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Dr. Saunders is speaking in his own personal capacity as a member of the academic community. This statement represents his views based on his research. It should not be implied to represent the views of the Department of Defense or the Administration.

Chinese Nuclear Forces and Strategy

China’s initial quest for a nuclear weapons capability was motivated by recognition of the political value of nuclear weapons and by Mao Zedong’s determination to remove China’s vulnerability to nuclear blackmail, which had been a factor in several crises involving the United States.¹ China’s senior political and military leaders have consistently emphasized that the principal utility of nuclear weapons lies in deterring a nuclear attack and countering nuclear coercion.² Although Chinese leaders believe that possession of nuclear weapons bestows international status, they do not believe that more warheads increase a state’s power or status. Unlike U.S. and Soviet strategists who focused heavily on the potential impact of relative capabilities in nuclear war-fighting scenarios, Chinese leaders appear to have concluded that one or a few nuclear weapons striking an adversary’s homeland would constitute unacceptable damage, making a large arsenal unnecessary to achieve the desired strategic effects. Following its first nuclear test in 1964, Beijing announced that it would adhere to a policy of no-first-use (NFU) of nuclear weapons and called for worldwide nuclear disarmament. It has maintained this official positions ever since.

Western analysts have described China’s nuclear strategy as a “minimal deterrent” that relies on a small number of nuclear weapons to deliver punitive, counter-value responses to an adversary’s first strike.³ Minimum deterrence refers to “threatening the lowest level of damage necessary to prevent attack, with the fewest number of nuclear weapons possible.”⁴ China’s choice of minimal deterrence was influenced by technological constraints on its nuclear arsenal and delivery systems, but was also heavily shaped by the views of senior political leaders (especially Mao), which have had an enduring influence on PRC nuclear doctrine. Chinese leaders did not dictate a specific number of nuclear weapons; China’s nuclear forces appear to have been sized based on the need for a few weapons to survive a first strike and launch a retaliatory attack.

China’s 2006 Defense White Paper provides a concise overview of the key elements of China’s “self-defensive” nuclear strategy:

Its fundamental goal is to deter other countries from using or threatening to use nuclear weapons against China. China remains firmly committed to the policy of no first use of nuclear weapons at any time and under any circumstances. It unconditionally undertakes not to use or threaten to use nuclear weapons against non-nuclear-weapon states or nuclear-weapon-free zones, and stands for the comprehensive prohibition and complete elimination of nuclear weapons. China upholds the principles of counterattack in self-defense and limited development of nuclear weapons, and aims at building a lean and effective nuclear force capable of meeting national security needs. It endeavors to ensure the security and reliability of its nuclear weapons and maintains a credible nuclear deterrent force. China's nuclear force is under the direct command of the Central Military Commission (CMC). China exercises great restraint in developing its nuclear force. It has never entered into and will never enter into a nuclear arms race with any other country.”

This description highlights a number of key elements of China’s nuclear strategy and policy, including the goals of deterrence and preventing nuclear coercion; “no-first use” policy; the goal of eventual elimination of nuclear weapons; and China’s explicit determination (which dates from the beginning of its nuclear weapons program) not to engage in nuclear arms races.

In terms of doctrine, a no-first use policy implies an operational focus on retaliatory counter-attack, or “striking after the enemy has struck.” In terms of force structure, “limited development of nuclear weapons” and a “lean and effective nuclear force” do not translate directly into requirements for specific numbers of nuclear weapons and delivery systems. Rather, they suggest that the quantitative requirements for a “lean and effective” nuclear force will depend on the ability of Chinese nuclear forces to survive a potential adversary’s nuclear first strike via some combination of mobility, dispersal, camouflage, and operational resilience and then to launch a retaliatory strike that can penetrate an adversary’s missile defenses and inflict unacceptable damage. Chinese nuclear force requirements thus depend significantly on the intelligence, conventional precision-strike, nuclear strike, anti-submarine warfare, and missile defense capabilities of potential adversaries. China’s nuclear forces are not solely focused on the United States, but U.S. capabilities (and potential future advances) in these areas make it a key driver of Chinese force structure.

The development of China’s nuclear forces is broadly compatible with the thinking of Chinese top political leaders (especially Mao and Deng) described above. Technological limitations meant that the Chinese deterrent initially relied primarily on air-delivered weapons and then on vulnerable silo and cave-based missiles. Chinese experts privately admitted that the credibility of China’s deterrent rested on a potential adversary’s uncertainty about whether a first strike could destroy all of China’s long-range nuclear missiles. Ambiguity about the total size of China’s nuclear arsenal was therefore viewed as an important element of China’s deterrent capability. Rather than build large numbers of highly vulnerable first-generation missiles, China decided in the late 1970s and early 1980s to develop a second generation of mobile land and sea-based missiles that would

be more survivable and better able to provide a credible second-strike capability. As these new systems began nearing deployment in the late 2000s, U.S. withdrawal from the ABM treaty and deployment of ballistic missile defenses challenged the premises behind mutually assured destruction, prompting Chinese complaints that the United States sought “absolute security” for itself while keeping others vulnerable.

China’s current nuclear forces consist of a mix of first and second generation nuclear missiles, with new DF-31 and DF-31A solid-fueled mobile Intercontinental Ballistic Missiles (ICBMs) gradually being deployed to augment existing DF-5A ICBMs. China has also upgraded its regional nuclear deterrent with the deployment of the DF-21 Medium-Range Ballistic Missile (MRBM) to supplement first generation DF-3 and DF-4 Intermediate-Range Ballistic Missiles. In terms of a sea-based deterrent, China’s initial XIA class nuclear missile submarine (SSBN) suffered from a troubled development process and may never have constituted a truly operational system.⁵ China has already built two Type-94 JIN class SSBNs and may ultimately deploy five of the submarines, which will be equipped with JL-2 SLBM missiles.⁶

The interaction between evolving U.S. military capabilities and China’s nuclear modernization is likely to produce a significant expansion of the number of deployed warheads that can reach the United States. However, it is difficult to speak about the numbers with confidence because China provides no official data on the current or projected size of its nuclear force, the number and capabilities of its delivery systems, or its overall modernization plans. A 2010 Pentagon report estimates that China’s current ICBM arsenal consists of approximately 20 first-generation ICBMs and approximately 30 solid-fueled, road-mobile second-generation ICBMs. China’s future nuclear forces are likely to include additional second-generation ICBMs and possibly upgrades to allow its first generation ICBMs to carry multiple warheads.⁷ The 2011 report gave an updated estimate of 55-65 ICBMs and also noted that “China may also be developing a new road-mobile ICBM, possibly capable of carrying a multiple independently targetable re-entry vehicle (MIRV).”⁸ The Pentagon report also notes that “the first of the new JIN-class (Type 094) SSBN appears ready, but the associated JL-2 SLBM appears to have encountered difficulty, failing several of what should have been the final round of flight tests. The date when the JIN-class SSBN/JL-2 SLBM combination will be operational is uncertain.”⁹

Most observers expect these modernization efforts to produce both a quantitative expansion in the number of Chinese ICBMs and SLBMs that can reach the United States and qualitative improvements in the capabilities of Chinese missiles. The Pentagon report also notes that China is developing “a range of technologies to attempt to counter U.S. and other militaries’ ballistic missile defense systems, including maneuvering re-entry vehicles, MIRVs, decoys, chaff, jamming, thermal shielding, and anti-satellite (ASAT) weapons. PRC official media also cites numerous Second Artillery Corps training exercises featuring maneuver, camouflage, and launch operations under simulated combat conditions, which are intended to increase survivability. Together with the increased mobility and survivability of the new generation of missiles, these technologies and training enhancements strengthen China’s nuclear deterrent and enhance its strategic strike capabilities.”¹⁰

China's nuclear arsenal has remained relatively small, consistent with China's nuclear strategy, even as some of the technical constraints on building a larger, more sophisticated nuclear arsenal have eased. But are China's nuclear doctrine and the Second Artillery (the branch of the PLA that controls China's ground-based nuclear forces) training consistent with the publicly articulated strategy? Although the official campaign outlines and combat regulations for China's nuclear forces are classified documents inaccessible to Western scholars, enough internal doctrinal materials have become available to permit an assessment. Broadly speaking, these doctrinal materials and published reports about Second Artillery Corps training are consistent with Chinese public statements about nuclear strategy such as the white paper quoted above.

The 1987 volume *The Science of Military Strategy* identifies key doctrinal principles addressing the deterrent and retaliatory uses of nuclear weapons.¹¹ The book also emphasizes the concept of "effectiveness" and highlights survivability as a key component of an effective nuclear deterrent. Subsequent editions and other doctrinal materials retain this emphasis, demonstrating that the principles originally articulated by Mao and Deng have continued to guide initial Chinese nuclear strategy and campaign planning even as technical and resource constraints on development of advanced nuclear forces have eased. For example, doctrinal materials published in the early 2000s describe the Second Artillery's "nuclear counterstrike campaign" and refer to "striking after the enemy has struck" as a basic guiding principle.¹² This is consistent with China's "no first use" policy as well as with open source materials on Second Artillery training, which stress the need to be prepared to operate in an environment where nuclear strikes have occurred.

Another distinctive aspect of Chinese nuclear thinking worth highlighting is the concept of counter nuclear deterrence. This is described as "an operation used to demonstrate China's resolve and will to use nuclear weapons in response to efforts by adversaries to coerce China with nuclear threats."¹³ Counter-deterrence operations involve efforts to communicate China's will and resolve to respond to a nuclear attack in order to signal that China cannot be coerced by nuclear threats and to reinforce deterrence. They can be considered a form of nuclear signaling.

Internal debates within the Chinese nuclear community have periodically challenged these principles. One debate in the early 1990s concerned the possibility of a shift to a limited nuclear deterrent that envisioned a broader mix of nuclear capabilities that would support nuclear war-fighting. However this debate concluded by reaffirming the deterrence and counter-coercion principles that had historically guided Chinese nuclear strategy.¹⁴ A later debate in 2005-2006 questioned whether a no-first-use policy was viable given U.S. advances in conventional precision-strike capabilities (which might threaten Chinese nuclear missiles with conventional strikes) and missile defenses (which might be capable of intercepting retaliatory strikes by a limited number of Chinese ICBMs that survived a conventional first strike). Although China did not modify its official description of its "no first use" policy, subsequent statements by officials and military officers created a degree of ambiguity about whether a conventional strike against Chinese nuclear assets or command and control systems constituted a "first use" that justified nuclear retaliation.¹⁵

Chinese debates about no-first-use highlight Beijing's pursuit of a no-first-use pledge from the United States, a consistent theme in its diplomacy. Chinese officials argue that a no-first-use commitment would help prevent nuclear war, strengthen the non-proliferation regime, and promote nuclear disarmament. They also argue that U.S. conventional superiority means that the United States does not need a first-use option. A U.S. bilateral no-first-use pledge would imply acceptance of Chinese principles about the limited role of nuclear weapons and symbolize an equal, non-hostile political relationship between the two sides. China might hope that a U.S. no-first-use pledge would call U.S. security commitments to its regional allies (the nuclear umbrella) into question, thus potentially weakening U.S. alliances. The value of such a U.S. pledge would increase significantly if the conventional military balance in the Western Pacific tipped in China's favor. Finally, given that the Chinese conception of deterrence implies coercion as well as restraint, a no-first-use pledge would make it harder for U.S. policymakers to threaten nuclear escalation in a crisis and provide China with the moral and political high ground to resist any such threats.

Although Chinese nuclear doctrine, force structure, and training appear broadly consistent with publicly articulated Chinese nuclear policy, some aspects have raised concerns for Western analysts. One is the emphasis in Chinese military doctrine of the importance of maintaining the initiative, a concept in tension with the retaliatory principle of "strike only after the enemy has struck." Some Chinese military writers argue that this can justify pre-emptive attacks under some circumstances, such as in cases where China has credible early warning of a pending nuclear attack. Chinese doctrinal materials emphasize the potential for nuclear counterstrikes to shock an adversary into submission in the hopes of de-escalating a conflict, and discuss retaliatory attacks against a range of counterforce, countermilitary, and countervalue targets.¹⁶ Another issue involves the challenges that mobile ICBMs and especially SLBMs may pose for command and control of China's nuclear arsenal, especially since their technical advantages may erode traditional controls against unauthorized launches (such as the separation of missiles and warheads in China's older ICBMs). Some analysts worry that China's potential deployment of missiles with multiple warheads may create incentives for first strikes that could be destabilizing in a crisis.¹⁷ Finally, some see the potential for greater PLA influence over nuclear doctrine to move China in the direction of nuclear war-fighting strategies and a larger nuclear arsenal.¹⁸

A final consideration is that much of what we know about Chinese nuclear policy and strategy comes from publicly articulated policies (such as the section of the 2006 white paper quoted above) or study of doctrinal materials (which reflect PLA writings). We know little about what China's top civilian leaders in the Politburo Standing Committee—the actors who would decide whether China should employ nuclear weapons—think about the employment of nuclear weapons or the role of nuclear weapons in crisis situations. The fact that these leaders have little military experience and have likely not been exposed to academic thinking about nuclear weapons (and nuclear dangers) may be grounds for additional concern.¹⁹ At the end of the day Chinese leaders, like other leaders in other countries, are acutely aware of China's vulnerability to nuclear attack and are likely to be cautious in situations with the potential to escalate to an exchange of nuclear weapons.

NOTES

¹ John Wilson Lewis and Xue Litai, *China Builds the Bomb* (Stanford: Stanford University Press, 1988); Zhang Shu Guang, *Deterrence and Strategic Culture: Chinese-American Confrontation, 1949-1958* (Ithaca: Cornell University Press, 1992). On U.S. nuclear threats to China, see Gordon H. Chang, “To the Nuclear Brink: Eisenhower, Dulles, and the Quemoy-Matsu Crisis,” in Sean M. Lynne-Jones, Steven E. Miller, and Stephen Van Evera, eds., *Nuclear Diplomacy and Crisis Management* (Cambridge, Mass.: MIT Press, 1990), pp. 200-227.

² M. Taylor Fravel and Evan S. Medeiros, “China’s Search for Assured Retaliation: The Evolution of Chinese Nuclear Strategy and Force Structure,” *International Security*, Vol. 35, No. 2 (Fall 2010), pp. 48–87.

³ Avery Goldstein, *Deterrence and Security in the 21st Century: China, Britain, France, and the Enduring Legacy of the Nuclear Revolution* (Stanford, Calif.: Stanford University Press, 2000); Jeffrey Lewis, *The Minimum Means of Reprisal: China’s Search for Security in the Nuclear Age* (Cambridge, Mass.: MIT Press, 2007); and Litai Xue, “Evolution of China’s Nuclear Strategy,” in John C. Hopkins and Weixing Hu, eds., *Strategic Views from the Second Tier: The Nuclear Weapons Policies of France, Britain, and China* (San Diego: University of California Press, 1994), pp. 167–190. Phillip C. Saunders and Jing-Dong Yuan, “China’s Strategic Force Modernization,” in Albert Willner and Paul Bolt, eds., *China’s Nuclear Future* (Boulder, Col.: Lynn Rienner, 2006), pp. 79-118.

⁴ Committee on the U.S.-Chinese Glossary of Nuclear Security Terms, *English-Chinese, Chinese-English Nuclear Security Glossary* (Washington, D.C.: National Academies Press, 2008), p. 36.

⁵ John Wilson Lewis and Xue Litai, *China’s Strategic Seapower: The Politics of Force Modernization in the Nuclear Age* (Stanford, Calif.: Stanford University Press, 1994).

⁶ Office of the Secretary of Defense, Annual Report to Congress, Military and Security Developments Involving the People’s Republic of China, 2010.

⁷ *Ibid.*, p. 34.

⁸ Office of the Secretary of Defense, Annual Report to Congress, Military and Security Developments Involving the People’s Republic of China, 2011, p. 34 and 3.

⁹ Office of the Secretary of Defense, Military and Security Developments Involving the People’s Republic of China, 2010, p. 34.

¹⁰ *Ibid.*, p. 34.

¹¹ The four principles are centralized control (*jizhong zhihui*), strike only after the enemy has struck (*houfa zhiren*), close defense (*yanmi fanghu*), and key point counter-strikes (*zhongdian fanji*). *The Science of Military Strategy [Zhanlue Xue]* (Beijing, Academy of Military Sciences, 1987), cited in Fravel and Medeiros, 69.

¹² Fravel and Medeiros, 76.

¹³ Michael S. Chase and Evan Medeiros, “China’s Evolving Nuclear Calculus: Modernization and Doctrinal Debate,” in James Mulvenon and David Finkelstein, eds., *China’s Revolution in Doctrinal Affairs: Emerging Trends in the Operational Art of the Chinese People’s Liberation Army* (Arlington, VA; CNA, 2002), p. 133.

¹⁴ Alastair Iain Johnston, “China’s New ‘Old Thinking’: The Concept of Limited Deterrence,” *International Security*, Vol. 20, No. 3 (Winter 1995/96), pp. 5–42.

¹⁵ Fravel and Medeiros, 79-80.

¹⁶ See sources cited in Fravel and Medeiros, 76-77.

¹⁷ Saunders and Yuan; Michael S. Chase, Andrew S. Erickson, and Christopher Yeaw, “Chinese Theater and Strategic Missile Force Modernization and Its Implications for the United States,” *Journal of Strategic Studies*, Vol. 32, No. 1 (February 2009), pp. 67–114.

¹⁸ Mark Schneider, “The Nuclear Doctrine and Forces of the People’s Republic of China,” *Comparative Strategy*, Vol. 28, No. 3 (July/August 2009), pp. 244–270; and Larry M. Wortzel, *China’s Nuclear Forces: Operations, Training, Doctrine, Command, Control, and Campaign Planning* (Carlisle, Pa.: Strategic Studies Institute, U.S. Army War College, May 2007).

¹⁹ The author’s interviews with relevant faculty members at the Central Party School suggest that nuclear deterrence is not taught in the international relations and security lectures that senior party members receive.