



North Korean nuclear
fuel rods, Yongbyon.

A Quiet Revolution Nuclear Strategy for the 21st Century

By JAMES J. WIRTZ *and* JAMES A. RUSSELL

AP/Wide World Photo

There is a quiet revolution underway in U.S. nuclear strategy. It is overshadowed by the global war on terrorism, questions over homeland security, and chaos in the international order. It is revolutionary because it reflects many changes in threats, capabilities, and doctrine that have preoccupied nuclear planners since the 1950s. It also highlights the way the Armed Forces prepare for future conflicts.

The vision found in the Nuclear Posture Review (NPR) is part of a wider endeavor to develop new policies.¹ It embraces the concepts of

assurance, dissuasion, deterrence, defense, and denial articulated in the Quadrennial Defense Review in 2001. Both reviews set priorities for formulating defense and foreign policy, developing a strategic relationship with Russia, and countering proliferation of nuclear, biological, and chemical (NBC) weapons and long-range ballistic missiles.

New Threats, New Opportunities

Nuclear policy reflects strategic, political, and technological trends that emerged over the last decade. The collapse of the Soviet Union presented an opportunity to foster a new strategic relationship. The United States concluded that massive nuclear arsenals, which had produced the concept of mutual assured destruction (MAD), arms control agreements, and many views of the

James J. Wirtz is the chairman and James A. Russell is Office of the Secretary of Defense fellow in the National Security Affairs Department at the Naval Postgraduate School.

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 2002		2. REPORT TYPE		3. DATES COVERED 00-00-2002 to 00-00-2002	
4. TITLE AND SUBTITLE A Quiet Revolution Nuclear Strategy for the 21st Century				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) National Defense University, 300 5th Ave SW, Marshall Hall, Washington, DC, 20319-5066				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 7	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

**Dismantling Tu-160
in Ukraine.**



AP/Wide World Photo (Efrem Lukatsky)

Cold War, were no longer relevant. Moreover, both countries would benefit by reducing defense budgets. During the 2000 Presidential campaign, supporters of George Bush noted that the arms control regime prevented adjustments to meet fiscal realities and new threats. Arms control was the source of acrimony; the time had come to stop regarding Russia as an enemy and to develop a more cooperative approach to managing strategic relations.

Though many observers marveled at the effectiveness of precision-guided air strikes in the Persian Gulf War, advances in technology did not stop. The information revolution of the 1990s continued to transform military capabilities. Sometimes called the revolution in military af-

**commanders can use data
from myriad sensors
to acquire a picture of the
battlespace in real time**

airs, it involved integrating surveillance and reconnaissance sensors, information processing, tactical and operational communications, and precision-guided munitions. Today, commanders can use data from myriad sensors—generically known as the global command and control system—to acquire a picture of the battlespace in real time, a capability that did not exist ten years ago. The Pentagon wants to use advances in command, control, communications, computers, and intelligence (C⁴I) to integrate nuclear and conventional forces so they can be responsive on short notice.

Concern has grown over the proliferation of NBC weapons and related delivery systems. The conflict between Iran and Iraq and the Gulf War highlighted the danger posed by long-range

missiles and hinted at this new threat. A national intelligence estimate issued in 1995, *Emerging Missile Threats to North America during the Next Fifteen Years*, posed relatively benign threats. It was discredited by the Rumsfeld Commission Report and the North Korean test of the Taepo-Dong missile in 1998. The sarin attack in the Tokyo subway in 1995, Indian and Pakistani tests of nuclear weapons in 1998, the end of U.N. inspections in Iraq, and the terrorist attacks on 9/11 have turned weapons of mass destruction (WMD) into a salient danger. In a report to Congress, the Central Intelligence Agency identified nine states that were developing or seeking to acquire such weapons. According to the Nuclear Policy Review, Libya, Iran, Iraq, North Korea, and Syria could be involved in a nuclear contingency. Various nonstate actors and terrorist groups such as al Qaeda, which are reportedly seeking NBC and radiological weapons, also are depicted as posing a serious threat to the United States. By contrast, the review does not characterize Russia as an immediate or potential concern to national security.

Recent trends present a challenge. On one hand, there is a strategic capability optimized for a danger that no longer exists and is considered the stumbling block in Russian-American relations. On the other, failures in nonproliferation confront planners with relatively small-scale threats that could become serious problems with little warning. Although the Armed Forces may confront an enemy willing to use NBC weapons,

Destroying Pershing II missiles in 1989.



DOD (Jose Lopez, Jr.)

the revolution in military affairs provides ways of employing conventional weapons for missions once reserved for nuclear forces.

The End of MAD

The Nuclear Posture Review and the Quadrennial Defense Review indicate that mutual assured destruction is not an acceptable basis for a strategic relationship. According to the former review, the United States “will no longer plan, size, or sustain its forces as though Russia presented merely a smaller version of the threat posed by the Soviet Union.” In other words, because Russian nuclear arms are seen as a waning threat, deterrence will no longer dominate nuclear doctrine and targeting.

Although the current administration has not articulated a clear plan to transform strategic relations, policy changes are creating a new bilateral framework. Washington took the initiative by announcing a shift in nuclear doctrine, negotiating strategic force reductions, and introducing confidence-building measures that were intended to reduce tension and foster relations. Viewed in this light, withdrawing from the Antiballistic Missile Treaty becomes a positive step because it delivered a lethal shock to an outdated strategic

framework. As the United States has repeatedly noted, the treaty stood in the way of missile defense as well as more cooperative relations with Moscow. The agreement signed by Presidents George Bush and Vladimir Putin in May 2002 is part of this new framework. Though the treaty limits deployed nuclear warheads to a maximum of 2,200 by 2012, it is more of a political document than a vehicle for arms control and strategic stability. The treaty reflects changes in force structure discussed in the Nuclear Policy Review and fulfilled Russian requirements for concrete evidence of this new partnership.

In fact, bilateralism was helped by pragmatism. By declaring peace, Bush and Putin have undermined the strategic rationale for sustaining the military, institutional, and diplomatic status quo. The United States made it difficult for Russia to assume a Cold War approach because it is willing to reciprocate. Putin found it possible to live with a limited ABM system in return for a U.S. nuclear arsenal reduced to Russian levels, which are based not on doctrine but on a weak economy. The American approach challenges traditional arms control and disarmament policies. Many treaties may become obsolete as bilateral relations improve. Cooperative efforts to foster peace, reduce forces, and safeguard materials do not pose a danger to other nations and need not be codified by treaties to ensure a stable world order.

The New Triad

The Nuclear Posture Review offers a pathway toward a new strategic triad that is aided by enhanced command and control and intelligence systems with offensive strike systems (nuclear and nonnuclear), defenses (active and passive), and a revitalized infrastructure. It assumed that nuclear

advanced command, control, and intelligence will integrate the triad, facilitating flexible operations

weapons are only one of the capabilities that can address threats from proliferation of NBC weapons and ballistic missiles. This triad represents a departure in strategic doctrine, with deterrence, defense, and

counterforce acknowledged as components. It can be best supported by a new force structure, although the concepts and planning for this advance remain undefined.

The new triad is intended to integrate capabilities (like missile defense), nuclear weapons, and nonnuclear strike forces into a seamless web

employed against targets able to withstand non-nuclear attack (for example, deep underground bunkers or bio-weapons facilities).

Advanced command, control, and intelligence will integrate the triad, facilitating flexible operations. The new strategic triad will rely on adaptive planning to meet emerging threats and contingencies. Emphasis on adaptive planning differs from the traditional way of developing the nuclear war plan—the single integrated operations plan—which was a deliberate process that often took months or even years to generate a finite number of options for consideration by the President as Commander in Chief.

Administration officials suggest that the new triad would allow reductions in operational nuclear forces from current START I levels of approximately 6,000 warheads for each country. The Treaty of Moscow in May 2002 made a reality of these levels when the signatories agreed to reduce strategic warheads to between 1,700 and 2,200 by 2012. Reductions in the U.S. arsenal will result from retiring MX Peacekeeper ICBMs (which began in 2002), removing four Trident submarines from strategic duty, and eliminating the requirement that B-1 bombers have nuclear capabilities. The administration will maintain a response force (sometimes known as a reserve force) of warheads that could be brought back into service. Planners probably have not finalized the size of this force, but in all likelihood it will number in the thousands. Both the Clinton and Bush administrations have maintained that it makes sense to count only warheads that either are deployed or can be available for use in days. By contrast, the response force would become available only after an extended regeneration and redeployment, which could take months or years.

The reduction in warheads will be accompanied by the development of new capabilities. The centerpiece will be missile defense, a multi-layered protection against accidental launches or relatively limited strikes. No longer constrained by treaty, the United States is building on work initiated more than a decade ago. The current program includes boost-phase interceptors that attack ballistic missiles over enemy territory. There is special interest in the airborne laser, a speed-of-light directed energy weapon, and research on sea, air, and space-based boost phase systems to defeat missiles in the highly visible and vulnerable initial stage of flight. The plan enhances the mid-course, ground-based interceptor program with an expanded testbed. Additional support for the advanced Patriot missile will bolster terminal and point defense. This system is intended to protect land forces against cruise and tactical ballistic missile attack. The Pentagon also appears interested in a mobile tactical high-energy laser, which will



DOD (Helene C. Stikkel)

Briefing Nuclear Posture Review.

to assure allies and friends, dissuade potential enemies from mounting military challenges against the United States, deter enemies, and fight and win wars when deterrence fails. The Nuclear Posture Review notes that strike elements:

can provide greater flexibility in the design and conduct of military campaigns to defeat opponents decisively. Non-nuclear strike capabilities may be particularly useful to limit collateral damage and conflict escalation. NPR emphasizes technology as a substitute for nuclear forces that are withdrawn from service. Global real-time command and control and reconnaissance capabilities will take on greater importance in the new strategic triad. Nuclear weapons could be



305th Communication Squadron (Scott H. Spitzer)

Unloading weapon
from C-141.

provide ground forces with a directed energy weapon to counter rockets, cruise missiles, and artillery and mortar munitions.

The new triad highlights profound changes in strategic doctrine. First, it makes clear that deterring an all-out nuclear war with Russia is no longer a feature of war plans. Policymakers believe that to be an extremely remote possibility. Second, the triad embodies an effort to increase the credibility of strategic deterrent threats by increasing available options. The old triad was intended to pose a massive response to nuclear attack, while the reconfigured triad guarantees an appropriate way to respond to other forms of aggression, thereby bolstering deterrence. Third, the new concept sidesteps bureaucratic resistance to reconfiguring longstanding doctrine—the sanctity of the old triad and focus on assuring a massive response under any circumstances. This approach paves the way for further reductions in U.S. strategic nuclear forces.

Proliferation, Counterforce, and War

Although there is little doubt that the United States wants to eliminate nuclear deterrence as the basis for a strategic relationship with Russia, it is clear that the Nuclear Posture Review is not a blueprint for disarmament. But reducing operational

warheads, deploying missile defenses, shifting to adaptive nuclear planning, and developing conventional precision-strike capabilities suggest a new era in strategic thinking and the relationship among nuclear weapons, deterrence, and war. The review identifies new targeting priorities for nuclear weapons: hardened facilities for command centers, underground facilities associated with NBC weapons, and mobile targets, such as NBC-armed missiles. It cites some 1,400 underground sites around the world that require targeting because conventional weapons cannot destroy them. Thus there is a need to develop an earth-penetrating capability to place these targets at risk.

The review calls for greater yield flexibility for both stockpiled weapons and warheads that reduce collateral damage. By identifying new targets and missions for nuclear weapons, it would appear that the United States must design and build arms—a process that was made difficult by the moratorium on testing. Given the unlikelihood that the moratorium would be abandoned under present circumstances, the way to overcome this basic inconsistency in the policies and capabilities advocated by the review is unclear.

Precision-guided weapons are clearly the preferred option for preemptive attacks against WMD infrastructure and delivery systems. Although it is difficult to justify employing nuclear weapons in order to prevent their use by an enemy, the arsenal provides escalation dominance. U.S. nuclear superiority makes doing nothing and being disarmed by a conventional counterforce attack the only rational response available to an enemy.

A range of nuclear options makes it more likely that an enemy with a small WMD arsenal will lose rather than employ NBC capabilities. And using such weapons might generate a nuclear response by the United States, a perception that reduces incentives for initial escalation. The-

missile defenses backstop conventional counterforce attacks by destroying incoming warheads

ater and national missile defenses backstop conventional counterforce attacks by destroying incoming warheads. This is a form of nuclear warfighting and troublingly is not merely hypothetical. It has played out repeatedly in the case of Iraq,

though many observers fail to pay attention to preventive war in counterproliferation strategy.

The message for both state and nonstate actors seeking WMD is unambiguous—America accepts that it cannot prevent proliferation. Instead, it is preparing to target nuclear, biological, and chemical arsenals with conventional and, if necessary, nuclear forces. Preemptive attack has not been ruled out. The President announced at West Point in June 2002 that U.S. security “will require all Americans to be forward-looking and resolute, to be ready for preemptive action when necessary to defend our liberty and to defend our lives.”²

Warfighting Issues

While the Nuclear Posture Review makes interesting reading, its implementation falls on the warfighter. Because of internal inconsistencies, some challenges may take years to resolve. For example, there is a mismatch between force structure and the new missions given to nuclear weapons. The review proposes that the weapons be used to hold at risk hardened underground bunkers containing WMD or command and control facilities. Yet there are no nuclear weapons in the arsenal that are optimized to meet this requirement, although there are plans to modify the B-61 gravity bomb for earth penetration. And if enemies simply decide to dig deeper, the length of time that modified B-61s can hold this target set at risk is uncertain. The force structure must

Launching ICBM from Vandenberg Air Force Base.



U.S. Air Force (Amanda M. Edwards)

be overhauled to meet new targeting needs. This change will require reviewing nuclear programs, retiring old systems, and fielding new weapons.

Conversely, while the Nuclear Posture Review proposed greater reliance on conventional weapons to perform strategic missions, the process of operationalizing this concept is ill defined. Increased reliance on conventional munitions as a substitute for nuclear weapons calls for a new targeting methodology, which will require criteria for targeting. Doctrine must be developed for substituting conventional weapons to strike targets once covered by nuclear weapons. Moreover, varied conventional munitions must be designed, built, and integrated into the force structure.

Another targeting issue flows from the reduction in nuclear force levels. Fewer warheads translate into a reduced number of targets that can be struck by nuclear weapons. Redundancy in coverage has played an important role in counterforce strategy. But making serious reductions in arsenals could force the United States to confront nuclear scarcity: by definition counterforce could become primarily a mission for conventional weapons, while nuclear weapons are held in reserve for countervalue missions. The new threat environment, however, suggests that nuclear weapons might be more in demand, not less—to hold hardened underground facilities at risk.



U.S. Marine Corps (J.M. Gilbert)

M93A1 NBC reconnaissance system.

Conventional counterforce, under such circumstances, could be extremely demanding in terms of force structure, doctrine, and operations.

Although assigning forces to particular targets is challenging, there is a broader mismatch between the nuclear force structure and the international environment. What are the benefits of the D-5 SLBM or Minuteman III against al Qaeda or other transnational/terrorist threats? Would the United States contemplate using the Minuteman III against WMD sites? This imbalance in explosive yield and targets to hold at risk is a major challenge that takes on greater urgency given emerging doctrine, which emphasizes either preemptive strikes or war to check such threats. But developing a new generation of nuclear weapons to match this threat will be difficult as long as the United States honors a moratorium on testing.

There is also a mismatch between calls for a new generation of nuclear weapons and the ability of the nuclear infrastructure to meet that requirement. While the Nuclear Posture Review draws attention to the deterioration of the infrastructure, scientists who designed the weapons are leaving the scene. The source of a new generation of scientists to design weapons to respond to future threats is unclear. And even if scientists are found, it is uncertain how they will design, construct, and certify weapons, particularly low-yield and earth penetrating systems, without resuming nuclear tests.

Another major issue facing nuclear planners is the integration of offensive and defensive components of the strategic deterrent. The Pentagon is entering uncharted waters, and planners will

have to establish a command and control infrastructure for the components of the new triad and determine mechanisms for these command relationships.

The Nuclear Posture Review represents a departure in thinking about deterrence. First, it abandons mutual assured destruction as the basis of the Russian-American strategic relationship and eliminates Russia as the benchmark for sizing nuclear forces. Second, it seeks to substitute conventional for nuclear capabilities as a strategic deterrent; the objective in the past was finding ways to combine conventional and nuclear force structures to function in a mutually supportive way to bolster conventional and nuclear deterrence. Third, the integration of offense and defense to bolster deterrence by denial is a departure, even if mechanisms and organizations to integrate these forces are still on the drawing board.

Despite the critics, the paradox of the review is that while it appears to make nuclear use more likely, it reflects the practice of nonuse that emerged after World War II. Factors other than efficiency or military utility shape policy on weak states with NBC weapons. The United States could have addressed proliferation and long-range delivery systems as a simple threat. It could have stated that any use of WMD, conventional strike, or unconventional attack would be met by a massive use of nuclear weapons. Instead, planners are searching for options to deter and defeat WMD-armed enemies with far less force than an all-out nuclear attack.

The problems of implementing the Nuclear Posture Review and operationalizing concepts in that document will eventually reach warfighters. This is a sobering challenge that will require decades to meet. But by destroying the paradigm that informed nuclear strategy in the Cold War, the review provides an opportunity to develop nuclear strategy for the 21st century. **JFQ**

NOTES

¹ Excerpts from the classified version of the report were published in *The New York Times* and *Los Angeles Times*. Most of the text is posted at <http://globalsecurity.org/wmd/library/policy/dod/npr.htm>. This cite is taken from the executive summary released by the Department of Defense. Other quotes come from the global security Web site, although the authors have no way of confirming their authenticity.

² Remarks by the President at the U.S. Military Academy on June 1, 2002 (Washington: The White House, June 1, 2002).