Bulletin of the Atomic Scientists

The ambiguous arsenal

Recent reports warn that China is aggressively building up its nuclear forces. Don't believe the hype.

By Jeffrey Lewis
May/June 2005 pp. 52-59 (vol. 61, no. 03)

If you read the *Washington Times*, in addition to believing that Iraqi weapons of mass destruction are hidden somewhere in Syria, you might believe that "China's aggressive strategic nuclear-modernization program" was proceeding apace. [1] If munching on freedom fries at a Heritage Foundation luncheon is your thing, you might worry that "even marginal improvements to [China's intercontinental ballistic missiles (ICBMs)] derived from U.S. technical know-how" threaten the United States. [2]

So, it may come as a shock to learn that China's nuclear arsenal is about the same size it was a decade ago, and that the missile that prompted the *Washington Times* article has been under development since the mid-1980s. Perhaps your anxiety about "marginal improvements" to China's missile force would recede as you learned that China's 18 ICBMs, sitting unfueled in their silos, their nuclear warheads in storage, are essentially the same as they were the day China began deploying them in 1981. In fact, contrary to reports you might have recently read that Chinese nukes number in the hundreds--if not the thousands--the true size of the country's operationally deployed arsenal is probably about 80 nuclear weapons.

Estimating the size, configuration, and capability of China's nuclear weapons inventory is not just an exercise in abstract accounting. The specter of a robust Chinese arsenal has been cited by the Bush administration as a rationale for not making deeper cuts in U.S. nuclear deployments. Likewise, opponents of the Comprehensive Test Ban Treaty (CTBT) point to China in making the case for maintaining U.S. deterrent capabilities. Others portray China's modernization program as evidence of the country's increasingly hostile posture toward Taiwan--adding a sense of urgency to developing missile defenses. And, more recently, these concerns have raised the temperature in transatlantic relations as the European Union contemplates lifting the arms embargo imposed on China in the wake of the Tiananmen Square massacre.

The true scope of China's nuclear capabilities are hidden in plain sight, among the myriad declassified assessments produced by the U.S. intelligence community. Yet, such analyses have run afoul of conservative legislators, who express dismay when threat assessments don't conform to their perceptions of reality. Congressional Republicans, for instance, in 2000 created the China Futures Panel, chaired by former Gen. John Tilelli, to examine charges of bias in the CIA assessments of China. In 2002, Bob Schaffer, a Republican congressman from Colorado, complained about the latest National Intelligence Estimate (NIE) of foreign ballistic missile development in a letter to CIA director George Tenet: "The lack of attention to the pronounced and growing danger caused by China's ballistic missile buildup, and its aggressive strategy for using its ballistic missiles cannot go unchallenged. The report is misleading, and, because it understates the magnitude of threat, is profoundly dangerous."

Consequently, many defense analysts simply ignore what the intelligence community has to say. For example, two scholars in a peer-reviewed international security journal cited *Jane's Strategic Weapon Systems* to suggest that China's future submarine-launched ballistic missile (SLBM)--the Giant Wave, or Julang-2 (JL-2)--may carry "three to eight multiple independent reentry vehicles." They failed to mention the consensus judgment of the U.S. intelligence community that Chinese warheads are so large that it is impossible to place more than one on the JL-2.

In another instance, a student from the National University of Singapore posted an essay on a web site claiming that China had more than 2,000 warheads. His figure was based on amateurish fissile material production estimates that incorrectly identified several Chinese fissile material facilities. [3] (Classified estimates by the Energy Department, leaked to the press, estimate the Chinese plutonium stockpile at 1.7-2.8 tons. [4] Assuming 3-4 kilograms of plutonium per warhead, China could deploy, at most, a nuclear force of 400-900 weapons.) Despite such obvious mistakes, experts from the Heritage Foundation, the Institute for Defense Analyses, the Institute for Foreign Policy Analysis, and the Centre for Defence and International Security Studies all cited the Singapore essay to suggest that China might have substantially more nuclear warheads than widely believed. [5] David Tanks, then with the Institute for Foreign Policy Analysis, called the essay "convincingly argued."

Iraq debacle or not, the estimates of the U.S. intelligence community are still a better place to start than, say, some college kid's essay posted on the internet. These analysts have unparalleled access to the full array of information-gathering technology available to the federal government. For example, the intelligence community monitors ballistic missile tests with satellite images

to detect test preparations, signals intelligence sensors to intercept telemetry data, and radars to track missile launches and collect signature data on warheads and decoys. No comparable unclassified source of such data exists, unless it is released by the government conducting the test.

Moreover, the intelligence community employs well-known methods that can be evaluated for gaps or bias. Although intelligence estimates are sometimes politicized or agenda driven, systematic bias is often evident and can be observed by comparing estimates over time. For example, the intelligence community has tended to exaggerate future Chinese ballistic missile deployments, in part because Chinese industrial capacity has tended to exceed production. This information is useful when considering estimates about future Chinese deployments. Establishing a baseline consensus estimate about the size and composition of Chinese nuclear forces would allow analysts to lodge specific objections to intelligence community judgments. More broadly, a deeper understanding of the true scope of China's arsenal and its modernization efforts provides a clearer picture of Beijing's strategic intentions.

Minimum means of reprisal

Beijing doesn't publish detailed information about the size and composition of its nuclear forces. With a very small nuclear arsenal relative to the United States and Russia, China seems intent on letting ambiguity enhance the deterrent effect of its nuclear forces. Chinese force deployments suggest that Beijing's leadership believes that even a very small, unsophisticated force will deter nuclear attacks by larger, more sophisticated nuclear forces. While some Western analysts spent the Cold War fretting about the "delicate balance of terror," the Chinese leadership appears to have concluded that technical details such as the size, configuration, and readiness of nuclear forces are largely irrelevant. China's declaration that it would "not be the first to use nuclear weapons at any time or under any circumstances" reflects the idea that nuclear weapons are not much good, except to deter other nuclear weapons. In deciding what sort of nuclear arsenal to build, China settled on what Marshal Nie Rongzhen, the first head of China's nuclear weapons program, called "the minimum means of reprisal." [6]

China's reluctance to provide numerical information about its nuclear forces relaxed a bit this past spring, when its foreign ministry released an April 2004 statement that, "Among the nuclear weapon states, China . . . possesses the smallest nuclear arsenal." That statement suggests China possesses fewer than 200 nuclear weapons, the generally accepted size of the British nuclear arsenal.

The intelligence community does not publish a single, detailed assessment of China's nuclear arsenal. Instead, these estimates are scattered across multiple documents, including the 2001 edition of the Defense Department's *Proliferation: Threat and Response* and the National Air and Space Intelligence Center's (NASIC) 2003 *Ballistic and Cruise Missile Threat*. Some information, such as the National Intelligence Council's *Tracking the Dragon* series, has been released through the natural process of declassification. But much more information was released--or leaked--during the 1990s amid debates over allegations of Chinese nuclear espionage, ballistic missile defenses, and the CTBT.

Based upon these various assessments, a realistic estimate of China's nuclear arsenal is a total force of 30 nuclear warheads operationally deployed on ICBMs and another 50-100 on medium-range ballistic missiles (MRBMs), for a total force of 80-130 nuclear weapons. (See "China's Arsenal, by the Numbers,")

Estimates provided by many nongovernmental organizations--such as the Council on Foreign Relations, the Natural Resources Defense Council, and the International Institute for Strategic Studies (IISS)--are much higher (albeit, not as high as their more zealous conservative counterparts). They typically describe the People's Republic of China as the world's third largest nuclear power, ahead of Britain and France, with 400 or so warheads. [7] Such estimates often assume deployment of three other categories of nuclear weapons--aircraft-delivered weapons, SLBMs, and tactical nuclear weapons.

Yet, in the 1980s, the Defense Intelligence Agency (DIA) found no evidence that China had deployed nuclear bombs to airfields and, based on the antiquity of the aircraft, concluded that China did not assign nuclear missions to any of its planes--a conclusion reiterated in a declassified 1993 National Security Council report. The most recent edition of the Pentagon's *Chinese Military Power* suggests that China has yet to deploy the Julang-1 (JL-1) ballistic missile on its solitary ballistic missile submarine. And, in 1984, the DIA acknowledged that it had "no evidence confirming production or deployment" of tactical nuclear weapons. To the contrary, *Chinese Military Power* notes that the country's short-range ballistic missiles are conventionally armed, thereby freeing Beijing from "the political and practical constraints associated with the use of nuclear-armed missiles."

Room for expansion?

Over the next 15 years, the intelligence community expects China's ICBM force to expand from 18 to 75-100 strategic nuclear warheads targeted primarily against the United States and from 12 shorter-range ballistic missiles capable of reaching parts of the United States to "two dozen." [8]

Beijing's modernization plan centers on a mobile, solid-fueled ballistic missile under development since the mid-1980s called the

Dong Feng (DF)-31. The intelligence community believes the DF-31 could be deployed during the next few years. Since 2002, IISS has cited "reports" that the DF-31 is deployed, but that assessment appears based on a pair of 2001 news stories in the *Taipei Times* and *Washington Times*, neither of which actually claims the missile is deployed. [9]

The intelligence community believes China is also developing follow-on versions of the DF-31: the extended-range DF-31A to replace the DF-5 (currently its longest-range ICBM) and a submarine-launched version (JL-2). The DF-31A may have a range of 12,000 kilometers and could be deployed before 2010. China is also designing a new nuclear ballistic missile submarine to carry the JL-2, which is expected to have a range of more than 8,000 kilometers. China will likely develop and test the JL-2 and the new sub (Type 094) later this decade. [10]

One senior intelligence official described the 75-100 warhead estimate to the *New York Times*: "[China would] add new warheads to their old 18 [DF-5s], transforming them from single-warhead missiles into four-warhead missiles," or "double the size of their projected land-based mobile missiles." [11] The estimate of 75 warheads assumes that China will supplement its existing ballistic missile force with the DF-31 ICBMs; the estimate of 100 warheads is based on the assumption that China would build half as many DF-31 ballistic missiles, but place multiple warheads on existing DF-5 ICBMs.

China has not placed multiple warheads on its silo-based ICBMs and has not begun to deploy the DF-31. Therefore, these predictions are little more than informed speculation, based on how the intelligence community imagines China *might* respond to missile defense and other changes in U.S. nuclear posture. Past intelligence community estimates, however, have overstated future Chinese ICBM deployments. The number of Chinese strategic ballistic missiles has actually declined, from 145 in 1984 to 80 today.

China tested its smallest nuclear warhead from 1992-1996. [12] Developed for China's DF-31 ICBM, NASIC estimated that the reentry vehicle has a mass of 470 kilograms--too heavy to place more than one on any of China's solid-fueled ballistic missiles. [13] Placing multiple warheads on China's solid-fueled ballistic missiles would probably require Beijing to design and test a new warhead, which is currently prohibited by China's signature on the CTBT. [14]

Dangerous incentives

So, let's review: China deploys just 30 ICBMs, kept unfueled and without warheads, and another 50-100 MRBMs, sitting unarmed in their garrisons. Conventional wisdom suggests this posture is vulnerable and invites preemptive attack during a crisis. This minimal arsenal is clearly a matter of choice: China stopped fissile material production in 1990 and has long had the capacity to produce a much larger number of ballistic missiles. [15] The simplest explanation for this choice is that the Chinese leadership worries less about its vulnerability to a disarming first strike than the costs of an arms race or what some Second Artillery officer might do with a fully armed nuclear weapon. In a strange way, Beijing placed more faith in Washington and Moscow than in its own military officers.

Washington has never reciprocated that trust. Instead, the United States has embarked on a major transformation of its strategic forces that is, in part, driven by concern about the modernization of China's strategic forces. President Bill Clinton reportedly directed U.S. Strategic Command in 1998 to include plans for strikes against China in the U.S. nuclear weapons targeting plan. The 2001 Nuclear Posture Review (NPR) identified China as one of seven countries "that could be involved in an immediate or potential contingency" with nuclear weapons. [16]

Chinese strategic forces are increasingly supplanting Russia as the primary benchmark for determining the size and capabilities of U.S. strategic forces--at least in administration rhetoric. China's nuclear arsenal is reflected in the 2001 NPR in two ways. First, the review recommends reducing the 6,000 deployed U.S. nuclear weapons to no less than 1,700-2,200. In response to criticism that these cuts didn't go low enough, Defense Secretary Donald Rumsfeld warned that further reductions might encourage China to attempt what he termed a "sprint to parity"--a rapid increase in nuclear forces to reach numerical parity with the United States. [17]

Second, the 2001 NPR recommends the addition of ballistic missile defenses and non-nuclear strike capabilities to help improve the ability of the United States to extend nuclear deterrence to its allies. [18] Here too, concern over China's arsenal lurked in the background. Shortly before he was nominated as Deputy Assistant Secretary of Defense for Forces Policy (with responsibility for overseeing the NPR), Keith Payne argued that the United States, in a crisis with China over Taiwan, must possess the capability to disarm China with a first strike if U.S. deterrence is to be credible. Despite overwhelming U.S. nuclear superiority, he has argued, "China's leadership may not be susceptible to U.S. deterrence threats, regardless of their severity, largely because denying Taiwan independence would be a near-absolute goal for Chinese leaders." Thus, the United States "would have to make blatantly clear its will and capability to defeat Chinese conventional and [weapons of mass destruction] attacks against Taiwan and against its own power projection forces." [19]

Yet, if the United States were truly interested in discouraging a Chinese sprint to parity or the development of a Chinese ballistic missile force that could undertake coercive operations, the president would disavow the vision for nuclear forces outlined in the NPR. The Chinese leadership chose their arsenal in part on the belief that the United States would not be foolish enough to use

nuclear weapons against China in a conflict. By asserting that Washington *may be* that foolish, and by attempting to exploit the weaknesses inherent in China's decision to rely on a small vulnerable force, the NPR creates incentives for Beijing to increase the size, readiness, and usability of its nuclear forces.

Larger, more ready Chinese nuclear forces would not be in the best interests of the United States. In the midst of a crisis, any attempt by Beijing to ready its ballistic missiles for a first strike against the United States, let alone to actually fire one, would be suicide. The only risk that China's current nuclear arsenal poses to the United States is an unauthorized nuclear launch--something the intelligence community has concluded "is highly unlikely" under China's current operational practices. That might change, however, if China were to adopt the "hair trigger" nuclear postures that the United States and Russia maintain even today to demonstrate the "credibility" of their nuclear deterrents. China might also increase its strategic forces or deploy theater nuclear forces that could be used early in a conflict--developments that might alarm India, with predictable secondary effects on Pakistan.

So far, none of this has happened. Chinese nuclear forces today look remarkably like they have for decades. The picture of the Chinese nuclear arsenal that emerges from U.S. intelligence assessments suggests a country that--at least in the nuclear field--is deploying a smaller, less ready arsenal than is within its capabilities. That reflects a choice to rely on a minimum deterrent that sacrifices offensive capability in exchange for maximizing political control and minimizing economic cost--a decision that seems eminently sensible. The great mystery is not that Beijing chose such an arsenal, but that the Bush administration would be eager to change it.

1. Bill Gertz and Rowan Scarborough, "Inside the Ring: Failed DF-31 Test," *Washington Times*, January 4, 2002, p. 9.

2. Richard D. Fisher Jr., "Commercial Space Cooperation Should Not Harm National Security," Heritage Foundation Backgrounder, no. 1198, June 26, 1998.

3. Yang Zheng, *China's Nuclear Arsenal*, March 16, 1996 (www.kimsoft.com/korea/ch-war.htm).

4. David Wright and Lisbeth Gronlund, "A History of China's Plutonium Production," pp. 61-80; see also David Albright, Frans Berkhout, and William Walker, *Plutonium and Highly Enriched Uranium 1996: World Inventories, Capabilities and Policies* (New York: Oxford University Press, 1997), pp. 126-130.

5. See: Fisher, "Commercial Space Cooperation Should Not Harm National Security"; Richard D. Fisher Jr. and Baker Spring, "China's Nuclear and Missile Espionage Heightens the Need for Missile Defense," Heritage Foundation Backgrounder, no. 1303, July 2, 1999; David R. Markov and Andrew W. Hull, "The Changing Nature of Chinese Nuclear Strategy," Institute for Defense Analyses, January 1997; David R. Tanks, "Exploring U.S. Missile Defense Requirements in 2010: What Are the Policy and Technology Challenges?" Institute for Foreign Policy Analysis, April 1997; and "Size of China's Ballistic Missile Force," Centre for Defence and International Security Studies, no author, no date.

6. Nie Rongzhen, *Inside the Red Star: The Memoirs of Marshal Nie Rongzhen*, Zhong Rongyi, translator (Beijing: New World Press, 1988). See also: Nie Rongzhen, "How China Develops Its Nuclear Weapons," *Beijing Review*, April 29, 1985, pp. 15-18.

7. Such estimates are often based on two comments in the open literature: In 1979, a senior Defense Department official described the nuclear forces deployed by China, France, and Britain as "more or less comparable with China perhaps being the leader of the three. So it is possible that China might be the third nuclear power in the world." See: Defense Department, *Department of Defense Authorization for Appropriations for FY80; Part 1: Defense Posture; Budget Priorities and Management Issues; Strategic Nuclear Posture* (Washington, D.C.: Government Printing Office (GPO), 1979), p. 357. See also John W. Lewis and Xue Litai, *China Builds the Bomb* (Stanford: Stanford University Press, 1988), p. 253. A "senior Chinese military officer" purportedly told Lewis and Xue that China maintained "a nuclear weapons inventory greater than that of the French and British strategic forces combined."

8. Unless otherwise noted, this estimate is derived from: Senate Committee on Homeland Security and Governmental Affairs, *CIA National Intelligence Estimate of Foreign Missile Developments and the Ballistic Missile Threat through 2015*, Senate Hearing 107-467, 107th Cong., 2nd sess., 2002.

9. Bill Gertz, "China Ready to Deploy its First Mobile ICBMs," *Washington Times*, September 6, 2001.

10. Senate Committee on Intelligence, *Current and Projected National Security Threats to the United States*, Senate Hearing 107-597, 107th Cong., 2nd sess., 2001, p. 79.

11. Michael R. Gordon and Steven Lee Myers, "Risk of Arms Race Seen in U.S. Design of Missile Defense," *New York Times*, May 28, 2000, p. A1. An earlier National Air Intelligence Center (NAIC) estimate, however, suggested that the DF-5A (CSS-4) might carry up to three 470-kilogram DF-31 (CSS-X-10)-type reentry vehicles--although one assumption of this analysis was that a "minimum number of changes" were made to modify a Smart Dispenser upper stage for use as a post-boost vehicle. See Bill

Gertz, *Betrayal: How the Clinton Administration Undermined American Security* (Washington, D.C.: Regnery, 1999), p. 252.

12. Defense Department, *Future Military Capabilities of the People's Republic of China, Report to Congress Pursuant to Section 1226 of the FY98 National Defense Authorization Act* (Washington, D.C.: GPO, 1998), p. 5.

13. The NAIC estimate is found in NAIC-1442-0629-97 (no title), December 10, 1996, cited in Gertz, *Betrayal*, pp. 251-252.

14. John M. Shalikashvili, *Findings and Recommendations Concerning the Comprehensive Nuclear Test Ban Treaty* (Washington, D.C.: GPO, 2001).

15. Defense Department, *Chinese Military Power* 1997, p. 4.

16. Presidential Decision Directive (PDD)-60 (1998) returned China to the Single Integrated Operational Plan after a reported 16-year absence. Although classified, the *Washington Post* reported that PDD-60 directed "the military to plan attacks against a wider spectrum of targets in China, including the country's growing military-industrial complex and its improved conventional forces." See: R. Jeffrey Smith, "Clinton Directive Changes Strategy on Nuclear Arms Centering on Deterrence, Officials Drop Terms for Long Atomic War," *Washington Post*, December 7, 1997, p. A1; and Hans M. Kristensen, *The Matrix of Deterrence: U.S. Strategic Command Force Structure Studies* (Berkeley: Nautilus Institute, 2001), pp. 14-15. The revelation produced a confidential State Department memorandum, now partially declassified, concerning targeting policy. See: State Department, *Targeting Policy*, March 17, 1998 (SEA-23820.9).

17. Senate Committee on Foreign Relations, *Treaty on Strategic Offensive Reduction: The Moscow Treaty*, Senate Hearing 107-622, 107th Cong., 2nd sess., 2002, pp. 81, 111.

18. These quotations are drawn from the unclassified cover letter that accompanied the 2001 Nuclear Posture Review. See: Donald H. Rumsfeld, Foreword, Nuclear Posture Review Report, January 2002 (www.defenselink.mil/news/Jan2002/d20020109npr.pdf).

19. Keith B. Payne, "Post-Cold War Deterrence and a Taiwan Crisis," *China Brief*, vol. 1, no. 5, September 12, 2001.

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May/June 2005 pp. 52-59 (vol. 61, no. 03)

Sidebar: China's arsenal, by the numbers

Why 80-130 operationally deployed weapons is the best estimate for China's nuclear forces

• **18 DF-5 (NATO designation: CSS-4) ICBMs.** The liquid-fueled Dong Feng (DF)-5 ICBM ("East Wind") is the only Chinese missile capable of striking targets throughout the entire United States. With the greatest throw weight among Chinese ballistic missiles, the DF-5 is likely equipped with China's largest nuclear warhead, with an estimated yield of 4-5 megatons. The National Air and Space Intelligence Center (NASIC) estimates that China has "about 20" DF-5s. [1] In congressional testimony, Gen. Eugene Habiger, the commander of U.S. Strategic Command, was more specific, revealing that China had 18 DF-5s, all of which are silo-based. [2]

• **12 DF-4 (CSS-3) ICBMs.** Although NASIC lists the DF-4 as an ICBM, the DF-4 is not capable of reaching the continental United States. In 1993, the U.S. intelligence community estimated that of China's approximately ten DF-4 ICBMs, "two of the DF-4s are based in silos but most are stored in caves and must be rolled out to adjacent launch pads for firing." [3] The DF-4 reportedly is loaded with the same 2,000-kilogram, 3-megaton reentry vehicle as the DF-3. [4] NASIC estimates that China has "fewer than 25" DF-4 ICBMs. [5] The most recent National Intelligence Estimate on ballistic missile threats is more specific, stating that China

maintains "about a dozen [DF-4] ICBMs that are almost certainly intended as a retaliatory deterrent against targets in Russia and Asia." [6]

• **50-100 DF-3 (CSS-2) and DF-21 (CSS-5) medium-range ballistic missiles (MRBMs).** China's nuclear-capable "theater" ballistic missile force comprises DF-3 and DF-21 ballistic missiles. The DF-3 is a land-based derivative of the naval Julang-1 (CSS-NX-3). China is upgrading the DF-21 to replace the much older DF-3 and converting an unspecified number of DF-21 ballistic missiles to conduct conventional missions. During normal peacetime operations, DF-3 and DF-21 launchers probably remain in their garrisons, where the principle method of protecting deployments is extensive tunneling. [7]

In 1972, U.S. intelligence assessed that the DF-3 was equipped with China's earliest 3-megaton thermonuclear warhead. [8] Unofficial reports indicate that China planned a 600-kilogram warhead for the DF-21 with a yield of 400 or more kilotons, although the delayed deployment of the DF-21 in the late 1990s may have allowed China to use DF-31 type warheads tested between 1992 and 1996. [9] *Ballistic and Cruise Missile Threat* estimates the number of launchers for the DF-3, DF-21 "Mod 1" and DF-21 "Mod 2" MRBMs as "less than fifty" each, implying as many as 150 total MRBM launchers. [10] Intelligence documents leaked to the press, however, suggest that there are fewer than 50 total MRBM launchers of all types. [11] The entire MRBM force (DF-3 and DF-21), then, comprises either 50 or 100 missiles, depending on whether 1 or 2 missiles are assigned to each launcher.

Jeffrey Lewis

1. National Air and Space Intelligence Center (NASIC), *Ballistic and Cruise Missile Threat*, August 2003, p. 16.

2. Senate Committee on Foreign Relations, *Ballistic Missiles: Threat and Response*, Senate Hearings 106-339, 106th Cong., 2nd sess., 1999, p. 165. See also: Defense Department, *Annual Report on the Military Power of the People's Republic of China ("Chinese Military Power")*, June 2000. *Chinese Military Power* notes that "China reportedly has built 18 CSS-4 [DF-5] silos."

3. National Security Council, *Report to Congress on Status of China, India and Pakistan Nuclear and Ballistic Missile Programs*, 1993 (www.fas.org/irp/threat/930728-wmd.htm).

4. Defense Intelligence Agency (DIA), *Soviet and People's Republic of China Nuclear Weapons Employment Strategy*, March 1972, (page number redacted). See tables 5 and 6.

5. NASIC, *Ballistic and Cruise Missile Threat*, p. 16.

6. Senate Committee on Homeland Security and Governmental Affairs, *CIA National Intelligence Estimate of Foreign Missile Developments*, Senate Hearing 107-467, 107th Cong., 2nd sess., 2002, p. 32.

7. On peacetime DF-3 (CSS-2) operations, including tunneling efforts, see: DIA, *Intelligence Appraisal China: Nuclear Missile Strategy*, March 1981, pp. 4-5 (DIAIAPPR 34-81).

8. DIA, *Soviet and People's Republic of China Nuclear Weapons Employment Strategy*.

9. John W. Lewis and Xue Litai, *China's Strategic Seapower: The Politics of Force Modernization in the Nuclear Age*, (Stanford: Stanford University Press, 1994), p. 177.

10. NASIC, *Ballistic and Cruise Missile Threat*, p. 10.

11. A 1996 National Air Intelligence Center (NAIC) report on the program to replace the DF-3 (CSS-2) with the DF-21 (CSS-5) suggested that China had approximately 40 DF-3 launchers and implied that the DF-21 was replacing the DF-3 on a one-to-one basis. NAIC, *China Incrementally Downsizing CSS-2 IRBM Force*, November 1996 (NAIC-1030-098B-96), cited in Bill Gertz, *The China Threat: How the People's Republic Targets America* (Washington, D.C.: Regnery, 2000), pp. 233-34.