Below the strategic level of nuclear employment more limited scenarios could also be simulated, including a Chinese regional nuclear attack against U.S. forward deployed military forces in Northeast Asia, or a U.S. limited nuclear attack on Chinese conventional or nuclear forces in a war over Taiwan. Both countries have probably drawn up such (or similar) plans for limited nuclear use under the assumption that the other side would be deterred from escalating to strategic war. But wars never go according to plan, and the scenarios in this report are intended to remind the reader of the stakes of miscalculation.

For detailed overviews of U.S. nuclear forces, see our annual status reports in the Nuclear Notebook published in the Bulletin of the Atomic Scientists at http://www.thebulletin.org/nuclear_weapons_data/.

The history of China’s role in U.S. nuclear planning during the Cold War is surprisingly poorly described in the open literature and seems to have eluded most analysts and scholars who have focused almost exclusively on the U.S.-Soviet deterrence relationship. According to one report: “Experts in China recall a history of U.S. nuclear blackmail and a slow but steady progress in bringing a credible deterrent posture into being. Experts in the United States seem barely to recall this history at all, recalling China as little more than a footnote in the history of the nuclear era. This leads to very different views of the strategic balance between the two, the principles of nuclear strategy, and the constraints on future developments.” Brad Roberts, China-U.S. Nuclear Relations: What Relationship Best Serves U.S. Interests?, Institute for Defense Analysis/Defense Threat Reduction Agency, IDA Paper P-3640, September 2001, p. ES-2. Available online at www.au.af.mil/au/awc/awcgate/dtra/china_us_nuc.pdf.

Recent efforts to increase communication between the two countries include military-to-military discussions about nuclear policy, reciprocal military visits, and invitation of observers to military exercises.


A box in the 2006 DOD report cites three Chinese articles to question whether China will maintain its no-first-use policy, including an interview with Chu Shulong at Qinghua University:

> While affirming ‘no first use,’ Chu Shulong, from the prestigious Qinghua University, also stated in a July 2005 interview printed in a state-owned media that “if foreign countries launch a full-scale war against China and deploy all types of advanced weapons except nuclear weapons, China may renounce this commitment [to no first use] at a time when the country’s fate hangs in the balance.

Yet according to Jeffrey Lewis at armscontrolwonk.com, the FBIS translation apparently used by the Pentagon was wrong. The FBIS headline was “PRC Expert Warns PRC May Renounce ‘No First Use’ of Nuclear Weapons in War Time, but the translation of the Chinese title is “PRC Expert: China’s Policy on Nuclear Weapons Remains Unchanged.” The Pentagon’s excerpt above appears to misrepresent what the Mr. Chu said by including one part of the interview but ignoring another:

> The Director of Tsinghua University’s Institute of Strategic Studies, in an interview with a reporter from Da Gong Bao expressed, [sic] China’s promise not to be the first to use nuclear weapons was extremely clear and firm. As of now, their [sic] isn’t the slightest indication that China’s government will let go of this promise. “(I) have not heard any leader on any occasion state China will change or let go of this position. Never.”

> At the same time Chu Shulong provided a hypothetical, except in the case of a foreign power launching a full scale war against China, using all of their advanced (precision) weaponry except nuclear weapons, and the Chinese nation were facing the fanger of extermination, China may let go of this promise. But he considered the possibility not very great. “I think what Zhu Chenghu said is the worst possible circumstance, and the worst possible circumstance should not happen.”


12 Confidence in the capability of the U.S. offensive nuclear capability appears to be high. According to the Rear Admiral Eric A. McVadon, former Deputy Director for Strategy, Plans and Policy (Navy Staff) and Defense and Naval Attache at the American Embassy in Beijing, “even with the augmented nuclear arsenal [of DF-31 and JL-2 missiles], China’s minimal deterrent is useful only when unused.” Rear Admiral (USN, Ret.) Eric A. McVadon, Director of Asia-Pacific Studies, Institute for Foreign Policy Analysis, “Recent Trends in China’s Military Modernization,” prepared statement before the U.S.-China Economic and Security Review Commission, September 15, 2005, p. 6.

13 Though it should be said that Russia has not completely left the field. See Stephen F. Cohen, “The New American Cold War,” The Nation, July 10, 2006, pp. 9-17.


Kenneth H. Bacon, Assistant Secretary of Defense (Public Affairs), DOD News Briefing, September 12, 2000, 2:41 p.m. EDT.

U.S. Department of Defense, Office of the Secretary of Defense, Quadrennial Defense Review, February 6, 2006, p. 29. The QDR's assessment of China as the primary large-scale military threat is repeated in the Pentagon's 2006 report on China's military forces.


That is not to suggest that the United States did not have concerns about China’s nuclear (and general military) development at the time. In testimony to the Senate Armed Services Committee in April 1999, Assistant Secretary of Defense for Strategy and Threat Reduction Edward L. Warner stated that the United States was trying to make China become a positive force for regional stability and peace, but cautioned that “we are not now assured that this will be the case, and that our nuclear forces will not be needed at some future point to deter China. China has a much smaller nuclear force than Russia’s, but one that is still formidable, consisting of about 20 CSS-4 ICBMs capable of reaching the United States in addition to several dozen theater-range nuclear ballistic missiles. And China continues to make steady efforts to modernize these forces.” Nonetheless, Warner continued, “Given the overall positive trends in Russia and China over the past decade, however, one of our most critical security challenges today is the proliferation of weapons of mass destruction (WMD) and systems for their delivery.”


49 Ibid, p. 5.


51 Dan Stober and Ian Hoffman, A Convenient Spy: Wen Ho Lee and the Politics of Nuclear Espionage (Simon & Schuster, 2002).


54 Ibid., p. 180.


The claim that smaller Chinese warheads on new mobile missiles were “in part influenced by US technology gained through espionage” was echoed in Central Intelligence Agency, National Intelligence Council, “Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015, September 1999, n.p. [Internet version page 3 of 14].


For a description of the difference between minimum and limited deterrent, see “China’s Nuclear Weapons Policy” on p. 30.

60 Ibid., p. 26.


A statement by former STRATCOM commander General Eugene Habiger (who at the time of the article served a the DOE’s security chief) that “the jury is still out” on whether China’s new strategic weapons will contain stolen U.S. nuclear weapons secrets, was buried at the end of the article and did not soften the story or headline.

62 The Cox report resulted in the FY 2000 Defense Authorization Act establishing the U.S.- China Economic and Security Commission to monitor, investigate, and submit to congress an annual report on the national security implications of the bilateral trade and economic relationship between the United States and the People’s Republic of China, and to provide recommendations, where appropriate, to Congress for legislative and administrative action. Three Annual Reports have been submitted in 2002, 2004 and 2005. The conclusions are largely consistent with other intelligence reports, including that “By 2015, China’s intercontinental nuclear force is projected to grow to 75 to 100 warheads.”


65 Unfortunately, CRS reports are not made available to the public but only to members of Congress. Yet many CRS reports are available from the Federation of American Scientists Government Secrecy project at http://www.fas.org/sgp/crs/nuke/index.html


Yet some suggest that the combined effect of the security challenges facing China and the capabilities evolving as part of China’s current modernization of its nuclear forces and supporting capabilities almost inevitably will drive Chinese nuclear policy beyond the current minimum deterrent. For example, while concluding that “dramatic departures in Chinese doctrine, strategy, and capability seem unlikely...[f]or the moment at least,” a report published by the Institute for Defense Analysis in 2003, predicted:

To be sure, qualitative and quantitative improvements to China’s forces have long been under way and would likely occur in the absence of a U.S. BMD program. But this historical review suggests that those improvements will be tailored to meet the new requirements of survivable second strike posed by U.S. BMD. China’s quantitative options are numerous: to increase missiles, to increase launchers (both land- and sea-based), to increase the number of warheads atop missiles. Its build-up will be constrained in part by the fear of being drawn into an arms race with the United States of the kind that helped destroy the Soviet Union, and in part by the desire not to increase the perception of China as a major military threat. Qualitative improvements include deployment of mobile intercontinental strike systems, enhanced protection of non-mobile systems, more efficient attack operations, enhanced command and control, and defense penetration aids. These quantitative and qualitative factors will combine in ways to give China’s force new operational capabilities and may reinforce the move away from “minimum deterrence.” The impact of factors beyond U.S. BMD, such as the New Triad and China’s strategic relationships with Russia and India among others, is highly uncertain but seems likely to drive China’s understanding of nuclear sufficiency away from its historical foundations in minimalism and small numbers.


*China’s Endeavors for Arms Control, Disarmament and Non-Proliferation*, Information Office of the State Council of the People’s Republic of China, Beijing, September 2005, pp. 9, 10.


Ibid., pp. 2, 13-14, 28.

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86 Ibid.

87 Ibid., p. 1. Partially declassified and released under FOIA.


94 Some analysts believe the Chinese arsenal may be even smaller. See: Jeffrey Lewis, “China’s Ambiguous Arsenal,” *Bulletin of the Atomic Scientists*, May/June 2005.


This forecast appears to include only that portion of the ICBM force that is primarily targeted against the United States. The role currently served by the DF-5A. The language used by the DOD is: “China currently has around 20 ICBMs capable of targeting the United States. This number will increase to around 30 by 2005 and may reach 60 by 2010.” Ibid.

The estimate of 30 ICBMs by 2005 was first made by the DOD in the 2002 report on China’s military capabilities and repeated in subsequent reports. The estimate is not included in the 2005 or 2006 reports. See also: U.S. Central Intelligence Agency, Director of Central Intelligence, *Foreign Missiles Developments and the Ballistic Missile Threat Through 2015*, National Intelligence Council, December 2001, p. 8.


The variables for the estimate are explained in Robert D. Walpole, Strategic and Nuclear Programs, National Intelligence Council, Central Intelligence Agency, testimony before the International Security, Proliferation and Federal Services Subcommittee of the Senate Governmental Affairs Committee hearing on CIA National Intelligence Estimate of Foreign Missile Developments and the Ballistic Missile Threat Through 2015, March 11, 2002, p. 6.

Even if one assumes that China was capable of equipping (and decided to do so) each DF-5A with as many as eight smaller 250 kt warheads and the DF-31A with three 250 kt warheads each (the most extreme estimates we have seen made by private analysts), the total Megatonnage on China’s ICBM force primarily targeted against the United States in 2015 would still be less than it is today (70 Mt vs. 80 Mt).


111 Yue Xiaolin and Zhang Jianchu, “Second artillery brigade steps up only night con-


113 Li Yongfei and He Tianjin, “Second artillery signal regiment improves wartime capa-


121 One notable exception is a report published by the Ballistic Missile Defense Organization in 1995: “Although missile inventories may not have expanded appreciably, this modernization includes the development and deployment of a new generation of IRBMs and ICBMs, and the transition from surface-to-surface missiles.
(SSMs) mounted with single or multiple reentry vehicle (MRV) nuclear warheads to multiple independently targetable reentry vehicle (MIRV) warheads.” Ballistic Missile Defense Organization, BMDO Countermeasure Integration Program, “Country Profiles: China,” April 1995, p. 3. Emphasis added.


In July 2006, Fischer’s claim about multiple warheads on the DF-31A were perpetuated once more in an interview Jane’s Defence Weekly made with him in response to the publication of the 2006 DOD report on China’s military forces. According to the magazine, Fischer said the DF-31A “may in fact be able to carry up to three payloads,” a conclusion he based on his belief that “the DF-31A is similar to the KT-2A” space launch vehicle, which is capable of carrying up to three space payloads. Caitlin Harrington, “US experts warn on China’s ICBM moves,” Jane’s Defence Weekly, July 19, 2006, p. 15.

MIRV claim was also repeated in the front-page story Defense News published in response to the 2006 DOD report. The story, which also incorrectly suggested that the DF-31A will have a longer range than the DF-5A, claimed that the DF-31A will have a payload of “up to 5 MIRVs.” Wendell Minnick, “China Speeds ICBM Plans: To Debut Missiles With Longer Reach in 2007,” Defense News, July 10, 2006, p. 1.
Despite these predominant U.S. government assessments that China has not developed multiple warhead payloads for its ballistic missiles and that a MIRV capability for mobile missiles is many years away, an internal Ballistic Missile Defense Organization (BMDO) document in 1995 described the Chinese missile development as a “transition from surface-to-surface missiles (SSM) mounted with single or multiple reentry vehicle (MRV) nuclear warheads to multiple independently targetable reentry vehicle (MIRV) warheads. U.S. Ballistic Missile Defense Organization (BMDO), BMDO Countermeasure Integration Program, Country Profiles: China, April 1995, p. 3.


The Chinese define ballistic missile ranges as:

- Short-range: less than 1,000 km;
- Medium-range: between 1,000 and 3,000 km;
- Long-range: between 3,000 and 8,000 km;
- Intercontinental-range: above 8,000 km.

The Pentagon, in contrast, defines ballistic missile ranges as:

- Short-range: less than 1,100 km;
- Medium-range: between 1,100 and 2,750 km;
- Intermediate-range: between 2,750 and 5,500 km;
- Intercontinental range: above 5,500 km.


The article also repeated the inaccurate (compared with the U.S. intelligence community) prediction that the DF-31A will carry “up to 5 MIRVs.”

The DF-15 (CSS-6) short-range ballistic missile may also have a nuclear capability, although the vast majority of the deployed missiles are thought to be armed with conventional warheads.


Training levels at Dengshahe dropped from 5-8 months per year in late-1980s to 4 months per year in the mid-1990s.

By the mid-1990s, four DF-3A and four DF-21 (Mod 1) launch sites were operational at Jianshui.
141 Of 16 launch site garrisons built at Lianxiwang, up to 10 were operating DF-3A in 1996, two were under conversion to DF-21 (Mod 1), and DF-3A training was being reduced. Four garrisons may remain until DF-3A is retired.

142 Of the 12 launch site garrisons at Tonghua in 1996, only 4 (with 8 launchers) still operated the DF-3A, and 3 of those four were candidates for conversion to DF-21.

143 Yidu may have been converted to DF-21. See Figure 16 for image of possible launch site.

144 See Figure 20 and 21 for images of DF-4 launch sites at Delingha.


153 Ibid.


155 Ibid.


It is also curious that the 2005 DOD table shows far fewer DF-21 missiles than launchers. It is a possibility, although this has not been confirmed, that the DF-21 information in the report table has been reversed by mistake so that it shows 19-23 missiles for 34-38 launchers instead of 34-38 missiles for 19-23 launchers.


The most recent test flight took place on September 13, 2006. The missile reportedly flew approximately 2,500 km west into the Takla Makan Desert. “China launches one more intercontinental ballistic missile,” ITAR-TASS, September 5, 2006.


191 Neil King, Jr., “As China Boosts Defense Budget, U.S. Military Hedges Its Bets,” *Wall Street Journal*, April 20, 2006, p. 1. A letter to the editor sent to *Wall Street Journal* to correct the projections for the Chinese submarine force was ignored by paper. The “five to one” estimate cited by the article is a misrepresentation of a Heritage Foundation publication from April 2006, which states that by 2025, “Chinese attack submarines could easily outnumber U.S. submarines on station in the Pacific by a five to one ratio….” The number of U.S. submarines on station is obviously much smaller than the total number of submarines in the fleet. See John J. Tkacik, Jr., *Hedging Against China*, Heritage Foundation, April 18, 2006, p. 2, emphasis added.


196 Ibid.


199 John J. Tkacik, Jr., *Hedging Against China*, Heritage Foundation, April 18, 2006, p. 3.


The source listed by the Cox report for the JL-2 range is: Li Peng, “Report on the Outline of the Ninth Five-Year Plan for National Economic and Social Development and Long-Range Objectives to the Year 2010,” delivered to the Fourth Session of the Eighth National People’s Congress on March 5, 1996.


The Congressional Research Service stated in a report in 2006 that the first two Shang-class boats were expected to enter service in 2005, and that construction of a third may have begun. Ronald O’Rourke, China Naval Modernization: Implications for U.S. Naval Capabilities – Background and Issues for Congress, Congressional Research Service, RL33153, July 26, 2006, p. 75.


Data obtained by Hans M. Kristensen from the U.S. Navy Office of Naval Intelligence under the Freedom of Information Act.

The complete absence of patrols in 2005 may also be related to rumors about technical problems on the Han-class submarines.

U.S. Navy, Office of Naval Intelligence, e-mail to Hans M. Kristensen, August 25, 2005.


235 The Han-class’s involvement in the 1985 voyage is identified in Dr. Lyle Goldstein and Bill Murray, “From Humble Origins: China’s Submarine Force Comes of Age,” Undersea Warfare, Winter 2004, n.p. [html version pp. 2, 6].


The reporters appear to mistakenly identify the submarine as a Ming-class diesel submarine, which does not match the other information provided in the article. The term “undetected SSN deployment,” the month-long underwater operations, and the statement that “Mings will be replaced in the next decade by a new general of nuclear attack submarines called the Type 093,” suggest that the submarine may have been a Han-class nuclear-powered attack submarine.


242 U.S. Central Intelligence Agency, Communist China’s Strategic Weapons Program, NIE 13-8-69, February 27, 1969, p. 10.


Some private and semi-official sources have already predicted that the land-attack cruise missiles will have a nuclear capability. Mark Stokes, for example, who cited an unidentified 1993 DOD report, wrote in 1999 that there are “clear indications that China will likely have a nuclear warhead sized for one of their cruise missiles and are seriously considering adding another leg to their nuclear force.” Mark A. Stokes, *China’s Strategic Modernization: Implications for the United States*, Strategic Studies Institute, U.S. Army War College, September 1999, p. 82.


263 Ibid., p. 51.

264 Ibid.


266 Ibid., p. 3.

267 Ibid., p. 4.


269 Ibid., p. 36.

270 Ibid.

271 A later Handbook, for example, stated that China had 24 SLBMs (including 12 JL-2s which had not been developed at the time) and 120-150 tactical warheads for artillery pieces, multiple rocket launchers, and demolition charges. U.S. Defense Intelligence Agency, *China Country Handbook*, DOD-2630-CH-008-00, March 2000, p. 123. Obtained under FOIA.


Another apparently not so reliable DIA publication at the time stated: “The 2d Artillery Corps reportedly has 1980 to 200 nuclear warheads at its disposal out of a total Chinese inventory of 330 to 350. The PLAN and PLAAF combined have 24 sea-launched ballistic missiles (SLBMs) and 120 to 150 warheads (various artillery pieces, multiple rocket launch systems, and demolition charges) respectively.” U.S. Defense Intelligence Agency, *China Country Handbook*, DOD-2630-CH-008-00, March 2000, p. 123. Obtained under FOIA.


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303 The facilities are also used to launch satellites.


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307 Mao placed Deng Xiaoping in charge of the Third Line project. “The cost of the Third Line was nearly 40 percent of China’s capital budget from 1963-65, 53 percent in the next five years, and 45 percent up to 1975 .... No project of Mao’s was to prove so costly, so labor-intensive, so economically unfeasible, or so disruptive as the Third Line.” Harrison E. Salisbury, *The New Emperors: China in the Era of Mao and Deng* (Boston: Little Brown and Company, 1992), pp. 126, 127.
Deployment, n.p. [sheet 2]. URL:
http://www.fas.org/irp/dia/product/prc_72/app_a.htm


312 Ibid., p. 42.


316 Director of Central Intelligence, Communist China’s Advanced Weapons Program, Special National Intelligence Estimate No. 13-2-63, July 24, 1963, pp. 1-2. Released under FOIA to the National Security Archive. The document is available on the Internet at [http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB19/01-01.html].


319 In addition to a more “pure” strategic targeting, non-strategic nuclear forces continued to provide support to smaller contingencies in the region. PACOM’s analysis in support of the annual Nuclear Weapons Requirements Study from April
1962 for the Fiscal Year 1965, for example, contained a “greater recognition of the Allied nuclear capable delivery vehicles to give fire support in the Taiwan and Korean area.” U.S. Pacific Command, CINCPAC Command History 1962, Volume I, April 30, 1963, p. 38. Emphasis added. Partially declassified and released under FOIA.

320 U.S. Strategic Air Command, History of Strategic Air Command January-June 1962, Historical Study No. 91, Vol. I, p. 86. Partially declassified and released under FOIA.

321 U.S. Strategic Air Command, History of the Strategic Air Command July-December 1963, Historical Study No. 93, Volume I, August 1964, pp. 102, 103. Partially declassified and released under FOIA.

322 U.S. Strategic Air Command, History of the Strategic Air Command January-June 1964, Historical Study No. 95, Volume I, January 1965, p. 106. Partially declassified and released under FOIA.

323 Ibid., p. 107.

The program, however, was effected on a scheduled basis, and the B-52 Reflex operation did not completely replace the B-47 Air Mail force until the second week of April 1964.


325 Ibid., pp. 200, 201.


China was described as a “disruptive element in underdeveloped countries and a military threat in Asia.” Ibid.


328 Ibid., p. 93.


Ibid., p. 101.

Ibid., pp. 100, 101.

Ibid., pp. 102, 103.

Ibid., p. 103.


The USS Ethan Allen (SSBN-608) was not homeported in the Pacific but at Charleston in South Carolina, and the Navy had originally intended to conduct the Frigate Bird test in the Atlantic Ocean with target area near Ascension Island mid-way between South American and Africa. The Joint Chiefs of Staff granted approval in March and USS Ethan Allen departed Charleston on April 19th with four of the 16 standard Polaris A2 missiles slightly modified with tracking beacons and command-destruct systems. Transit with the nuclear weapons was made through the Panama Canal. Originally planned for May 5th, technical and weather problems delayed Frigate Bird one day and the first two Polaris missiles failed to launch. After completion of the test, the USS Ethan Allen was rushed back to North Carolina, and on June 26th the submarine departed Charleston for its first deterrent patrol in the Atlantic. Edward C. Whitman, “The Other Frigate Bird,” Undersea Warfare, U.S. Navy, Office of the Chief of Naval Operations, Fall 2004, n.p.; Department of the Navy, Strategic Systems Programs Office, Facts/Chronology: Polaris-Poseidon-Trident, 1996, p. 31.


U.S. Pacific Command, CINCPAC Command History 1963, April 27, 1964, p. 34. Partially declassified and released under FOIA to Peter Hayes.

Department of the Navy, Strategic Systems Programs Office, Facts/Chronology: Polaris-Poseidon-Trident, 1996, p. 32.

U.S. Strategic Air Command, History of the Joint Strategic Target Planning Staff: Revisions 1-8 to SIOP-64, January 1967, p. 28. NOFORN/TOP SECRET. Partially declassified and released under FOIA. Available at National Security Archive, Washington, D.C.


U.S. Pacific Command, CINCPAC Command History 1972, Volume I, n.d. [1973], pp. 43, 44. Partially declassified and released under FOIA.


Deployments to Taiwan were discontinued in 1974 following withdrawal of U.S. forces from the island.


The VLF/LF capability of the ABNCP aircraft, which made direct communication with the submarines possible without the TACAMO aircraft, had been installed on ABNCP aircraft in 1969 despite the objection of CINCPAC. JCS ordered the equip-
ment installed as part of the Minimum Essential Emergency Communications Net, although CINCPAC worried that the EC-135P ABNCP aircraft would be too heavy. With the extra weight, ABNCP in Hawaii would be able to reach Guam all times a year but only Yokota AB in good weather. Clark AB in the Philippines and Andrews AFB in Washington would be out of reach without refueling. U.S. Pacific Command, *CINCPAC Command History 1969*, Volume I, n.d. [1970], pp. 44-45. Partially declassified and released under FOIA.


365 Department of the Navy, PMA-271: *Airborne Strategic Command, Control, and Communications (C3 Program*, n.d. [downloaded 2/9/00], n.p. [“ECX (TACAMO aircraft, Future) STUDIES”]. Available online at http://pma271.navair.navy.mil/history/history_txt.html


377 Richard A. Mobley, “Revisiting the Korean Tree-Trimming Incident,” *Joint Forces Quarterly*, Issue 35, Summer 2003, p. 111. The author states that the August 1976 DEFCON 3 was “the first time it was changed in response to activity in North Korea.” Ibid., p. 110.


381 Ibid., p. 196.

382 This was the first foreign port visit in the PACOM of a Fleet Ballistic Missile nuclear submarine. U.S. Pacific Command, *CINCPAC Command History 1976*, Volume I, October 18, 1977, p. 196. Partially declassified and released under FOIA.

383 This was the last visit before conversion to attack submarine on October 6, 1980. Norman Friedman, *U.S. Submarines Since 1945* (Annapolis, Maryland: Naval Institute Press, 1994), p. 235.
This was the last visit before conversion to attack submarine in February 1981. Norman Friedman, *U.S. Submarines Since 1945* (Annapolis, Maryland: Naval Institute Press, 1994), p. 235.


This was the last visit before conversion to attack submarine on November 20, 1981. Norman Friedman, *U.S. Submarines Since 1945* (Annapolis, Maryland: Naval Institute Press, 1994), p. 235.

This reportedly was a “mid-patrol break” during a deterrent patrol from Guam. During its subsequent 55th and final patrol, which was also the US Navy’s last A3T Polaris patrol, the submarine reportedly crossed the Equator and International Date Line at the same time. *History of the USS Robert E. Lee*, Unofficial SSBN 601 Web Site, updated as of January 22, 2003, URL <http://www.ssbn601.com/history.asp>.


The only other country where SSBNs could occur without clearance was Canada. Beyond South Korea and Canada, CNO involvement was also not required for visits to Morocco (Agadir), Portugal (Lisbon), and West Germany.


China’s increasing emphasis on economical development may make it easier in the future to project “traditional” deterrence strategy onto that country. Ibid., p. 37.

Ibid., pp. 37-38.

Ibid., pp. 38, 45.

Ibid., pp. 87-88.

Ibid., p. 17.


Ibid., p. 80.

Ibid., pp. 80, 81.


CONPLAN (Concept Plan) is an Operation Plans (OPLAN) in Concept Format. An OPLAN is an operational plan for the conduct of military operations that could be translated into an operation order with minimum alteration. Complete plans include deployment/employment phases, as appropriate. A CONPLAN, conversely, is an operation plan in an abbreviated format that still requires expansion into a formal OPLAN or Operational Order (OPORD) prior to implementation. An OPORD is a directive, usually formal, issued by a commander to subordinate commanders for the purpose of effecting the coordinated execution of an operation. Generally, each OPLAN requires a complete, annual logistic appraisal for supportability as prescribed in the Joint Strategic Capabilities Plan. Ibid., p. 179.
The SRF forces were subdivided into the Secure Reserve Force (SRF) and residual forces on the one hand, and the Designated Reserve Forces (DRF) plus residual forces on the other hand. Residual forces included strategic and non-strategic nuclear forces, with the former consisting of recovered/reconstituted, uncommitted, and unexecuted forces. Non-strategic Residual Forces, in turn, consisted of uncommitted and not NATO designated nuclear forces. Chairman of the Joint Chiefs of Staff, J-5, Nuclear Supplement to Joint Strategic Capabilities Plan for FY 1996 (JSCP FY 96), CJCS1 3110.04, 12 February 1996, pp. D-26, D-28. Partially declassified and released under the FOIA.

Chairman of the Joint Chiefs of Staff, J-5, Nuclear Supplement to Joint Strategic Capabilities Plan for FY 1996 (JSCP FY 96), CJCS1 3110.04, 12 February 1996, pp. D-26, D-28. Partially declassified and released under the FOIA.

U.S. Strategic Air Command, History of the Strategic Air Command 1 January-31 December 1987, November 9, 1988, Volume I, p. I-5. Partially declassified and released under FOIA.


U.S. Strategic Air Command, History of the Strategic Air Command 1 January-31 December 1987, November 9, 1988, Volume I, p. I-5. Partially declassified and released under FOIA.
Ibid.


U.S. Pacific Command, <i>CINCPAC Command History 1984</i>, Volume I, September 27, 1985, p. 70. Partially declassified and released under FOIA.


This view was echoed in the Joint Chiefs of Staff’s annual Joint Military Net Assessment from 1990 which stated: “As ROK forces grow stronger, a reduction of US forces may be warranted. However, continuous retention of US troops in Korea will be required as long as the US and Korean governments and people want them there.” U.S. Joint Chiefs of Staff, <i>1990 Joint Military Net Assessment</i>, 20 January, 1990, p. IV-3.


The initiative also withdrew non-strategic nuclear weapons (except bombs) from Europe and from surface ships and attack submarines.


Ibid.


Dual-capable fighter wings in the Continental United States also maintained a nuclear capability and were tasked to forward deploy to Northeast Asia if necessary.


Department of the Navy, Commander Submarine Force U.S. Pacific Fleet, Command History for 1991, p. 7. Partially declassified and released under FOIA.


Joint Strategic Target Planning Staff, Minutes of the Forty-Seventh JSTPS Strategic Advisory Group Meeting 2-3 April 1992, Offutt AFB, Nebraska, May 1, 1992, p. v. Partially declassified and released under FOIA.


U.S. Senate, Armed Services Committee, Threat Assessment, Military Strategy, and Defense Planning, 102d Congress, 2d Session, January 22, 1992, p. 34.


The Chinese news agency Xinhua reported in August 2006 that China had conducted its “first joint exercise involving troops from a PLA area command, the Air Force, the Second Artillery, and the Chinese People’s Armed Police.” The exercise, known as North Sword – 0607(S), was held at an unidentified northern training base, involved a thousand tanks, armored vehicles and troops carriers, and covered 1,000 square kilometers. “PLA holds high-technology war exercise,” Xinhua, August 24, 2006.

U.S. Department of the Navy, Joint Intelligence Center Pacific, South China Sea: Spratly Islands Summary, OS-021-96, July 19, 1996 (reviewed on February 1, 1997), n.p. [page 4]. Secret. Partially declassified and released under FOIA.


Ibid.


Kenneth H. Bacon, Assistant Secretary of Defense (Public Affairs), DOD News Briefing, July 7, 1998, 1:45 p.m. (EDT).

China has, for its part, continued to use the word “detargeting” to describe the agreement. “China’s Endeavors on Arms Control, Disarmament and Non-Proliferation,” Information Office of the State Council of the People’s Republic of China, Beijing, September 2005, p. 10.


See: U.S. Department of the Navy, Office of the Chief of Naval Operations,


Despite its long range, however, Trident weapon system planning in the 1990s have continued to involve “time to move into range,” indicating that the submarines still need to transit for some time to be in range of some targets. See for example: U.S. Strategic Command/ J5, *Sun City*, 1993, p. 21. Partially declassified and released under FOIA.


The General Accounting Office in 1979 stated that of 41 strategic submarines, 23 (56 percent) were at sea at any given time, and 12 of these (52 percent, or 29 percent of total force) were on station at full alert capable of launching their missiles within minutes. The remaining 11 submarines at sea were not on full alert but could be brought to that condition probably within hours. U.S. General Accounting Office, *An Unclassified Version of a Classified Report Entitled 'The Navy's Strategic Communications System – Need for Management Attention and Decisionmaking,'* PSAD-79-48A (May 2, 1979), p. 2. Released under FOIA. Note: the unclassified report does not reveal the number of SSBNs deployed in each ocean. The numbers are, however, disclosed by Mr. Bruce G. Blair in *Strategic Command And Control: Redefining the Nuclear Threat* (The Brookings Institution, Washington, D.C., 1985), p. 173, footnote 100.


Personal conversation, June 16, 2005.


Hazard Prediction Assessment Capability (HPAC), software developed by SAIC under contract to the DOD. According to the HPAC user’s manual: “Hazard Prediction and Assessment Capability (HPAC) is a counter proliferation, counterforce tool that predicts the effects of hazardous material releases into the atmosphere and its collateral effects on civilian and military populations.” See: http://www.dtra.mil/toolbox/directorates/td/programs/acec/hpac.cfm.

The LandScan 2000 Global Population Database – the second release – was developed by Oak Ridge National Laboratory for the United States Department of Defense. This dataset consists of a worldwide population figures compiled on a 30° X 30° latitude/longitude grid, where census numbers are assigned to grid cells based on a number of criteria, including persistent nighttime lights. See http://www.ornl.gov/sci/landscan/.
STRATCOM – the United States Strategic Command – is one of the nine unified U.S. commands under the Department of Defense and has responsibility for U.S. nuclear strike planning and execution. In addition, on January 10, 2003, Change 2 to the Unified Command Plan (UCP) assigning four additional missions to STRATCOM: missile defense, global strike (which includes nuclear strikes), information operations, and global C4ISR. Finally, on March 1, 2005, Unified Command Plan 2004 assigned STRATCOM a sixth mission area: coordinating the Pentagon’s efforts to combating Weapons of Mass Destruction. See: http://www.stratcom.mil/.


In HPAC, the formula for calculating the minimum HOB of a nuclear explosion causing no local fallout is: HOB (feet) > 180 x Yield(kilotons)^0.4.

The initial height of a fallout “mushroom” cloud for nuclear weapon yields greater than 1 kiloton is given by the following formula: Height of Cloud (thousands of feet) = 44 + 6.1 x ln(Yield(kt)/1000) – 0.205(ln(Yield(kt)/1000) + 2.42) x ABS(ln(Yield(kt)/1000) + 2.42), where ABS is the absolute value. This formula was found in the “Help” file for the computer code WE (“Weapons Effects”), created for the U.S. Defense Nuclear Agency by Horizons Technology in December 1984. For example, at the 15 Mt U.S. nuclear test “Bravo” conducted on Bikini Atoll in 1954 the mushroom cloud reached a height of 50,000 feet. The above formula predicts a cloud height of 55,000 feet.

From HPAC 4.04.011 documentation: Casualty Estimation and Performance Decrement, Table 8-6.


The actual number of warheads reaching their targets would likely be less due to missile failures, duds, and a possible U.S. anti-ballistic missile system.

Actually mobile systems such as the DF-31A would likely have a smaller probability off pre-emptive destruction than the DF-5A.

Confidence in the capability of the U.S. offensive nuclear capability appears to be high. According to the Rear Admiral Eric A. McVadon, former Deputy Director for Strategy, Plans and Policy (Navy Staff) and Defense and Naval Attache at the American Embassy in Beijing, “even with the augmented nuclear arsenal [of DF-31 and JL-2 missiles], China’s minimal deterrent is useful only when unused.” Rear Admiral (USN, Ret.) Eric A. McVadon, Director of Asia-Pacific Studies, Institute for Foreign Policy Analysis, “Recent Trends in China’s Military Modernization,” prepared statement before the U.S.-China Economic and Security Review Commission, September 15, 2005, p. 6.


China argued in the 1980s that it didn’t have to get involved in nuclear arms limitations until the United States and the Soviet Union reduced their nuclear arsenals by 50 percent. When the United States and Russia in the 1990s cut back 60 percent, the Chinese switched to arguing that the two superpowers would have to come down to China’s level (approximately 200 warheads) before arms control discussions could begin. This observation is presented in Brad Roberts, et al., “China: The Forgotten Nuclear Power,” Foreign Affairs, July/August 2000, p. 62.