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surance is a top objective. In dealing with potential adversaries, dissuasion is a top objective.

As the United States thinks about how many of what types of strategic strike forces to acquire, it must bear in mind the different requirements of these different objectives. The requirements for deterrence, defense and defeat are the focus of the remainder of this study. Here we would like to offer a few observations about *assurance* and *dissuasion.*

Both the Quadrennial Defense Review (QDR) and the Nuclear Posture Review (NPR) list *assurance* as the first in the series of U.S. objectives. This top priority underscores the role friends and allies play in U.S. security strategy the risks the nation faces in an era of heightened weapons of mass destruction (WMD) proliferation. In the Cold War, assurance reduced essentially to the issue of extended deterrence—did the United States have the means to credibly extend the nuclear umbrella to its friends and allies and to safeguard their interests from the Soviet threat? In the post-cold war era, extended deterrence remains an important issue, as new and different threats emerge.

But assurance requires much more than credible extended deterrence. It requires also that U.S. friends and allies believe that the security relationship with the United States serves their long-term interests by promoting their security. Many if not most of these allies and friends have the ability from a purely technical perspective to develop nuclear weapons of their own (though their ready access to the necessary fissile materials is significantly constrained). Assuring U.S. allies in Europe and Asia that they need not develop nuclear arsenals of their own in anticipation of deterioration in their security environment remains an important U.S. objective. From the perspective of the strategic strike question of this study, it requires also that U.S. strike systems have the flexibility to protect those friends and allies.

Dissuasion focuses principally on potential adversaries. In particular, the United States seeks defenses to dissuade major powers from seeking peer military status. Encouraging Russia to continue down the path of partnership with the United States requires dissuasion to reinforce the perception in Moscow that there can be no benefit in seeking to return to a peer competitive military relationship with the United States. Likewise, encouraging China to deepen its cooperation with the international community and to pursue its program of military modernization without upsetting regional or global stability requires an element of dissuasion. From the perspective of strategic strike, dissuasion derives from the numbers of deployed and deployable weapon systems and also from an infrastructure capable of quickly producing new systems that can defeat any capability the adversary may choose to field. While a general reputation for producing greatly superior and innovative military capabilities can also dissuade the competition, the need to dissuade seems unlikely to drive the particular technical details of new systems.

In sum, assurance requires flexibility in strategic systems, and dissuasion requires the ability to out-pace a potential competitor in order to prevent or preclude some future advantage they may seek. But the primary technical requirements of future strategic strike derive from the objectives of deterrence and defeat—the focus of the following analysis.

to better estimate how they will act in the future. Our forces need to be flexible enough so that they will not be badly degraded by the changes that adversaries institute as a result of our activities.

2.3 THE FUTURE SECURITY ENVIRONMENT

The future security environment confronting the United States and its allies provides the overall context for identifying and assessing needed strategic strike capabilities. Contrasted with the more static Cold War security environment, the future security environment is considerably more fluid and complex. Three dimensions of the future strategic environment stand out: near-term U.S. objectives, medium term uncertainties, and longer-term uncertainties.

2.3.1 *Current U.S. Objectives*

Current U.S. objectives provide a starting point for defining strategic strike requirements. Since the terrorist attacks of 11 September 2001, defeating the terrorist threat to American life has become the top defense priority. The United States has applied military and paramilitary capabilities to remove the Taliban regime in Afghanistan, to disrupt ongoing terrorist attacks, and to achieve other ends. The war on terrorism, moreover, is likely to be prolonged, quite possibly measured in decades. It is likely to be characterized by a full spectrum of military actions, from tailored strikes against emerging terrorist targets to full-scale military operations against supporters of terrorism.

The United States today is also seeking to roll back and eliminate the threat posed by those rogue countries that possess or nearly possess nuclear, biological, or chemical weapons and the means to deliver them (from ballistic missiles to unconventional operations). These countries (and yet others that may emerge if proliferation cannot be checked) present a direct threat to the United States and its friends and allies and an indirect threat, in that terrorists or sub-state groups could possibly access WMD through one of these rogue countries.

U.S. policy also seeks to consolidate cooperation among the major powers to an unprecedented degree. A primary focus here is on deepening and strengthening the non-adversarial relationship with Russia. The aim is to replace Cold War-style military confrontation with new patterns of political, economic, and even military partnership in order to deal with 21st century security challenges and thus to create a more peaceful global environment. Though tensions over Taiwan linger beneath the surface, the United States also seeks to strengthen cooperation with a China that is still looking to define its future internal make-up and external role. Strengthening cooperation with other great powers, from the countries of the "new Europe" to more traditional allies in Europe and Asia, also is important, not least of all to help us prevail in the war on terrorism.

2.3.2 *Medium-Term Uncertainties*

Whether or not—or the extent to which—the United States is successful in pursuing these near-term objectives defines the critical medium-term uncertainties of the future security environment.

One such medium-term uncertainty concerns the war on terrorism. Over the next 10 to 20 years, will the type of "spectacular terrorism" characterized by the 11

September attacks gradually become a less dominant feature of the international security environment, or will today's radical Islamic terrorism be transformed by increasing access to WMD? Closely related to these questions is the question of whether the underlying social, political, and economic problems of many Islamic countries will provide the root for a transnational consolidation of radical Islam in a new multi-state movement. Or will a new sense of danger in many "weak societies" gradually lead to the type of internal political-economic-social change needed to reduce dramatically the recruitment pool of future terrorists?

Perhaps equally important, the scope and pace of WMD proliferation comprises a related medium-term uncertainty. Success in rolling back today's proliferation challenges would go far to lessen the dangers of more widespread proliferation, but failure would make it considerably more difficult to contain future proliferation pressures. A mix of the inability to roll back today's proliferators, the sale of WMD technology and materials, regional instabilities, and internal factors all could lead to runaway proliferation in the years ahead. Of particular importance in shaping these future proliferation outcomes may be whether nuclear, biological, and chemical (NBC) weapons are used again, by whom, and with what consequences. Successful use in pursuit of aggressive ambitions by a regional rogue, a use of nuclear weapons by the United States that was widely perceived to be illegitimate and disproportionate, or even a U.S. unwillingness to consider the use of nuclear weapons when such weapons might be the only way to prevent an adversary from overwhelming an ally could drive proliferation as well. At the least, the issue of NBC use comprises a key, if uncertain, factor.

The prospects for major power partnership and consolidation of cooperation also are a medium-term uncertainty. In part, the outcome depends on factors outside of U.S. influence, let alone control. This is particularly so with the great transitions now underway internally in Russia and China. But how effective will be today's strategy of dissuasion in convincing a China or a Russia not to compete militarily with the United States? A key here may be whether dissuasion is accompanied by sufficient measures to reassure such potential major power adversaries that the United States is not seeking to dominate them but is prepared to work cooperatively with others—if others are prepared to cooperate in return. Careful statesmanship will be an important adjunct to military preparations.

Contrasted with these medium-term uncertainties, the re-emergence of a peer adversary by 2030 appears highly unlikely. No other country has the economic and technical foundation to develop military capabilities fully comparable to the United States.

2.3.3 *Longer-Term Uncertainties*

Longer-term uncertainties also exist in the future international security environment. Most basically, if the medium-term uncertainties are resolved favorably for U.S. security interests, the longer-term security environment could well be relatively benign. Low-level internal violence, limited regional military conflicts, and internal instability all could still characterize international relations. Indeed, there could be considerably more effective cooperation among the great powers in dealing with underlying global security challenges. By contrast, if the medium-term uncertainties develop unfavorably, international politics could be considerably more dangerous and conflict-prone. Rather than a more orderly process, widespread proliferation, persistent WMD terror-

Asymmetric Conflict is a
US problem - ~~more than~~
not a Br one.

ism, and clashes among both small and great powers could arise. Not least, in this future world, use of WMD could no longer be an exception.

In the above environment, the United States still might not confront a peer competitor. Fundamental economic, political, energy, and demographic disparities could leave the United States out ahead of its adversaries. But a combination of a U.S. decline and unexpected growth on the part of another country also cannot be completely ruled out. Thus, still another longer-term uncertainty is the possible emergence of a true peer adversary.

The future long-term international security environment, however, will not spring forth in an instant. Rather, as time passes and the near-term gives way to the medium-term, it should become possible to identify broad trends and to assess better the likelihood of particular outcomes. From the prospects for success in the war on terrorism to the extent of cooperation among the great powers, the world of the future will send its own signals.

This final dimension has two important implications for determining future requirements and making choices about strategic strike investment. First, it suggests that a key priority must be to strengthen those strike capabilities that can support U.S. actions aimed at ensuring a favorable resolution of the medium-term uncertainties—especially in regard to the war on terrorism and countering rogue proliferators. Second, it suggests the importance of ensuring that, in hedging against future uncertainties, the actions taken do not unintentionally make it more likely that the international security environment will revert to great power confrontation and conflict.

Given the dynamic nature of the challenges the United States faces, programs and recommendations adopted today will have to be frequently reassessed in the years ahead to ensure they continue to provide the United States the necessary capabilities to meet evolving threats.

2.4 NOTIONAL CONTINGENCIES

The preceding discussion of the future security environment identifies a range of significant actors in that environment: terrorists, "rogues," and major powers. It also underscores the difficulty of predicting the dominant planning problems from among the list of many possible alternative futures given the fact that branches and sequels cannot be known in advance. But utilizing this structure, it is possible to identify a notional spectrum of contingencies that seem likely to encompass the full range of possibilities in 2030.

At one end of the spectrum are conflicts against states and terrorists that harbor aggressive intentions but lack weapons of mass destruction. Modern terrorism has been with us for more than a century (going back to the Russian anarchists) and even successful eradication of al Qaeda and its supporters will not mean the end of all terrorist actors. The international security challenges posed by aggressive states (and by weak and collapsing ones as well) seem a continuing condition of the anarchic international system. Indeed, this set of contingencies may well constitute the vast majority of contingencies facing the U.S. military in 2030.

Next along the spectrum are conflicts involving WMD-armed non-state actors. Whether these actors are terrorist organizations as we have known them, terrorist movements with revolutionary goals, or simply violent individuals pursuing some ultimate goal of their own, conflicts with such adversaries will be shaped significantly by the adversary's potential or actual use of mass casualty weapons. These risks will magnify concerns about the difficulty of targeting and thus also of deterring terrorist actors that do not have state structures that can be put at risk.

Farther along the spectrum are conflicts involving rogue states. In this category, it is useful to distinguish between two basic types of such states: those armed with modest WMD capability and those with more robust capabilities.[4] We can hope that the current campaign to deal with "gathering threats at the crossroads of tyranny and technology" will have a salutary effect in reforming the existing "rogues" and deterring the future emergence of new ones. But such threats clearly belong on a notional spectrum of contingencies.

We distinguish here between modest and robust WMD capabilities for various reasons. One is to draw attention to the difference between a state armed with large numbers of nuclear weapons deliverable by missiles and a state armed with only a handful of such weapons and perhaps reliant on covert delivery. Another is to draw attention to the difference between the nuclear threat and its biological counterpart—and the possibility that states armed with few nuclear weapons may be capable with biological weapons of inflicting significant damage on the United States (and perhaps of doing so covertly and without attribution).

Next along the continuum of notional contingencies are conflicts against major powers that possess WMD. If U.S. assurance policies are successful, there will continue to be a larger number of major powers without WMD—indeed, perhaps a growing number of such powers as some potentially powerful developing countries prosper. We focus here on contingencies against adversaries and believe that if the United States ever again finds itself in conflict with a major power, that power will have weapons of mass destruction. Dissuasion strategies ought to help make these contingencies unlikely.

Finally, then, we come to peer adversaries. The QDR emphasizes the possible reemergence of a peer adversary at some point in the future. Looking ahead to the 2030 timeframe, we see such a development as unlikely. Neither Russia nor China is likely to have the combination of capability and motivation to challenge the United States militarily at the global level. Although other major powers may well emerge, even at the military level, it is difficult to reasonably anticipate that any would seek to challenge the United States at the peer level. Hedging against that possibility is in the U.S. interest, however, particularly because the situation two or three decades into the future is even more difficult to predict.

This spectrum is defined here as notional. Reality will present us with a more specific set of problems, and we can tailor forces to meet future requirements, as and if they take more definitive shape. But such a notional approach is intended in the shift from threats to capabilities as the basis of U.S. planning. It helps to identify the range of capabilities that the United States should now be seeking to develop.

From this perspective, these contingencies fall into two basic groups. This analytical structure has proven contentious in our study process, on the argument that there are many important differences among the various contingencies. A conflict against a "rogue" armed with 50 nuclear-tipped missiles would inevitably be very different from a conflict against a terrorist loner armed with biological weapons, for example. Moreover, the spectrum seems to hint at relatively equal numbers of instances of actual conflicts against this set of possibilities—a suggestion that we have already rejected above. Hedging against that possibility is in the U.S. interest, however. The following slide lays out this logic in more detail.

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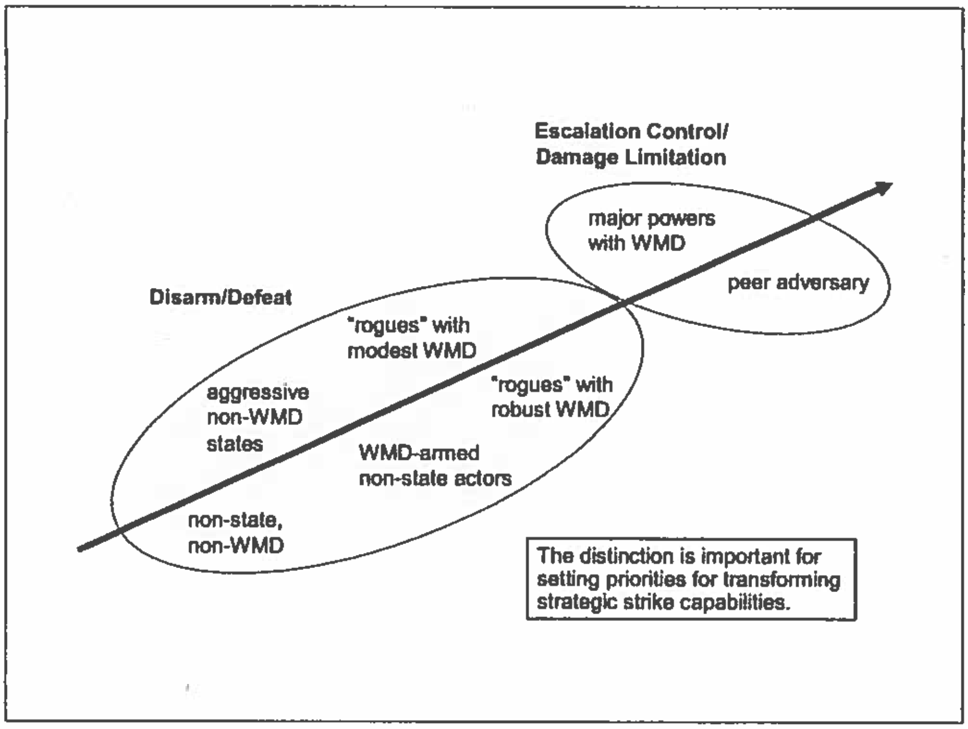
[4] We utilize the term "rogue" reluctantly, as it is a term that conveys many unintended meanings. Here we mean simply states run by regimes that show no respect for the usual norms of behavior, whether internationally or domestically. They are prone to commit acts of international aggression while also transgressing the rights of their citizens.



The distinction is important for setting priorities for transforming strategic strike capabilities.

Figure 2-1: The different roles of strategic strike.

The focus here is *not* on describing all of the possible conflicts that the United States may encounter in 2020, 2030, or beyond. Rather, our purpose here is to elaborate a capabilities-based approach to planning future strategic strike forces. Thus the focus is on illuminating—by conceptually exploring the future security challenges facing the United States—how future U.S. strategic strike capabilities might best be shaped. In the past (and still to a significant extent today), strategic strike capabilities have been designed with a single focus: the peer adversary. Looking ahead to 2030, we see a broad range of contingencies for which strategic strike capabilities can play a valuable role.

Let us begin with the group depicted in the left-hand oval (see figure 2-1). This group encompasses all of the notional contingencies with the exception of the major power ones. In 2030 conflicts against rogue states armed with WMD, strategic strike will likely be asked to achieve a number of objectives, usually in conjunction with a broader military campaign. Such strikes would be asked to (1) nullify and, if possible, eliminate the adversary's WMD; (2) eliminate the leadership at minimum cost to the public; and (3) terminate as quickly as possible any war in which that adversary actually employs nuclear, biological, and/or chemical weapons.

The United States will also seek to use its strategic strike capabilities in ways that teach the right lessons about the war. By that, we mean that the United States will be concerned about how to win the peace as it chooses how to win the war, and winning the peace could be more difficult if the United States is seen to have been excessively heavy-handed in its operations or if it used nuclear weapons first. In such conflicts, U.S. leadership can be free to pursue such ambitious objectives assuming that it also has the means to protect the United States from acts of retaliation, whether the adversary retaliates with a missile salvo or through more covert means. This requires both a missile defense capable of defeating such strikes and a homeland defense capable of thwarting covert attack. It is the policy of the U.S. government that such capabilities will be well in place by 2030. If so, these defensive capabilities will enable the United States to deal with these threats and not to be blackmailed by them.

After some debate, we chose to include non-state actors in this first category. An obvious difference exists between state and non-state adversaries in terms of deterrence for the simple reason that non-state adversaries lack populations to protect and territories to safeguard—and they are more likely to "employ" suicidal operatives. However, from the perspective of specifying needed types of strategic strike capabilities (e.g., delivery platforms; payloads; and intelligence, surveillance, and reconnaissance—ISR), such non-state adversaries pose the same general set of targeting requirements as do rogue states with WMD. The United States must have the ability to target leadership and weapons of mass destruction and WMD-related infrastructure when it has the opportunity to do so. It also has ambitious objectives vis-à-vis these adversaries: to eliminate them and nullify their capabilities, and to win in a way that wins the peace.

We carefully considered whether the non-WMD threats—both state and non-state—belong in this group of contingencies. The imperative to target leadership and key capabilities exists regardless of the WMD aspect. After all, who would argue against use of a strategic strike capability to eliminate a key leader or critical attack capability of al Qaeda? To be sure, the numbers and types of strategic strike weapons employed in such an attack would differ substantially from a strategic strike against a "rogue" with robust WMD capabilities, but planners and policymakers would desire many of the same effects.

We have called this the "urgent, emerging" category because it seems likely to be more prominent in U.S. security strategy in coming decades and because it drives a distinct set of requirements for strategic strike. We elaborate these in a subsequent section, under a review of target types and targeting tasks.

But before turning there, let us consider the other main category described in the right-hand oval: future major power adversaries with WMD. This is not the peer category of old, and this fact alone has important implications for future strategic strike capabilities. As argued above, the peer category is a Cold War construct, derived from a bipolar world.

Over the next two or three decades, we can easily anticipate that other major powers will have conflicts of interest with the United States, conflicts that may even have a military aspect. But the emergence of states willing and able to contest U.S. influence on a global scale seems rather unlikely. Indeed, a central theme of the 2002

National Security Strategy is that we now face an unprecedented opportunity to consolidate cooperation among the United States, Russia, China, India, and others on the basis of common interests and common responsibilities.

The concept of dissuasion is intended to support this objective by persuading other major powers that no possible benefit can exist for them in competing with the United States for military advantage. The concept of assurance also plays a role in its objective of keeping friends and allies of the United States non-nuclear and closely aligned with us.

If somehow conflict were to emerge with another major power (for example, a confrontation between the United States and China over Taiwan), we would most likely find ourselves at war for limited, not survival, stakes. We would seek to secure our interest in the conflict and exploit our advantages—whatever they might be at the conventional and nuclear level—by projecting power and "winning" the issue at hand. To induce the adversary's restraint and to keep the conflict limited would also be a central U.S. objective. We also recognize that an adversary might seek to attack our allies and friends, whether to punish them, to persuade them to oppose U.S. operations, or to simply slow the flow of U.S. forces into the theater. Naturally, the United States would seek to limit such attacks.

These objectives are less ambitious than U.S. objectives in contingencies involving rogues/terrorists. As a first-order priority, the United States will not seek to eliminate a major power regime—rather, the United States desires its restraint. Nor is the United States likely to seek to eliminate an adversary's WMD fully—to do so could induce an adversary to unleash its full retaliatory potential—although the United States might seek to eliminate a portion of the WMD capability most threatening to a particular regional operation or ally. Adversary retaliation would, of course, be met by whatever defensive capabilities the United States would have fielded.

At the present time, the United States has no plans to field ballistic missile defenses capable of fully blunting the strategic arsenals of major powers; rather, plans are focused on blunting the strategic arsenals of the rogue states. To be sure, such plans may take shape, when and if policymakers conclude that one or more major powers are emerging as adversaries and these adversaries can strike the U.S. homeland with WMD-armed cruise and ballistic missiles. A competitive deployment of comprehensive missile defenses by the United States, driven by the emerging offense of the potential adversary, is conceivable under these circumstances. And while the United States seems likely to do well in any such competition, in the long term its capacity for full protection against such retaliation at any given time is unpredictable. Hence, looking to the year 2030, a key discriminator between this category (major powers) and the preceding one (rogues/terrorists) is the greater expectation that the United States will not have available to it the kind of protection capabilities that would allow it to ignore with impunity a major power adversary's threats to retaliate. If the United States has such a capability against any given country, then we can consider that country to be in the same category as WMD armed rogues—that is, a country whose WMD the United States can neutralize with acceptable risk.

In a later section of this report we return to the question of how improved strike capabilities, *in synergy with other components of the new triad,* can serve U.S. objectives in both war and peace vis-à-vis these two categories of contingencies. But our purpose here has been to elaborate the types of contingencies that ought to inform future planning of strategic strike capabilities. This analysis illuminates two key planning questions:

1. What types of targets must the United States be able to strike effectively in 2030?
2. How will the targeting tasks differ between these two categories?

We turn to these questions next.

2.5 TARGETING REQUIREMENTS

The targets of future U.S. strategic strike operations are similar across the two types of adversaries. Whether strategic strike is used, for example, in support of rapidly terminating a conflict in which a rogue has used WMD or in support of degrading a great power's power projection capabilities, the overall target set could include WMD targets, leadership targets, and other military assets—any of which can be located or deployed in such a way as to make them special targets. These special targets will be particularly difficult to attack. They may be buried deep underground and additionally hardened as well, or they may be mobile and so difficult to detect as to allow the United States only occasional fleeting opportunities to target them, or they may pose great dangers to surrounding areas if striking them risks release of dangerous materials or triggers other particularly large and damaging effects.

Though the target sets are similar across the two types of adversaries, the targeting tasks will vary across the two categories. These variations will largely be due to the different threat the two types of adversaries pose directly to the United States, but the different types of conflicts likely to arise also will be important.

More specifically, with regard to the regional rogues, the task of strategic strike (integrated with defenses) will be to nullify and eliminate that adversary's WMD capability. This could entail a mix of actions to (1) try to establish or strengthen a sense of deterrence on the adversary's part, (2) to degrade or destroy the adversary's means of delivery and WMD stocks, and (3) to sever the adversary's command, control, and communications (C3) linkages.

By contrast, in a conflict with a great power, escalation control will likely be the dominant WMD-related targeting task. This emphasis on escalation control reflects the fact that in great power conflicts, the mix of offense and defense is unlikely to suffice to limit damage sufficiently to the Untied States and U.S. allies should a great power adversary escalate to all-out conflict. The imperative of escalation control in great power conflicts would shape what targets are struck, the choice between nuclear and non-nuclear means, and communications and signaling.

In a conflict with a regional rogue, the purpose of targeting leadership would more likely than not be to remove the regime. Decapitating the regime would offer a potential means to end a conflict rapidly, especially once a regional adversary had used WMD. Removing the leadership could also be thought necessary in the event that the leadership had initiated the use of WMD or supported WMD terrorism—in effect putting itself outside the boundaries of acceptable international action. It would be important, however, to pursue any such efforts to remove a hostile rogue leadership in a manner that did not do disproportionate damage to the country's population, society, and economy. Lack of responsibility on the part of most of the public for the actions of a rogue regime, the laws of war, and the likelihood of U.S. post-war involvement in assisting the recovery and reformation of a defeated rogue are but three reasons for restraint.

Strategic strikes against leadership targets in a major power would have a somewhat different purpose. Such targeting would be intended to drive that leadership's decisions toward choosing not to escalate the conflict further as well as to signal the risks to them of continued military action. On a limited basis, strikes against leadership also could be a means to reestablish deterrence after initial WMD use. As in the case of restraint in strikes against the WMD capabilities of a major power, these limits on strikes against leadership would reflect U.S. interests in limiting the chance that the conflict might escalate out of control.

As emerging threats become more clear, the United States should tailor strategic strike options to reflect the context in which the threat is emerging and the nature of the decision makers who pose the threat. We can then combine the best capabilities for optimum effectiveness against the targets at hand with an emphasis on avoiding nuclear use, if possible. Thus, the consequences of strategic strike concepts of operation (CONOPS) emerge from how the strikes would be implemented in the operational and tactical context. Correspondingly, the characteristics demanded of ISR, weapons, delivery systems, and command and control arrangements are determined by operational and tactical steps that the United States anticipates it might want to take before, during, and after an actual physical strike on a facility. This includes non-strike activities and some activities that could take place even before hostilities.

Strategic strike, then, is more than just taking a shot at a target. If, for example, we were to strike a well hidden, underground nuclear site, we would have to bring an entire system of strategic strike and support capabilities to bear. Operational and tactical CONOPS would envision exploiting human intelligence (HUMINT) and overhead assets pre-war and pre-strike to find and confirm locations. Covert operations and SOF could be used, before or after the initiation of hostilities, to confirm or characterize the nuclear storage facilities. Information operations or special signals intelligence (SIGINT) may also be used to probe activities at the site. Remote sensors or autonomous sensors emplaced by hand or by air delivery could continue to monitor activity or even actively probe to determine the characteristics of the target complex.

Although weapons exist to destroy many underground targets, we cannot destroy all such targets with confidence. Indeed, battle damage assessment (BDA) may not be sufficient to determine if a target attacked were actually targeted. In the case of the above example, we might assume that the probability of kill would be low and, therefore, take supplemental measures to neutralize the target. Specifically, remotely deployed anti-vehicular landmines and other advanced munitions could be placed around the likely exits from the targeted facility to destroy vehicles seeking to leave the location. Then, special munitions designed to blast through hardened tunnel doors could be used to destroy known entrances. In this case, denial and functional kill might be substituted for physical kill because of the difficulty of achieving-and knowing that you have achieved the latter against a high-value target. Because of the importance of the target in this example, additional sensors might be placed around the site either before or after its attack in order to monitor the facility for possible post-attack activity.

The concepts of persistent monitoring and tailored munitions employed through integrated tactics suggest that in the future, greater efforts should be made to