantly reducing the capacity of the United States or its allies to intervene in the conflict. Nuclear use before a declaration of war could possibly be more useful to China if US or allied forces were not yet alerted or dispersed.

In addition to this warfighting logic, a Chinese decision to use nuclear weapons against US forces could be motivated by a desire to avoid defeat: If Chinese leadership believed that it was losing a conventional war over Taiwan, it might seek to escalate to nuclear use in hopes of compelling negotiations for a settlement—a similar logic to the Russian “escalate-to-de-escalate” strategy.²²

Additionally, it is possible (though, of these possibilities, least likely), that Chinese leadership might believe, due to escalation in a conventional war, that US nuclear use may be likely and imminent. In that scenario, the CCP could decide that a preemptive, large-scale nuclear strike on the US homeland is necessary. This seems especially unlikely given the ultimate escalatory nature of this action and the reality that China does not—and will very likely not for the next five to ten years—possess a strategic force capable of a successful counterforce strike on the US nuclear triad. The United States will likely retain a robust second-strike capability in that time period. Such an attack, therefore, would likely result in a destructive retaliatory strike on the Chinese homeland—Chinese leadership is unlikely to take that risk.

In sum, if Beijing decided to invade Taiwan, China could possibly engage in nuclear threats or use to deter outside intervention; compel Taiwan to surrender; defeat Taiwanese, US, or allied forces; or force negotiations if the Chinese conventional offensive was on the brink of collapse.

Scenarios for US Limited Nuclear First Use

The United States might choose to use nuclear weapons in the event of a Chinese invasion of

Taiwan—especially if a Chinese victory looked imminent or if China engaged in a nonnuclear strategic attack on the US homeland. US declaratory policy does not rule out nuclear first use.²³ This policy assures allies and partners that the United States would consider using nuclear weapons to deter or respond to a strategic attack. Further, it forces a potential adversary not to count out US nuclear weapons if it aggressed against a US ally or partner. The United States has previously identified conditions for nuclear first use as a response to aggression. During the Cold War, the United States relied on nuclear deterrence to backstop local defenses, including prescribing that nuclear weapons be “available for use as other conventional munitions” in the event of hostilities.²⁴ US strategists planned for nuclear first use in the event of a Soviet invasion of West Germany, a situation not dissimilar to the potential local conventional inferiority the United States may soon be facing in the Taiwan Strait. It is not outside the realm of possibility that US strategists today could adapt plans like those for the specific political and physical geography of the contemporary Western Pacific, alongside greater investment in conventional defense and closer collaboration with allies.²⁵

The likeliest scenarios for US nuclear first use during a Chinese invasion of Taiwan would be an attack directly against the Chinese invasion force in the face of a Taiwanese defeat or as retaliation for a large-scale nonnuclear strategic attack on the US homeland or that of its allies.

The United States could find itself in a scenario in which the president decides to use nuclear weapons because he or she seeks to prevent the success of a Chinese invasion but lacks the conventional forces to do so. This situation could come about for a variety of reasons, including an intelligence failure that does not provide warning of a Chinese buildup, a successful Chinese conventional preemptive strike on key US conventional forces in the region, or a failure by the United States to invest in sufficient conventional forces to defend Taiwan. In this case, the United States would seek to use nuclear weapons against the invasion force to frustrate the

22 Matthew Kroenig, *A Strategy for Deterring Russian De-Escalation Strikes*, Atlantic Council, April 24, 2018, <https://www.atlanticcouncil.org/in-depth-research-reports/report/a-strategy-for-deterring-russian-de-escalation-strikes/>.

23 “Fact Sheet: 2022 Nuclear Posture Review.”

24 “Note by the Executive Secretary to the National Security Council on Basic National Security Policy,” Foreign Relations of the United States, 1952–1954, National Security Affairs, Volume II, Part 1, S/S–NSC files, lot 63 D 351, NSC 162, October 30, 1953, <https://history.state.gov/historicaldocuments/frus1952-54v02p1/d101>.

25 Matthew Kroenig, “Washington Must Prepare for War with Both Russia and China,” *Foreign Policy*, February 18, 2022, <https://foreignpolicy.com/2022/02/18/us-russia-china-war-nato-quadrilateral-security-dialogue/>.



A US Air Force B-52H Stratofortress lands at Andersen Air Force Base, Guam. Photo by US Air Force/Tech. Sgt. Zade Vadnais.

immediate success of the attack and to provide time for reinforcements or give room for diplomacy.

The United States might also seek to use nuclear weapons to deter or respond to a nonnuclear strategic attack on the US homeland or nuclear command and control. The 2022 National Defense Strategy “[r]ecogniz[es] growing kinetic and non-kinetic threats to the United States’ homeland from our strategic competitors.”²⁶ China can likely conduct kinetic or non-kinetic attacks on the United States. These attacks could include disruptions of critical infrastructure (e.g., the power grid or financial system), which might rise to the level of “extreme circumstances” that threaten “the vital interests” of the United States, as described in the 2022 Nuclear Posture Review.²⁷ US leaders might consider nuclear use to demonstrate to China that it cannot expect to gain enduring advantage from these nonnuclear strategic attacks on the US homeland or those of US allies and partners.

Scenarios for an Extended Nuclear Exchange

In the event that either the United States or China used a single nuclear weapon or a handful of nuclear weapons in any of the scenarios above, the prospect for an extended nuclear exchange would loom

large. Of course, a single nuclear detonation would not lead automatically to a nuclear Armageddon. Chinese leadership could conceivably elect not to respond to US nuclear use with nuclear weapons of its own—especially if China seemed likely to prevail regardless. A US response to a Chinese nuclear first use could also possibly convince Chinese leadership that it had nothing to gain from further escalation. As in the Cold War, strategists on both sides will identify pathways from one nuclear battlefield use to a full nuclear exchange, so that knowledge may induce caution for both parties.

If a single nuclear weapon is used, it is not hard to imagine how that could escalate to a strategic nuclear exchange. The United States might use nuclear weapons against Chinese landing ships. China could retaliate by striking Andersen AFB on Guam. The United States could strike several airfields on the Chinese mainland. China could retaliate by using an ICBM against US military bases in Alaska. Strategists on both sides would start to seriously contemplate the value of a damage-limiting strike as a broader exchange begins to look inevitable. Indeed, given that the number of US nuclear weapons available for theater-based, low-yield strikes is quite low, such pressures might emerge relatively early for the United States.

²⁶ “Fact Sheet: 2022 National Defense Strategy,” US Department of Defense, March 28, 2022, 1, <https://media.defense.gov/2022/Mar/28/2002964702/-1/-1/1/NDS-FACT-SHEET.PDF>.

²⁷ “Fact Sheet: 2022 Nuclear Posture Review,” 1.

STRATEGY, POLICY, AND OPERATIONAL CONSIDERATIONS FOR THE UNITED STATES

Any of the above scenarios would pose difficult strategic, policy, and operational questions for how the United States should respond. This section will consider some of the most important of those questions in detail.

Objectives of US Response, Including Potential Nuclear Use

In the event of Chinese nuclear use during a war over Taiwan, US national leadership would face difficult questions about US objectives. The primary US objective should be to restore intrawar and global deterrence. To restore intrawar deterrence, the United States would need to convince China that any further nuclear use would be met by a decisive US response and would, therefore, not advance Chinese objectives. Further, the US response would need to reinforce deterrence globally by demonstrating to other nuclear rivals not party to the conflict—namely, Russia and North Korea—that the United States will not allow any state to gain advantage from nuclear use. Such a response would restore the “nuclear taboo” by demonstrating that countries cannot expect to gain an enduring security advantage by using nuclear weapons. Another important goal would be to restore assurance of allies—both assuring those in the region that they would not be the next target of nuclear aggression and assuring allies globally that the United States would be able to protect them against future nuclear aggression. Success in this objective is key to US nonproliferation goals—a US response must convince countries like Japan and South Korea that the US nuclear umbrella suffices for their security and that domestic nuclear weapons programs are unnecessary. US objectives would also, importantly, include minimizing the prospect of further escalation. While threading this needle between deterring further nuclear use and preventing escalation, targets should be selected to achieve a militarily significant effect against elements of the PLA actively engaged in the invasion, while minimizing collateral damage against civilians in China and elsewhere.

In the event of US first use, national objectives would be, first, to achieve the desired discrete effect of the strike (e.g., to halt the Chinese invasion or to retaliate against a nonnuclear strategic attack) while deterring nuclear retaliation from China.

Response with Nuclear or Conventional Forces to Chinese Nuclear First Use

Presented with Chinese nuclear use, US leadership would face a decision to respond with either nuclear or conventional forces. To deter further Chinese nuclear use and maintain the credibility of nuclear deterrence globally, the United States would need to respond with nuclear weapons.

In order to convince China to stop using nuclear weapons, the United States would need to make it clear that further escalation would not achieve Chinese goals. Such a response would be designed to convince Chinese leadership that it had miscalculated US capabilities or resolve and that further escalation would be fruitless.

A US nuclear response to Chinese nuclear aggression would also be essential to reinforcing deterrence globally. If China were allowed to get away with nuclear aggression with only a conventional response, no matter how devastating, it could encourage nuclear aggression across the globe and erode the credibility of all US deterrent pledges. No conventional response could rise to the level of seriousness that a nuclear response would communicate.

Another reason why Chinese nuclear use would require a US nuclear response is that a devastating conventional response would be especially hard to achieve and communicate clearly in the midst of a high-intensity conventional war between the United States and China. If Chinese nuclear use occurs several weeks or months into the conflict, there will then likely be an ongoing exchange of conventional munitions, and many ideal targets will likely already be degraded. In this instance, it is not clear that a conventional strike could represent a significant enough escalation to signal to China that it had underestimated US resolve. If the United States was already engaged in a campaign to degrade military forces and bases involved in the war on Taiwan, would striking another such target with conventional munitions really constitute a devastating response to Chinese nuclear use? The target set suitable for conventional retaliation is also

constrained by another objective of a US response: preventing escalation to a strategic exchange and following the law of war. A strike on some targets serviceable by conventional forces—for example, national leadership, national command-and-control facilities, nuclear forces—could be perceived as a decapitating or disarming strike with a greater risk of escalation than desired.

Finally, even if a suitable retaliatory target set exists that could be attacked by conventional forces, it is not clear that such a strike would achieve an important secondary goal: assurance of allies. Would allies continue to believe in the US nuclear umbrella if the United States or its allies suffered a nuclear attack in wartime and Washington failed to respond in kind? This point is especially salient if China struck allied forces or territory, in which case the ally might demand a nuclear response.

A closely related question is whether the United States should conduct a demonstrative nuclear use or a militarily useful nuclear strike. A demonstrative strike would likely do little to advance US objectives and may undermine them. Indeed, a demonstrative use of nuclear weapons might do more to call into question the US will to use nuclear weapons than to emphasize resolve.

In contrast to an attack on US or allied forces, a nuclear attack on Taiwan (in the absence of a change in US policy) could likely be deterred or responded to using nonnuclear means of national power, including conventional forces. If China issued nuclear threats against Taiwan—or if the United States had intelligence that China was preparing to use nuclear forces—the United States could issue public, deliberately vague threats of catastrophic consequences. If China carried through on nuclear use, the United States could rally the world to impose sanctions, expel China from international organizations, and conduct conventional strikes on the Chinese forces or bases responsible for generating the nuclear strike against Taiwan.²⁸

Status of Targets on the Chinese Mainland

The United States should not afford sanctuary status to the Chinese mainland in the event of a war over Taiwan. The Soviet homeland was not a sanctuary for US war planning during the Cold War, and there is no reason for US planners to promise China protection. Instead, the United States needs to deliberately set expectations that China should expect military facilities on its territory to come under attack if it invades Taiwan. This is especially salient if China attacks the sovereign territory of US allies—such as Japan, South Korea, or Australia—that are supporting the war effort (or before they commit forces). Why should attacks on the territory of US allies be accepted, but attacks on Chinese territory be ruled out? Naval ports, airstrips, and missile garrisons in the Eastern and Southern Theater Commands would be essential to supporting a Chinese campaign against Taiwan. It is unrealistic to defend Taiwan without degrading these assets with conventional US forces. It is also possible that China would not refrain from attacks (kinetic or non-kinetic) on the US mainland in a war—the 2022 National Defense Strategy explicitly warns that competitors like China “pos[e] all-domain threats to the US homeland in an effort to jeopardize the US military’s ability to project power and counter regional aggression.”²⁹ Refraining from conventional attack on the Chinese mainland is a recipe for losing a war to defend Taiwan without making Americans appreciably safer. That is not to say that the escalation risk of attacks on Chinese targets should be ignored, but these risks can be managed by careful perception setting, target selection, and escalation management.

The decision to use nuclear weapons against the Chinese mainland either in response to Chinese nuclear first use or to defeat the Chinese invasion force would be a much more difficult question. Striking targets on the Chinese mainland with nuclear weapons would likely be highly escalatory, perhaps inviting Chinese retaliatory strikes on US territory. This concern would be especially salient in the event of US nuclear first use or if initial Chinese nuclear attacks struck vessels at sea.

28 Such an approach appears to be successful in deterring Russian nuclear use against Ukraine. See: Matthew Kroenig, “How to deter Russian nuclear use in Ukraine—and respond if deterrence fails,” *Memo to the President*, Atlantic Council, September 2022, <https://www.atlanticcouncil.org/wp-content/uploads/2022/09/Memo-to-the-President-Ukraine.pdf>; Max Seddon et al., “Xi Jinping warned Vladimir Putin against nuclear attack in Ukraine,” *Financial Times*, July 5, 2023, <https://www.ft.com/content/c5ce76df-9b1b-4dfc-a619-07da1d40cbd3>.

29 US Department of Defense, *2022 National Defense Strategy*, October 27, 2022, 4, <https://media.defense.gov/2022/Oct/27/2003103845/-1/-1/2022-NATIONAL-DEFENSE-STRATEGY-NPR-MDR.PDF>.



The *Nimitz*-class aircraft carrier USS *Ronald Reagan* (CVN 76) transits in formation with the Japan Maritime Self-Defense Force's *Izumo*-class helicopter destroyer JS *Izumo* (DDH 183) along with surface units from Canada and France. Photo by US Navy/Mass Communication Specialist 2nd Class Colby A. Mothershead.

Further, Chinese leadership is much more likely to misperceive attacks on targets on the Chinese mainland as disarming or decapitating strikes than attacks off the mainland. The following section will consider which militarily useful targets off and on the Chinese mainland the United States could consider for a nuclear strike.

Off-Mainland Targets for Nuclear Attack

Off the Chinese mainland, US nuclear planners have several possible targets: PLA Navy vessels (a subset of which includes an active invasion fleet), militarized islands in the South China Sea, and PLA force concentrations on beachheads on Taiwan.

PLA Navy Vessels

Deployed PLA Navy surface vessels are one possible target for a US nuclear strike. Generally speaking, these forces would constitute an ideal target, either for US nuclear first use or in retaliation for certain categories of Chinese nuclear aggression. Such an attack would constitute a direct military effect with

few or no civilian casualties. Additionally, this kind of nuclear use would have an immediate positive impact on the battle for Taiwan, reducing the number of assets China has available to conduct a blockade or bombardment of Taiwan. US planners should consider a subset of this target set—direct use against an amphibious fleet crossing the Taiwan Strait.

There are two significant drawbacks to this target set. First, there might not be any available Chinese ships to target. Deep into a war, US conventional munitions may have already struck a significant fraction of the PLA Navy, and remaining elements might not be clear of the mainland.

The second potential drawback to targeting operating Chinese naval vessels is that it is not clear that the United States possesses nonstrategic nuclear forces that are able to hit moving ships.³⁰ Ships might be able to maneuver fast enough that several nuclear warheads would be required to cover all of the locations where the ships might be moving. In addition, the Taiwan Strait air defense environment could be risky for US aircraft depending on the stage of the war.

³⁰ As Gregory Weaver points out in a related Atlantic Council paper, US submarine-launched ballistic missiles would likely be able to target the PLA amphibious fleet while it was disembarking on Taiwan. See: Gregory Weaver, *The Role of Nuclear Weapons in a Crisis or Conflict over Taiwan*, Atlantic Council, forthcoming.

Militarized Islands in the South China Sea

China has built several artificial islands in the South China Sea and emplaced significant military installations thereon.³¹ A US nuclear strike could target these islands.

These targets are fixed and purely military. Striking them poses a relatively low risk of escalation. Unlike naval vessels in motion, the location of these militarized islands is known and fixed. These are legitimate military targets, and a nuclear strike would have low collateral damage. An attack on one of these islands would pose virtually no threat to China's strategic nuclear forces or national leadership.

The major drawback to striking one of these islands is that they would likely have relatively little direct relevance to the clash over Taiwan, unless such a war had already broadened to include military conflict in the South China Sea. Striking these artificial islands could possibly have diplomatic repercussions, because other claimants dispute Chinese sovereignty over these features, which the claiming states believe to be within their exclusive economic zones, a position that the United States has supported in the past with regard to some features.³²

PLA Beachheads in Taiwan

If the Chinese military had already disembarked forces on landing beaches in Taiwan, the United States could plan to use nuclear weapons against those forces. The United States considered this approach in Europe for significant portions of the Cold War. During the Cold War, NATO created battle plans that would have allowed the use of tactical nuclear weapons against a Soviet invasion force on West German territory.³³

Nuclear weapons could be effective against disembarking Chinese forces that had not yet broken out of their beachheads. The geography of Taiwan makes for a limited set of locations suitable for an amphibious force to land.³⁴ The United States possesses low-yield nuclear weapons that could be delivered by strategic bombers or dual-capable

aircraft against the landing beaches. An airburst would generate minimal fallout. Such a strike would achieve significant military effect against the invasion effort without large-scale collateral damage and without an attack on the Chinese mainland.

The downside of such an attack is that striking the territory of an ally with nuclear weapons could pose significant risks to alliance cohesion. Any such strike should be the product of years of intensive planning with the government of Taiwan and should come at its explicit request. Plans for NATO to use nuclear weapons on its own members' territories were divisive during the Cold War, and such planning with Taiwan would be extremely delicate as well.

Mainland Targets for US Nuclear Use

The United States might also choose to attack targets on the Chinese mainland, depending on the severity of the initial Chinese nuclear use. (It is difficult to imagine doing so in a US first-use scenario).

Conventional Military Facilities Supporting the Invasion

If China used nuclear weapons to strike a US military target involved in supporting the defense of Taiwan (e.g., an aircraft carrier or an air base on Guam), a logical US response would be to target similar PLA facilities supporting Chinese aggression against Taiwan. There are likely hundreds of air bases, naval ports, and headquarters throughout the Eastern and Southern Theater Commands that would support an invasion. Many of them would be located outside of major urban areas and at a remove from key national leadership, command and control, and nuclear sites.

Such an attack would be the most constrained US use of nuclear weapons against the Chinese mainland. A benefit of this kind of tit-for-tat response is that it should not stoke Chinese fears of a disarming or decapitating strike. A drawback of

31 "China Island Tracker," Asia Maritime Transparency Initiative, Center for Strategic and International Studies, 2022, <https://amti.csis.org/island-tracker/china/>.

32 Edward Lundquist, "US Affirms Support for Philippines Over Disputed Islands," *Seapower*, July 15, 2022, <https://seapowermagazine.org/u-s-affirms-support-for-philippines-over-disputed-islands/>.

33 Tom Nichols, Douglas Stuart, and Jeffrey D. McCausland, eds., *Tactical Nuclear Weapons and NATO* (Carlisle, PA: Strategic Studies Institute, April 2012), <https://www.hsdl.org/?view&did=706112>.

34 Ian Easton, *The Chinese Invasion Threat: Taiwan's Defense and American Strategy in Asia* (Scotts Valley, CA: CreateSpace Independent Publishing Platform, 2017).

this approach is that it might be seen as expected or acceptable by Chinese leaders. It, therefore, might not convince Chinese planners that they had erred in escalating to the nuclear level. After all, there are many more air bases and ports in eastern and southern China than there are US military bases in the Western Pacific.

Even with this relatively constrained option, a nuclear attack on theater headquarters or certain air bases would still risk escalation from entanglement.³⁵ Elements of China's command and control are dual use for conventional and nuclear forces, and some airfields are used by conventional and nuclear-capable aircraft. A nuclear attack on either could be perceived as an attack on Chinese nuclear forces.

Nuclear Facility that Generated a Chinese Nuclear Strike

Another option for a direct US response would be to strike the origin of the Chinese nuclear attack, such as a missile garrison, air base, or naval port. Such a strike would be proportional, but it would also directly implicate Chinese nuclear forces immediately, possibly signaling to Chinese leadership that it should doubt the survivability of its nuclear forces should it set out on a series of limited nuclear exchanges with the United States.

Broader Nuclear Forces and Command and Control Target Set

While least likely, US planners could also consider a large-scale attack on Chinese nuclear forces and command and control, aimed at substantially disarming China's intercontinental nuclear forces. If US planners concluded that an extended exchange was the most likely outcome of Chinese initial nuclear use, then a large-scale US reaction could limit possible damage to the United States and its allies and partners. It could also shock Chinese leadership into ceasing its offensive and holding back remaining nuclear weapons and conventional forces to maintain a deterrent after the conclusion of the war.

The significant drawback of such an approach would be the risk—higher than for any other target set—that China would engage in nuclear retaliation against the US homeland. With Chinese forces

potentially moving toward a launch-under-attack nuclear posture, it is possible that Chinese weapons would be launched at the United States before US nuclear weapons could achieve their counterforce aims. While China may not perfect a strategic-range nuclear triad in the coming five to ten years, its arsenal of intercontinental-range road-mobile missiles would likely escape total elimination by a US disarming strike.

RECOMMENDATIONS

- The best way to deter a nuclear war is to deter a conventional war that might escalate to nuclear use. The United States should work with its Indo-Pacific and global allies and partners, including Taiwan itself, to develop an effective deterrent to Chinese aggression against Taiwan, including conventional forces.
- The United States should move from a policy of strategic ambiguity to a policy of strategic clarity, pledging to defend Taiwan from an unprovoked Chinese invasion.
- In making such a pledge, the United States could explicitly extend its nuclear umbrella over Taiwan. This could help deter Chinese nuclear use by convincing Beijing that it could not use nuclear weapons in a Taiwan conflict without suffering a devastating US response.
- To deter a Chinese nuclear strike, the United States should invest in dispersal of its key Indo-Pacific facilities, hardening them against attack to the extent feasible, and deploying air and missile defenses around them. The United States should exercise the capability to respond to the humanitarian disaster of a nuclear attack on a location like Guam.
- The United States should consider improvements to its nuclear forces beyond the modernization program of record. This should include consideration of theater nuclear weapons (e.g., the nuclear-armed sea-launched cruise missile) as well as a reevaluation of the overall size of the deployed nuclear force. Such considerations should inform US goals for arms control negotiations with Russia for a potential follow-on accord to the New Strategic Arms Reduction Treaty. The United States should

³⁵ While possible, this risk is less severe than some analysts have concluded. See: Kroenig and Massa, *Are Dual-Capable Weapon Systems Destabilizing?*

not accept a treaty that locks in parity with Russia at one thousand five hundred and fifty warheads.

- The United States should develop and deploy nonstrategic nuclear weapons to Asia that are able to carry out a nuclear attack against moving naval targets.
- The United States should initiate a dialogue with Taipei about the risks of nuclear escalation in the event of a Chinese invasion, US nuclear deterrence policy, and planning for US nuclear use on Taiwanese territory at the request of the Taiwanese government. The United States should provide the Taiwanese military the training and equipment to provide conventional support to US nuclear operations and to operate in the environment likely to prevail after a nuclear detonation.
- The United States should express to China that it should not expect its mainland to be a sanctuary from nuclear attack if China uses nuclear weapons against US or allied forces or bases while attacking Taiwan.
- US Strategic Command (STRATCOM) should identify targets to respond to Chinese nuclear use that meet the following characteristics: military value to the invasion of Taiwan; minimal civilian casualties; and minimal risk of perception as a disarming, decapitating, or blinding strike. STRATCOM should ensure that it possesses the nuclear forces necessary to execute an attack on those targets.
- The United States should explicitly re-scope its homeland missile defense plans to include not just potential attacks on the homeland by rogue states (i.e., North Korea and Iran), but also against limited nuclear use by China (or Russia).
- In considering investments in future conventional forces (e.g., space-based sensors, hypersonic missiles, advanced air and missile defenses, uncrewed underwater vehicles), the US Department of Defense should prioritize those that could both deter a conventional Chinese invasion of Taiwan and support damage-limiting strikes on Chinese strategic forces if nuclear deterrence fails.

CONCLUSION

As US planners grow increasingly focused on the risk of a US-China war over Taiwan, they should be sure to pay attention to the nuclear dimension of such a possible conflict. Either side might rationally choose to gamble on nuclear escalation rather than risk defeat in such a high-stakes conflict. To respond to possible Chinese nuclear use, the United States should identify a variety of targets on and off the Chinese mainland that would pose a setback to China's war progress without making Chinese leadership fear for its own survival or for its nuclear force. These targets could include PLA Navy vessels; Chinese beachheads on Taiwan; or mainland ports, air bases, or headquarters supporting the invasion.

The United States might also find itself in a situation in which it could not stop a Chinese invasion force from reaching Taiwan with conventional forces, but it could do so with nuclear weapons. In this instance, the United States should be prepared to consider nuclear first use as well.

The United States should prepare for the possibility of nuclear use in a Taiwan Strait contingency by developing the strategies, alliance and partnership coordination mechanisms, and forces required to optimally deter Chinese nuclear use in these scenarios or to employ nuclear weapons if necessary. This report has set out some of those items for consideration.

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