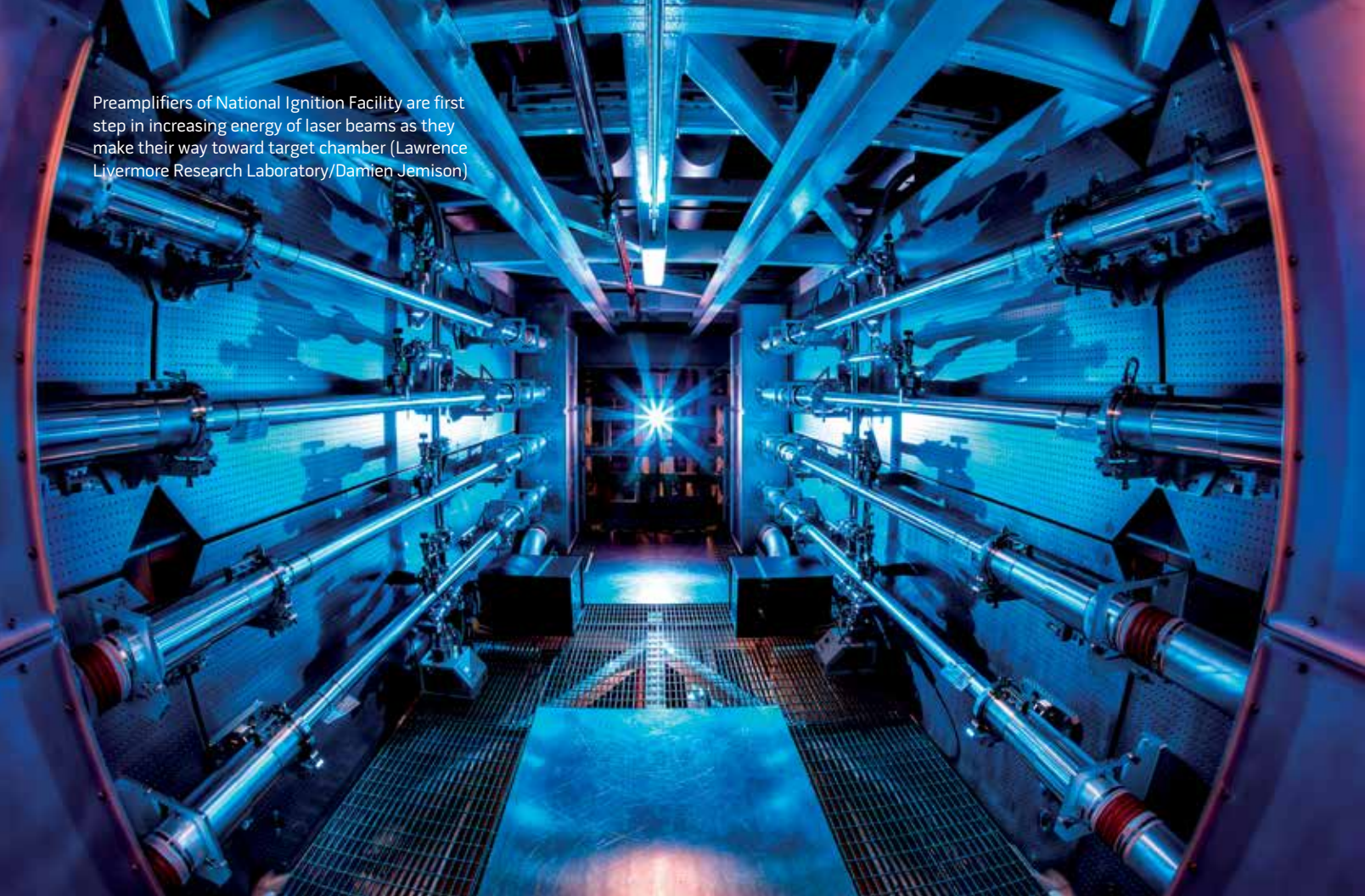


Preamplifiers of National Ignition Facility are first step in increasing energy of laser beams as they make their way toward target chamber (Lawrence Livermore Research Laboratory/Damien Jemison)



Deterrence with China

Avoiding Nuclear Miscalculation

By David S. Forman

The record reveals that defense planners have not been particularly successful in predicting the future. The U.S. has suffered a significant strategic surprise once a decade since 1940: Pearl Harbor, the North Korean invasion of South Korea, the Soviet H-bomb test, the Soviet reaction to the Arab-Israeli War of 1973, the fall of the Shah of Iran, the collapse of the Soviet Union and, most recently, 9/11.

—MACKUBIN THOMAS OWENS

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As China rises and the United States seeks to maintain its global dominance, the world is faced with a new historical phenomenon: a dramatic shift in power between

two nuclear-capable nations. As the relative power of each nation nears parity, tension is inevitable and the character of the evolving Sino-U.S. relationship poses a risk of nuclear miscalculation.

Nuclear use between China and the United States would be a catastrophe, but China is an independent actor, and the United States can only influence, but not control, the crossing of the nuclear threshold. If U.S. policymakers neglect this risk, miscalculation is more likely.

This article analyzes nuclear deterrence principles with China across the spectrum of peacetime, conventional crisis or conflict, and nuclear war. If the United States finds itself in a crisis or conflict with China, it would be important to know how the United States achieved deterrence in peacetime as well as how deterrence might be regained if a crisis deteriorates to the point of involving nuclear weapons. The article then makes recommendations on how to enhance nuclear deterrence. By assessing the full spectrum of potential conflict in this manner, the United States can lower the risk of miscalculation.

Nuclear weapons have helped prevent conflict between world powers on anything close to the scale of another world war,¹ but nuclear deterrence toward China is different. Pivotal factors that allowed deterrence to be effective in the past do not project to the future of the Sino-U.S. relationship for two main reasons: the relative growth of China within the relationship, and the fluid maritime relationship between the United States and China, which affects how a conflict might begin and therefore how nuclear deterrence could be implemented.

Though 20th-century China developed in a world largely influenced by the United States, China is now in a position to influence the world toward its own interests.² China's growth from a considerably closed society in 1972 to a global near-peer to the United States today is a fundamental difference from the Soviet-U.S. relationship. The history of the nuclear age has yet to see a significantly weaker nuclear power eclipse a dominant nuclear power.

The second factor that distinguishes the Sino-U.S. relationship is its maritime nature, and military tensions at sea differ greatly from tensions on land. Naval assets are continually in motion, and

there is no equivalent to trench warfare or prolonged stalemates in the air or on the sea. Also, as evidenced by North Korea's suspected sinking of the South Korean corvette *Cheonan* in 2010,³ the sea sometimes offers a sense of plausible deniability that leads to aggression that would not occur on land.

China's nuclear arsenal is estimated to be small in comparison to that of the United States, but it is growing.⁴ Without official reports from China, U.S. estimates are susceptible to large errors, but analysts assess that China holds between 175 and 250 nuclear warheads.⁵ China has demonstrated land and air launch capabilities, and reliable submarine launch capability is expected in 2014 or 2015.⁶ Some of China's missiles are already capable of reaching portions of the United States, and fielding capable ballistic missile submarines (SSBNs) will only improve their capability.

If conflict begins, China and the United States do not currently have the tools to ensure it does not become nuclear.⁷ When policymakers consider the art of nuclear deterrence, many still default to Cold War principles.⁸ Blindly assuming that two great powers, each with expectations of influence and respect, can avoid conflict is unwise and increases risks of miscalculation. Based on the character of the Sino-U.S. relationship, nuclear deterrence cannot be evaluated in a vacuum, but rather along a continuum of peacetime, conventional crisis or conflict, and nuclear war.

Deterrence during Peacetime

A nation's primary goal for peacetime deterrence should be to achieve its political objectives *without* fighting a nuclear war.⁹ Three basic elements help codify peacetime deterrence. First is a nation's nuclear *declaratory policy*, which lays the foundations of a nation's intentions and is a powerful political tool. Second is the demonstrated performance of delivery systems and warheads, referred to as *deterrent reliability*. Third is a measure of each nation's ability to achieve military objectives using only its conventional capability (without resorting to nuclear weapons),

or *nonnuclear stability*. When each nation can manage these three elements in the correct way, the cost-benefit calculations of each side should favor deterrence of a nuclear conflict.

Declaratory Policy. From Beijing's perspective, current U.S. nuclear declaratory policy suggests that if Washington determined an "extreme circumstance" existed, it might resort to using its nuclear weapons to strike first. Because China is *not* a nonnuclear country under the terms of the Non-Proliferation Treaty, the negative security assurance of the 2010 Nuclear Posture Review does not apply to China.¹⁰ Though U.S. political leaders assess a first strike as next to impossible, not all Chinese leaders hold the same view.¹¹

Deterrent Reliability. A credible nuclear deterrent is the product of capability and intent.¹² Intent derives from declaratory policy as mentioned above, and capability is sustained through demonstrated reliability of delivery systems and warheads. The United States expends considerable effort to ensure the reliability of each leg of its nuclear weapon delivery triad, which consists of intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs), and B-2 and B-52 bombers. The U.S. Air Force and U.S. Navy fully test the continuity of launch signals and together launch five unarmed missiles each year. The launch record is stellar, and confidence in these delivery systems is extremely high.¹³ Confidence in the warheads is a different story.

The United States last detonated an actual warhead in 1992. Time is incrementally eroding warhead reliability and, in turn, U.S. nuclear credibility. The Stockpile Stewardship Program (SSP) was created in the mid-1990s to ensure existing warheads were properly maintained, and from a scientific perspective, this program is a success; however, as noted by Dr. Kathleen Bailey from the National Institute for Public Policy, "SSP is not intended as, nor is it, a substitute for nuclear testing. There is no way that SSP can ever provide the high level of confidence in reliability of the stockpile that can be achieved by nuclear testing."¹⁴

Despite rigorous nonnuclear testing of the stockpile,¹⁵ quarterly testing reports from the National Nuclear Security Administration eventually may be insufficient to convince future adversaries, China included, that U.S. warheads are reliable.¹⁶ Detailed computer simulations provide American scientists with confidence of continued reliability, but the United States is not trying to deter American scientists.¹⁷ After 21 years, the question is rapidly becoming: do *other countries* consider U.S. warheads credible?

Nonnuclear Stability. When nuclear-capable nations are greatly outmatched by an adversary's *nonnuclear* capabilities, leaders of the less capable nation are forced to rely more heavily on their nuclear arsenals for security. Retired Russian General Makhmut Gareyev, president of the Academy of Military Sciences in Moscow, stated in 2004, "Basically [our nuclear arsenal] is the only factor which can still ensure our country's safety. We have nothing else to repel strategic military threats anymore."¹⁸ In response to a perceived threat, if a nation's leaders are forced to choose between relinquishing their own political power and authorizing a nuclear strike, then under some circumstances, a nuclear strike becomes a rational decision.

Five Policy Recommendations

First, the United States should maintain its current nuclear declaratory policy and not adopt an explicit "no first use" policy; certain forms of strategic ambiguity discourage military adventurism and can enhance nuclear stability. As a deterrence specialist stated, the overall concept of deterrence "takes place in the head of an adversary who lives in another country, has different values, is under different pressures, and has different goals."¹⁹ Being too explicit in declaratory policy removes political options and reduces the strength of deterrence.

Second, to maintain the reliability of its nuclear arsenal, the United States should seek international agreement among current nuclear powers to test nuclear warheads on a cyclic schedule.

Each nation would be permitted to conduct infrequent underground tests that could be observed by select nuclear and nonnuclear countries. Though the Comprehensive Test Ban Treaty (CTBT) procedure for peaceful tests was meant to account for geological construction projects, the precedent could be expanded because testing with international consensus would not be provocative.²⁰ Periodic international testing dates would serve as natural vehicles to discuss nuclear policies, and extended deterrence credibility could be strengthened. With no testing *ever*, the success of the CTBT could undermine nuclear deterrence and threaten the very security it was designed to protect.

Third, the United States must continue the uphill battle of maintaining the demonstrated reliability of its nuclear delivery triad. More specifically, the Air Force has yet to determine plans for replacing its long-range bombers²¹ and has been plagued by injurious reports that could undermine confidence in the reliability of the ICBM launch teams.²² The Navy is under pressure to justify the cost of its plans to replace its SSBN fleet. After a recent 2-year delay in the planned SSBN replacement program, any further delays would cause shortages in the 2030s of SSBNs for combatant commander requirements.²³ The challenges of designing, testing, certifying, and deploying a new submarine, combined with the challenges of maintaining the oldest *Ohio*-class submarines, already incur additional risk for the leg of the triad that could carry up to 70 percent of U.S. nuclear warheads.²⁴

Additionally, if the United States were to lose its current ICBM capability, either deliberately or due to perpetual neglect, the lack of a land-based deterrent would allow China to focus solely on SSBNs to prevent U.S. retaliatory attack capability.²⁵ The likelihood of being able to simultaneously disarm U.S. ICBMs and SLBMs is so remote that China would be wasteful to invest in trying; however, if the United States reverts to a dyad of delivery systems in SLBMs and aircraft (aircraft cannot be readied quickly), then investing in technology to mitigate

SLBMs becomes reasonable. This may still sound like a wasteful investment, but private enterprise is inadvertently allowing potential adversaries to close the gap on U.S. undersea dominance. Google is mapping and imaging the ocean floor in high resolution,²⁶ and research initiatives are proliferating underwater hydrophones that stream to the Internet.²⁷

Fourth, although too much information about an adversary can tempt the use of force,²⁸ the United States must seek a basic understanding of the essential elements of Chinese nuclear doctrine to lower the risk of miscalculation. The United States can incentivize information-sharing by offering China economic benefits. China's recent economic growth is not on auto pilot, and the success of President Xi Jinping's domestic agenda is far from certain. As one example, exchanging U.S. support for Chinese membership in the developing Trans-Pacific Partnership for basic Chinese nuclear doctrinal information would be a win-win for regional strategic security.²⁹

Fifth, the United States must consider how the development of a conventional prompt global strike (CPGS) capability—the ability to conduct a conventional strike anywhere in the world within 1 hour—would affect the nonnuclear balance with China. As part of a broader desire to reduce the role of nuclear weapons in U.S. foreign policy, the Obama administration has continued to support the Department of Defense's pursuit of a global strike capability that was mentioned in the 2006 Quadrennial Defense Review.³⁰ The capability of CPGS may prove advantageous in some scenarios,³¹ but those advantages do not come without a cost to nuclear deterrence stability with China—a cost that could outweigh the benefits.

Deterrence during Conventional Crisis or Conflict

Despite overt attempts by the United States to support the peaceful rise of China's military through cooperation in events such as Rim of the Pacific 2014 and humanitarian assistance/disaster response exercises, the United States does not have the only vote



Target assembly for National Ignition Facility's first integrated ignition experiment is mounted in cryogenic target positioning system, while two triangle-shaped arms form shroud around cold target to protect it before shot (Lawrence Livermore Research Laboratory)

when it comes to choosing peace or conflict. There is evidence that the Sino-U.S. relationship will be predominantly adversarial. Henry Kissinger recently noted, “Enough material exists in China’s quasi-official press and research institutes to lend some support to the theory that relations are heading for confrontation rather than cooperation.”³²

China has rapidly modernized its naval forces over the last decade,³³ and David Gompert’s research at RAND provides evidence of why the Sino-U.S. relationship is especially challenging. He analyzed three historical cases of what happened when developing sea powers challenged existing sea powers: Germany and the United Kingdom in 1914, Japan and the United States in 1941, and the long but steady ascent of the U.S. Navy over the Royal Navy. The first two cases ended in war, and the third “led to a

gradual and largely amicable transfer of first regional and then global predominance from one navy to the other.”³⁴ But importantly, Gompert quickly notes, “the United States is not about to defer to China in East Asia as Britain deferred to America in the Western Hemisphere.”³⁵ If the Sino-U.S. relationship develops similarly to Gompert’s first two cases studies, then history’s lessons do not bode well for peace in the Pacific.

Assessing the Actual Threat. The United States misjudged the precursors of conflict in the past, and the same could happen again. Dennis Ross, chief peace negotiator for George H.W. Bush and Bill Clinton, recounts how the United States misjudged Iraq’s 1990 invasion of Kuwait: “Few in the neighborhood or in the administration foresaw the possibility of Iraq actually seizing all of Kuwait. Their assessments were guided by the wrongheaded assumptions about

Saddam Hussein.”³⁶ China analysts must consider the consequences of similarly wrongheaded assumptions. For example, few analysts predicted China’s decision to declare its November 2013 Air Defense Identification Zone, yet its unilateral action sent shockwaves of concern through the region.³⁷

How Limited Can War Be? Several of America’s previous limited wars were fought against vastly weaker and non-nuclear powers. Yet China is not vastly weaker than the United States, and the United States would be unwise to assume crisis or conflict with China would remain limited. Carl von Clausewitz theorized that war is a “paradoxical trinity—composed of primordial violence, hatred, and enmity,”³⁸ and conclusions extrapolated from previous wars cannot completely inform American policymakers in their thinking about the possibility of conflict with China.



Blue crew of *Ohio*-class ballistic missile submarine USS *Nevada* prepares to moor as submarine returns home to Naval Base Kitsap-Bangor following strategic deterrent patrol (U.S. Navy/Ahron Arendes)

Many current discussions of the likelihood of conventional confrontation leading to nuclear conflict are not logically consistent. Writers often simplify their analyses and presume the use of nuclear weapons is so unlikely it can simply be ignored. As an example, defense policy advisor Michael Pillsbury specifically depicts 16 Chinese fears, 6 of which specifically apply to conventional crisis or conflict scenarios: fear of an island blockade, fear of aircraft carrier strikes, fear of major airstrikes, fear of attacks on strategic missile forces, fear of jamming or precision strikes, and fear of attacks on antisatellite capabilities.³⁹ Yet despite China's proximate fears, some analysts propose strategies that directly stimulate those fears while ignoring the nuclear threat.⁴⁰

In the *Journal of Strategic Studies*, Sean Mirski of Harvard Law School explores how the United States might implement a blockade strategy against China but also admits, "The United States will probably never have to consider implementing a blockade in the context of an unlimited war because such

a conflict . . . could only arise subsequent to a total breakdown in nuclear deterrence."⁴¹ Additionally, T.X. Hammes of the National Defense University promotes a distant blockade of China that "establishes a set of concentric rings that denies China the use of the sea inside the first island chain, defends the sea and air space of the first island chain, and dominates the air and maritime space outside the island chain."⁴²

All these concepts fail to adequately consider that China is a nuclear capable nation with several hundred warships. Even though not all of those warships are extremely able or their crews proficient, analysts should not assume China would allow the United States to starve China's economy with a blockade. A blockade would threaten China's regime and easily cause it to resort to force, and perhaps nuclear force. Precisely because some analysts do not understand China's psychology and assess scenarios devoid of nuclear risk, promoting these strategies may increase the likelihood of nuclear miscalculation.

Finally, the precedent of U.S. actions will determine the future validity of extended nuclear deterrence, and if U.S. commitment is rapidly eclipsed by desires to de-escalate, other nations may find renewed desire to both increase their own conventional weapon capabilities and seek their own nuclear arsenal. Nations such as Japan and South Korea may decide America's extended deterrent guarantees are unreliable and pursue nuclear weapons as security against nuclear attack.⁴³ The United States must anticipate how difficult it might be to pursue a limited conflict due to the political pressures to defend other nations in the region and prevent nuclear proliferation.

The Crisis Before the Storm. A Sino-U.S. confrontation would have global consequences that could cause physical and economic hardship for millions.⁴⁴ Political and military leaders would find themselves in crisis mode, and understanding this mindset is critical to sustaining nuclear deterrence during a Sino-U.S. crisis or conflict. William Ury and Richard Smoke, from Harvard and

Brown universities, respectively, analyze nuclear crises and note, “Times of crisis call for a special kind of negotiation. There is no time for drawn-out discussion or the usual diplomatic dance, and typically the negotiators are under considerable stress.”⁴⁵

In conventional engagements with modern powers such as China and the United States, large quantities of airplanes, ships, submarines, and cyber and space assets can rapidly come into play. As Ury and Smoke make clear, “Decision makers may fail to appreciate the value of time in a crisis or potential crisis, thereby unintentionally allowing the crisis to grow worse.”⁴⁶ If conflict begins, events may transpire at a pace that challenges the current national security decisionmaking apparatus. If this occurs, the risk of miscalculation will increase.

Natural uncertainties inherent in any conflict would be exacerbated because the U.S. method of political and military communication is so different from China’s. For example, when a Chinese F-8 aircraft collided with a U.S. Navy EP-3 aircraft in April of 2001, the United States struggled to get China to take the collision seriously and questioned if Beijing even knew the collision occurred. The Special Assistant to the U.S. Ambassador to China recounted: “While we in the Embassy were trying without success to reach officials at the Ministry of Foreign Affairs and Ministry of National Defense, the U.S. Pacific Command made the incident public in a brief, neutrally worded press release posted on its Web Site.”⁴⁷ If a collision between Chinese and U.S. aircraft was posted on a Web site before any official diplomatic or military communication was established, a similar uncertainty should be expected in the future.

Three Policy Recommendations

First, America’s political leaders and policymakers must aim to better understand the structure of China’s nuclear forces and its military decisionmaking process.⁴⁸ The United States must ensure a well-intentioned plan or military action does not *inadvertently* appear as a preemptive strike on China’s

nuclear forces.⁴⁹ Years ago, when China needed to develop its command and control organization for its nuclear forces, China’s Second Artillery Corps, also known as Strategic Rocket Forces, were deemed highly capable and given the task. As a result, nuclear and non-nuclear forces are physically collocated and share the same command and control structure. John Lewis and Xue Litai, writing in the *Bulletin of the Atomic Scientists*, describe a plausible scenario: China launches a conventional missile in a crisis or conflict, and the United States counterstrikes against Chinese collocated conventional and nuclear systems and “force[s] the much smaller surviving and highly vulnerable Chinese nuclear missile units to fire their remaining missiles.”⁵⁰ Resolving incongruous Sino-U.S. perceptions about the employment of the Second Artillery Corps is possibly the single most influential aspect of avoiding nuclear miscalculation.

Second, a reliable second-strike capability is a predominant factor for dissuading first strikes, and therefore the United States should take care to avoid explicitly targeting—and the appearance of targeting—China’s developing SSBN capability. The U.S.-China Economic and Security Review Commission recently stated, “The JL-2 [Julang-2], when mated with the [People’s Liberation Army] Navy’s JIN-class nuclear ballistic missile submarine (SSBN), will give China its first credible sea-based nuclear deterrent.”⁵¹ If China can achieve reliable second-strike capability through deployment of its SSBNs, it may be ready to divide its conventional and nuclear forces to achieve a greater margin from nuclear miscalculation.

Third, the potential for conventional crisis or conflict with nuclear-capable powers requires matching military means to political ends in a fundamentally different way. The United States must consider *not* approaching a Sino-U.S. engagement with expectations to establish large areas of military dominance. Dominance requires flawlessly attacking Chinese antiaircraft missile sites and command and control nodes that also serve

China’s nuclear forces. Flawless military plans are fiction, and based on what the United States knows of China’s Second Artillery Corps, the dangers of trying and failing could result in tactical victory but ultimate strategic defeat.⁵² To prevent a potential Sino-U.S. conventional conflict from becoming nuclear, the United States should aim to keep the engagement zone away from mainland China. American political and military leaders must be prepared for heavy losses of personnel and military ships and aircraft, and while unnecessary loss is abhorrent, aiming for a blinding victory risks nuclear retaliation that could lead to more catastrophic loss.

Deterrence during Nuclear War

In the unlikely but not impossible case that nuclear deterrence fails, if the United States has not prepared methods or plans to de-escalate in advance, the results could be far more calamitous than necessary. By developing and potentially announcing broad methodologies for how the United States would reluctantly fight a nuclear war, it is perhaps possible to reach China’s breaking point sooner, allow China to communicate when the breaking point is reached, and conclude hostilities earlier than if the conduct of a nuclear war were never discussed at all. For purposes of this analysis, assume China employed a nuclear weapon by some means and that the United States or its allies faced continued nuclear threats from China.

Four Policy Recommendations

First, how does the United States avoid using more nuclear weapons than necessary to achieve its military and political objectives? One way is to promote interval attacks that allow for conflict resolution between each attack. China is not yet capable of executing mutually assured destruction doctrine like Russia, and based on the reliability of military or political communications between China and the United States, the United States could choose to launch successive attacks within a matter of hours or a matter of days. If China



Test launch of LGM-25C Titan II ICBM from underground silo at Vandenberg Air Force Base during mid-1970s (U.S. Air Force)

attempted attacks at a rapid pace, and if a failure of U.S. theater or national missile defense allowed China's attacks to be successful, the pace of U.S. launch could be adjusted accordingly.

Second, Washington could consider how to rapidly shift to deterrence by denial. How would the United States take away China's nuclear capability altogether? China has been historically assessed to have a "minimum retaliatory strike deterrent" designed to dissuade

other nations, but most specifically the United States, from blackmailing or using nuclear weapons against China.⁵³ If China uses nuclear weapons to attack the United States or a U.S. ally, America's political leaders might feel compelled to use all of the Nation's capabilities to eliminate China's ability to launch any further nuclear attacks.

An important aspect of deterrence by denial is ballistic missile defense. According to the 2010 Ballistic Missile

Defense Review, "China is one of the countries most vocal about U.S. ballistic missile defenses and their strategic implications, and its leaders have expressed concern that such defenses might negate China's strategic deterrent."⁵⁴ What was potentially destabilizing in peacetime—better U.S. missile defenses may cause China to develop more missiles—can rapidly become essential to ending a nuclear conflict. As both China's launch capability and U.S. missile defense capability evolve over the years, U.S. ability to negate China's deterrent in peacetime may fluctuate. While ballistic missile defenses alone may be overwhelmed by China's arsenal, conventional attacks on China's launchers *combined* with missile defense may be adequate to protect the United States from a nuclear weapon. Protecting the United States from attack will enable de-escalation much sooner than if a nuclear weapon lands on U.S. soil.

Third, the United States should assess how nuclear war could be ended by nonnuclear and nonmilitary means. To assume nuclear weapons can only be answered with nuclear weapons is a false premise. Depending on the circumstances of the engagement, the United States does not necessarily need to respond in kind. If the United States can achieve its political and military objectives without using its own nuclear weapons, then it should do so.

Various political methods exist to convince China to end the conflict. As one example, despite the current cold relations between Washington and Moscow, some in Russia support a concept of "the Great Strategic Triangle" between the United States, Russia, and China.⁵⁵ Russia might gain elevated international influence following a Sino-U.S. nuclear conflict, and while Moscow should not be expected to directly support Washington's interests, Russia may still have interest in ending the conflict quickly. Russia might be in a position to use its own political and military ties with China and the United States to enable Sino-U.S. communications from its third-party perspective. Depending on the character of the war, such interlocutors may be needed to avoid further

unnecessary escalation or sustained nuclear attacks.

Fourth, while conceptualizing the end of a nuclear war with China, a secondary issue to consider is the uncertainty of the assumption that the United States could communicate with China's political leadership. Even in peacetime, the United States doubts the robustness of China's nuclear command and control structure. The burden and chaos of nuclear war may cause the United States to further question China's political control of its nuclear arsenal. If China's command and control fails during nuclear conflict, it might become impossible to deter China, and the U.S. President will be left with little choice but to use military force to disarm China of its nuclear arsenal.

Conclusion

Nuclear deterrence and nuclear war are two fundamentally different acts, yet they must be considered together to support proper analysis and policy. As the Sino-U.S. relationship moves forward, nuclear deterrence should not be relegated to the sidelines. China developed nuclear weapons to prevent U.S. coercion, but now a clear power struggle in the Asia-Pacific creates the potential that military conflict could begin and subsequently grow out of control. If the United States takes proactive measures in peacetime and has prepared for unwanted but possible transitions to conventional and nuclear conflict, then some risk could be mitigated. Unfortunately, the limited bandwidth of policymakers has not yet allowed meaningful consideration of nonpeaceful contingencies for China. The United States clearly does not want war; nuclear war with China would be an unfathomable calamity. However, even though the United States can influence the probability of a conflict, in the end, Washington does not have the final word. Therefore, prudence requires the United States to prepare for the worst in a way that does not make nuclear war a self-fulfilling prophecy. Preparations must not lead to the very endstate the United States is trying to avoid.

The road ahead is long, and the issues presented here could be pertinent for decades. Solutions that seem impossible now may become more plausible over time, and the United States should continue to evaluate reasonable methods to lower the risk of nuclear conflict. War is possible but not inevitable, and as Vice President Joe Biden recently quoted his father, "The only conflict worse than one that is intended, is one that is unintended."⁵⁶ JFQ

Notes

¹ Clark A. Murdock, *The Department of Defense and the Nuclear Mission in the 21st Century* (Washington, DC: Center for Strategic and International Studies, 2008), 13.

² Many international organizations, such as the World Trade Organization, International Monetary Fund, and United Nations are heavily influenced by American views on economics, human rights, and government. Between President Richard Nixon's famous trip in 1972 to Beijing and 2011, China's gross domestic product grew from 19th globally (\$1.28 billion) to 3rd (\$4.2 trillion). See United Nations, "GDP and its breakdown for all years—sorted alphabetically, All countries for all years—sorted alphabetically," National Accounts Main Aggregates Database, available at <<http://unstats.un.org/unsd/snaama/dnlist.asp>>.

³ Victor Cha, "The Sinking of the *Cheonan*," Center for Strategic and International Studies, April 22, 2010, available at <<http://csis.org/publication/sinking-cheonan>>.

⁴ Hans M. Kristensen and Robert S. Norris, "Chinese nuclear forces, 2013," *Bulletin of the Atomic Scientists* 69, no. 6 (November 1, 2013), available at <<http://thebulletin.org/2013/november/chinese-nuclear-forces-2013>>.

⁵ Robert S. Norris and Hans M. Kristensen, "Chinese nuclear forces, 2010," *Bulletin of the Atomic Scientists* 66, no. 134 (2010), 139.

⁶ Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2013* (Washington, DC: Department of Defense, 2013), 31.

⁷ Avery Goldstein, "First Things First," *International Security* 37, no. 4 (Spring 2013), 53.

⁸ Paul Bracken, *The Second Nuclear Age, Strategy, Danger and the New Power Politics* (New York: Times Books, 2012), 257.

⁹ T.V. Paul, *The Tradition of Non-Use of Nuclear Weapons* (Stanford: Stanford University Press, 2009), 13. Renowned economist Thomas Schelling made popular the concept of a "tradition of non-use of nuclear weapons" within the theory of nuclear deterrence.

¹⁰ *Nuclear Posture Review Report* (Washington, DC: Department of Defense, April 2010), viii. In this report, the United States created a negative security assurance for several countries. The United States declared it "would only consider the use of nuclear weapons in extreme circumstances to defend the vital interests of the United States or its allies and partners" (viii–xi) and that it "will not use or threaten to use nuclear weapons against non-nuclear weapon states that are party to the NPT [Non-Proliferation Treaty] and in compliance with their nuclear non-proliferation obligations" (viii).

¹¹ Bill Gertz, "Guess Who's Coming to Dinner, Chinese general who threatened nuclear strike on U.S. visits Washington this week," *The Washington Free Beacon*, March 4, 2013.

¹² Terry Diebel, *Foreign Affairs Strategy: Logic for American Statecraft* (New York: Cambridge University Press, 2007), 143.

¹³ Lockheed Martin, "Lockheed Martin-Built Trident II D5 Missile Achieves a Total of 148 Successful Test Flights Since 1989," September 24, 2013, available at <www.lockheedmartin.com/us/news/press-releases/2013/september/924-ss-FBM.html>. To verify reliability, the Air Force annually removes nine launch cables from randomly selected intercontinental ballistic missiles (ICBMs) and reconnects them to test equipment to verify correct launch signals are sent to the missiles. The launch signal is also tested from E-6 aircraft to verify connectivity with the Airborne National Command Post, a vital element of the contingency control system governing nuclear launch. Additionally, once a year the Air Force removes the warhead from a Minuteman III ICBM and actually launches the missile. The Navy also removes the warheads from four submarine-launched ballistic missiles every year and conducts four launches to fully test the reliability of the launch signal system and missile launch capability.

¹⁴ Kathleen C. Bailey, *The Comprehensive Test Ban Treaty: An Update on the Debate* (Fairfax, VA: National Institute for Public Policy, 2001), 8.

¹⁵ Cole J. Harvey, "Nuclear Stockpile Modernization: Issues and Background," Nuclear Threat Initiative, February 15, 2010, available at <www.nti.org/analysis/articles/nuclear-stockpile-modernization/>.

¹⁶ Quarterly testing reports are available at <<http://nnsa.energy.gov/ourmission/managingthestockpile/sspquarterly>>.

¹⁷ Nevada National Security Site, *Stockpile Stewardship Program* (Las Vegas: National Nuclear Security Administration, 2013), available at <www.nv.doe.gov/library/factsheets/DOENV_1017.pdf>.

¹⁸ David Holley, "Seeking respect and protection, Russia bolsters nuclear arsenal," *Seattle Times*, December 13, 2004, available at <http://seattletimes.com/html/nationworld/2002117512_russarms13.html>.

¹⁹ William F. Hoelt, Jr., “Deterrence: Now More Than Ever,” U.S. Naval Institute *Proceedings* 139, no. 6 (June 2013), 26–31, available at <www.usni.org/magazines/proceedings/2013-06/deterrence—now-more-ever>.

²⁰ Comprehensive Nuclear Test Ban Treaty (CTBT), 77, available at <www.ctbto.org/fileadmin/content/treaty/treaty_text.pdf>. Although the CTBT of 1996 prohibits “any nuclear weapon test explosion or any other nuclear explosion,” the treaty also provides a procedure to seek approval of testing for peaceful purposes. Specifically, Article VIII states: “On the basis of a request by any State Party, the Review Conference shall consider the possibility of permitting the conduct of underground nuclear explosions for peaceful purposes.”

²¹ Nuclear Threat Initiative, “Air Force Chief: Bomber Cost to Be Tightly Capped,” *Global Security Newswire*, November 15, 2013, available at <www.nti.org/gsn/article/air-force-chief-bomber-cost-be-tightly-capped/>.

²² Robert Burns, “AP Exclusive: Commander Cites ‘Rot’ in Nuke Force,” *The Big Story*, May 8, 2013, available at <<http://bigstory.ap.org/article/ap-exclusive-air-force-sidelines-17-icbm-officers>>.

²³ Rear Admiral Richard P. Breckenridge, testimony before the House Armed Services Committee, September 12, 2013, available at <<http://docs.house.gov/meetings/AS/AS28/20130912/101281/HHRG-113-AS28-Wstate-JohnsonD-20130912.pdf>>.

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