

Nuclear-Armed Adversaries and the Joint Commander

Colonel C. Robert Kehler, U.S. Air Force

THE END OF THE COLD WAR CHANGED the nuclear challenge facing the United States: the predominant threat has become a small number of nuclear weapons in the hands of regional belligerents.¹ Although such adversaries cannot directly threaten U.S. national survival, they could seriously threaten American interests and allies, undermine regional stability, and greatly complicate U.S. military action if conflict were to erupt. High-priority initiatives are underway to prevent the spread of nuclear weapons.² Nevertheless, several potential opponents remain intent on acquiring a nuclear capability.³ Recognizing the intensity with which some of these states are seeking nuclear weapons, the president has directed the Department of Defense to be prepared to "deter, prevent, and defend against" the use of regional nuclear weapons if nonproliferation efforts fail.⁴

Unlike conventional conflicts, of which U.S. military commanders have direct experience and for which the armed forces have planned and trained, operations against a regional adversary either having or presumed to have nuclear weapons would present problems that have never been directly faced and are not yet fully understood.⁵ At the operational level, these problems can be grouped into three general areas: initial campaign planning, development and selection of courses of action, and combat doctrine and operations.

The destructive potential and extraordinary political aspect of nuclear weapons make them unique among weapons of mass destruction. Therefore it is critical that the joint commander view a prospective regional contingency potentially involving nuclear weapons as far more than a standard planning

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problem. Joint and service warfare doctrines and the joint operation planning process all provide important guidelines, yet these sources (some of which still have a Cold War flavor) are general in nature and insufficient to ensure success. Only by contemplating, debating, and exercising for regional nuclear contingencies will joint commanders begin to appreciate the nature of this threat.

Campaign Planning Complications

Nuclear weapons will complicate a regional planning and operating environment already filled with formidable problems. Civil-military relations, coalition and alliance concerns, the information warfare environment, and the possible reactions of other regional nuclear powers are the foremost issues that commanders will confront as they begin the planning process.⁶

Civil-Military Relations. Political considerations of course will shape any American decision about whether and how to use nuclear weapons.⁷ Accordingly, civil-military relations are likely to be far different in this setting than the U.S. military has come to expect. Although U.S. commanders always look for civilian involvement and direction, the possibility of a regional nuclear exchange will cause far more direct political involvement in the details of the planning process than has been seen since the end of the Vietnam War, certainly far more than in Desert Storm.⁸

The joint commander can also expect much greater political direction in such matters as operational objectives, target selection, constraints, rules of engagement, preemption, retaliation, collateral damage, and also lesser issues that in a non-nuclear environment are routinely left to theater authorities.⁹ Joint doctrine acknowledges this possibility and cautions that commanders "must fully appreciate the numerous and often complex factors that influence the U.S. nuclear planning process, and would likely shape U.S. decisions on the possible use of nuclear weapons."¹⁰

As a closely related matter, the extreme consequences of nuclear use will also cause the decision-making process to slow considerably as the National Command Authority (i.e., the president and the Secretary of Defense collectively) seeks to retain tight political control of the conflict. Nuclear release procedures aside, certain decisions that would in a conventional contingency normally be made by the joint commander are likely to be reserved to higher levels; transition to successive campaign phases may be delayed until approval is granted by higher authority; restriking certain targets may not be allowed without permission; and many other matters may be scrutinized by senior officials. Joint commanders should also expect greatly increased requests for information, progress reports, updates, and assessments. In the final analysis, commanders will have to adjust

their own planning and decision-making processes to accommodate these requirements.

Coalition and Alliance Concerns. One reason an adversary would have nuclear weapons at all is to prevent the formation of an opposing coalition or to fracture it; the joint commander must carefully consider the ultimate operational impact of these political and strategic issues. Potential coalition members and alliance partners alike will be influenced by the possibility of nuclear use, which is also likely to make United Nations mandates far harder to obtain. The U.S. may choose to intervene unilaterally if nations who view nuclear use as a greater danger than succumbing to regional aggression refuse to enter the conflict.

Each scenario, then, will produce its own pressures on potential coalition members. The joint commander must be prepared for reluctance to join a coalition and for conditional commitment from those who do. The importance of the interests at stake, the opponent's specific nuclear capabilities, and the strength of international feelings against that adversary are among the factors that will bear upon coalition efforts.¹¹

Formal alliance partners are no more immune than ad hoc coalition members from the influence of nuclear weapons. The joint commander need only recall Cold War debates to anticipate the likely problems: "Countless NATO policy debates were sparked by the threat of Soviet nuclear use in Western Europe and fueled by the perception that alliance members on the opposite sides of the Atlantic faced markedly different levels of nuclear risk. Similar concerns and dynamics might have come into play during the Gulf War if the United States and its allies had faced a nuclear-armed Iraq with missiles capable of striking neighboring states and Europe but not the continental United States."¹²

Coalition and alliance issues will have a practical as well as a symbolic effect on campaign planning and execution. For example, U.S. power projection will be critical, but it may be far more difficult than in a conventional scenario to obtain basing rights, overflight authorization, sealift (some countries may not allow their merchant ships to transport military materiel to the theater), logistical and financial support, and of course force and troop commitments. The last-named factor could particularly stress U.S. forces as they become fewer.

Joint commanders must attentively consider the concerns of those who do commit themselves against the regional adversary.¹³ To allay them, the commander may have to defend coalition or allied partners against nuclear attack, even when the resources required would, from an operational viewpoint, be better used elsewhere. In this connection, joint doctrine recognizes that it may be essential to establish an effective attack warning system that can "transcend communications interoperability and language barriers in real time."¹⁴

Public Opinion, the Media, and Information Warfare. The possibility of nuclear weapon use will ignite intense political debate and cause extreme public concern in the democratic nations. Reflecting that debate and concern, the world press will subject both commanders and their forces to close scrutiny. The situation will certainly arouse the traditional anti-nuclear and anti-war groups, who have been relatively quiet since the end of the Cold War. Many of these groups can marshal prominent public personalities who can virtually guarantee wide press coverage. Activists will closely monitor and report on the movement of military forces, both in the United States and in the theater, and extremists may attempt to interfere with the movement of critical units (particularly nuclear-capable forces) and supplies. Strong anti-war sentiments are likely to be aroused in many nations, causing coalition troops to sense divided support from home.

This international background of extreme concern and divisive debate will prove attractive for information warfare by astute adversaries. Given that the opponent probably means to take advantage of his nuclear capability to deter or limit any U.S. or coalition response, the joint commander should expect him to do everything possible to create the impression that the risks of intervention far outweigh prospective gains.¹⁵

Other States with Weapons of Mass Destruction. Although a regional nuclear contingency poses little threat of escalation to a global exchange, it is not clear how declared or de facto nuclear states might react to U.S. intervention against a nuclear-capable state. Even less clear is how other nations that possess chemical or biological weapons will react if nuclear weapons are employed in their region. Joint commanders must also address the possibility of inadvertent or serendipitous nuclear "use" (i.e., the accidental or ill-advised destruction of nuclear facilities resulting in the release of radiation).

The joint commander must carefully consider the effect that overall campaign design and nuclear weapon use by one or both sides could have on other regional nuclear-capable powers. Some may threaten involvement, conventional or nuclear, if subjected even indirectly to weapon effects (e.g., radiation or electromagnetic pulse); others may react only if directly attacked; some may see the conflict as justification for completing their own nuclear weapons programs; and others may ally themselves with the adversary (especially if the U.S. itself uses nuclear weapons). All will express alarm at the possibility of nuclear use near their territory, particularly since nuclear weapons effects harm allies and potential adversaries alike, and well beyond the theater of operations. Public and diplomatic campaigns against any use, threat of use, or even preparation for use of nuclear weapons will develop quickly and build rapidly.

Developing and Selecting Courses of Action

Regardless of whether the mission is to intervene in a conventional conflict where the possibility of nuclear use exists (a new Desert Storm against a nuclear-armed Iraq) or to eliminate a regional nuclear threat (preemptive attack against an adversary's nuclear capability), choosing a course of action, a COA, will be difficult. Armed Forces Staff College Publication 1 provides insight on this issue: "Because the use of nuclear weapons . . . would be so influential, there is a temptation to make one of two tacit assumptions during planning: nuclear weapons will not be used at all or nuclear weapons can be quickly employed by friendly forces if the need arises. Either assumption can be dangerous. The joint planner must work with a realistic appreciation of both the possibility of the employment of nuclear weapons and the CINC's lack of effective control over the decision for their initial use."¹⁶

To begin with, nuclear weapons will present the commander with a quantum increase in risk. Since "ends, ways, means, and risks are all closely interrelated, a great increase in risk wrought by the introduction of nuclear weapons into the equation requires a reassessment of ends, ways, and means."¹⁷ Commanders (who address the "ends-ways-means-risks" balance at this stage) may propose either to restrict or expand ways and means so as to accomplish their assigned objectives with the lowest risk. These proposals will be subjected to analysis at higher levels of authority, which may result in different limitations than had been envisioned.

A second inherent difficulty involves intelligence assessments. Accurate intelligence of adversary capability and intent is vital; however, the joint commander must view estimates of intent in light of the grave consequences of error. "The massive penalty for incorrectly judging the adversary's intentions would require a worst case assumption even if intelligence information suggested the adversary would not employ nuclear weapons."¹⁸

COA Development. Joint commanders must ensure that all issues pertinent to the particular scenario are thoroughly considered at this stage and that, as far as possible, agreement is reached at all appropriate levels prior to the campaign. In general, regional nuclear planning comprises two theoretical possibilities: where use by the U.S. is planned, and in which nuclear use by either side is possible but not intended.¹⁹ The second category, the more likely planning case, will necessitate creating a basic conventional plan, with alternatives for a nuclear contingency.²⁰ The possibility of nuclear use will affect COA development in many ways. Objectives, design, and execution may all be altered (either limited or expanded) in an attempt to deter the enemy from using nuclear weapons or to control escalation if he does. The joint commander must expect that political

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requirements will drive the planning process but that these may prove extremely difficult to determine in advance.

Escalation control will be a key objective when hostilities commence, and it may result in the imposition of constraints. For example, permission to strike certain classes of targets—like headquarters, command and control nodes, communications systems, early warning sites, nuclear forces, nuclear production and storage locations, airfields with nuclear-capable forces, and industrial facilities—may be withheld because of their escalatory potential. On the other hand, some such target types may be permissible, depending on the degree of escalation control the commander believes realistic. These assessments are imprecise and at best are likely to be based on problematic assumptions.

Some of the most vexing issues will surround the question of whether a course of action is to be employed before or after enemy nuclear use. Planners must design COAs intended for implementation *before* nuclear use in such a way that they do not trigger that very thing. For courses planned in the event of nuclear attacks, damage limitation and the choice between conventional or nuclear retaliation are the key concerns.

Of course, the complex issue of employment of nuclear weapons by the United States itself will present the biggest challenge to the entire chain of command. The ultimate decision by the National Command Authority will be based on a myriad of strategic factors (many of which lie beyond the scope of the immediate military situation), and accordingly the commander should be prepared for a range of possible orders or responses to recommendations: the use of nuclear weapons may be denied, or approved, or approved with specific restrictions—or *directed*, perhaps without, or even against, the commander's recommendation. For their part, joint commanders should form recommendations from the standpoint of whether or not conventional weapons are adequate to achieve the military objectives and, if the adversary employs nuclear weapons, to limit damage and prevent further nuclear use.

Possible COAs. Unclassified sources suggest a number of possible approaches for dealing with a nuclear-armed regional opponent.²¹ The most plausible fall in six categories.²²

Deter the adversary from using nuclear weapons. In a regional contingency involving a nuclear adversary, deterrence is both the first priority and an objective that will continue throughout the conflict.²³ Several options are available: forward-basing or forward-deploying nuclear forces (bombers, dual-capable aircraft, attack submarines); increasing strategic nuclear readiness; increasing the frequency of reconnaissance over enemy nuclear facilities; threatening with conventional attack assets the enemy values most; and deploying defensive forces—all in conjunction with strong warnings of the consequences if the

enemy uses nuclear weapons.²⁴ The purpose of taking such steps is to signal U.S. capability and resolve. However, credibility is a major question that the joint commander must address; regional nuclear deterrence may not be the same as in the Cold War. As was true then, however, deterrent signals must be "sent, received, understood, and considered to be of sufficient magnitude by the challenger to be effective."²⁵ Some argue that the U.S. now has advantages enhancing its credibility in a regional context: it no longer needs to threaten to use nuclear weapons; its resolve may be very strong in regions where vital national interests are at stake; and it has tremendous conventional and nuclear superiority.²⁶ Others reply that "signalling" may be "particularly difficult across cultural lines or between adversaries who lack a shared frame of reference."²⁷ Ultimately, deterrent effectiveness is directly related to the characteristics of the opponent and specifics of the scenario (i.e., the nature of the crisis, the adversary's motivations and resolve, and the relative military balance).²⁸ A combination of offensive forces (nuclear and conventional) and defensive actions may be the most credible way to deter a nuclear-armed adversary throughout the conflict.

Destroy enemy nuclear weapons before they are launched. This is an extremely high-risk option, but it has a high payoff if successful. The probability of success will depend on the size, sophistication, and deployment of the adversary's nuclear assets. As evidenced by the low effectiveness of coalition air forces against Iraqi Scuds in 1991, preemption may not completely eliminate the enemy's capability.²⁹ (International inspection teams in Iraq after the war announced that most of the nation's nuclear facilities had been neither discovered nor targeted; the success of both the hunt for Scuds and the Patriot defenses against them are still being debated.)³⁰ Nuclear-capable potential aggressors surely view Desert Storm as proof of the need to hide and disperse their arsenals. Not only may the complete elimination of the nuclear capability be impossible, but an unsuccessful attempt itself—confronting the opponent with a "use or lose" decision—could trigger nuclear use or increase the threat against friendly countries. The commander may consider it imprudent to place the adversary in that position.

Protect U.S. forces and other potential targets. Defenses would enhance deterrence by creating uncertainty in the mind of the enemy as to whether nuclear use would be effective. Active defenses (e.g., theater early warning, ballistic missile intercept systems, air defenses) and passive measures (hardening against electromagnetic pulse, shelters, dispersal, civil defense) are both components of this COA. Active defenses are potentially the more effective, but they cannot be perfect, and unless complemented by a nuclear offensive element they may seem insufficiently threatening to deter. Similarly, active air and missile defenses will probably not prevent the delivery by unusual means of a small number of weapons or the detonation of "stay behind" weapons left in areas overrun by friendly forces.³¹ The joint commander must carefully gauge the entire range of

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plausible adversary capabilities and the likely deterrent effect of defenses combined with purely conventional offensive capability.

Defeat the adversary's military conventionally. This COA is essentially the Desert Storm model—high-intensity conventional warfare against the full range of enemy military power.³² Because this option could elicit a nuclear response, target selection is particularly critical; commanders must clearly signal the intent to leave intact the adversary's nuclear capability—unless, that is, they have high confidence of being able to preempt it. If the adversary employs nuclear weapons in the face of conventional attack, the joint commander will have to assess the effectiveness of the nuclear strike and recommend whether or not the conventional assault should be continued.

Limit further damage after the enemy has used nuclear weapons. The nature and scope of the response are the key issues here. Damage limitation may involve either conventional or nuclear weapons employment against the adversary's nuclear capability, coupled with active and passive defense. It may be hard to achieve with high confidence for the same reason that preemption is a problem: the difficulty of finding and destroying (all) the right targets.

Punish the adversary for nuclear use. This COA envisions retaliatory attack upon the adversary's infrastructure, leadership, or urban-industrial centers. Conventional or nuclear weapons, or a combination, could be used.

Clearly, none of these courses of action is without drawbacks, so no universal prescription can be offered in advance to joint commanders. The specific situation will have to be assessed—and continually reassessed—by all levels in the chain of command in order to select the optimum COA for the enemy's estimated situation and the objectives of U.S. or coalition leaders.

Post-war Considerations. The joint commander must address two primary issues when contemplating the post-war phase of the conflict: termination difficulties, and mitigating nuclear effects.

Joint doctrine addresses the potential problems of terminating a nuclear conflict: "Depending on the scope and intensity of a nuclear war, how and under what conditions it is brought to conclusion may be very different from previous wars."³³ Because there is but one historical precedent, and because it would be impossible to return to the *status quo ante*, a great deal of uncertainty surrounds this issue. As with every other aspect of a nuclear contingency, it is highly likely that military considerations will not dominate the concluding phase. If nuclear weapons have not been used, the end may come before the adversary's nuclear capabilities are even damaged; if they have, world opinion may force termination before the joint commander's military objectives are achieved. It is also possible that the passions unleashed as a result of nuclear use will create pressure to subdue the adversary completely. Joint commanders must clearly understand the desired

political end-condition prior to starting the campaign and thereafter participate in the debate that will certainly arise. They should foresee that termination decisions will require detailed, accurate, and frequently updated information on military and civil conditions in the theater of operations, and plan to provide such information notwithstanding the likely degree of chaos following nuclear weapons use.

Mitigating the effects of a regional nuclear conflict will be very difficult. The joint commander need only recall the clean-up required after the Chernobyl accident or in Kuwait following the Gulf war to begin to see the kinds of concerns that must be addressed if nuclear weapons are employed—mass casualties, environmental and ecological damage, and so forth.

Combat Doctrine and Operations

The possibility of nuclear employment in a regional conflict will affect “deployment, the scheme of maneuver, the tasks assigned to subordinate commanders, the logistics support concept, command, control, and communications arrangements—in short, the entire concept of operations.”³⁴ Although many of these factors are obvious and joint doctrine broadly addresses most of them, there is little if any detailed information available as to how they might operate and, most importantly, what their effect would be on the overall conduct of the campaign. The key question is: Will the possibility of nuclear use substantially affect the way in which the U.S. prepares to conduct regional contingencies, and if so, how? Changes are likely in three fundamental arenas.

The first comprises strategic deployment and logistics. “Overseas projection capability is a critical element of [American] post-Cold War military strategy.”³⁵ Today’s concept of operations for a regional contingency is based on the premise that U.S. forces will deploy to a theater using amphibious ships, prepositioned vessels, and massive airlift, and establish a reliable flow of logistic support once there. U.S. forces rely heavily on massive external supply, especially in this era of reduced forward basing. However, major logistical concentrations present lucrative targets for nuclear attack; therefore, the joint commander must consider how forces will operate if these assets must be dispersed, if supplies must be distributed piecemeal to widely separated bases, or if forces arrive, for such reasons, far more slowly than currently planned.

A second and related point is force posture. Dispersal of combat power is essential in a possible nuclear environment, yet it can weaken capability and flexibility. A nuclear environment could negate American force projection advantages if key assets (e.g., tactical air power, aircraft carriers, or amphibious ships) must remain out of range. Similarly, the joint commander may find it difficult to concentrate forces as early as necessary to halt an advance, or to

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achieve at all a concentration of the scale and density of Desert Shield. Further, anything that hinders force projection or concentration has implications for deterrence.

The posture of one's own theater nuclear force is a specific area of concern. Because strategic bombers are no longer on nuclear alert and only in Europe do theater nuclear weapons remain forward-deployed with dual-capable aircraft, to assign nuclear weapons to forward forces entering a regional contingency may prove problematic.³⁶ Some dual-capable aircraft, strategic bombers, tankers, and attack submarines, once loaded for the nuclear strike mission, will be unavailable for conventional uses throughout the contingency, adding to the burden on other arms at a time when the overall pool of available forces is declining and coalition partners are likely to be few.

A third concern is defense, active and passive. Depending on the nature of the threat, the joint commander may need to devote substantial resources to active defense, which reduces the ability to employ them where they are needed to influence conventional operations early in a conflict; Air Force and naval aviation assets, for example, might have to be assigned to air or fleet defense rather than offensive missions. Protecting one's own headquarters facilities and command, control, and communications assets will be of particular concern to the joint commander, since their disruption or destruction could have a devastating impact. Active defense assets may need to be permanently provided as well to friendly nations in order to satisfy coalition concerns. Passive defensive measures will also "inhibit the effectiveness of offensive forces by reducing flexibility, increasing weight, and requiring specialized training."³⁷ Finally, the overall operational tempo can also be slowed by defensive measures.

Since the U.S. military is charged with being prepared to deal with a nuclear-armed regional adversary, joint commanders must carefully consider the implications of such an eventuality on campaign planning and operations. The possibility of nuclear use in a regional contingency will complicate initial planning, selection of a course of action, and combat operations in both predictable and unexpected ways. Although the operational-level implications reviewed here are not new to U.S. commanders (virtually all are present in some form in every contingency), the tremendous military and political consequences of nuclear use magnify their importance, with unprecedented effects upon the campaign itself. The U.S. military successfully faced a nuclear adversary during the Cold War, yet the strategic and operational planning precepts guiding that confrontation took many years to evolve. There has been much analytic study of the strategic aspects of the regional nuclear threat (proliferation, deterrence, political strategies, etc.), but little detailed attention has yet been paid to the campaign level. While from the operational viewpoint none of the problems

caused by the possibility of nuclear use appear insurmountable, only thorough and detailed planning and exercising will allow the joint commander to understand adequately and address comprehensively regional nuclear contingencies. Now is the time to proceed; national requirements and international deterrence credibility demand it.

Notes

1. The author is not suggesting that the residual Cold War nuclear forces of the former Soviet Union pose no threat to U.S. security. Certainly the U.S. must closely monitor remaining Cold War nuclear forces and maintain a strong (although smaller) strategic deterrent force for the foreseeable future.

Further, the author does not imply by use of the future tense in this article a certainty that all of this will come to pass. Although the author believes the issues raised warrant serious attention now, the future tense (rather than the future conditional) was employed solely for clarity.

2. See U.S. President, *A National Security Strategy of Engagement and Enlargement* (Washington: February 1995), pp. 13–4; and Les Aspin, "The Defense Counterproliferation Initiative Created," *Defense News*, 7 December 1993, pp. 1–3. Similarly, this is why the United States pressed for and achieved extension of the Nuclear Non-Proliferation Treaty.

3. In 1993 the Congressional Arms Control and Foreign Policy Caucus categorized potential Third World proliferators as follows: "de facto nuclear weapons states" (i.e., who own weapons covertly—India, Israel, Pakistan, South Africa); "threshold nuclear weapons states" (on the verge of acquiring them—North Korea, Iran, Iraq, Brazil, Argentina); and "other countries of concern" (Syria, Libya, Algeria, South Korea). According to the Caucus, North Korea and Iran are aggressively pursuing nuclear capability. Iraq's interest in nuclear weapons is well documented in many sources. Other so-called "threshold" states, like Brazil and Argentina, have rolled back their programs, and South Africa claims to have dismantled its weapons. See Arms Control and Foreign Policy Caucus, *The Neglected Arms Race: Weapons Proliferation in the 1990s* (Washington: Arms Control and Foreign Policy Caucus, U.S. Congress, April 1993), pp. 8–11; and Jerome H. Kahan, *Nuclear Threats from Small States* (Carlisle Barracks, Penna.: Strategic Studies Institute, U.S. Army War College, 13 June 1994), pp. 2–3.

4. *A National Security Strategy*, p. 14.

5. Years of Cold War nuclear planning (which emphasized nuclear weapons in a strategic, not a theater, setting) may not be directly applicable to the regional contingency environment. Key differences exist in the strategic environment and in the nature (including motivations) and capability of the potential adversary. In 1994, the Secretary of Defense stated that nuclear-capable regional states may have different "doctrines, histories, organizations, command and control systems, and purposes for their unconventional military forces" than did the Soviets. See for example U.S. Department of Defense, *Annual Report to the President and the Congress* (Washington: 1994), p. 35; and Michele A. Flournoy, "Implications for U.S. Military Strategy," Robert D. Blackwill and Albert Carnesale, eds., *New Nuclear Nations: Consequences for U.S. Policy* (New York: Council on Foreign Relations Press, 1993), pp. 140–1.

6. Two brief explanations are necessary. First, the matter of nuclear first-use by the U.S. arises; it, however, is a contentious issue, beyond the scope of this article. Second, as used here, "information warfare" refers to an adversary's use of communications media (e.g., radio, television, computer nets, etc.) to manipulate public opinion and thereby influence events in his favor.

7. U.S. Joint Chiefs of Staff, *Doctrine for Joint Nuclear Operations*, Joint Publication [Pub] 3–12, 29 April 1993, p. II-1.

8. General Norman Schwarzkopf has described General Colin Powell as virtually his "sole point of contact within the Administration" during the Gulf war, though the decision process was "tortuous and was sometimes filled with emotional strain and debate." See H. Norman Schwarzkopf with Peter Petre, *General H. Norman Schwarzkopf, the Autobiography: It Doesn't Take a Hero* (New York: Bantam Books, 1992), pp. xi, 325. Additionally, most accounts of the decision process by the senior military officers involved in the Gulf war praise the fact that the politicians gave broad guidance and allowed the military to take care of the details. For additional information, see Michael R. Gordon and Bernard E. Trainor, *The Generals' War: The Inside Story of the Conflict in the Gulf* (Boston: Little, Brown, 1995), pp. vii–viii, x, 326, 468–9.

9. Kahan, p. 12.

10. Joint Pub 3–12, p. II-1.

11. Flournoy, p. 156.

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12. Ibid., p. 155.
13. U.S. Joint Chiefs of Staff, *Joint Doctrine for Nuclear, Biological, and Chemical (NBC) Defense*, Joint Publication [Pub] 3-11, p. III-11.
14. Ibid.
15. Thomas G. Mahnken, "America's Next War," *The Washington Quarterly*, Summer 1993, p. 177.
16. Armed Forces Staff College, *The Joint Staff Officer's Guide 1993*, AFSC Publication [Pub] 1, p. 6-52. "CINC" refers to any of the unified commanders in chief (e.g., Commander in Chief, U.S. Atlantic Command), who, under the U.S. Unified Command Plan, actually employ forces in operations and in combat.
17. Memorandum, Professor Roger W. Barnett, Senior Secretary of the Navy Research Fellow, Naval War College, Newport, R.I., to the author, 4 May 1995.
18. Ian B. Bryan, "U.S. Policy and Doctrine Regarding Nuclear Force in Regional Contingencies: Tactical Expediency Could Threaten Strategic Aims," Technical Report (Alexandria, Va.: Defense Technical Information Center, 20 July 1994), p. 43.
19. AFSC Pub 1, pp. 6-52, 6-53.
20. Ibid., p. 6-53.
21. See Flournoy, pp. 140-57; Kahan, pp. 13-8; Kenneth Watman and Dean Wilkening, *Nuclear Deterrence in a Regional Conflict* (Santa Monica, Calif.: RAND Corp., 1995), pp. 53-62; and Philip Zelickow, "Offensive Military Options," Blackwill and Carnesale, eds., pp. 162-95.
22. COAs in this section are broadly based on the military options contained in Kahan, pp. 13-8.
23. Joint Pub 3-12, p. I-3.
24. Kahan, p. 14.
25. Watman and Wilkening, p. 12.
26. See Watman and Wilkening, p. x; and Richard D. Hooker, Jr., and Ricky L. Waddell, "The Future of Regional Deterrence," *Naval War College Review*, Summer 1992, pp. 78-88.
27. Flournoy, p. 144.
28. Watman and Wilkening, p. 8; and Flournoy, pp. 145-6.
29. Bryan, p. 41.
30. See Martin van Creveld, *Nuclear Proliferation and the Future of Conflict* (New York: The Free Press, 1993), p. 117; and Lewis A. Dunn, "New Nuclear Threats to U.S. Security," Blackwill and Carnesale, eds., p. 23.
31. For a thought-provoking scenario involving "stay behind" weapons, see Robert D. Blackwill and Albert Carnesale, "Introduction: Understanding the Problem," Blackwill and Carnesale, eds., pp. 3-19.
32. The distinction between military and non-military targets is becoming increasingly blurred. As adversaries use deception and camouflage to mask the purpose and scope of nuclear programs, and as militaries around the world increasingly exploit traditionally "civilian" communications capabilities, U.S. intelligence will be hard pressed clearly to identify military targets. During Desert Storm, where precautions were taken to limit civilian casualties and collateral damage, some targets (e.g., communications facilities, transportation nodes, power grids, etc.) were not exclusively military. See Gordon and Trainor, p. 474.
33. Joint Pub 3-12, p. I-6.
34. AFSC Pub 1, pp. 6-52, 6-53.
35. Gary H. Mears and Ted Kim, "Logistics: The Way Ahead," *Joint Force Quarterly*, Spring 1994, p. 40.
36. Problems may range from obtaining a decision to load nuclear weapons (a matter for which timing may be a crucial signalling issue) to reestablishing the logistics, security, and handling support network for tactical nuclear systems that have been removed from operational forces.
37. Kahan, pp. 18-9.

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Our Cover: Ian Marshall's watercolor "USS *Lehigh* and USS *Sangamon* on the James River, Virginia, 1863" pictures two ironclads in a littoral role analogous to that performed the same year by other ironclads in the harbor of Charleston, South Carolina. See Robert Schneller's "A Littoral Frustration," beginning on page 38. For a notice on the artist's work, see p. 37.

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