

House Armed Services Committee



Committee Defense Review Report

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EXECUTIVE SUMMARY

After passage of H.R. 1815 by the U.S. House of Representatives in May 2005, the committee's senior members—led by Chairman Duncan Hunter and Ranking Minority Member Ike Skelton—discussed several mechanisms for addressing their concerns about the then-upcoming 2006 Quadrennial Defense Review (QDR), as produced by the Department of Defense (DOD). Specifically, they expressed concern that the QDR report would represent a “resource-constrained model” that would assume a certain level of funding and then made recommendations accordingly. Ultimately, the committee decided to conduct its own independent review and launched the Defense Review of the House Armed Services Committee, also known as the Committee Defense Review (CDR).

Committee members wanted the CDR process and report to complement—not to compete with or contradict—the DOD's QDR. The committee, with its limited resources, recognized it could not conduct the level of detailed analysis that characterized the QDR. However, members adamantly believed that a review based on threats, not resources, would be instrumental in the ongoing dialogue and legislative debate. The review would improve the committee's ability to make programmatic decisions and recommendations based on a review of real-world threats. The resulting report would become a tool that allows decision-makers to evaluate risk and then make informed choices about national security-related capabilities and capacities.

Toward that end, Chairman Hunter and Ranking Minority Member Skelton set the following parameters:

The Committee Defense Review should:

1. Be threat-based, projecting possible threats twenty years into the future;
2. Identify demands on military capabilities, independent of the legislative cycle;
3. Then acknowledge that resource constraints may limit the development, acquisition, or use of such capabilities; and
4. Further educate members in a bipartisan manner and complement the Defense Department's Quadrennial Defense Review.

i. Process

HASC members structured the bipartisan CDR process to elicit the knowledge of a wide variety of sources and purposely sought defense and foreign policy experts from multiple viewpoints to share their analysis and insight with the committee. The process itself had three distinct phases: (1) a threat panel to review and categorize threats; (2) gap panels to focus on threat categories and look at needed military capabilities; and (3) an integration panel to synthesize the findings and recommendations of the preceding panels. In other words, members reviewed the current and projected threats to U.S. interests, identified key military capabilities needed to address those threats, and subsequently integrated the massive amounts of information into a coherent, focused report. To promote bipartisanship, the committee dispensed with traditional procedures for conducting hearings and instead established panels that were evenly divided between parties with co-chairs from each side of the aisle. Each panel determined its own procedures based on its unique needs.

The threat panel included 12 members to review current and potential threats and held a series of focused briefings with officials from the Defense Intelligence Agency, DOD's geographical combatant commands, the National Intelligence Council, and the Central Intelligence Agency. This panel also conducted geographically-organized public hearings to hear multiple perspectives on the kinds of threats that might exist in a given region. The threat panel concluded its work by assessing the information it received and organizing it into categories of threats that represent the kinds of missions the Armed Forces might be directed to undertake or the challenges they could confront, ranging from traditional state-on-state conflict to domestic disaster relief.

As the threat panel began outlining its conclusions, the committee formed six "gap panels" of six to eight members each to focus on each category of threats. Specifically, each panel reviewed the kinds of military capabilities best suited for dealing with scenarios in a particular threat category. In doing so, they examined the military capabilities that the United States currently possesses and considered the appropriate roles and missions for the DOD in those scenarios, given the capabilities and responsibilities of other government departments and agencies. Many members of the threat panel chose to remain actively involved in the CDR process by also serving on a gap panel.

Finally, the committee formed an integration panel to review the collective work of the gap panels. This panel, comprised of the committee's more senior members, assessed each gap panel's findings and recommendations and integrated them into an overall assessment and set of recommendations regarding the future of the Armed Forces. Thus, this CDR report provides an overall assessment of the threats facing U.S. national security and the role of the Armed Forces in securing the United States against those threats. It draws primarily on the work of the panels formed to conduct the CDR and is an integrated product representing the combined judgment of committee members.

ii. Conclusions and Recommendations

The most important conclusion that the committee reached is that today's U.S. military is the most professional, dedicated, and capable force the world has ever known. The committee confirmed as a result of the review that the security of the American people is in good hands with the U.S. Armed Forces.

That said, the committee does believe that the capabilities and capacity of the Armed Forces must improve to minimize risks associated with meeting 21st century challenges to U.S. security. In this, there is much in the DOD's QDR with which the committee strongly agrees, including expanding Special Operations Forces, recognizing the need to work with allies and coalition partners, and improving the capacity and capabilities of other countries to contribute to the system of international security.

Yet, after reviewing the threats and missions it expects U.S. military forces to handle, the committee concluded that U.S. force structure must expand and U.S. capabilities must improve to reduce the risk to the security of the American people to an acceptable level.

Therefore, the committee notes the following:

- **Force structure increases will be necessary to conduct ongoing operations in the Global War on Terrorism (GWOT) and respond to two nearly-simultaneous major regional conflicts** (the force sizing benchmark defense planners used during most of the last fifteen years). The committee believes that being prepared to deal successfully with two major regional contingencies while simultaneously maintaining the current GWOT level of effort is critical to deterring aggression by any potential state adversary. Such a force structure would include:
 - 78 Army Brigade Combat Teams;
 - 43 U.S. Marine Corps Infantry Battalions;
 - 4 U.S. Marine Corps Preposition Squadrons;
 - 55 Amphibious ships;
 - 15 U.S. Navy carrier strike groups;
 - 15 carrier air wings;
 - 55-68 attack submarines; and
 - 15 U.S. Air Force Air Expeditionary Wings

- **The U.S. Armed Forces should be organized and funded at a level adequate to prevail in both the GWOT and two simultaneous major regional conflicts.** Defense and budget planners appear to believe that the current demand for military forces in the GWOT is an aberration and that strains currently placed on our military will subside over time. While the committee hopes this proves to be the case, it is less optimistic about the future and believes that the current level of operations should serve as a baseline for future force planning.
- **Trends in defense planning and acquisition that are currently reducing military force structure and replacing platforms at a ratio below 1:1.** A shrinking number of platforms reduces strategic depth and flexibility, increases operational rates (accelerating the rate at which platforms reach the end of operational life and stress on personnel), makes it more difficult to influence the strategic environment through military presence, weakens the defense industrial base, and limits the ability to support a long conflict. The committee believes that these costs exceed the benefits of the current trend.
- **The U.S. government must ensure rapid acquisition capabilities.** The committee notes that unnecessary layers of bureaucracy have hindered the fielding of war fighter requirements. It is critical that goods and services are delivered in a timely fashion to support “boots on the ground”.
- **The U.S. government should not retire of current operational systems before proving and deploying new capabilities.** The committee appreciates the fiscal constraints that drive DOD to retire older systems but notes with alarm that “gapping” capabilities in such a way unnecessarily increases risks to U.S. national security.
- **The capability and capacity of existing intelligence, surveillance, and reconnaissance (ISR) assets are insufficient.** Witnesses and commanders alike consistently emphasized that the Armed Forces need more ISR assets at every level of command. The committee also found that ISR units do not achieve planned levels of operational availability. In fact, their availability rates are generally lower than those of combat units. As a result, the committee believes that ISR capabilities and capacity need to increase over and above their current ratio
- **A robust ballistic missile defense (BMD) is critical to defeat strategic threats to the United States and its allies.**
- **Biological weapons pose a real and substantive threat to national security.** DOD must focus on the research and development and subsequent stockpiles of vaccines, anti-virals and other treatments, coordinating efforts with other key departments and agencies.
- **An improved interagency process could elicit more cooperation among the various agencies and departments in addressing national security concerns.** The creation of regional interagency task forces entities could serve allow relevant departments and agencies to develop joint plans with DOD’s combatant commanders.

- **As outlined in the QDR, Special Operations Forces (SOF) capabilities should increase**, including an expansion of SOF battalions by one third. Other recommendations commonly held by the QDR and the CDR include: expanding psychological operations and civil units personnel; establishing a Marine Corps Special Operations Command to train foreign military units and conduct special reconnaissance; increasing SEAL team force levels; and establishing a U.S. Southern Command unmanned aerial vehicle squadron to locate and target enemy capabilities.
- **DOD should take aggressive steps to ensure the availability of strategically critical technologies and manufacturing capacities.** The defense industrial base, as well as investment in shipyard modernization and in research and development is necessary to foster continued technological advancements and capacity.

I. INTRODUCTION

1.1 – Rationale

In accordance with section 118 of Title 10, United States Code, the Department of Defense (DOD) conducts a Quadrennial Defense Review (QDR), which is intended to serve as a benchmark for assessing the correlation between the defense needs of the United States and the capabilities and resources it devotes to meet those needs. The 1997 and 2001 QDRs assumed a certain amount of funding and made recommendations for future defense capabilities accordingly.

For some time, the Committee on Armed Services has expressed concern that such a “resource-constrained” model limits planning consideration to only those threats and capabilities for which the DOD officials have—or expect—adequate resources. Many members of the committee consider such an approach inconsistent with the legislative intent behind the QDR requirement, believing that the threat should define capabilities needed and that DOD officials should address resource questions only after identifying threats and capabilities.

After passage of H.R. 1815 by the U.S. House of Representatives in May 2005, the committee’s senior members—led by Chairman Duncan Hunter and Ranking Minority Member Ike Skelton—discussed several mechanisms for addressing their concerns about the then-upcoming 2006 Quadrennial Defense Review. Ultimately, the committee decided to conduct its own independent review and launched the Defense Review of the House Armed Services Committee, also known as the Committee Defense Review (CDR).

Both executive and legislative officials understand that national security-related decisions occur in a resources-constrained environment. Such decision-makers should use the CDR as a tool for evaluating risk and then making informed choices about the capabilities and capacities.

1.2 – Goals

The Committee Defense Review should:

1. Be threat-based, projecting possible threats twenty years into the future;
2. Identify demands on military capabilities, independent of the legislative cycle;
3. Then acknowledge that resource constraints may limit the development, acquisition, and/or use of such capabilities; and
4. Further educate members in a bipartisan manner and complement the Defense Department’s Quadrennial Defense Review.

Goal 1: Conduct a threat-based review, projecting possible threats twenty years into the future: Committee members decided early in the planning process that a review of U.S. defense needs should begin with a comprehensive review of potential threats. While some experts criticize threat-based planning due to the unpredictability of threat evolution, members believed that a threat-based review would serve as a useful alternative to the capabilities-based planning of the Defense Department's QDR. In particular, this threat-based review helped members deepen their knowledge of the international security environment and the kinds of threats that the U.S. Armed Forces will likely confront in the 21st century. The review further improved the committee's ability to make programmatic decisions and recommendations based on a review of real-world—as opposed to hypothetical—threats.

Goal 2: Identify demands on military capabilities, independent of the legislative cycle: Participants in the CDR sought to build a more comprehensive picture of potential long-term demands on military forces for U.S. national security. For example, it may take two decades for a major defense acquisition program to move from conceptual to operational status. Once deployed, these platforms may be in service for more than three or four decades. Unfortunately, the nature of the legislative process and the demands of enacting an annual National Defense Authorization Act often require members to focus on the immediate challenges of completing the annual bill. By conducting the review independent of the legislative cycle and seeking to project possible threats twenty years into the future, the committee sought to help members overcome those limitations and view defense planning from a more long-term, strategic perspective.

By the same token, a short-term focus on annual legislation sometimes limits the time and resources the committee has to seek multiple perspectives on defense issues not immediately related to enacting the legislation. Oversight of about \$500 billion in annual defense spending requires an extraordinary amount of time and attention, including dozens of hearings and briefings with: executive branch officials who prepare and execute the annual budget; federal oversight agencies, such as the Government Accountability Office and DOD Inspectors General; and the uniformed services. CDR participants sought defense and foreign policy experts from multiple viewpoints to share analysis and insight apart from preparing the annual defense bill.

Goal 3: Acknowledge that resource constraints may limit the development, acquisition, and/or use of such capabilities: DOD's resource-constrained QDR often reaches conclusions based on defense budget expectations rather than likely threats. In contrast, the premise of the CDR was to review explicitly all military threats and mission demands without consideration of resource—fiscal, personnel, and other—constraints. Without allowing such constraints to prejudice the outcome, the committee was able to identify a range of potential threats to U.S. national security and determine, to the greatest extent possible, the military capabilities necessary to address such threats effectively. As a result, the CDR established a wide-ranging set of military requirements against which existing and future U.S. capabilities can be measured. This baseline represents the committee's informed judgment about the capacity and capabilities that the U.S. Armed Forces need to counter future threats at low risk. Thus, when resource constraints enter into the equation during future budget deliberations, officials can make conscious, careful choices about force structure and capabilities, weighing resource availability while recognizing the possible consequences of various decisions for the military's ability to deal with particular threats.

Goal 4: Educate members in a bipartisan manner and complement DOD's QDR: Chairman Hunter and Representative Skelton also decided early in the process that the CDR would be a bipartisan review with an eye towards contributing to a bipartisan consensus on future defense needs. This report discusses the implications of those decisions in greater detail below.

The CDR process assisted members in considering the results of DOD's QDR but was not designed to compete with or contradict the QDR. The committee recognized it could not conduct the detailed analysis that DOD and its contractors use in force planning. Nevertheless, the process of reviewing threats, considering defense capabilities, reviewing non-warfighting demands, assessing the roles and missions appropriate to the U.S. Armed Forces in meeting those demands, and making recommendations about future defense capabilities assisted members in considering and placing the QDR into context.

The committee did not set out to make specific programmatic decisions in the CDR—a process more appropriately handled through the annual defense budget—but instead to create an alternative framework to consider the defense budget request for fiscal year 2007 and the Future Years Defense Program (FYDP). Nevertheless, members identified some specific areas in which they and DOD officials would work together to improve national defense. When appropriate, the CDR report makes certain recommendations in those areas. Yet, ultimately, the CDR serves as a complement to the QDR as an additional analytical tool for use during the legislative process of authorizing the annual DOD budget.

1.3 – Process

The bipartisan CDR effort included:

- A threat panel to review and categorize threats;
- Gap panels to focus on threat categories and look at needed military capabilities; and
- An integration panel to synthesize findings and recommendations of the threat and gap panels.

While the committee separated the review process into distinct phases—to understand the current and projected threat to U.S. interests, identify key military capabilities needed to address those threats, and integrate the massive amounts of information into a coherent, focused report—the parameters for each phase remained deliberately broad to maximize flexibility, allowing members to take the CDR in different directions based upon their briefings, hearings, and deliberations. To promote bipartisanship, the committee dispensed with traditional procedures for conducting hearings or considering legislation and instead established focused panels that were evenly divided between parties with co-chairs from each side of the aisle. Each panel determined its own procedures based on its unique needs.

Each panel held open hearings and briefings, but most discussions took place in closed sessions for two primary reasons. First, each panel reviewed extensive amounts of classified information, which precludes public discussion. Second, the committee decided that it would be beneficial for members to engage in free-flowing discussions in closed sessions, where they could integrate classified information with unclassified perspectives.

1.3.1 – The Threat Panel

The first CDR phase included a 12-member panel to review current and potential threats (i.e., over the next twenty years). The threat panel met for a series of focused briefings from the officials from the Defense Intelligence Agency, DOD’s geographical combatant commands, the National Intelligence Council, and the Central Intelligence Agency. The panel concluded its activities with a series of briefings at the Central Intelligence Agency headquarters and extended discussions with senior officials from the Department of State. Finally, throughout this process, the threat panel conducted a series of geographically-organized public hearings to gather multiple perspectives on the kinds of threats that might exist in a given region.

In general, briefers and witnesses addressed current and potential threats posed by: state actors; non-state organizations; political instabilities that could require the deployment of U.S. military forces; and technological change. While the threat panel did review some U.S. policies that could affect the evolution of the international security environment, in general it sought to avoid exhaustive policy discussions in order to focus primarily on threats.

The threat panel concluded its work by assessing the information it received and organizing it into categories of threats. In general, it defined a threat as an international actor: possessing, or capable of forming, the intention to harm the United States; and possessing, or capable of acquiring, the ability to act on those intentions. However, the panel concluded that this definition did not capture all events that make considerable demands on the U.S. Armed Forces, such as peacekeeping, responses to humanitarian disasters, or emerging capabilities that could evolve into threats and might fall into the wrong hands relatively easily. As a result, the panel members developed categories that more fully captures the kinds of missions the Armed Forces might be directed to undertake or the challenges they could confront, ranging from traditional state-on-state conflict to domestic disaster relief.

1.3.2 – The Gap Panels

As the threat panel began outlining its conclusions, the committee formed six “gap panels” of six to eight members each to focus on each category of threats. Gap panel members developed expertise in their subject areas by assessing the scenarios the Armed Forces could face within a given threat category. In reviewing the military capabilities best-suited for dealing with scenarios in a particular category, they examined the capabilities that the United States currently has and considered the appropriate roles and missions for the DOD in those scenarios, given the capabilities and responsibilities of other government departments and agencies. Many threat panel members chose to remain actively involved in the CDR by also serving on gap panels.

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Each gap panel developed its own approach to its subject, reflecting the fact that each threat category represented a different national security problem. In general, the committee tasked the gap panels with identifying military capabilities needed to deal with the most stressing and the most likely scenarios in their respective categories, independent of the findings and recommendations of the other gap panels. By approaching threats in this manner, the committee broke its assessment of U.S. defense requirements into smaller, more manageable pieces and enabled members to develop deeper expertise in the respective threat areas.

1.3.3 – The Integration Panel

Finally, the committee formed an integration panel to review the collective work of the gap panels. The integration panel, comprised of the committee’s senior members, assessed each gap panel’s findings and recommendations and integrated them into an overall assessment and set of recommendations regarding the future of the U.S. Armed Forces. Some recommendations made in the report are very specific, but the purpose of the overall report is to inform the programmatic and policy decisions made in the National Defense Authorization Act—the report is not a substitute for the legislative process.

In the end, the CDR report provides an overall assessment of both the threats facing U.S. national security and the role of the Armed Forces in securing the United States against those threats. It draws primarily on the work of the panels formed to conduct the CDR, but it is not limited to the work of those panels. The committee conducts regular hearings and briefings on U.S. national security and the role, capabilities, and resources needed to ensure that the U.S. Armed Forces help secure the United States and its national security interests. Thus, the following report is an integrated product representing the combined judgment of the committee members, rather than a series of separate reports drafted by those individual panels.

1.4 – Limitations

The committee made deliberate decisions about the CDR’s parameters and acknowledged the resulting limitations, including:

1. CDR assumptions about future threats may prove inaccurate
2. Some experts may challenge CDR assumptions about future “worst case” and “most likely” scenarios
3. CDR recommendations are broad and do not reflect budget constraints
4. Increased “jointness” among military forces or within the interagency construct and improved technologies may change U.S. capabilities in unforeseen ways

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In any defense review, there are natural limitations that preclude the outcome from providing “the” answer. First and foremost, the committee acknowledges uncertainty about the future. The international security environment can evolve quickly and in unanticipated ways, and the research, development, testing, engineering, acquisition, and deployment of advanced military platforms may take decades. As a result, the security environment envisioned at the outset of a program may differ radically from the actual environment in which the U.S. Armed Forces find themselves. Paralysis in decision-making may result, if planners insist on perfect information before making difficult—and perhaps expensive—decisions. The cost of “getting it wrong” will be not only in the wasted resources spent developing ultimately inappropriate capabilities but also in the possibly compromised security of the country and the lives of the U.S. military personnel who must defend it.

However, planning must begin somewhere. When commanders approach a battlefield, they often begin by making an “estimate of the situation” which has been defined as: “a logical process of reasoning by which a commander considers all the circumstances affecting the military situation and arrives at a decision as to the course of action to be taken in order to accomplish his mission.” By viewing the committee’s explicit assumptions as an “estimate of the situation”, laying out where those assumptions have the greatest impact on planning, and acknowledging that the situation is subject to change, members believe that they can help to manage the unpredictability of the threat environment. Thus, the CDR’s assumptions are not rigid planning guidelines.

A clear list of the military challenges for DOD has prepared results also in a *de facto* list of challenges for which DOD is less prepared. While greater specificity makes the CDR assumptions more vulnerable to criticism, the committee concluded that the benefits of being explicit outweighed any potential drawbacks. In fact, the committee welcomes discussions of alternative projections about the security environment; such discussion could improve the committee’s ability to identify and manage risks.

A second limitation in defense planning revolves around how one treats “worst case” and “most likely” scenarios, either of which could involve substantial military deployments. In considering these scenarios, CDR gap panels addressed a multitude of contingencies, ranging from multiple major regional conflicts and nuclear warfare to significant natural disasters and weapons of mass destruction incidents in the U.S. homeland. The panel participants also assessed U.S. military capabilities against those scenarios—both “worst case” and “most likely”—to determine what kinds of improvements, if any, would better prepare the U.S. military to meet them. Clearly, the Armed Forces must prepare for the most demanding security challenges at the same time the federal government does not burden taxpayers with the acquisition of unnecessary capabilities. Unfortunately, there is no perfect formula for balancing the risks of being unprepared for a “worst case” scenario against the dangers of wasting resources preparing for remote possibilities. The committee, therefore, exercised its combined judgment about the level of national preparedness expected by the American people. That decision, of course, is subjective and, like assumptions about the international security environment, vulnerable to criticism.

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Third, the CDR report does not explicitly answer questions about resources. Some may view this as a weakness in the report since its broad recommendations are made without reference to likely budgets. The committee understands that limitation but decided to separate its “estimate of the situation” from the budget process for two reasons:

- The threats and missions for which the U.S. Armed Forces must prepare are not a function of the defense budget. The committee consciously decided to consider force structure and capabilities questions solely in terms of the threats and missions that the Armed Forces could face and avoid the tendency to dismiss or downplay threats and missions that often results from a resource-constrained review. Debates about what the United States can afford should occur with full information about what the nation’s security requires and not downplay needs because they are viewed as unaffordable.
- Debates about resources are an appropriate part of the annual budget process. The CDR report will help place those debates into context by helping budget planners understand the risks and potential costs of not providing enough resources for the Armed Forces to carry out their likely missions.

As a fourth limitation, the CDR does not explicitly consider the improved capabilities that should result from increased jointness among the military services—and perhaps through any improved interagency process—or that could result from many of the new combat platforms currently being developed and deployed. Just as there is uncertainty about the future of the security environment, there remains uncertainty about current and future capabilities. The committee assumes that military jointness has improved the performance of the Armed Forces and that continued developments should further strengthen the Armed Forces. Similarly, reforms may also improve the ability of various federal departments and agencies to work together and bring all the tools of national power to bear on any particular security challenge. The same might be said of federal, state, and local entities in various domestic contingencies.

However, neither increased jointness nor improved technologies can guarantee improved performance by the Armed Forces or the federal government in securing the country’s future. In fact, they may have unintended consequences that actually undermine our long-term security. Bringing more departments and agencies into national security issues, for example, could slow the speed of national security decision-making *if* it undermines a clear chain of command and the principle of unity of command. Similarly, planning for new capabilities to improve performance could undermine national security *if* it leads to the elimination of proven capabilities before new systems demonstrate their value—or lack thereof. The point is that there may be as much uncertainty about these developments as there is about the future security environment. Thus, the committee decided to approach these issues from the standpoint of how they might shape the future, rather than to take them as a given as our Armed Forces evolve.

In general, the committee understands and acknowledges the limitations of the process and final outcome of the CDR. It strongly believes, however, that the strengths of the CDR outweigh those limitations and that the process makes a critical contribution to improved national security decision-making by more explicitly reviewing the threats, missions, capabilities, and force structure needed to help secure the United States.

1.5 – Report Organization

Chapter two summarizes the kind of threats and mission that the committee believes the U.S. Armed Forces might face in the future. With the exception of al Qaeda, the committee's review did not definitively conclude that any particular entity or capability will threaten the United States. Instead, the committee sought to identify the general outlines of what a threat might look like, based on real world data. As discussed in chapter three, the committee notes that it is possible to shape the future security environment and thereby affect what entities may choose to make themselves adversaries of the United States. Thus, it is not possible to say conclusively that the Armed Forces will, or will not, engage in conflict with any of the countries reviewed by the committee.

Chapter three discusses the means by which the United States might shape: the evolution of the international security environment and the threats facing the United States; the impact of the current Global War on Terrorism on the U.S. Armed Forces; particular scenarios in which the Armed Forces might find themselves; and non-traditional missions that represent current and future military challenges. Where appropriate, chapter three expresses the committee's findings and conclusions about the current state of national security affairs and the U.S. government's ability to secure the country.

Chapter four presents a series of recommendations. In general, the chapter focuses on developing a specific force structure for the U.S. Armed Forces, based largely on what the committee believes will be necessary to deal with the most challenging security threats. It also reviews specific recommendations for improved capabilities in key areas. However, for reasons already discussed, these recommendations are not a specific series of programmatic recommendations, which members would normally discuss during the annual budgeting process.

II. THE SECURITY ENVIRONMENT: ASSUMPTIONS AND FINDINGS

The twelve-member threat panel reviewed global threats to U.S. national security and subsequently organized those threats into categories, based on an assessment of the potential that the individual elements within the category could present a challenge to the U.S. Armed Forces. The organization of those data points into categories does not necessarily indicate that the committee believes any single data point is currently, or will become, a threat to the United States. In fact, members of the committee often debate whether any specific country, group, capability, or situation does represent a challenge to U.S. national security. However, the committee is in bipartisan agreement that the categories outlined here and the items within each category represent useful benchmarks against which defense planners should seek to project and develop U.S. military capabilities.

In this chapter, the committee outlines various threats and findings relating to U.S. national security. Members readily acknowledge that there are several areas of overlap among the threat categories (e.g., terrorists may employ asymmetric or unconventional means to disrupt U.S. command, control, and communications infrastructure). They also acknowledge that there are some threats to U.S. national security (e.g., narcotics trafficking and transnational gangs such as Mara Salvatrucha (MS-13)) that, although not primarily military missions, may require the Department of Defense to coordinate and cooperate with other departments and agencies.

2.1 – Regional Military Powers

In light of the assumption that state-on-state conflict remains a significant element of the security environment, the committee believes that, in general terms, regional military powers:

- Are currently developing military capabilities unevenly and will continue to do so.
- Have surprised the United States with the pace and scope of their military activities.
- Would likely not seek a conflict with the United States. If in conflict with the United States, they would not seek to fight on U.S. terms.
- Do not have to develop capabilities commensurate with the United States and are generally seeking capabilities that are “good enough” to achieve their strategic, operational, and tactical objectives.
- Demonstrate some common characteristics:
 - Large military forces with outdated equipment.
 - Modernizing, often in particular niches that offset conventional U.S. military advantages and may be competitive with current U.S. capabilities.

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- Weak domestic military industrial bases with some dependence on foreign suppliers for technology and/or or platforms.
- Possess, or are seeking, asymmetric capabilities and are, in some cases, developing a domestic industrial base to provide these capabilities. Of particular concern: ballistic and cruise missiles, submarines, integrated air-defense networks, and mine warfare.
- In some cases acquiring modern command, control, communications, computers, intelligence, surveillance, and reconnaissance capabilities that would create a disproportionate increase in their overall military capabilities relative to the United States.
- Security decisions often driven by local security environment and not necessarily the possibility of conflict with the United States.

The committee concluded that state-on-state conflict remains, and will be, a major component of the international system. The threat panel identified several countries with significant military capabilities that were developing in a direction that could challenge the U.S. Armed Forces: the People's Republic of China (PRC); India; Pakistan; North Korea; Iran; and Russia.¹ In general, these states share several characteristics that should influence U.S. military planning and illustrate the characteristics of regional military powers.

First, such states generally have a large number of conscripts with a professional military officer corps and a limited non-commissioned officer corps. For example, experts estimate that Iran—the smallest state listed above—has roughly 540,000 active duty and 350,000 reserve personnel. The largest, the PRC, has roughly 2.25 million active duty and 500,000-600,000 reserve personnel. This force structure may retard development of lower-level initiative and hinder efforts to obtain and retain the advanced technical skills needed to procure, maintain, and operate advanced combat platforms. To the degree that such forces are stratified or politicized, they may also suffer from slow decision cycles and a lack of doctrinal or operational creativity.²

Second, regional military powers operate very large numbers of 1960s-1970s era equipment, much of which can trace its heritage back to 1950s-1960s era Soviet designs. While many of their combat platforms have been upgraded with more modern electronics and systems, there are performance limitations on older systems, which are generally not up to the standard of contemporary U.S. combat platforms. Additionally, while older systems may have initially required less field maintenance, it will be increasingly difficult to maintain them as they age. In general, the military forces of these countries suggest that they have a legacy of preferring quantity over quality for their main forces.

¹ The committee considered these states as illustrative of major regional military powers – in the committee's opinion, they do *not* necessarily constitute a threat to the United States. Indeed, one, some, or all of them may not possess malicious intent vis-à-vis the United States.

² For example, China and North Korea both maintain the dual command structure of military and political officers common to communist countries. Iran has split its armed forces into a traditional, professional military arm, which is watched closely by regime loyalists, and the Islamic Revolutionary Guards Corps, also known as the Pasdaran, which operates as a stand-alone force.

Third, there is ample evidence that all of the states recognize the challenges of maintaining credible military capabilities on the basis of large quantities of outdated military hardware and are seeking to modernize their forces. However, due to resource constraints and the recognition that U.S. forces outclass their conventional military forces, these states focus modernization on key niche areas that either relate directly to a specific security problem (e.g., the Taiwan Strait in China's case) or that represent areas of asymmetric advantage in any contest with potential adversaries, including—but not limited to—the United States (e.g., Iran's support for terrorism and its fast boats for the Persian Gulf, North Korea's expansion of its missile arsenal and nuclear weapons). As a result, some military forces in these states are quickly acquiring levels of technical sophistication that may curtail current U.S. advantages in key areas. Of course, potential adversaries do not necessarily have to match the U.S. Armed Forces in terms of the quality of their platforms. They need only possess capabilities that are “good enough” to achieve tactical, operational, and strategic objectives, which, in many cases, may be possible with older hardware, especially in large quantities. U.S. planners must assess whether capabilities possessed by potential adversaries are, in fact, “good enough,” as opposed to “as good as ours.”

Fourth, with the exceptions of the PRC and Russia, these states generally lack a domestic industrial base sufficient to support overall military modernization, and may even lack the ability to support modernization in key niches. As a result, they are often dependent on foreign suppliers for key systems and technology, and increasingly, these states work with one another to develop and acquire certain technologies, such as ballistic missile and nuclear technologies. Such cooperation has several implications. On one hand, their military modernization will not proceed in a straight line but through rapid fits and starts and unevenly from one area to the next—with the added implication of quite likely surprising foreign observers who attempt to track or predict the evolution of potential threats. At the same time, importing foreign technology means states can more easily focus internal industrial activities on improving foreign-developed technology or developing indigenous capabilities required to maintain some degree of autarky in developing critical asymmetric capabilities.

Access to, and dependence on, foreign technology acquisition also represents a vulnerability to states seeking to modernize: they may become dependent on foreign capabilities that can be denied. During the Cold War, for instance, the North Atlantic Treaty Organization (NATO) established the Coordinating Committee for Multilateral Export Controls, which sought to harmonize export control laws in the West for the purposes of denying the members of the Warsaw Treaty Organization advanced technology that could be used for military purposes. More recently, the United States launched the international Proliferation Security Initiative, intended to interdict illicit shipments of technology to states of proliferation concern. While such activities may not succeed in conclusively denying states access to modern military technology, they may increase the costs of developing new military capabilities and, as a result, help dissuade states from investing in certain military capabilities in the first place.

Fifth, states are combining technology from multiple sources into new capabilities. For instance, a state may combine surface-to-air missiles from country A with a fire-control-system from country B and a surveillance/target acquisition system from country C. To the degree that United States threat detectors are programmed to deal with a certain kind of threat system, they may be unprepared to deal with these new hybrids. That may give states a temporary tactical

advantage over the U.S. military. Conversely, the dependence on multiple foreign suppliers further complicates the logistics and maintenance challenges of operating such systems and increases the demands for advanced technical skills within the force.

Sixth, these states clearly recognize the advantages that the U.S. military derives from precision and advanced command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) systems. They are aggressively pursuing options to create such advantages for themselves. Most have initiated space programs to achieve some degree of independent access to, and use of, space. Additionally, outside observers note increased experimentation with airborne early warning and command and control platforms. While such capabilities may be decades away from matching the performance of U.S. systems, even modest systems may represent a disproportionate increase in military capability for countries unaccustomed to having them at all. These C4ISR systems, combined with small numbers of precise munitions acquired from more advanced states, represent a qualitative change in the military capabilities of many regional powers.

Seventh, regional military powers seek asymmetric capabilities, a strong indicator that they would not fight U.S. military forces on U.S. terms, should a conflict arise. Most notably, they are investing in large numbers of ballistic missiles capable of reaching forward U.S. bases, if not the United States itself. While such systems may not represent a significant military threat in and of themselves,³ they represent a potent political weapon in deterring potential allies or coalition partners from permitting U.S. use of facilities on their soil. Other asymmetric capabilities in evidence include: terrorism; large, dispersed flotillas of limited-capability boats or aircraft; and cyber threats. Some states may also be pursuing medium- to long-term capabilities intended to exploit critical U.S. vulnerabilities, such as electromagnetic pulse weapons.

Finally, it should be noted that not all—indeed, perhaps not even most—of these states develop their military capabilities with an eye toward conflict with the United States. While they have likely reviewed U.S. military operations since Operation Desert Storm in 1991, assessed U.S. military strengths and weaknesses, and derived their own lessons learned, each state has its own set of unique security challenges which may have higher prominence in that state's military planning. India and Pakistan, for example, have long been locked in a political confrontation. Thus, one should not view foreign military developments or predict the evolution of possible threats based on the presumption that they are driven solely by the possibility of conflict with the United States. Indeed, in selecting these countries for consideration, the committee's threat panel did not conclusively determine that any individual country was, or was not, a direct threat to the United States. Instead, the threat panel viewed these countries as states that may be involved a contingency for which the United States should prudently plan.⁴

³ The committee acknowledges that large quantities of missiles and the possibility that they might be armed with weapons of mass destruction could deprive U.S. forces of their forward bases, thereby representing a significant military threat.

⁴ Interestingly, as late as the 1930s the U.S. Navy planned for possible conflict with Great Britain and developed plans for the possible invasion of Canada – using planning as a mechanism for sizing forces and assessing the kinds of military capabilities that the United States should develop and not necessarily as a predictor of future conflict.

Conclusions based on a review of regional military powers:

- India, Pakistan, and Russia demonstrate the attributes of major regional powers.
- It is prudent to plan for contingencies involving the PRC, North Korea, and Iran.
- Simultaneous conflict with two or more of them represents a reasonable worst case scenario for which the U.S. Armed Forces should be prepared.

The committee concluded that conflict with the PRC, North Korea, and Iran would present particular security challenges. They all possess significant military capabilities; their intentions are subject to differing interpretations. The committee further identified simultaneous conflict with two of them as a worst case scenario for which the U.S. Armed Forces should prepare, noting that should conflict with one state erupt, a second power might seek to exploit U.S. preoccupation to pursue its strategic goals through violence. While other powers could seek to exploit opportunities created by U.S. involvement in two regional conflicts, the committee concluded that more than two major regional powers were unlikely to coordinate simultaneous aggression against U.S. national interests.

The following discussion highlights several trends in the PRC, North Korea, and Iran.

2.1.1 – People’s Republic of China (PRC)

Key Characteristics

- Rapidly growing defense budget
- Very large military
- Increasingly modern force focused on anti-access/area denial capabilities

The image of the PRC military as a large, unsophisticated peasant force with limited power projection capabilities is outdated. The People’s Liberation Army (PLA) is an increasingly professional force equipped with the latest generation of advanced military hardware. China’s defense spending, currently at \$60-\$90 billion per year, has grown at double-digit rates for the better part of a decade. The PRC has matched that growth in spending with a general downsizing of its forces, freeing up resources to accelerate their modernization. In particular, the PRC’s air and naval forces have dramatically improved their capabilities to extend the battle space beyond Chinese territorial waters. The following trends allow the PRC to operate far off-shore, complicate efforts to deter or defeat the use of force against Taiwan, and increase its ability to exert military power over neighbors.

In addition to over 1,000 older tactical aircraft, the PLA Air Force (PLAAF) fields over 239 advanced tactical fighters, including domestically-built J-10 multi-role fighters, the Russian Su-27 Flanker, and its more advanced Su-30MKK variant. DOD notes the PLAAF fields these aircraft with precision weapons that give them rough parity with, if not outright superiority over, most potential adversaries. The PLAAF has an interest in aerial refueling and airborne early warning (AEW), turning some older H-6 bombers into tankers and modifying A-50/IL-76 transport aircraft to perform the AEW mission. These capabilities would provide greater reach and command and control, significantly improving its ability to project airpower into the Pacific.

The PLA Navy (PLAN) is transforming itself from a coastal navy to a deep-water fleet centered on anti-access and area-denial vessels, such as four Sovremenny-class destroyers equipped with the advanced SS-N-22 Sunburn ship-to-ship missiles and modern, quiet submarines, including up to eight domestically-produced nuclear submarines and eight modern Kilo-class diesel submarines from Russia, as well as the domestically-produced Song-A⁵ and Yuan diesel classes, the latter of which reportedly surprised Western intelligence services. The PLAN has conducted submarine operations in Japanese territorial waters and can project power well beyond the South China Sea. Modernization trends will improve these capabilities.

A rapidly growing force of short-, medium-, and long-range ballistic missiles capable of reaching beyond Taiwan to U.S. bases in Japan and Guam support these more conventional forces. Unclassified estimates put the number of CSS-6 and CSS-7 ballistic missiles at between 650 and 730, increasing at a rate of 75-120 missiles per year. Many observers estimate that in a potential conflict with Taiwan these missiles would be used with conventional warheads to engage in precision strikes against Taiwanese airfields and command and control centers as well as any military forces moving to prevent or defeat aggression. Additionally, China has deployed the CSS-3 and CSS-5, extending its reach well out into the Pacific, including Alaska. There are growing concerns over the PRC's plans to improve its ballistic missile fleet to the point at which it could also be used to attack moving ships far from Chinese shores. The PRC is improving its situational awareness deeper into the Pacific through expansion and evolution of its growing numbers of over-the-horizon radars, satellites, and unmanned aerial vehicles.

2.1.2 – Democratic People's Republic of Korea (North Korea)

Key Characteristics

- Extraordinarily large military, given the country's size
- Outdated platforms but unique strategic advantages near South Korean population centers
- Advanced ballistic missile capabilities for a developing country

⁵ On October 26, 2006, U.S. forces sighted a Song-class submarine within five miles of the U.S.S. Kitty Hawk Carrier Strike Group, which was conducting routine training operations roughly 80 miles off of Okinawa.

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The Democratic People's Republic of Korea (DPRK), also known as North Korea, has one of the world's largest standing military forces, with over 1 million individuals in the active force and some 4.7-7.7 million reservists. The U.S. government estimates that North Korea spends more than \$5 billion, or roughly 20 percent of its Gross Domestic Product, on defense annually – making North Korea one of the most heavily militarized economies in the world.

Among its extraordinarily large standing military, most forces are resident in the North Korean army. Very roughly, it possesses some 3,150 main battle tanks, 3,500 towed artillery pieces, 4,400 self-propelled artillery pieces, 862 combat aircraft, and 31 major naval combatants. Many of these platforms are aging and severely outclassed. North Korea's inventory of main battle tanks, for instance, reportedly includes the T-34, a Soviet tank that first saw action during World War II. The dominant airframes in its air force are derivatives of the Mig-17 and Mig-19, which first entered Soviet service in the 1950s. North Korea does possess a notable number of aircraft derived from the Mig-21, which traces its heritage back to the 1960s, and a handful of relatively modern Mig-29 tactical aircraft.

That said, North Korea's military – while generally aging and outclassed – remains a threat to peace and stability on the Korean peninsula due to its size, the tense military standoff along the demilitarized zone that has existed since the cease-fire in the Korean War,⁶ the nature of its regime which continues to demonstrate hostile intent, and the fact that the Republic of Korea's (ROK or South Korea) capital and major metropolitan areas lie close to the demilitarized zone – within range of North Korea's conventional artillery forces.

Additionally, North Korea has developed considerable expertise in missile design and manufacture among developing nations. That nation possesses over 1,000 conventional ballistic missiles, ranging from the relatively short range B, C, and D models of the Scud—which can still reach out to roughly 1,000 kilometers—to the longer range Nodong and Taepodong medium-range ballistic missiles with an estimated range of up to 2,500 kilometers. In July 2006, North Korea launched several missiles, including a longer range Taepodong, and while the missiles malfunctioned shortly after launching, this event illustrated the progress North Korea has made in its missile programs, the North Korean government's willingness to test and perhaps use its missiles, and the need for at least a limited U.S. missile defense system. North Korea has also demonstrated an interest in space launch vehicles, which are de facto intercontinental ballistic missiles (ICBMs).⁷

Of interest is the fact that North Korea has regularly exported ballistic missiles throughout the developing world. Indeed, many attribute Iran's progress in ballistic missile development to the assistance of North Korean engineers.

⁶ The committee recognizes that there is no formal peace treaty ending the Korean conflict.

⁷ An ICBM is basically a space launch vehicle with a payload orbit designed to intersect with the surface of the Earth.

2.1.3 – Islamic Republic of Iran

Key Characteristics

- Large military, but defense spending has fallen since the Iran-Iraq War
- Older combat platforms; experiences difficulty maintaining its conventional forces
- Pursuing asymmetric capabilities (ballistic missiles and terrorism) that give it ability to strike at potential adversaries inaccessible to its conventional military
- Developing asymmetric anti-access/area denial capabilities for the Persian Gulf and North Arabian Sea

The Islamic Republic of Iran has a relatively modest defense budget estimated at \$4.7 billion, or roughly 2.7 percent of its Gross Domestic Product, in 2005. Iran's overall defense budget has declined since the end of the Iran-Iraq war in 1988, and its foreign military procurements have been hampered by international arms embargos. Until the Islamic revolution in 1979, Iran depended on Western suppliers for the bulk of its conventional military platforms. Since the revolution, it has maintained those aging platforms with spare parts often procured on the black market. To offset these aging systems, Iran has sought to purchase hardware from Russia, the PRC, and North Korea. Even these purchases, however, have declined dramatically since the late 1990s. Despite the fact that its equipment is aging, Iran's military is still vastly larger than its Arab neighbors.

Arguably, Iran has turned to more asymmetric and unconventional means of pursuing its interests. These means include developing a growing fleet of ballistic missiles, mostly derived from the North Korean Nodong, and consistently supporting terrorist groups operating throughout the Middle East.⁸ Iran's conventional forces may have limited capabilities to project power much beyond its borders, but these forces give it the ability to strike well beyond the range of its conventional military capabilities.⁹ Closer to home, Iran has invested in anti-access and area-denial capabilities, such as submarines, mine warfare capabilities, and large numbers of armed fast boats that provide the capability to attack shipping in the Persian Gulf and North Arabian Sea without necessarily engaging in a large naval battle with any other country's navy. According to the Office of Naval Intelligence, the Revolutionary Guard Corps Navy operates a force of over 1,000 fast attack craft and fast inshore attack craft, principally armed with infantry weapons (machine guns, rocket-propelled grenades, recoilless guns, and man-portable air defense systems.) They have operated in groups of up to 40 and could break into groups of 20 to 30 and attack ships and convoys from multiple axes simultaneously. Taken together, these capabilities represent a threat to global petroleum supplies.

⁸ For example, Iran has known ties to several terrorist groups, including most notably Hamas and Hezbollah, the latter of which had killed more Americans than any other terrorist group prior to Al Qaeda's September 11, 2001 attacks. Some groups also engage in activities in Europe, Asia, and the Western Hemisphere.

⁹ Iran's ballistic missile fleet is estimated to include roughly 370 Shahab 1/2/3 ballistic missiles.

2.2 – Current and Emerging Nuclear Powers

Key Characteristics

- With the exception of Russia, relatively modest nuclear arsenals when compared with superpower Cold War arsenals
- Limited numbers and types of strategic nuclear delivery vehicles
- Varying stages of strategic modernization; generally do not mirror the Cold War strategic triad of bombers, missiles, and submarines
- Doctrine, command and control appear uncertain, possibly even to policymakers within the country
- Poor U.S. understanding of what may deter or dissuade current and emerging nuclear powers
- Potential for threat to change suddenly due to global availability of nuclear materials and possible loss of control of its nuclear weapons by a nuclear power

During the Cold War, the potential for a nuclear exchange between the United States and the Soviet Union dominated much of the U.S. national security agenda. In retrospect, some analysts have suggested that the U.S.-Soviet strategic relationship was relatively stable, as both sides confronted only the other nuclear power and understood the so-called “rules” of the relationship. In theory, those rules included: (1) each country retained complete control over its nuclear weapons arsenals; (2) each country understood that its nuclear weapons existed to deter the other; (3) each country was prepared to accept a rough balance of capability in order to ensure that neither could achieve unilateral advantage; and (4) each country possessed a reliable, robust ability to launch a second strike against the other, should the other initiate a nuclear exchange. Looking back, some analysts have referred to the strategic balance as a desirable period of stability in international security.

In fact, the strategic U.S.-Soviet relationship may have been much less clear. For most of the Cold War (and indeed, even today), analysts and academics debated why, when, and how the United States could deter the Soviet Union. Different answers had significant programmatic and operational implications. For instance, many experts, who concluded that the Soviet Union did not share U.S. views on deterrence and/or that nuclear deterrence exacerbated NATO’s conventional disadvantages vis-à-vis the Warsaw Treaty Organization, advocated ballistic missile defense to preserve stability in the relationship. Others, who concluded that the Soviet Union shared U.S. views on deterrence, often viewed ballistic missile defense as destabilizing. Adherents of either view could point to ample factual data and doctrinal statements to support their views. As a result, debates over strategic policy were often very heated.

In considering current and emerging nuclear threats, the committee reviewed Russia, the PRC, India, Pakistan, North Korea, and Iran.¹⁰ In viewing the rise of new nuclear powers, the difficulties of interpreting foreign strategic capabilities and developments are likely to be exacerbated. Of particular concern, it appears that many current and emerging nuclear powers do not view their nuclear capabilities solely through the lens of deterring conventional, or nuclear, attack upon themselves. The panel on current and emerging nuclear powers noted with some concern that three established nuclear powers (i.e., Russia, the PRC, and India) are experiencing significant demographic changes and may view nuclear weapons as a means of bolstering regional economic and political relevance. Conversely, North Korea, Pakistan, and Iran may all view nuclear weapons as a means to enhance regional clout and increase their international freedom of action. In these circumstances, the gap panel concluded that the risk of a large-scale, direct nuclear attack on the United States is relatively small. Nuclear weapons use is more likely to result from some regional crisis, ranging from a local conflict to a regime change that draws the United States into the conflict due to its strategic interests.

Setting Russia aside, emerging nuclear powers share several characteristics that will complicate the task of planning for U.S. national security. First, current nuclear arsenals tend to be quantitatively modest, particularly when compared with those of the United States or the Soviet Union during the Cold War. Few states discussed below currently have the infrastructure or means of producing large numbers of advanced nuclear weapons. This is not to say that they are not seeking to expand their infrastructure or that the committee believes they will fail to do so over the twenty-year timeframe of the Committee Defense Review (CDR); indeed, some—particularly Iran—appear committed to significant infrastructure expansion, and some—for example, North Korea—have recently tested the resolve of the international community by conducting unauthorized nuclear tests. Even if they only produce a handful of nuclear weapons a year, each of these states could accumulate a sizeable arsenal over time.

Second, most emerging nuclear states currently have a limited number of strategic nuclear delivery vehicles of a relatively modest capability. They generally lack the Cold War triad of bombers, ballistic missile submarines, and intercontinental ballistic missiles that the superpowers possessed during the Cold War. Instead, newer nuclear states tend to rely on one particular class of delivery platform while seeking to broaden the types of delivery vehicles available to them over time. More often than not, their current likely delivery vehicles are theater-range systems incapable of reaching U.S. territory from the territory of the emerging nuclear power. The committee does not believe that this situation will persist and expects current and emerging nuclear powers to improve the range of strategic nuclear delivery vehicles, noting that even today non-military vessels could seek to approach illicitly the U.S. coast and launch shorter-range delivery systems against U.S. territory.

Third, new nuclear powers are in varying stages of modernizing their delivery capabilities. However, those capabilities are not being modernized in a manner to mirror the robust offensive triad of bombers-submarines-missiles. Instead, nuclear states are improving the performance and reliability of a particular type of platform (e.g., ballistic missiles) while laying the groundwork to add a second class of major delivery platforms (e.g., ballistic missile submarines or bombers). Thus, the offensive capabilities of these states are often uneven across

¹⁰ The committee notes that the first five states possess nuclear weapons and that Iran is thought to be seeking them.

the range of delivery platforms. Some may even explore unconventional delivery platforms, such as disguised surface vessels.

Fourth, many of these states appear to lack clear doctrine for the employment of nuclear weapons and may not have developed the kinds of command, control, communications, and intelligence capabilities that give them a high confidence in employing their nuclear weapons in a variety of situations. As a result, they may have a limited number of nuclear use options available in a crisis and a limited number of crises for which they have pre-planned their potential nuclear weapons use. To the degree that these factors create uncertainty, they may be destabilizing.

Fifth, all of the nuclear weapons states have strategic relationships with countries other than the United States. Those relationships are not necessarily benign and probably have a larger impact on the nuclear plans of these emerging nuclear states than their relationship with the United States.

Sixth, the United States possesses an extraordinarily limited amount of information and expertise about how to deter some of the new nuclear powers, assuming that they are deterrable. Even if one assumes that U.S. planners clearly and accurately understood how to deter the Soviets from either conventional or nuclear aggression, it is not clear that anyone understands what could deter new nuclear powers. Indeed, in some cases it is not even clear whether the leadership in those countries has identified its own “red lines,” the crossing of which would trigger nuclear use. At a minimum, the challenge is exacerbated significantly by the number of nuclear powers and the need to develop understanding and capabilities to deter several states likely to have different motivations and capabilities of their own.

2.3 – Terrorism and Radical Islam

Key Observations

- There is a civil war within the Islamic world, pitting violent, religious extremists against more moderate voices. The United States is a combatant within that civil war.
- The enemy will adapt and will try to operate in ungoverned areas, failed states or states that support terrorism. Terrorists have declared Iraq to be the central front in their war against all people who oppose their ideology.
- A terror campaign on U.S. soil similar to those seen in Israel and Europe is likely. U.S. would suffer catastrophic consequences and be fundamentally changed if the enemy achieves its strategic goals.
 - The enemy will succeed in attacking the U.S. homeland again, likely by taking advantage of relatively porous borders/ports of entry and exploiting narcotics trafficking routes.

- Terrorist use of WMD on U.S. soil is likely. Likely targets would include symbols of national power and key economic arteries, such as transportation infrastructure and energy facilities.
- It is difficult to deter or dissuade non-state actors using traditional methods and to counter-strike against an enemy who may be hidden or among a blameless population.
- In the long term, the committee judges that erosion of American will and resolve to combat an adaptive, enduring enemy is one of the greatest security threats posed by militant jihadists.

The nexus of terrorism and radical Islam presents one of the gravest threats to U.S. national security and is at the heart of the Global War on Terrorism (GWOT). Al Qaeda and its affiliated movements openly advocate war against the United States on the basis of radical Islamic teachings. In the long term, the committee judges that erosion of American will and resolve to combat an adaptive, enduring enemy is one of the greatest security threats posed by militant jihadists.

As implied—or stated outright—in messages from Osama bin Laden and his associates, al Qaeda sees the current conflict in Iraq both as an opportunity to advance the violent jihadist cause throughout the Muslim world and as the principal means of threatening the security and economic stability of the United States. Even as al Qaeda and its affiliates continue to operate in Iraq, they still desire to attack the United States directly, if possible using catastrophic chemical, biological, radiological, nuclear or high-yield explosive (CBRNE) weapons. Such attacks could result in massive civilian casualties and significant physical damage and disruption.

2.3.1 – Al Qaeda Network Ideology

Al Qaeda and similar groups use terrorism as a means of destabilizing the international system with the ultimate hope of replacing it with an all encompassing Islamic state, or Caliphate. In this, al Qaeda differs considerably from historic terrorist groups in that they generally focused on particular political aims vis-à-vis one state. Al Qaeda's strategic goal embraces portions of three continents, including dozens of nation-states. Some extremists go further, calling for global jihad until Shari'ah law is enforced around the planet.

For example, on March 4, 2006, the Arab media outlet al Jazeera broadcast a clip of Ayman al-Zawahiri, regarded as al Qaeda's "second-in-command," in which he called upon Hamas to defy Western calls to seek peace with Israel now that Hamas controlled the Palestinian Authority's legislative body. Zawahiri proclaimed, "The first issue is that the assumption of power is not required in itself, but it is required to consolidate God's law on earth. Should we give up the basis of religion; namely, the rule of Shari'ah, how would we apply the rule of God on Earth." Abu Musab al-Zarqawi, the leader of al Qaeda in Iraq whom coalition forces killed in June 2006, released an audiotape describing his mission. In this tape, which appeared online on January 9, 2006, he stated, "Our demands are: First, expelling the invaders from our land in Palestine and Iraq and the rest of the land of Islam. Second, establishing God's Shari'ah [Islamic

law] on earth, spreading the justice of Islam, and eliminating the injustice of [other] religions. We will not stop the raids until Islam triumphs and Shari'ah is established or we perish while doing that.”

Radical Islam, the militant jihadist faction, is a small section of the Islamist belief system, which is committed to the violent overthrow of the existing international system. Militant jihadists utilize radical religious doctrine to justify the use of terror by interpreting “jihad” as a religious sanction for employing violence. Moreover, jihadist elements invoke holy texts, such as the Koran, to appeal to non-jihadist Muslims. Precisely where militant jihadist ideology differs from the non-violent Islamist and mainstream/moderate strains of Islam is therefore a matter of paramount importance. Focusing on the ideological struggle within Islam will allow the United States to gauge the extent of radical Islam’s following, and foster strategies for stemming its spread.

2.3.2 – Recruitment and Organizational Goals

Al Qaeda and other militant jihadist organizations will operate in ungoverned areas, failed states or states that support terrorism. Educational institutions that serve as the breeding ground for future militant jihadists exist not only in traditional militant jihadist hotbeds within the Middle East, but also in Europe, Southeast Asia, Africa, and South America. Some of these organizations can operate in Western states because they inculcate followers with an ideology that falls just short of advocating violence; however, they maintain connections with terrorist cells. Recruits, who demonstrate a strong commitment to this ideology, are often ultimately connected to militant jihadist cells and eventually enter terrorist training camps. The movement spans the globe and is both agile and difficult to detect and monitor.

For those reasons, estimates of al Qaeda’s size vary. The U.S. Department of State concludes that al Qaeda probably has several thousand extremists and associates worldwide. However, because it is a loose network and defines itself as the leader of a global ideological/religious movement, al Qaeda may inspire a much larger number of radically-inclined Islamists, who can join the violent pursuit of its goals without necessarily becoming formal “members” of the organization. Thus, al Qaeda can contribute to the creation of splinter groups that could expand the number of violent Islamist terrorists. In other words, the nature of the conflict with terrorist Islamists is broader than a straightforward conflict with al Qaeda.

Faced with the possibility that state sponsors of terrorist organizations will no longer harbor terrorist groups, al Qaeda affiliates have established operating bases in ungoverned spaces (i.e., states that lack functioning central governments or that do not exercise effective control over national territory). Thus, al Qaeda affiliates are able to train Indonesian operatives in the southern Philippines, operate throughout North Africa, and find havens in the Caucasus. This development represents an increasingly difficult challenge for U.S. policymakers.

There is a growing consensus that ideology leads some Muslims to become violent jihadists. This poses a serious challenge to open societies, particularly in Europe. While the jihadist ideology poses a security threat, democratic governments generally cannot prosecute

those who believe in and spread a militant jihadist ideology, unless they break some other law. This allows militant jihadists to retain the initiative in deciding when to translate their beliefs into action. It also allows military jihadists to organize, radicalize, and recruit in open societies.

As a result, many experts expect that violent jihadists will also seek to operate in open societies, exploiting the freedoms and civil liberties inherent in liberal democracies. They believe that such jihadists will again penetrate U.S. borders, establish cells within the United States, and carry out attacks on non-military targets within the homeland. As the 9/11 Commission Report stated: “While his allied Islamist groups were focused on local battles, such as those in Egypt, Algeria, Bosnia or Chechnya, bin Laden concentrated on attacking the ‘far enemy’—the United States.”

As the September 11th attacks demonstrated, al Qaeda prefers multiple simultaneous attacks on highly symbolic targets. Thus, it will likely target symbols of national power, as well as key arteries of the U.S. economy, such as transportation infrastructure and energy facilities, in future attacks.

2.4 – Asymmetric and Unconventional Threats

The threat panel identified asymmetric and unconventional threats as a special category of capabilities that potential adversaries might seek or use to offset the overwhelming conventional and strategic military power of the United States armed forces. While most of these capabilities would likely be used in the context of a conflict with another state or terrorist group, the committee concluded that their unique nature warranted additional scrutiny.

The asymmetric and unconventional gap panel identified four particular areas of concern: outer space, cyberspace, weapons of mass destruction, and critical infrastructure writ large.

2.4.1 – Outer Space

The United States derives considerable military advantages from its space systems, which typically comprise three segments: ground, including user and control elements; link; and space/orbital. Threats to U.S. space assets might target any of these segments, and the threats to each segment differ significantly. While most of the information governing vulnerabilities and threats is classified, the following discussion examines the kinds of vulnerabilities and threats that warrant increased attention from policymakers.

Ground Segment

Although often discussed separately, the user and control segments of a space system face similar threats. The “user segment” refers to the receivers, processors, and terminals to send or receive space signals and information. These can be ground-, air- or ship-based. The “control

segment” refers to the ground control facilities that direct and monitor the space asset. Components in these segments are vulnerable to the same types of threats as other ground-, air- or ship-based platforms, including but not limited to ground attack, air attack, or sabotage.

Although smaller components (e.g., Global Positioning Satellite (GPS) receivers) are unlikely targets, larger components (e.g., satellite antennas) could be vulnerable if identified by an enemy. Identification by visual signature is most likely, as identification by other means is difficult. Receivers do not emit a traceable signal. The directional antennas used by most transmitters make detection by standard electronic warfare equipment unlikely in most circumstances.

Location of control facilities depends on the types of system and orbit of satellites being controlled. Depending on the location of a particular control facility, vulnerability to conventional ground or air attack could be significant. Such facilities could also present an attractive terrorist target. Most space systems are designed to allow another control facility to take over if the primary facility is offline.

Link Segment

The link segment is the means (electromagnetic energy) used to convey data and information between the space/orbital element and the user/ground element of a space system. Attacking the link segment of a space system is often relatively easy, and usually leaves no physical evidence of the attack. Jamming and spoofing are the two most common link segment threats.

- *Jamming* – Jamming is the transmission of signals that impede communication between the control and/or user segments and the space asset. The vulnerability of a satellite to jamming depends in large part on the frequency of the signals (e.g., UHF is very vulnerable, SHF is somewhat less vulnerable, EHF is much less vulnerable), the power of the jamming signal relative to the target signal, and the location/orbit of the target satellite. The purchase and construction of simple jammers are relatively cheap and easy, making jamming a commonly used technique.
- *Spoofing* – Unlike jamming, which “blocks” or “drowns out” a signal, spoofing is the transmission of fake signals that appear to be legitimate data coming to or from the satellite. Spoofing a downlink (i.e., information from the satellite) could hypothetically allow an enemy to send false location information to a GPS receiver, or send false information on satellite status (e.g., health, location) to a control facility. Spoofing an uplink (i.e., information going to the satellite) could hypothetically allow an enemy to gain control of a space asset by sending commands to the satellite via the spoofed signal. Spoofing is much more technologically complex than jamming, since the spoofed signal must appear real to the other segments. Signal encryption decreases the vulnerability of military space assets to spoofing.

Space/Orbital Segment

Experts refer to the actual platform and/or payload (e.g., satellite bus and mission-specific hardware) as the space, or orbital, segment. Due to the relatively high cost and technological sophistication required to damage, destroy, or otherwise interfere with a satellite, this segment is typically the least vulnerable of a space system. However, this segment is also typically the most expensive, time consuming, and difficult to repair/replace should an attack be successful. In addition to the threat of deliberate attack, there are several environmental threats in space that should not be ignored.

No nation is currently believed to have the capability to carry out a catastrophic, “space Pearl Harbor” attack. However, poor situational awareness in space, lack of reliable intelligence on foreign counter-space programs, and the acknowledged importance of U.S. space-based elements preclude a high level of confidence in that conclusion. Potential deliberate threats include the following:

- *Direct ascent ASAT* – Satellites in Low Earth Orbit (LEO) are vulnerable to direct ascent anti-satellite (ASAT) weapons. These weapons are designed to launch directly at a satellite as it flies overhead and destroy space assets via kinetic collisions. Compared to other types of ASAT interceptors, these are relatively simple to design, build and test.
- *Co-orbital ASAT* – A co-orbital ASAT weapon is launched into a temporary orbit similar to its target, where it waits for a specified number of orbits or period of time before destroying its target. Unlike direct ascent ASAT weapons, co-orbital ASATs are able to target satellites in higher orbits, not only LEO. The additional time these ASATs must spend in orbit requires them to be somewhat more complex than direct ascent ASAT weapons, making co-orbital ASAT weapons more difficult to design, build, and test.
 - *Short duration* – A short duration co-orbital ASAT would typically hold in a temporary “parking orbit” for a matter of hours before attacking its target.
 - *Long duration* – A long-duration co-orbital ASAT would typically hold its parking orbit for a matter of months or even years before moving to its target. Given the extended orbital timeframe, these ASATs must be more sophisticated and more reliable than other interceptors.
 - *Farsats/Nearsats* – A farsat would hold a parking orbit away from its target, making its way toward a target once the command is given. A nearsat would hold an orbit closer to the intended target, requiring greater maneuver capability than a farsat. An adversary could launch either type of satellites well in advance of a planned attack, and they would likely appear to be non-hostile satellites serving some innocuous function.
 - *Space mines* – These relatively unsophisticated satellites could be placed into a parking orbit that periodically intercepts the orbit of the target. As the space mine and target pass each other, the space mine would detonate, either by ground command or some form of onboard trigger/fuse.

- *Fragmentation/Pellet Rings* – The release of small, non-maneuvering objects (e.g., shrapnel) from a satellite could form fragmentation or pellet rings, creating a debris ring around the earth that would damage or destroy any satellites passing through it.
- *Space-to-Space Projection* – Space-to-space projection could involve physical projectiles or high energy lasers. The most complex co-orbital ASAT system, a space-to-space missile system would comprise a carrier satellite, rocket-propelled ASAT interceptors, and command and control assets. A single orbital platform could theoretically carry multiple, independently “targetable” missiles. Space based high energy lasers are a familiar concept in the context of ballistic missile defense, and have obvious ASAT potential as well.
- *Microsatellites* – Of particular interest is the proliferation of miniaturized satellites, commonly referred to as microsats, nanosats, or picosats depending on size. Miniaturized satellites cost less than their full-size counterparts to design, build, and launch, and their shorter development timelines allow them to incorporate cutting edge technology. In addition to the many non-hostile missions miniaturized satellites can perform, adversaries could use them for counter-space operations such as orbital surveillance and intercept. However, there is no reliable indication that foreign powers are currently testing any such technology. Reports of miniature “parasite satellites” are unsubstantiated.
- *Standoff Weapons* – Standoff ASAT weapons are typically ground- or air-based systems that attack a target from afar. Unlike most interceptor-based ASAT systems, standoff weapons would be capable of engaging a target in a matter of minutes or seconds, and would be capable of engaging multiple targets.
 - *Lasers* – Low-power lasers can be pointed at a satellite’s optical sensors to temporarily blind it, a practice known as “dazzling.” High-power lasers can damage or destroy a satellite by overheating its parts. The need to compensate for atmospheric effects makes ground- and air-based laser systems more difficult to develop than space-based systems.
 - *Particle beams* – Concepts for particle beam ASAT weapons involve firing an intense beam of atomic particles at a satellite, radiating enough energy to overload a satellite’s electronic components. The particles used cannot penetrate the atmosphere, making any potential particle beam ASAT platforms strictly space-based.
 - *Radio Frequency (RF) weapons* – Concepts for RF weapons include ground- and space-based systems that fire an intense burst of radio energy at a satellite, overwhelming its electrical circuits and thus disabling its electronic components. Although there are no known RF ASAT weapons deployed today, this technology will soon reach maturity.

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- *Non-directed Nuclear ASATs* – A nuclear detonation in space is arguably the easiest and most effective ASAT option. Although any nation with a missile and a nuclear device could pursue this option, the result would simultaneously impact every LEO satellite, including those used by the nation responsible for the attack.

The detonation of a nuclear weapon at high altitude will produce two devastating effects. The first effect is a High Altitude Electromagnetic Pulse (H-EMP), which would impact ground segment components and LEO satellites in line-of-sight of the blast. The second, longer-term effect is that of ambient radiation. Radiation from the blast can linger for months or years, drastically shortening the lifespan of LEO satellites from years to a matter of months.

Threats to U.S. Military Forces From Foreign Space Assets

Other nations currently possess and continue to acquire new space-based capabilities, particularly for intelligence, surveillance, and reconnaissance (ISR). Although only a handful of states currently have space launch capabilities, other state or non-state actors can pay commercial entities or space-faring nations to launch payloads for them. Furthermore, the ease of access to commercial weather, communications, and imaging satellites allow actors to enjoy the benefits of these satellites even without a viable space program. Of the regional powers reviewed by the committee: Russia and the PRC have robust space capabilities; India is a leading space power in the developing world; while possessing limited experience with space systems, North Korea and Iran have missile capabilities and have announced their intentions to develop independent space capabilities; and Pakistan seeks to improve its relatively modest capabilities, most of which are dependent on third party support.

Communications

Satellite communications have become a global standard, and access will only become more widespread in the coming years (e.g., cable television, internet, satellite phones, and pagers). Many commercial satellite communications constellations exist, and the U.S. deployed forces spend more than \$400 million per year on additional bandwidth to augment the military-owned satellite communications systems. All of the commercial assets are owned by multi-national conglomerates. Foreign governments are increasing their use and investment in satellite communications, but currently the majority of their communications are sent via microwave line-of-sight ground stations and ground-based fiber optics. Satellite communications have proven to be a key enabler for non-state actors as well.

Observation

A handful of companies around the globe readily provide commercial satellite imagery to the general public, and this global industry is gaining momentum. Low-resolution satellite imagery is available for free on the Internet, and customers can purchase higher resolution

imagery from commercial firms through the use of a credit card. The proliferation of high-resolution imagery technology is evident in a number of countries in which governmental agencies are producing quality imagery products for defense and intelligence uses.

Precision Navigation and Timing

GPS receivers are inexpensive and available worldwide. The only GPS signal available to commercial devices is the Standard Positioning Service (SPS), which is far less accurate than the Precision Positioning Service (PPS) signal available to the U.S. military and its allies. However, even SPS is a significant navigational improvement for many foreign militaries. Newer iterations of the GPS satellites will increase that accuracy. The GPS system was integrated into “Blue Force Tracker,” a system that improved the situational awareness and command and control of U.S. forces during Operation Iraqi Freedom. The SPS signal could be used to similar effect by foreign military forces. Similarly, many advanced U.S. conventional munitions rely on GPS for their precision; foreign forces can use the SPS signal to create less precise munitions.

Russia currently has its own version of GPS called GLONASS, which provides quality PNT data. Additionally, the European Union is developing a system (Galileo) that will diminish member nations’ dependence on GPS and may provide an alternative means of improving the situational awareness, command and control, and precision of foreign military forces. In fact, some analysts suspect that Galileo’s development is motivated in part by a desire to improve the ability of some European countries to develop, field, and export precision-guided munitions without dependence on the U.S. GPS system.

Early Warning

Early warning systems provide near real time notice of events such as ballistic missile attack or nuclear detonation. Space-based early-warning systems have played a major role in past nuclear false alarms – sometimes showing that there was no attack when other sources incorrectly said there was and sometimes providing false warning of impending attack.

2.4.2 – Cyberspace

Cyber assets are the backbone of U.S. military transformation and are critical to net-centricity and information dominance – i.e., the ability to gather, analyze, and disseminate necessary information while preventing one’s enemy from doing the same. Such reliance renders cyber assets such as computer hardware, software, and networks increasingly attractive targets for state and non-state actors alike. A successful cyber attack could drastically reduce U.S. command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) capabilities, thus negating a primary advantage on the battlefield.

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Threats to U.S. cyber assets range from tech-savvy high school students to foreign intelligence agencies. For the purposes of this discussion, the committee broke these threats into three separate categories.

Level I – Recreational Hackers

Level I threats are the most common and least dangerous. Recreational hackers are usually relatively inexperienced and unsophisticated, using tools developed by more advanced hackers to engage in random cyber-vandalism. They typically lack the skill and/or financial backing to conduct more dangerous attacks and are usually easily detectable. They are opportunistic, looking for inherent system vulnerabilities rather than attacking a particular target. Recreational hackers typically employ the following methods:

- *Bots/Botnets* – A bot is a software program that can be controlled remotely. A collection of bots working together is called a botnet. Bots may have legitimate, non-hostile purposes. For example, Google and Yahoo search engines use bots to index web pages. However, malicious bots can be used to infect an unprotected computer, which could then be used to infect other computers, launch denial of service attacks, which temporarily crash the target system by overloading its bandwidth or computational resources, or execute other malicious code.
- *Viruses* – A virus is a program that self replicates by seeking out and spreading or inserting copies of itself into system programs or documents. At a designated time (or when a preprogrammed action is taken by the user), the virus activates itself and delivers its “payload.” Most viruses are merely nuisances, using up valuable system resources. However, some viruses can delete, alter, or steal computer files or create “back door” access to computer systems in preparation for future attacks. Unlike worms, viruses cannot move across the network independently – they travel via human activity such as sharing infected files or opening infected email attachments.
- *Worms* – A worm is a self-replicating computer program, similar to a computer virus. However, unlike a virus, a worm is self-contained and does not need to insert itself into another program or document to propagate. Worms require no human activity to spread – they typically spread themselves by searching infected systems for email contact lists or shared folders. Worms are a particularly efficient way of creating backdoors into infected systems in preparation for later unauthorized access and have been tailored to thrive in the internet environment.
- *Trojans* – Inspired by the story of the Trojan Horse in Homer’s *Iliad*, a trojan is a malicious program that is disguised as legitimate software. Typically this type of threat will remain dormant and undetected on system or within a network until it is triggered. Trojans may exist in forms that seem harmless, useful, and/or interesting (e.g., screen savers, games, security patches) to an unsuspecting user but, when executed, might perform malicious tasks such as erasing data, corrupting files, “phishing” for bank or other account details, or installing a “backdoor” for later unauthorized access to a system.

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- *Web Vandalism/Web Graffiti* – Web page vandalism involves altering the content of a web site without permission of the owner. Although it is the most visible type of attack, it usually is little more than an annoyance. This technique is often used by “hacktivists,” hackers with a political agenda.

Level II – Cyber Mercenaries

Level II threats are also common and pose a greater threat to U.S. cyber assets than Level I threats. Unlike recreational hackers, cyber mercenaries are highly skilled and usually well-financed. They may improve existing hacker tools, or they may write their own malicious programs and/or code to exploit software vulnerabilities before security patches can be developed. Most mercenaries are interested in gaining and maintaining access to a target system, rather than simply causing mayhem. Some of the more advanced “hacktivists” fall into the Level II category in terms of their skills, although their primary motivations are political/ideological rather than financial.

Cyber mercenaries are usually hired to target specific systems and execute or enable specific criminal activities (e.g., data mining, stealing passwords, credit card fraud). They are not typically trusted for state-level espionage, but their skills could certainly enable any state sponsor willing to hire them. Many experts suspect terrorist groups of recruiting hackers in an attempt to: (1) raise funds via various forms of cyber crime and (2) collect information on potential targets for non-cyber attack.

Like recreational hackers, cyber mercenaries employ common tools, especially trojans and botnets, and methods, such as backdoors and denial of service attacks, but typically use them in a more sophisticated manner, allowing them to avoid detection for longer periods of time.

Level III – State-Sponsored Cyber Hostility

Hostile activity by foreign governments is the most dangerous threat to U.S. cyber assets, although as the committee can ascertain, such activity is the least commonly experienced. It is extremely difficult to accurately assess the amount of hostile cyber activity directly connected to foreign governments. Much of it is masked by the high volume of Level I and Level II activity or begins at these lower levels. Additionally, hostile cyber activity from one source can easily be made to appear as though it came from somewhere else. One of the attractions of hostile cyber activity for a foreign government is the high level of plausible deniability.

For the purposes of this discussion, it is useful to draw a distinction between cyber espionage and other forms of cyber attack. In most cases, foreign governments would find it much more useful to engage in cyber espionage, allowing them to gather sensitive information with little fear of detection or reprisal. Although state-sponsored cyber espionage is difficult to detect and identify, it is certainly occurring.

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While conducting cyber espionage activities, agents of foreign governments or corporations can avail themselves of many of the same tools as Level I and Level II actors. However, in most cases, agents would place a far greater emphasis on remaining undetected and collecting data than causing damage to the target system or network. Elements of traditional espionage can be useful in conducting cyber espionage; for example, the collection of a computer password via human intelligence or signals intelligence would allow an agent to gain access to the target system as a trusted user, possibly allowing the agent greater freedom of movement within the system and lower probability of detection. Purchase of computer hardware and software from foreign entities presents a counter intelligence risk that must be addressed. Additionally, cyber assets have become an integral tool of traditional intelligence tradecraft, providing significant advantages in open-source data collection, analysis, communication, and counterintelligence efforts.

Although the catastrophic “cyber meltdown” scenarios popular in the late 1990s are highly unlikely, the threat of cyber attack in some form is very real. As mentioned previously with respect to the military, a successful cyber attack could drastically reduce U.S. C4ISR capabilities and leave U.S. Armed Forces helpless, unable to communicate and with severely degraded situational awareness.

Worms, trojans, and other hacker tools could allow foreign agents to alter or destroy information on target systems, damage/destroy the systems themselves, or overburden critical sites and organizations with hacker activity. Cyberterrorists could install “backdoors” in target systems well in advance of any planned cyber attack, allowing unfettered access once an attack has begun. More advanced forms of web vandalism could be used in misinformation campaigns, either by allowing foreign agents to change information on official government websites, or to “spoo” official websites by surreptitiously redirecting users from the official page to an authentic-looking page of false information.

Cyber assets are also vulnerable to electromagnetic pulse (EMP) weapons, such as the High Altitude Electromagnetic Pulse (H-EMP) generated by the detonation of a nuclear device, or the High-Power Microwaves (HPM) generated by special equipment that transforms energy from batteries or chemical explosions into intense microwaves. Generally speaking, any actor with a nuclear device and a delivery system can generate an H-EMP, and depending on the altitude and power of the nuclear burst, the H-EMP effect can span thousands of miles. HPM weapons have a much smaller range, but are easier to construct (because no nuclear material is required). Furthermore, the frequencies generated by HPM weapons are more destructive and more difficult to harden against than H-EMP.

Cyberterrorism

Finally, while some experts argue that it is difficult to determine the level of interest or the capabilities of international terrorist groups to launch an effective cyber attack, others conclude that terrorist groups will ultimately supplement traditional physical terrorist attacks with cyber attacks against industrialized nations. It remains disputed whether Al Qaeda sees cyberterrorism as a necessary means for executing an attack against United States.

Nevertheless, violent jihadists will continue to exploit the internet to carry out operations critical to their mission. Al Qaeda has improved organizational secrecy by taking advantage of technological innovations. For example, there is evidence that Al Qaeda operatives used the Internet to plan the September 11th attacks. Internet-based telephone services have become al Qaeda's preferred form of communication with terrorist cells overseas. Captured al Qaeda operative Khalid Shaikh Mohammed, the infamous mastermind of the September 11th attacks, exploited Internet chat software to communicate with at least two hijackers. In addition to using technology for secure communication, al Qaeda affiliates also use sophisticated encryption software to protect its data and plans. Paramount to defeating terrorist cells is attaining a capability that can infiltrate and disable terrorist planning and communication.

2.4.3 – Weapons of Mass Destruction (WMD)

Key Observations

- A major nuclear exchange is unlikely.
- Nuclear detonations on U.S. soil are likely to result from regional conflicts or the loss of control of nuclear material by a nuclear weapons state.
- The likelihood of such attacks is increased by the continued spread of nuclear capabilities and a terrorist commitment/desire to conduct such attacks.
- Over the long run, the committee believes that biological weapons attacks are a greater danger, driven by the spread of biotechnology and the relative ease with which potential adversaries can develop capabilities.

The scenario with the most catastrophic consequences involves a nuclear attack on U.S. population centers. Like during the Cold War, nuclear weapons represent a class of threats so significant as to require unique scrutiny. The committee, therefore, considered nuclear threats—and other WMD such as chemical, biological, and radiological weapons—from a variety of perspectives. The current and emerging nuclear powers panel, for example, considered them in the context of state-on-state warfare with special attention to specific list of states. The terrorism and violent jihadism panel reviewed them through the prism of terrorist capabilities and intentions to attack the United States. The asymmetric and unconventional threats panel reviewed them from the perspective of what it took to produce weapons of mass destruction and how those threats could be managed. The non-traditional and unconventional threats panel reviewed weapons of mass destruction through the prism of consequence management and the role that the Department of Defense plays, and could play, in responding to an attack. In many cases, the work of each panel overlapped, but their general findings were consistent.

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The worst case WMD scenario would result from a large nuclear assault on U.S. cities by a near-peer competitor. The committee deemed that event unlikely, concluding that nuclear weapons use involving the United States would more probably begin with a regional conflict to which the United States becomes a party or from a nuclear power's loss of control over its nuclear weapons. Finally, the committee noted that terrorists seek to acquire, and strike the United States with, WMD, preferably nuclear or radiological.¹¹ The committee concluded that the greatest near-term danger is the use of a small nuclear weapon in an urban area, which could result in approximately 100,000 fatalities and significant radiological fallout. The concern dominating this scenario is the proliferation of this capability to those for which rational diplomacy has traditionally not produced a solution, primarily non-state (terrorist) actors and states with unstable governments.

Due to the continued development and expansion of biotechnologies, biological agents will pose a greater danger over the long-term. The industrial base required to research and produce a significant biological weapons capability is much smaller than the large military-industrial base necessary for production of nuclear weapons from raw materials. A minimal industrial infrastructure coupled with the "dual use" nature of many of the technologies make detection of biological weapons activities particularly problematic. In the absence of effective mitigation measures, a relatively small biological attack in an urban area could result in a million fatalities. Large conventional explosive weapons and radiological weapons currently pose the most likely threats.

WMD threats have traditionally been considered in the context of state-on-state conflict. However, terrorist groups continue to seek the capability to attack their adversaries with WMD capabilities. Of particular concern, militant jihadists, such as al Qaeda, reportedly intend to carry out a WMD attack against the United States by taking advantage of relatively porous borders and ports of entry. The committee believes that militant jihadists will continue to partner with drug traffickers, exploit drug trafficking routes, and enter the United States undetected. They seek biological, radiological and nuclear weapons capabilities, including "dirty bombs" which can be a cheap means for striking a decisive blow. State sponsors of terrorism, such as Iran, Syria and North Korea, have strong ties with terrorist organizations and possess WMD stockpiles. Whether these state sponsors have actually supplied terrorists with WMD is not known with certainty; however, the possibility of covert transfers or leakages clearly exists.

Terrorists have attempted to acquire WMD technology through resources and connections. One example is the Aum Shinrikyo terrorist group, which sought plans and technology for the production of sarin, a deadly nerve gas. Aum Shinrikyo used sarin gas in an attack on the Tokyo subway in March 1995, killing twelve people and injuring 5,000. There is speculation that non-state proliferation networks, similar to the A.Q. Khan network, may be providing al Qaeda and its affiliates with unconventional WMD capabilities. These reports are consistent with speculation that al Qaeda has a WMD procurement program. A recent report by the Congressional Research Service (CRS) cites a collection of press clippings which highlight: "long discussions" between Osama bin Laden and Pakistani nuclear scientists concerning

¹¹ The committee notes that terrorists appear relatively undeterrable. It seems that many terrorists do not hold anything tangible – including their own lives and those of their loved ones – valuable, so it is difficult for the United States to hold anything at risk.

nuclear, chemical, and biological weapons; that a bin Laden emissary tried to buy radioactive waste from an atomic power plant in Bulgaria; the discovery by intelligence officials that al Qaeda built a dirty bomb near Herat in Western Afghanistan; and that in 2003, British authorities reportedly disrupted a plot to use the poison ricin against personnel in England. The report also cites a 1998 U.S. federal indictment, which charges that al Qaeda operatives sought enriched uranium on various occasions. Finally, in April 2002, captured al Qaeda leader Abu Zubaydah revealed that al Qaeda members sought a dirty bomb, which uses conventional explosives packaged with radioactive material.

2.4.4 – Military Operations Other Than War

In addition to deterring and combating enemies of the United States, the U.S. Armed Forces often serve U.S. national security interests in non-combat roles. Indeed, some experts believe that these roles are ultimately as important to U.S. national security as defeating adversaries on the battlefield. Two recent reports from the Defense Science Board concluded that since the 1990s, the Armed Forces experienced an increase in deployments, largely for the purposes of conducting peacekeeping, stability, and reconstruction operations but also in conjunction with diplomatic maneuvering.

The committee did not review all potential instances in which military forces could be deployed in such operations but took as a given that the military would continue to be called upon to perform those missions. In fact, Department of Defense Directive 3000.05, issued on November 28, 2005, elevated stability operations to the level of combat operations in the Department's list of priority missions that it must be capable of executing.

The kinds of non-combat missions in which the armed forces engage vary widely in the number of military personnel deployed, the length of their deployments, and the kinds of tasks they undertake. Nevertheless, it is possible to appreciate the kinds of missions that are required by briefly examining the nature of U.S. operations in the Balkans during a ten-year period.

In February 1993, President Clinton authorized the airdrop of relief supplies to Muslims surrounded by Serbian forces in Bosnia as the first U.S. military involvement in the 1990's Balkans wars. Over the following months, U.S. armed forces participated in NATO air actions to prevent unauthorized flights and in the United Nations mission to maintain stability in the Former Yugoslav Republic of Macedonia. In 1994, the U.S. President authorized combat air strikes, and U.S. involvement in the region increased exponentially in 1995 as the 1,500-member strong international Intervention Force (IFOR) deployed to Bosnia-Herzegovina and Croatia in early December; by the end of 1995, the United States had authorized 20,000 U.S. military personnel for participation in IFOR and thousands of other U.S. forces for missions in other former Yugoslav states, as well as Hungary and Italy. U.S. plans of action called for IFOR withdrawal by December 1996, and in that same month President Clinton authorized American participation in the follow-on Stabilization Force (SFOR) initially numbering 8,500. While early projections called for an 18 month presence, SFOR served in Bosnia until December 2004, at which time NATO concluded the mission and decided to maintain a military headquarters in Sarajevo to carry out a number of specific tasks related in particular to assisting the government

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in reforming its defense structures. (Note: The European Union (EU) has taken over the stabilization role previously undertaken by NATO. Agreements between NATO and the EU allow NATO to provide planning, logistic and command support for the EU-led operation.)

In addition to the Bosnia-Herzegovina example, the United States has been actively engaged in other international peace-enforcement and peacekeeping missions. As of February 2006, roughly 2,000 U.S. military personnel remained deployed in Kosovo as part of a peacekeeping force established after the 1999 conflict with Yugoslavia. The committee notes that during this period, the U.S. Armed Forces: continued to enforce the no-fly zones in Iraq that resulted from Operation Desert Storm in 1990; conducted eight operations in Liberia and Sierra Leone and five operations in East Timor; and routinely prepared military forces to evacuate U.S. citizens from conflict zones. In the five-year period since 2001, Department of Defense (DOD) reports that personnel have deployed in support of humanitarian assistance and peacekeeping operations in 86 different countries. For example, 7,800 personnel have deployed to Belize, 6,600 to El Salvador, 6,600 to Guatemala, 9,900 to Honduras, and 7,800 to Nicaragua for humanitarian and civic action programs and for infrastructure improvement. Likewise, 16,000 personnel were deployed to Indonesia for tsunami relief and an additional 2,769 were deployed to Pakistan for earthquake relief in 2005. Also, not including personnel engaged in training of security forces in Afghanistan or Iraq, approximately 471 personnel were deployed for various peacekeeping training operations in Albania, Armenia, Bulgaria, Croatia, Estonia, Germany, Hungary, Latvia, Moldova, Poland, Slovakia, Slovenia, Tanzania, Uganda, Ukraine, and Uzbekistan. The table below gives a better sense of the scale of relevant operations and the types of demands on the Armed Forces.

Nature of Incident	Enforcing Iraqi No-Fly Zone	Somalia	Haiti	Bosnia-Herzegovina
	1991-2003	1992-1993	1994-1995	1995-1996
Lead Agency	DOD	DOD	DOD	DOD
Days of Military Deployment	~4200	144	196	360
Deployed from Active Component	Unknown	10,000	18,000	23,000
Deployed from Reserve Component	Unknown		400	6,013
Deployed from Guard	Unknown		400	2,082

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Relation to International Entities	U.S. led multi-national coalition	U.S. led multi-national coalition	U.S. led multi-national coalition	NATO operation
Military Function	Security, Logistics, Command & Control, Air Defense	Security, Logistics, Command & Control, Air Defense	Security, Logistics, Command & Control, Air Defense	Security, Logistics, Command & Control, Air Defense
Major Equipment Required	Air & ground vehicles, patriot air defense systems	Reinforced light infantry division	Reinforced light infantry units	Reinforced armor division
Specialized Skills Required	Special Operations Forces (SOF), Language	Psychological Operations (PSYOPS), SOF, Civil Affairs, Medical, Engineer, Language	PSYOPS, SOF, Civil Affairs, Medical, Engineer, Language	PSYOPS, SOF, Civil Affairs, Medical, Engineer, Language

Source: Office of the Joint Chiefs of Staff.

The Defense Science Board recently noted that in order to successfully support the total number of simultaneous stabilization and reconstruction operations, the military must deploy three to five times the number of personnel required for a single stability operation. Further, a smaller force is generally required to conduct a combat operation than is required for a stability and reconstruction operation. Advances in technology do not serve as force multipliers for stability and reconstruction in the same way that they do for combat operations. Consequently, as the pace, duration, and frequency of these kinds of operations and deployments have increased, wear and tear on the armed forces have also increased.

Recurrent peacekeeping operations have the potential to consume manpower and deplete resources, including funding, training time, and equipment assets. For example, service personnel involved in peacekeeping missions could lack critical combat and emergency preparedness training. Further, the equipment used in such operations would be unavailable at military bases and ranges for training purposes. During peacekeeping missions, this equipment also could be exposed to extra wear and tear, necessitating additional maintenance and repair. Extended military involvement in peacekeeping efforts also places stress on the forces through increased personnel and operational tempos. This eventually degrades military readiness, imposes significant stress on the forces, and detracts from the military's primary function and competency. It is concerning that peacekeeping operations could lessen the military's ability to conduct its more traditional missions of combating direct threats to American lives.

There is an ongoing discussion within the analytical community about the force size and structure needed for the military to maintain its core competency while also developing skill sets to conduct these non-traditional missions. The low-density/high-demand capabilities relied upon for peacekeeping missions are primarily resident in the reserve component, which could lead to an over-reliance on National Guard and Reserve units. These units are also, in many cases, the elements called on for consequence management within the United States by the President or state governors. It is an alarming reality that if a disaster were to occur, the military might be less capable of responding because its pertinent Guard and Reserve assets were committed overseas to a peacekeeping mission. In general, the committee does not believe that the global scale of U.S. military deployments on non-combat missions is fully appreciated, creating circumstances that may contribute to excess stress on the force.

The CDR concluded that non-combat deployments represent a national security challenge in that units deployed on such non-traditional missions are not available for other, more pressing contingencies either at home or abroad. Nevertheless, DOD has a unique role in transitioning from combat to stabilization, which currently cannot be performed by other agencies or international bodies. Moreover, DOD has many highly skilled personnel within the active and reserve components who have both combat, security, political, and linguistic experience. Thus, the committee expects the Armed Forces will continue to conduct these kinds of missions in the interest of U.S. national security. Nevertheless, in a “worst case” scenario for U.S. national security, the committee is concerned that two major regional conflicts could require the deployment of substantial U.S. military forces as a peacekeeping/stabilization and reconstruction force for an extended period, making them unavailable for other contingencies.

2.5 – Natural Disasters and Homeland Defense

Key Observations

- DOD increasingly responds to domestic natural catastrophes, unique security events, and pandemics. The establishment of U.S. Northern Command in 2002 has helped to make DOD more responsive to military support to civil authorities.
- Domestic natural disasters occur with enough severity to overwhelm local resources, requiring deployment of military units from the National Guard and, occasionally, the active component.
- Such disasters often involve destruction of local infrastructure and create a domino effect of second- and third-order effects.
- Pandemics have the potential for catastrophic consequences, but tend to emerge slowly and derive their mass effect from their ability to overwhelm available health care services.

2.5.1 – Domestic Natural Disasters

Annually, the United States faces a variety of naturally occurring disasters (e.g., severe thunderstorms, flash floods, and tornadoes) that wreak predictable havoc on local communities. In addition, there are disasters that occur during a predictable period of the year, in known regions, but that strike with such unanticipated force and impact a disproportionately large number of communities and states that they should be classified as unpredictable threats (e.g., significant hurricanes like Katrina in 2005, wildfires, major flooding). Finally, there is a category of threats that does not follow an annual pattern of occurrence but rather strikes at any point in time, such as earthquakes and volcanic eruptions. Although each of these disasters requires a significant response from non-DOD entities, severe events can overwhelm local responders, leading state authorities to deploy National Guard units integrated into the force structure. In some cases, federal authorities may deploy units from the active component to alleviate problems among the American people.

The committee determined that the natural disasters most likely to require such resources of the U.S. military are hurricanes and earthquakes, due primarily to the second and third order effects that often occur as a result of these disasters. As Hurricane Katrina demonstrated, a single natural disaster can have a domino effect of lesser, subsequent crises as initial infrastructure damage leads to other problems, such as increased flooding, loss of power, lack of law and order, and inability to transport people and goods along damaged roadways.

The committee concluded that an earthquake in southern California or the San Francisco Bay area would be highly damaging due to population density and the high number of older structures that would be unlikely to survive a significant earthquake. Second and third order effects include the possibility of fires from ruptured gas pipelines and saltwater flooding of major agricultural areas. An earthquake off of the U.S. northwestern coast could trigger a series of tsunamis that would cause major damage along the Washington and Oregon coastlines. If an earthquake occurred along the fault lines running through the lower Mississippi River Valley, the destruction— from flooding of both the Mississippi and Ohio rivers and the resulting economic costs of ruptured oil and gas pipelines—would be significant.

In 2005, the United States witnessed the consequences of a large-scale hurricane along the Gulf Coast. At this time of this report, the nation is still evaluating the subsequent effects. A second high magnitude threat raised in the panel's briefings was the threat of a similar hurricane striking a densely populated East Coast area, such as New York City. Evacuation would simply not be an option for that region, causing widespread casualties. Much of the infrastructure would not be able to withstand the high winds and storm surge associated with a major hurricane, and the availability of remaining shelter would not adequately support the population in need.

Examining the five-year period since 2001, the Joint Chiefs of Staff has reported that 76,246 military personnel have deployed to 19 different states/territories in response to natural disasters. The table below summarizes several recent natural disasters that resulted military deployments and offers some idea of the scope and length of the resulting military commitment.

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Year	Nature of Incident	Lead Agency	Length of Military Deployment	Deployed from Active Component	Deployed from Guard	Military Function	Major Equipment Required	Specialized Skills Required
1989	Hurricane Hugo (Cat 4)	FEMA	52 days	3,409	5,507	Security, Logistics, Command & Control, Manpower, Engineering, Medical	Air & ground vehicles, engineering & medical equipment	Police, Medical, Engineers
1989	San Francisco Earthquake	FEMA	29 days	1,508	16,599	Security, Logistics, Command & Control, Engineering	Air & ground vehicles, engineering & medical equipment	Police, Medical, Engineers
1991	Andover Tornado Outbreak	State Governments	6 days		373	Security, Logistics, Command & Control, Medical, Engineering	Air & ground vehicles, engineering & medical equipment	Police, Medical, Engineers
1992	Hurricane Andrew (Cat 5)	FEMA	49 days	24,609	7,650	Security, Logistics, Command & Control, Medical, Engineering	Air & ground vehicles, engineering & medical equipment	Police, Medical, Engineers
2005	Hurricanes Katrina, Rita & Wilma	FEMA	>90 days, ongoing	24,500	50,000	Security, Logistics, Command & Control, Manpower, Engineering, Medical	Air & ground vehicles, high water vehicles, small boats, engineering & medical equipment	Police, Medical, Engineers

Source: Office of the Joint Chiefs of Staff.

Finally, the establishment of U.S. Northern Command (USNORTHCOM) in 2002 increased the Department of Defense's sensitivity to the needs of state and local agencies, which may quickly be overwhelmed by natural disasters. Events associated with multiple hurricanes in 2005 demonstrated that USNORTHCOM has helped DOD to become more responsive in providing military support to civil authorities. However, lessons learned from Hurricane Katrina show that disaster response capabilities require further improvement to respond better to future catastrophes. While USNORTHCOM's mission statement notes that "USNORTHCOM plans, organizes and executes homeland defense and civil support missions... [including] domestic

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disaster relief operations that occur during fires, hurricanes, floods and earthquakes”, the command must become more pre-emptive and proactive in its approach. In particular, Northern Command must be intimately involved with the crisis preparation planning process, beginning with a full assessment of individual states’ capabilities and limitations. Northern Command planners must build relationships with their appropriate counterparts, not only at the federal level but, more importantly, at the state and local levels. Such planners must be fully aware of all military resources and assets in each region, communicate with officials at all levels of government, and coordinate the rapid deployment of these resources and assets in an emergency.

2.5.2 – Unusual Security Events

In recent years, the U.S. military – primarily U.S. Northern Command – has also supported large domestic events at high risk for terrorist attack. Security requirements for such events usually exceed the capacity of most state and local law enforcement agencies. As a result, the U.S. Armed Forces provide supplemental assistance. The table below summarizes military deployments associated with such events.

Year	Nature of Incident	Lead Agency	Length of Military Deployment	Deployed from Active Component	Deployed from Guard	Military Function	Major Equipment Required	Specialized Skills Required
1996	Atlanta Olympic Games (security & bombing response)	U.S. Secret Service	~80 days	1,277	13,376	Security, Logistics, Command & Control	Air & ground vehicles	Explosive ordnance disposal & detection
2002	Salt Lake City Winter Games	U.S. Secret Service	~90 days	5,000		Security, Logistics, Command & Control, Manpower Explosive Ordnance Disposal/ Detection	Trucks, helicopters, fighter jets, ground air defense	Explosive ordnance disposal & detection
2005	George W. Bush Inauguration	U.S. Secret Service	11	3,677	90	Security, Logistics, Command & Control, Manpower	Air & ground vehicles, medical equipment	CBRN, Medical, Explosive ordnance disposal & detection

Source: Office of the Joint Chiefs of Staff.

2.5.3 – Pandemics

A pandemic requires many years—oftentimes decades—to evolve fully. Particular concern exists about the current H5N1 influenza virus, although many other strains exist and could be potentially threatening. H5N1 is of primary concern because millions of wild birds are currently infected with this virulent strain and are migrating across the globe, making the strain impossible to eradicate. While H5N1 has not reached sustained transmission between humans, the strain is believed to have a 50 percent mortality rate, based upon human cases reported to date. Even if the mortality rate is much lower, the death toll could be staggering. For example, if the mortality rate of the 1918 virus (i.e., 2 percent) were applied to today's population, 1.8 million fatalities could occur. Nevertheless, the key triggering event—sustained human-to-human transmission—has not yet occurred and may never occur. As well, while the spread of an influenza virus would be rapid in this age of international travel and trade, some amount of containment may be possible with proper precautions.

Indeed, much of the threat posed by an influenza pandemic stems from the lack of preparation in the U.S. and around the globe. There is very little surge capacity in the U.S. health care system, and many individuals either do not have access to regular care or infrequently utilize preventative health care precautions. Health monitoring in some of the world's highest risk areas, such as Africa and parts of Asia, is minimal. There is a global shortage of vaccines and anti-virals available to combat the virus and there are no quick production remedies.

In the event of a pandemic, a global competition for access to existing vaccines and treatments would likely ensue. Only nine countries manufacture all of the world's influenza vaccines. Lack of adequate supplies would force governments to prioritize the distribution of their vaccine supply. The current global capacity for regular flu vaccines is 900 million monovalent doses (i.e., a dose that treats one particular strain). The test vaccines for H5N1 require additional precursors and multiple doses per person, reducing the total number of treatment courses to 100-200 million. Private industry has thus far not been willing to invest in additional production capacity because critical egg-based manufacturing technology is outdated. Scientists develop other vaccines using cell culture technology, but market conditions have created no incentive for upgrading influenza vaccine manufacturing technology and facilities. Antiviral drugs, such as Tamiflu, take over a year to manufacture and some estimate it will take five years or more to get new production facilities on-line. It is clear that the U.S. government must help define a market in order for these factors to change.

To protect their populations, many governments may impose quarantines, causing global travel and trade to drop precipitously, and the economic impact of such an action could further diminish the nation's level of national security preparedness. However, quarantines are not viewed as a reliable means of combating the spread of an influenza virus, because humans are often contagious for 3-5 days before developing symptoms. Even if large-scale quarantine proved to be physically possible, some experts warn of the need to update and improve upon existing quarantine laws and authorities. While some have speculated in the media that the military might have a role in quarantine enforcement, multiple public health and military health experts cautioned that such a measure would be an inappropriate use of military force. DOD clearly stated that the military is not currently planning or training for such an eventuality.

Instead, the primary DOD responsibility during a pandemic would be the protection of military personnel, dependents of military personnel on military installations, and civilian DOD personnel. However, a large-scale pandemic would constitute a national emergency, in which DOD would provide support to the lead federal agency, the Department of Health and Human Services. The committee understands that the availability of DOD's support is contingent on the impact that the pandemic would have on DOD personnel, commitments abroad, and readiness levels. Thus, while certain capabilities, such as mobile hospitals, currently exist within the Department, they may not be available during a pandemic. The committee cautions other federal agencies, as well as state and local authorities, from relying too heavily on the DOD as they develop their individual preparedness plans.

As mentioned earlier, the spread of biotechnology capabilities throughout the world raises the possibility that potential adversaries could seek to achieve such effects by modifying certain communicable diseases to accelerate their transmission. While such activities may prove as lethal to those who engage in them as they do to an adversary's potential victims, the committee concluded that the United States does not currently have enough insight into the cost-benefit calculations of potential adversaries to know whether the potential for self-inflicted harm would dissuade or deter states or non-state actors from engaging in such behavior.

III. SECURITY CHALLENGES AND THE U.S. ARMED FORCES

The Committee Defense Review (CDR) focused on those threats and missions that make significant demands on the U.S. Armed Forces. Following that survey of threats and missions, the committee assessed the tools available to the U.S. government for ensuring U.S. security, again, focusing on the Armed Forces. Chapter three discusses the committee's findings and assessment.

3.1 – Shaping the Security Environment

As noted in the previous chapter, the security challenges that the United States faces today and in the foreseeable future are not limited to military threats, although military challenges must remain foremost in the minds of defense planners since the Armed Forces are the only entities capable of defeating such threats. Nevertheless, the committee believes it is important to consider the ways in which the U.S. government can shape the security environment, using all elements of national power. Some of the most significant challenges in the future will flow from the strategic choices some nations make as they grow into more powerful global actors. The natures of these challenges are not foregone conclusions; the United States should take all available opportunities to influence those choices as they develop. Where those opportunities do not appear to exist, the committee believes the United States should look to create them proactively, thereby positively affecting the military threats and scenarios for which the Department of Defense (DOD) must plan.

3.1.1 – Interaction with Other Countries

Key Observations

- Formal alliances and military commitments affect cost-benefit calculations of potential aggressors.
- Proactive involvement in crisis areas may help prevent conflict, contain it geographically, or limit its escalation.
- U.S. global military presence demonstrates U.S. seriousness of purpose and affects cost-benefit calculations of potential aggressors, but becomes a more difficult mission to accomplish as force structure shrinks.
- Effective diplomacy may limit the scope and scale of demands on the U.S. armed forces.

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The committee believes that the U.S. government must effectively use all of the tools at its disposal to shape the security environment. The committee notes that relationships with other countries accomplish several purposes related to this task.

First, formal alliances and long-standing commitments historically affected calculations of other countries, particularly relating to the cost-benefit analysis of committing aggression. During the Cold War, for instance, the North Atlantic Treaty Organization (NATO) existed to deter direct military aggression against its members by the Soviet Union. Since the fall of the Berlin Wall, NATO has become a mechanism for integrating Eastern European nations into a transatlantic security structure, arguably helping preserve peace and security on the continent. Security relationships with countries in critical areas may have a similar deterrent impact.

Second, proactive involvement in unstable areas of the world may help prevent conflicts, contain them geographically, and/or keep them from escalating. During the 1990s, for example, the United States focused diplomatic and political efforts on containing the violence that accompanied the collapse of Yugoslavia. In particular, U.S. leaders were concerned that any violence spilling over into the Former Yugoslav Republic of Macedonia could exacerbate tensions between Greece and Turkey. In contrast, some argue that insufficient attention to developments in Afghanistan following the Soviet withdrawal in 1989 permitted a persistent civil war there to facilitate the Taliban's rise and eventually created a haven for al Qaeda.

Third, the committee concluded that the global U.S. military presence is one means by which the United States remains engaged in the world and demonstrates its interest in particular situations. During the 1995-1996 Taiwan Strait crisis, for example, the dispatch of U.S. carrier strike groups demonstrated a significant American commitment to preventing conflict across the strait. Similarly, in 2003, the ability of U.S. military forces to provide "overwatch" capabilities facilitated the entry of a peacekeeping group led by the Economic Community of West African States into Liberia, helping contain the immediate conflict there. The committee is concerned that current trends are reducing U.S. force structure and thereby limiting the ability of the U.S. Armed Forces to play those roles.

Fourth, the committee noted that effective use of diplomatic and economic tools may change the demand for military force, both in quality and quantity. In 1994, for example, the U.S. military prepared for a "forced entry" into Haiti in order to remove its government and restore Jean-Bertrand Aristide, an elected President removed in a 1991 coup, to power. Last-minute diplomacy convinced the Haitian government to step down, facilitating the peaceful entry of U.S. combat forces into Haiti.

Finally, the committee believes that interaction with other countries may lead them to help shape the international security environment in ways beneficial to U.S. national security interests. U.S. active participation in NATO, for example, helped that organization transition from a security alliance concerned principally with the defense of its members from military attack to a military alliance concerned with peace and security beyond European borders. Today, NATO members are contributing to stability and reconstruction operations in Afghanistan and assisting with the training of Iraqi security forces. In both cases, NATO is assuming some of the security burden that would likely have otherwise been shouldered by the U.S. military.

3.1.2 – Shaping the Evolution of Potential Threats

Key Observations

- In addition to affecting the overall security environment, the U.S. government has a variety of non-military tools for affecting the ways in which conceivable threats might evolve.
- Technology security/multilateral export controls can influence the speed, scope, and focus of foreign military modernization.
- Nunn-Lugar style programs may reduce illicit access to weapons of mass destruction (WMD) capabilities.
- International cooperation can deny/increase the cost to potential threats of acquiring capabilities.

3.1.3 – Constraining International Technology Flows

As discussed in chapter two, many of the countries that concern the United States are seeking to modernize their military capabilities through the acquisition and integration of hardware from more technologically advanced states. The PRC, for instance, has sought and acquired advanced combat platforms from Russia, military aircraft engines from Great Britain, and anti-radar drones from Israel. France and Italy are reportedly assisting China's development of a military helicopter. Iran has received North Korean assistance in the development of its Shahab ballistic missiles, themselves a derivative of the Soviet Scud missile transferred by the Soviet Union to its allies during the Cold War. Staunching these transactions could retard the military modernization of countries seeking foreign technology, either by denying them access to the technology altogether or by forcing them to develop it indigenously, at greater expense. In the past, international regimes, such as that created by the Coordinating Committee on Multilateral Export Controls (COCOM), successfully harmonized their export control systems in order to deny potential adversaries access to advanced technology. COCOM ceased operations after the fall of the Berlin Wall, and its successor has not been as robust.

3.1.4 – Nonproliferation and Threat Reduction Programs

The committee also noted that one can help constrain the threat of nuclear proliferation—either to states or non-state actors—through programs designed to control and reduce the availability of nuclear materials. In particular, the committee reviewed the Nuclear Nonproliferation and Cooperative Threat Reduction programs of the Departments of Energy and Defense, which assisted the denuclearization of Belarus, Ukraine, and Kazakhstan after the collapse of the Soviet Union.

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Department of Energy Nonproliferation Programs

The Department of Energy (DOE) nonproliferation programs are part of a national effort to reduce the threat of attack by nuclear, chemical, and biological weapons by non-military means. The stated mission of DOE's Office of Defense Nuclear Nonproliferation is to detect, prevent, and reverse the proliferation of weapons of mass destruction and reduce the risks from civilian nuclear operations. To achieve these goals, several programs have been developed to:

- Secure nuclear weapons materials and radiological sources at potentially vulnerable sites in Russia and elsewhere;
- Reduce quantities of nuclear and radiological materials;
- Bolster border security overseas;
- Strengthen international nonproliferation and export control regimes;
- Downsize the nuclear weapons infrastructure of the former Soviet Union (FSU);
- Mitigate risks at nuclear facilities worldwide; and
- Conduct cutting-edge nonproliferation and national security research and development.

The primary program goal is to reduce the risk of a rogue nation or non-state actor employing nuclear weapons or "dirty" radiological bombs. The program also seeks to defuse other nuclear threat scenarios by reducing the feedstock of nuclear weapons materials and radiological sources; securing the materials stored at civilian, naval, and nuclear weapons complex sites; securing nuclear weapons knowledge through job transitions for nuclear scientists and engineers; supporting nonproliferation treaties, initiatives, and agreements; and by providing technology and expertise for detecting and monitoring nuclear weapons activities and trafficking.

Department of Defense Cooperative Threat Reduction Program

Congress established the Department of Defense's Cooperative Threat Reduction (CTR) program in late 1991 through the Nunn-Lugar Amendment to the Conventional Armed Forces in Europe Treaty. Through the CTR Program, the Department of Defense has funded projects that have assisted Russia, Ukraine, Belarus, and Kazakhstan in dismantling strategic nuclear delivery platforms slated for elimination under the 1991 Strategic Arms Reduction Treaty. It has since expanded to include destruction of chemical weapons and improving security at nuclear weapons storage and trans-shipment points—to the degree that Russia has demonstrated a commitment to those goals and a willingness to allow U.S. participation. Although it has not resulted in the destruction of any nuclear weapons, CTR has also funded projects that:

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- Improved safety and security at nuclear weapons storage facilities in Russia;
- Improved the security of transportation systems that move nuclear weapons from deployment to storage or elimination facilities in Russia; and
- Constructed a long-term storage facility for plutonium removed from Former Soviet Union and Russian nuclear weapons.

DOD's CTR program was never intended to prevent a U.S. conflict with a major nuclear power, as it does not require the elimination or deactivation of Russian nuclear weapons and it cannot assure a continuing cooperative relationship between the two nations if political circumstances change. While weapons eliminated by the CTR program were already slated for elimination under the START Treaty, promises of CTR assistance most likely accelerated the elimination process in Russia and contributed to decisions in Ukraine, Belarus, and Kazakhstan to eliminate their nuclear weapons.

The committee recognizes the successes that DOD's CTR program has experienced to date, and while the program was specifically developed with Russia's nuclear programs in mind, Congress has recognized that work remains – even at sites outside of the former Soviet Union – to secure and dispose of WMD materials that could otherwise fall into the wrong hands. As a result, Congress has given the Department the authority to use CTR funds in other vulnerable countries on a limited basis and as appropriate. The first project funded under this authority helped Albania eliminate chemical weapons first secured by the Department of State's Nonproliferation and Disarmament Fund.

Many argue that CTR efforts can secure and eliminate weapons while improving understanding and relieving tensions. Clearly, by helping denuclearize Belarus, Ukraine, and Kazakhstan, the CTR program reduced the possibility that those three countries would initiate a nuclear conflict. By merely increasing cooperation and transparency, CTR efforts may also reduce tensions and the likelihood that a conflict would involve the use of nuclear weapons. In contrast, some analysts have noted that U.S. assistance through CTR efforts is unlikely to alter the underlying dynamics in a regional conflict. Some have argued that nations would not accept U.S. assistance in securing or eliminating their nuclear weapons programs unless they had already resolved the underlying concerns that prompted their nuclear programs in the first place. To the degree that threats to the United States are a function of intent and capability, CTR programs in countries with benign intentions have little impact on U.S. security vis-à-vis that country (assuming its intentions remain benign). However, by reducing and security certain capabilities in countries with benign intent, CTR can serve U.S. security by making it more difficult for those with malicious intentions to illicitly acquire capabilities from a country receiving CTR assistance.

The committee concludes that Nunn-Lugar type programs become acceptable to their recipients after other diplomatic or political changes had already prevented or mitigated the threat of a regional nuclear conflict, but that such programs can still shape the security environment in ways that serve U.S. national security. To the extent that terrorists continue to seek access to WMD materials, Nunn-Lugar type programs can help mitigate this threat through enhanced protection.

3.1.5 – Interdiction

The committee noted that arms and technology flows often occur illicitly, without the cooperation or knowledge of governments positioned to stop them. The Proliferation Security Initiative was created to help governments work together to stop such flows. By promoting joint exercises (which focus on primarily maritime interdiction scenarios and on air interdiction to a lesser extent) and information sharing, this initiative increased international cooperation, eventually contributing to the interdiction of illicit WMD-related shipments to Libya. Confronted with international economic sanctions, a successful interdiction of its WMD-related acquisition activities, and the toppling of the Hussein regime in Iraq, Libya's leaders decided in 2003 to give up their nuclear programs, reducing the possibility that Libya would one day present a nuclear threat. Of note is that Libyan officials were implicated in a plot to assassinate the Crown Prince of Saudi Arabia around this time, even as Libya improved its cooperation in global anti-terrorist activities. The episode demonstrates that international cooperation on specific international security challenges can affect how those specific challenges arise.

3.1.6 – Cultural Knowledge

Key Observation

- The U.S. government lacks adequate cultural knowledge and language skills to operate effectively in areas it is likely to be needed.

The CDR determined that the U.S. military generally lacks sufficient cultural knowledge and language skills to operate effectively in the areas it is likely to be deployed. Increasingly, military operations involve interaction with civilians overseas. As the focus on threats to U.S. security shifts from Europe to the areas of responsibility of U.S. Central Command and U.S. Pacific Command, U.S. forces find themselves increasingly interacting with military personnel and civilians who do not speak English or share a Western cultural heritage. That shortfall may have operational consequences, particularly if it limits the ability of deployed forces to collect human intelligence.

The CDR noted a series of studies initiated in November 2002 by the Under Secretary of Defense for Personnel and Readiness to review the effectiveness of language and foreign area specialist programs within the military departments, the Combatant Commands, and the Defense Language Institute Foreign Language Center. In September 2003, the Deputy Under Secretary of Defense for Plans commissioned a further examination of language functions that also informed the CDR.

Findings of Language Studies

- DOD did not have an effective foreign language oversight process or a comprehensive and integrated strategy for language and regional expertise.
- DOD had not completed a zero-based review of requirements for language and cultural expertise and the Combatant Commands lacked a common and systematically applied process for requirements determination.
- There was no mechanism for DOD or the Combatant Commands to assess language readiness and DOD did not possess a comprehensive and accurate data base on language and regional expertise.
- The established practice of contracting for civilian linguist support had created significant problems that degraded operational effectiveness and security.
- Foreign language and regional expertise had not been perceived as critical war fighting skills and Combatant Commands did not explicitly address such expertise in operational planning.

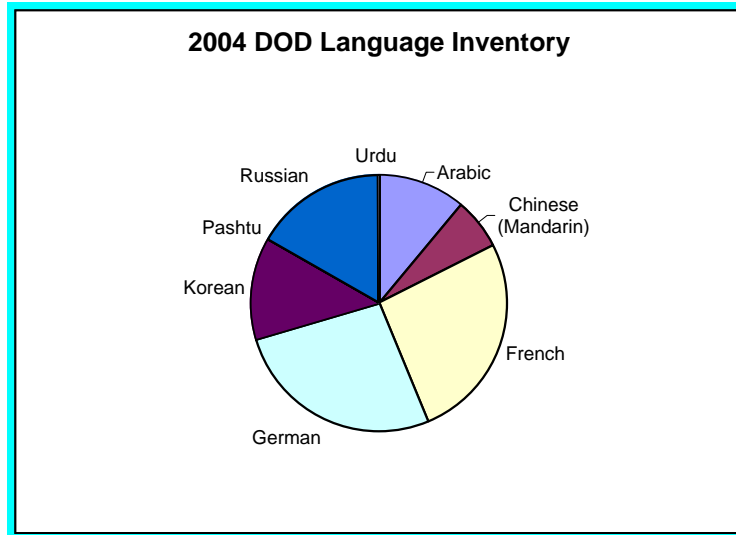
The chart below shows the change in the DOD Historical Language Inventory from 1985–2004.¹² While proficiency in Arabic and Chinese is increasing, DOD needs more speakers of languages spoken in regions of potential instability—not, for example, French or German.

2004 DOD Language Inventory

Language	1985	1990	1995	2000	2004	% Change
Arabic	1087	1443	1297	2581	2864	+163
Chinese	826	895	721	1168	1623	+96
French	9009	8660	6220	6672	6723	-25
German	11238	11449	6625	7249	6931	-38
Korean	1465	2223	1562	2646	3354	+129
Pashtu	0	2	1	1	5	+∞
Russian	3457	4878	3606	4234	4194	+21
Urdu	36	40	30	61	72	+100

Source: Defense Science Board 2004 Summer Study, “Transition to and from Hostilities”, December 2004.

¹² Totals reflect participants in the Defense Language Proficiency Test and individuals who are self-assessed. Consequently, these figures are high.



Source: Defense Science Board 2004 Summer Study, “Transition to and from Hostilities”, December 2004.

Testimony the Committee received in the summer of 2004 underscores this point. At a hearing on the future of the United States Army, Major General Robert Scales, USA (ret.), former Commandant at the U.S. Army War College, noted that “in 1976, the Army sent 7,400 officers to a fully funded graduate school. Today, the Army sends 396, half of whom are going to West Point [to be professors] and the other half are being assigned to Army Acquisition Command. Compare this with generals like the names of Abizaid and Petraeus, all of whom came up through a liberal arts upbringing.” General Scales’ point was that the demands of the long duration irregular war in Iraq necessitated highly educated senior officers, but that the educational systems that had produced the finest U.S. senior officers today have atrophied to the point where the Army’s ability to educate the officers of the future may be in jeopardy.

3.2 – Global War on Terrorism

Key Observation

- The Global War on Terrorism (GWOT) has strained the existing force structure and raised questions about the ability to sustain other simultaneous conventional campaigns.

3.2.1 – Strains on the Force

The GWOT, including current military deployments in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF), is a significant burden on the U.S. military. The significant burden imposed on the military did not come from the initial requirements of defeating the Taliban or Iraqi military. That was done quickly. The burden has come in

sustaining force levels substantially higher than predicted to set conditions for restoration of civil society following the military victory. The committee remains confident that the U.S. Armed Forces are shouldering that burden effectively and admirably with lethal effects on those terrorists who seek to harm Americans.

Nevertheless, the GWOT truly represents a new kind of conflict for U.S. forces. Some experts have characterized it as a global insurgency against the nation state; others consider it a long war against merciless enemies, who do not subscribe to Western limitations on warfare. Some see it largely as a matter for law enforcement, and still others have described the conflict as a cultural showdown between two different religious heritages. No matter how one characterizes the conflict, however, there should be no doubt that: (1) the men and women of the U.S. Armed Forces are on the front lines, risking—and sometimes losing—their lives every day to defeat those who wish the United States harm; (2) the war against terrorism will be a long one—perhaps comparable in length to the Cold War; (3) the GWOT will be as demanding for the United States as the forty-year standoff with the Soviet Union; (4) the U.S. homeland will continue to be a target within the GWOT context; and (5) active combat operations could be continuous for the length of the conflict.

The current U.S. military was not designed or resourced to have either the capacity or capabilities for the kind of conflict described above, and the GWOT has strained it in ways that the defense planners, who created the current force in the wake of the conflict in Vietnam, did not intend. For example, for much of 2003-2005, the equivalent of 18-20 combat brigades have been deployed in Afghanistan and Iraq, fighting the remnants of the Taliban and Hussein regimes, al Qaeda, and al Qaeda in Iraq. This strain (discussed below) on the current military raises serious concerns about the ability of the U.S. Armed Forces to meet past planning targets of being prepared to fight two, nearly-simultaneous major regional conflicts while defending the homeland. In particular, the strain has revealed some limitations in current force structure.

3.2.2 – Impact of OEF and OIF—Rotation Base

OEF and OIF have revealed an inadequate rotation base to sustain a long-term conflict. The Army's inability to sustain the GWOT—including these two operations—rotational requirements without incurring unacceptably high and damaging operational tempos compelled the Department of Defense to implement a joint forces approach. Such an approach has resulted in a steady state commitment of more than 25,000 Marines and additional thousands of Navy and Air Force personnel to support missions that had not previously been envisioned for those services.

Even with this approach, the Army is unable to maintain the rotational cycles that it believes are necessary to sustain the all-volunteer force and maintain overall military readiness. According to the Army, the desired unit rotation cycle has a unit deployed for one year out of every three. The actual rotation cycle redeploys units to OEF and OIF just a little over a year after returning from the combat zone. The Marine Corps, which has rotational objectives similar to the Army, is also faced with an actual rotation cycle where units are returning for a seven-month OEF or OIF tour after less than a year at home station.

Army and Marine Corps representatives also illustrated the inadequacies of the rotation base when they told the committee that, should either service be required to sustain a GWOT operation at the force levels required by OEF and OIF and simultaneously carry out a second major conventional campaign, both services would have to abandon unit rotation policies. Instead, a “for-the-duration” boots-on-the-ground policy would be required until one of the operations was resolved.

Moreover, OEF and OIF are draining units of people and equipment normally based in the continental United States. With regard to people, especially in the Army National Guard and Army Reserve, the requirement to fully man units deploying to OEF and OIF underscored the long-standing hollowness in the force structure, and committee members recognize that National Guard and Reserve personnel (used under section 12302 of title 10, United States Code) have been severely strained by current deployments. For example, the Army National Guard has a force structure allowance of 375,000 spaces, but is authorized no more than 350,000 people to fill those spaces. In some cases, as now, the challenges of recruiting and retention have resulted in the actual strength being well below authorized strength. For example, at the end of fiscal year 2005, the Army National Guard had an actual strength of about 17,000, or nearly 5 per cent, below authorized, and the Army Reserve had an actual strength of about 16,000, or nearly 8 per cent below authorization. Moreover, in both the Army Guard and Army Reserve, many thousands of people assigned to units are not deployable. The result upon mobilization is that manpower is brought from other units in a process called cross leveling to fill the deploying unit. Non-deploying or later deploying units are decremented by the cross leveling, significantly increasing the challenge of making them ready when their time for OEF/OIF deployment comes, or in making them ready for another entirely different operation. With regard to equipment, the practices of cross-leveling and of leaving most unit equipment in Iraq upon redeployment are decreasing the ability of the non-deployed units in the United States – active, guard and reserve – to ready themselves for future operations; this could particularly impact the State mission of the National Guard to respond to disasters, man-made and natural. Not only are the training challenges increased, but also increased are the challenges of assembling and delivering, in the timeframes demanded by operational plans, the right mix and number of forces and capabilities required for another contingency.

3.2.3 – Impact of OEF and OIF—Capabilities Mix

OEF and OIF highlighted inappropriate balances and mixes of capabilities within the active components and between the active components and the reserve components. Shortfalls in civil affairs, psychological operations and special operations forces were evident early in the conflict. The demand for military police, truck drivers and other support specialties caused both the Army and Marine Corps to temporarily convert combat arms units like artillery battalions to perform non-traditional missions normally assigned to combat support and service support units. Furthermore, as the result of tiered readiness polices that stemmed from the view that most of the National Guard combat divisions as a strategic reserve, no more than 15 of 42 combat brigades were available for the OEF/OIF rotational pool.

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According to what combatant commands reported to the committee, OEF and OIF are consuming a major portion of the available intelligence, surveillance and reconnaissance (ISR) assets. As a result, the other combatant commands are stressed to meet their ISR requirements. Furthermore, OEF and OIF are consuming key missile defense capabilities, leaving other worldwide commitments under-resourced.

The two operations demonstrate that the U.S. military mix of capabilities is not well-suited to GWOT demands. For instance, Air Force and Naval units have had to deploy to Iraq in order to conduct ground convoy security missions for which they are not customarily trained. Similarly, experience in Iraq demonstrated a shortage of military police and civil affairs personnel, who had to serve occasional back-to-back deployments while individuals with more traditional combat specialties rotated home.

The operations are also resulting in much higher-than-planned utilization rates of critical equipment. A recent Government Accountability Office (GAO) study of thirty different equipment items concluded that three fleets, the Army CH-47 D/F Chinook helicopter, the Marine Corps M1A1 Abrams tank, and the Navy P-3 Orion aircraft were currently experiencing availability problems that required immediate attention to resolve. In the near term, GAO concluded that the Marine Corps CH-46E Sea Knight would experience similar problems. In the long term, GAO concluded that five additional platforms, the Army's Abrams tank and Bradley Fighting vehicle, the Navy CH-53E Super Stallion helicopter, the Navy Standard Missile-2, and the Air Force KC-135 Stratotanker faced problems that warranted immediate attention in order to prevent a crisis from emerging. In the near term, the GAO concluded four additional fleets would face significant problems: the Army M113 Armored Personnel Carrier, High Mobility Multi-Purpose Wheeled Vehicle, and family of Medium Tactical Vehicles, and the Navy F/A-18 Hornet. By and large, the GAO attributed these problems to: 1) the age of the platforms; 2) their increased operational use in support of OIF and OEF; and 3) a failure to develop and resource a plan to resolve those problems. More simply, the GWOT is wearing these platforms out more quickly than planners assumed, since the planners assumed peacetime use rates.

While combatant commanders believe that they have barely enough ISR assets for their individual commands, committee believes current and projected levels of ISR assets are not at all adequate to fully support requirements of one combatant command.

3.2.4 – Impact of OEF and OIF—Reset

Resetting and re-equipping the U.S. military forces returning from Afghanistan and Iraq is imperative to ensuring that the U.S. armed forces can carry out future conventional war fighting requirements. The GWOT has placed great stress on both people and equipment. Currently the Army has over 130,000 Soldiers in OEF and OIF, with a similar number preparing to deploy and a similar number having just returned. Furthermore, a significant percentage of the Army's mission-capable equipment is being used presently in Iraq. Much of this equipment does not rotate in and out of Iraq with units; instead, it remains in theater for multiple units' deployments, causing great impact to the life cycles of this equipment. OEF and OIF have taken a heavy toll on Army and Marine Corps equipment in terms of both daily combat losses and

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wear and tear. For example, the Army calculates that the mileage and hours that equipment is used in OIF are figured to be roughly five times the peacetime usage.

When units return from OEF and OIF, they begin a period of unit reset that restores them to a desired level of combat capability commensurate with future mission requirements and available resources. This entails movement of military personnel, individual-level training, and the restoration of a unit's equipment. The latter involves a series of actions performed on equipment: reset, recapitalization, and replacement. In this context, reset is repair work that returns the vehicle to a fully mission capable state, with selected modernizations to improve safety and performance. This work, which is sometimes referred to simply as "maintenance" or "repair", is funded through Operation and Maintenance (O&M) accounts. Recapitalization is the rebuild and/or systemic upgrade of currently fielded systems to ensure operational readiness and a zero time/zero mile status. Because this process is a significant overhaul and brings the equipment to a "like new" condition, it is considerably more expensive than reset, and comes out of both O&M and Procurement accounts. Finally, when equipment is severely damaged or lost in combat, it requires replacement through Procurement funding.

The Army has dedicated \$12.1 billion in Fiscal Year 2006 (FY06) for reset. The funding requested for reset in FY07, however, is unknown because the majority of reset costs are included in supplemental appropriations requests. Army documents suggest, however, that over the Future Years Defense Program (FY06-FY11), Army reset could cost at least \$36.0 billion, and estimates of Marine Corps reset costs approach \$12 billion over a multi-year period. The Army anticipates the entire equipment reset process (reset, recap, replacement) and its funding requirements will persist for at least two years after forces withdraw from Iraq. In addition to imprecise costs, other uncertainties will impact reset. To date, a formal decision has not yet been made with regard to leaving equipment in theater for the Iraqi Security Forces to use. Also, some units that return from OEF and OIF will simultaneously undergo their transition to modularity and unit reset. Both will require the procurement of new equipment, and thus it will be difficult to determine which equipment is being purchased with which initiative's funding. Although there is great intermingling of the needs and acquisition associated with modularity and reset, the Army is attempting to segregate the funding. The committee will continue to evaluate equipment reset, including the Army's ability to fully resource its reset needs.

3.2.5 – Commitment of Resources

Key Observation

- While the United States intends to withdraw U.S. Armed Forces from Afghanistan and Iraq, as conditions in those nations permit, the current level of U.S. military commitment to GWOT (i.e., operations in support of the worldwide effort) will persist indefinitely.

Many analysts argue that U.S. force levels in Afghanistan and Iraq—currently the front line in the GWOT—will fall, reducing the strain on the military, as insurgents are defeated and

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both nations are better able to stand on their own. During the CDR process, committee members were able to review the security challenges and military missions (combat and otherwise) associated with the GWOT and conclude that the current level of effort in the overall war against terrorism is likely to persist in the foreseeable future.

First, to the degree that both Afghanistan and Iraq follow the classic model of an insurgency campaign, defeating the insurgents resident in these nations may take a decade. Committee members acknowledge that U.S. participation in combat, security, and stabilization operations in these nations may decrease over time and as conditions on the ground permit, but the political—and as necessary and as appropriate, the military—commitment to Iraq and Afghanistan will remain.

Second, the presence of U.S. forces in both countries is tied to the achievement of several conditions and the battlefield commander's assessment of their continued value in the campaign. While Iraq and Afghanistan have made remarkable political progress and their security forces are growing in quantity and quality, the situation in both countries will not unfold according to a neat timeline. At times, the insurgency may make more progress than coalition forces in achieving its strategic, operational, and tactical goals. This normal ebb and flow in warfare means that the United States cannot reliably predict when certain conditions will be achieved or whether they will persist, meaning it cannot say for certain when Iraq and Afghanistan will no longer need significant U.S. military support.

Third, while they are the main battlefields in the long war today, Iraq and Afghanistan are unlikely to be the only GWOT battlefields. Other countries—some of which may already be under attack or influence by al Qaeda and its associates—may require U.S. military assistance to prevent terrorist extremists from achieving their goals. Similarly, should terrorists succeed in taking over a region or a country from which they launch attacks against the United States, the United States may be compelled to attack them in order to defend itself.

Fourth, as discussed in chapter two, the Armed Forces continue to take on a large number of operations not traditionally viewed as “combat operations.” The GWOT is likely to increase the need to conduct many of those activities, such as stability and reconstruction operations or overseas humanitarian assistance. GWOT demands led to noticeable military deployments to the Philippines and Djibouti. In a different vein, the U.S. military played a critical role in providing assistance to countries in the Indian Ocean after the 2004 tsunami and to Pakistan after its 2005 earthquakes, for example. In both cases, operations by the U.S. Armed Forces may have done more to advance U.S. strategic objective in the Muslim world than either combat operations or development assistance.

Finally, the DOD Quadrennial Defense Review (QDR) indicates that conventional military forces will improve their capabilities in irregular warfare in order to free up Special Forces for more complex tasks. While the committee agrees that increased irregular warfare capabilities are necessary to succeed in the GWOT, it also believes that this will result in increased overseas deployments of conventional forces on GWOT missions traditionally performed by Special Forces.

That said, the committee concluded that conventional forces are not ideally suited to fighting terrorists. While conventional forces have done excellent work in Afghanistan and Iraq, the United States trains its Special Forces units specifically for the kind of unconventional warfare that terrorists employ. Unconventional forces can be highly effective in GWOT, but they currently exist in inadequate numbers in the U.S. force structure.

3.2.6 – Ungoverned Spaces

Key Observation

- Terrorists will exploit ungoverned spaces and state sponsors of terrorism to organize, arm, train, and plan.

Unlike state-on-state warfare, the GWOT involves conflict with a stateless enemy capable of hiding anywhere in the world. Many of the 9/11 hijackers, for instance, were members of an al Qaeda cell in Hamburg, Germany and acquired technical skills in the United States. Nevertheless, historically, international terrorist groups have needed some place to organize, plan, train, and equip themselves without having to continually evade authorities. Until recently, many of them found safe harbors among state sponsors of terrorism, such as Iraq, Iran, and Libya. Prior to September 11, 2001, however, al Qaeda sought safe harbor among weakly-governed states such as Sudan and Afghanistan, often developing its infrastructure in regions that have acquired a reputation for general lawlessness. This tendency means that threats to the United States may now reside in areas where governments are weak or practically non-existent.

3.2.7 – Foreign Capacity Building

Key Observation

- The key to long-term success lies with local population and partner security forces, including the ability for other-than-U.S. forces to stabilize and secure areas. Buy-in and participation are essential, but such foreign forces may need U.S. assistance (e.g., training, advice, equipment).

The committee notes that the U.S. Armed Forces cannot “police the world” and that the U.S. government does not have the capability or capacity to address global weaknesses or failures of governance. Therefore, it will be critical to improve the ability of other governments to police their own territories and ensure that terrorists are not able to find safe haven within their

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borders. As discussed earlier, many governments lack this capacity; others may lack the will to close their borders to individuals that they do not believe are terrorists.

This situation raises a challenge for the United States. As noted earlier, peacekeeping, stability, and reconstruction operations, which have been a critical element of nation-building in the Balkans, involve a very demanding set of tasks for the Armed Forces and can result in a general decline in U.S. military capabilities to the degree that they strain the force. Such deployments are also very long: the U.S. presence in Bosnia lasted nearly a decade and U.S. forces are still in Kosovo, roughly six and a half years after the conflict with Yugoslavia.

The committee concludes that the U.S. government must work closely with other governments to improve their capacity and capability to police their territory and deny terrorists safe-haven. Such foreign capacity building can also improve the ability of those governments to participate in peacekeeping, stability, and reconstruction operations outside of their borders, ultimately creating alternatives to the U.S. Armed Forces for such missions.

The committee notes that considerable efforts are already being made in this area. For example, G-8 leaders endorsed a U.S. plan to expand global capacity for peace support operations at the Sea Island summit in June 2004. The plan builds upon the Global Peace Operations Initiative (GPOI) and the African Contingency Operations Training and Assistance (ACOTA) Program, the latter of which has trained and equipped over 12,000 peacekeepers from ten African countries. It aims to train and equip 75,000 troops by 2010 and create a Gendarme Center of Excellence in Italy to increase the interoperability of gendarme forces for peace support operations. These programs are executed through the Department of State as part of the foreign security assistance budget. The U.S. Armed Forces are actively engaged in training Iraqi and Afghan security forces to secure their countries against terrorists. The President received additional authority to direct the Department of Defense to execute a pilot program in other countries in section 1206 of the National Defense Authorization Act for Fiscal Year 2006 (Public Law 109-163). Unlike GPOI and ACOTA, the Defense Department's pilot capacity-building program is funded through re-programming actions within the DOD Defense-Wide Operations and Maintenance Account, raising concerns expressed elsewhere in this report about the strain that GWOT places on the U.S. Armed Forces.

To date, DOD has focused its efforts on training and equipping foreign security forces. Such activities do involve risk. First, there is no guarantee that, once trained, foreign security forces will use their skills for legitimate purposes. The Zeta Mexican drug gang, for instance, is reportedly made up and led by former Mexican special police commandoes who were trained by the United States, but subsequently decided that the narcotics business was more lucrative than serving their nation. Second, there are no guarantees that foreign governments will maintain the capability they acquire through U.S. government assistance. For example, the United States trained a battalion of the Republic of Georgia military to assert Georgian sovereignty in areas near Chechnya. After the train and equip program ran its course, the Georgian government reportedly failed to pay the soldiers, many of whom deserted. The United States therefore conducted the program again. Clearly, creating competent military forces requires more than training and equipping them. It also requires a reasonably competent government, the creation of which may be beyond the ability of the United States. Third, having trained and equipped foreign military forces, the United States becomes responsible for their actions in the eyes of

some individuals. For instance, during the 1980s, many held the U.S. government responsible for reported human rights abuses by Central American military forces that received U.S. training. While it may be unfair to hold the United States responsible for the behavior of other nations' militaries, various international actors have done so. Thus, moving forward with foreign capacity building requires careful planning and considerable attention to possible consequences.

Unfortunately, the committee found little evidence that a coordinated, careful, and integrated security assistance strategy currently exists. In fact, it found that definitions of "capacity building" and the degree to which it is proactive or reactive differed across federal agencies. Executive branch officials have also not yet fully addressed the roles and responsibilities of various federal departments. Using authorities contained in title 22 of the U.S. Code, principally derived from the Foreign Assistance Act and the Arms Export Control Act, the President has ample authority to provide military assistance to other countries, a process managed and funded through the Department of State with active involvement by the Department of Defense. Yet, executive branch officials complained the process was burdensome and have repeatedly sought new authorities for DOD to fund and manage a separate process. The committee looks forward to the review of funding, authorities, roles, and mission associated with foreign security assistance required in Section 1206 of the National Defense Authorization Act for Fiscal Year 2006 (Public Law 109-163) so that it can be in a better position to determine whether DOD has a robust role to play in security assistance.

3.2.8 – Remote or Denied Environments

Key Observation

- Ability to deploy and sustain military personnel in remote or denied environments is insufficient.

Disrupting terrorist networks, capturing or killing terrorists, and influencing terrorist communications may often require U.S. personnel to operate in areas—and perform missions—that would be denied to it for geographic or political reasons. Developing this capability may require the ability to deploy and sustain personnel in remote areas without a high-profile or significant logistical infrastructure.

3.3 – Regional Contingencies

As discussed earlier, the committee reviewed multiple regional military powers in order to assess their military capabilities and possible conflicts that might involve the U.S. armed forces.

- A major regional conflict with the PRC, North Korea, and Iran represents the worst case scenario against which the United States should plan.
- Stability in Pakistan remains a major concern.
- The committee does not believe that any of those nations will actively seek an armed conflict with the United States, but envisions circumstances in which their actions might require U.S. intervention to preserve U.S. interests.

3.3.1 – Most Likely Scenarios

With regard to the specific countries examined, the committee concludes the most likely scenarios that the United States will face in the 2006-2026 period involve a low probability of major conventional war.

The People’s Republic of China (PRC)

The PRC will continue a regional campaign to achieve reunification with Taiwan by shaping and influencing diplomatic, information, and economic initiatives. Economic integration with Taiwan is well advanced and that trend is likely to continue. As a minimum, the PRC will continue to seek to prevent the independence of Taiwan through coercive means, if necessary. It is not likely that the PRC will seek direct military confrontation with the U.S. However, third party actions or other events could result in potential conflicts. Outside the near future, it is more difficult to predict Chinese intentions. The PRC will also take actions to address its concerns about a remilitarized Japan and continue to increase its influence in the region. A global Chinese “charm offensive,” with strong economic and cultural initiatives aimed at the U.S., is a key element in Beijing’s strategy. The PRC will continue to modernize its military capabilities, especially cruise and intermediate range ballistic missiles, integrated air defenses, mine laying capability and submarine forces, to achieve its goals despite possible U.S. intervention. Over the long term, the PRC will seek increasing political and military power and influence in the region. Retaining U.S. influence in the region requires U.S. presence.

In the event of a military confrontation, Beijing’s key objectives would be to: (1) deny access by U.S. military forces, especially U.S. sea- and air-based forces, to regions the PRC considers critical and (2) project military power into Taiwan, if necessary. The Chinese anti-access strategy would take the form of a system of layered defenses beginning at more than

1,000 to 1,500 miles from their coast, with succeeding layers of submarine, missile and land based aviation attacks against any intervening naval task force.

North Korea

North Korean leadership will remain solidly in control, but its actions will be unpredictable. North Korea's dire economic condition will require the continued marketing of its weapons and military technology, as well as continued engagement in counterfeiting and drug trafficking. North Korea will continue to use its nuclear weapons program to leverage outcomes. North Korea's aging military capabilities, 70 percent of which are within 40 miles of the demilitarized zone, will retain an ability to inflict severe damage on South Korea. The PRC will remain interested in propping up the North Korean regime to avoid the significant impacts that would be created for the ORC by large refugee populations, prevent a loss of control over North Korean nuclear weapons, and prevent a North-South reunification. An unstable North Korean regime could create problems for the PRC such as large refugee populations or a loss of control over North Korean nuclear weapons. Beijing may also continue to use its influence in the six-party talks with North Korea to ameliorate U.S. engagement with Taiwan. South Korea may turn increasingly to economic initiatives to achieve closer ties with the North.

Pakistan

Pakistan will continue efforts to maintain government control and stability. Extremist presence in under-governed regions is unlikely to change, although Pakistan may face a growing insurgency in Baluchistan. The risk of extremists gaining control of Pakistan's nuclear weapons will remain.

Iran

Iran will continue to attempt to counter U.S. influences in the region through continued diplomatic efforts (other than with Israel), by support of international terrorism using methods to maintain deniability, and by continued development of a nuclear weapons capability and ballistic and cruise missiles. It will retain the military capability to close or seriously disrupt shipping in the Straits of Hormuz, at least temporarily, and to threaten neighbors and regional stability. Economic sanctions or pre-emptive military strikes undertaken to contain or delay Iran's development of nuclear weapons are likely to cause asymmetric responses ranging from terrorism through surrogates to reduction of oil supplies to western nations and may have limited effects.

3.3.2 – Most Stressing Military Scenarios

For reasons discussed in chapter two, the committee believes that the most dangerous and most stressful conventional military challenge that will face the United States will be the requirement to deal simultaneously with multiple conventional scenarios. The requirement to plan that U.S. military forces might have to conduct simultaneous conventional military operations is not new. However, after September 11, 2001, the United States faces that requirement in addition to the need to continue the GWOT. The war on terrorism will continue for the foreseeable future as an extremist Islamic insurgency that will require the continued commitment of U.S. military forces and capabilities. The size of those future commitments could be substantial, the places and duration of the commitments unpredictable and the ability of the U.S. to shift committed forces to a second major contingency questionable. Despite the increased demands of the GWOT, the committee does not believe that the requirement to be prepared to fight and win two major regional contingencies simultaneously has been rendered moot. In fact, the committee believes that the requirement may have increased as potential aggressors see opportunities to exploit the U.S. commitment to the GWOT.

Leading the committee's review of conventional contingencies, the regional powers gap panel identified four scenarios of concern for which the U.S. military should focus its force structure. In selecting these particular scenarios, the committee is not necessarily making a judgment about their likelihood. Rather, the committee believes that if the U.S. Armed Forces can prevail in these scenarios, they will be able to prevail in other scenarios as well.

Four Scenarios of Concern—Drivers for U.S. Military Force Structure

- A North Korean conventional invasion of South Korea
- A U.S.-China military confrontation over Taiwan
- A regime collapse in Pakistan leading to the loss of control of that nation's nuclear weapons
- The development of a nuclear weapons capability in Iran

3.4 – Findings and Conclusions about U.S. Capabilities

Much of the committee's review was classified. As a result, the committee must limit its discussion of its findings and conclusions to protect information.

3.4.1 – Doctrine and Process for Joint Interagency Operational Planning, Coordination and Implementation

Currently there is a significant capability gap in strategic level interagency planning and coordination. The committee recommends that such a capability be developed to more effectively deter and respond to national security contingencies.

“Worst case” contingencies involving regional powers are likely to be complex operations because of the involvement of many non-military actors vital to the overall success of the mission. The deterrence of “worst case” contingencies involving regional powers and the routine response to most likely scenarios involving regional powers are highly interagency in nature due to their non-military aspects.

The United States needs the capability to translate the strategic level guidance on regional powers provided by the National Security Council into specific coordinated interagency planning and operational guidance for non-defense departments on a routine basis. The Department of State, the Director of National Intelligence and other intelligence agencies, the Department of Justice, the Department of Homeland Security, the Department of Commerce, and other non-defense agencies have central roles to play.

Restructuring the strategic level interagency planning and coordination process may require legislation similar to the Goldwater-Nichols Act. The mandates of that act were necessary to compel the substantial cultural changes necessary to permit joint policy, planning and operations to mature with all elements of the Department of Defense. There are several independent organizations that are considering steps on how to begin this process. Perhaps the best known is the Center for Strategic and International Studies (CSIS) report series entitled “Beyond Goldwater-Nichols,” which outlines some possibilities for improving the interagency planning and coordination process with a focus particularly on reconstruction and stabilization.

In addition to a better interagency process, each non-defense department or agency likely to be involved in complex operations needs an institutional planning capability. Planning capabilities are not “people intensive” but do require extensive education and training, especially for non-defense agency personnel unfamiliar with such planning. The executive branch should do more to make participation in this area career-enhancing for both defense personnel and non-defense personnel. While existing senior-level Department of Defense professional military education schools are currently best able to provide the education and training needed, by design they provide military-oriented education for a predominately military student body. As the concept of inter-agency professional education matures, some thought should be given as to how best to structure the future inter-agency professional education system so that it meets the needs of a diverse student body and addresses all elements of national power in a balanced manner.

A common government wide planning lexicon is needed. The only existing planning lexicon is a military planning lexicon that is not used by non-defense agencies and which does not fully encompass their requirements.

Currently, little capability exists to plan for and jointly execute contingencies wherein the military plays a supporting role to non-defense agencies. Joint Forces Command has developed

a concept known as “Unified Action”, which provides a doctrinal basis for interagency coordination on military contingencies, and established an organization, the Joint Interagency Coordination Group, to bring these capabilities into military combatant commands. The Unified Action concept should go beyond stabilization and reconstruction activities and counterterrorism to include the full range of operations, and it needs to encompass multinational coalition partners and their non-defense capabilities. Military commanders need more flexibility in the kinds of funding available for coalition support in contingencies involving multinational forces.

3.4.2 – Intelligence, Surveillance, and Reconnaissance (ISR)

The ISR capability required is the capacity to monitor continuously activities of interest across the full expanse of the electromagnetic spectrum. As one of the witnesses told a gap panel, this means “collecting, analyzing, and disseminating all of the information adversaries generate, whether it is in the form of radio waves, infrared emissions or visible imagery. That means knowing how to intercept cellular communications from far away, how to track moving ground targets, how to pierce the secrecy of buried fiber cables, and how to produce streaming video of unfolding events at both the strategic and tactical level...It is about fusing diverse forms of information into a coherent picture, then sharing it with the whole joint forces in a way that can be tailored by individual users.” Such ISR capability is essential for early warning and precision targeting, as well as key to allowing U.S. military forces to multiply significantly effectiveness, coordination and lethality.

While the United States possesses substantial ISR capabilities, they remain inadequate. In addition to the shortfalls created by the demands of OEF and OIF, the committee learned that:

- The Air Force programs for space-based capabilities do not meet anticipated requirements through 2018.
- Better dissemination of intelligence to lower levels of command is required by all services.
- Improved indications and warning capabilities for employment of nuclear, chemical and biological weapons need to be developed and enhanced.
- Persistent ISR is needed by all theaters to increase warning time.

The committee recommends that priority efforts be given to ensure the future adequacy of ISR capability. These include the Office of the Secretary of Defense assuming a far greater leadership role in the development of ISR metrics—metrics that are essential for establishing required ISR capabilities and capacity—as well as assuring interoperability and cost-sharing among military service systems.

Furthermore, potential U.S. adversaries are already seeking ways to attack, counter or degrade these U.S. capabilities. In this context, for example, the committee heard testimony in open session of Chinese efforts to develop capabilities to knock out U.S. satellites. Thus, substantial U.S. efforts will be required to both defend its ISR capabilities and adapt them to overcome the countermeasures that will be used against them.

3.4.3 – Sea Power

The PRC, North Korea, and Iran already possess substantial submarine, missile and mine capabilities that pose significant challenges to U.S. naval forces. All three nations appear to be engaged in efforts to upgrade these capabilities to attack U.S. warships, especially aircraft carriers. Of particular concern are: the growing numbers of Chinese submarines; recent Chinese acquisition of a submarine launched cruise missile capability; and Chinese efforts to develop ballistic missiles with “steerable” warheads that can be maneuvered after they reenter atmosphere to track and attack a moving formation of ships. Key challenges for the United States, therefore, will be to improve the capability to neutralize or eliminate the cruise missile threat and to locate, track and neutralize threat submarines.

The committee found persuasive the testimony of former naval officers who voiced deep concern regarding the significant gaps in naval capabilities created because “we do not build for mission requirements. We build to what we can afford.” They also cautioned against an over-reliance on so-called silver bullet technological solutions as substitutes for capabilities created by integrated approaches.

Their testimony especially focused on the gaps in the Navy’s capabilities to locate, track and neutralize threat submarines. While they focused on the developing Chinese threat, what they said had applicability to the antisubmarine challenges posed by Iran and North Korea. These former naval officers laid out a number of concerns that the committee believes must be addressed, including:

- The Navy’s current antisubmarine warfare (ASW) capability is focused too narrowly on wartime defense when it should also provide continuous peacetime monitoring and tracking of potential threat submarines. Monitoring and tracking are resource intensive, requiring the deployment, coordination, and integration of naval air, sea and undersea assets. The objective of monitoring is continuous data collection on threat submarines and their movements, but such intensive monitoring also has the significant benefit of training the antisubmarine force to achieve wartime success;
- Significant gaps in the Navy’s monitoring capabilities are indicated by failures to detect the construction and launch of a new class of Chinese submarine (Yuan Class) in 2004, as well as by shortfalls in the Navy’s ability to meet combatant commanders’ requests for U.S. submarine presence to conduct patrolling and monitoring functions: “They are asking for 150 per cent more submarine presence time than [the Navy] can give them”;

- The Navy is building insufficient ships and platforms to perform peacetime ASW monitoring missions compared, for example, to the significantly increasing numbers of Chinese submarines. Inventories of key ASW assets, such as the P-3 aircraft fleet, are being reduced due to expended fatigue life and high operations and maintenance costs. While helicopters are providing some near-term relief, the P-8 multi-mission maritime aircraft planned to replace the P-3 is not planned to have an initial operational capability until 2013;
- There is no technological silver bullet for monitoring and defeating threat submarines; and
- Building ASW excellence will require the continual training and exercising of a force in utilizing an integrated network of aircraft, surface ships, submarines and sensors to know the location of every threat submarine, where it has been and where it is going.

In addition to improving the U.S. capability in anti-submarine warfare, U.S. maritime forces must maintain their ability to conduct their traditional missions. The decline in the surface fleet size over the past decade, combined with the explosive growth of near-peer naval forces in Northeast Asia may jeopardize the U.S. ability in a potential conflict to maintain sea lines of communication and keep commercial transit lanes open in and beyond the littorals. Moreover, the United States Armed Forces cannot ignore mine warfare mission, naval gunfire support of ground forces, and basic maritime interdiction missions. Maritime forces must be capable and prepared for non-conflict-related missions as well, including disaster assistance, anti-piracy, sanction enforcement, and peacetime presence supporting U.S. foreign policy goals.

3.4.4 – Air Dominance

Air dominance is the “capacity to make unfettered use of airspace despite enemy efforts to deny...access. Command of the air enables every other facet of joint war-fighting.” Today, the U.S. Air Force and U.S. Navy can achieve air dominance over any potential enemy. However, the committee believes that such a future capability is not assured, given: (1) the expected development by China of sophisticated integrated air defense systems, including fighter aircraft that may meet or exceed the capabilities of all current U.S. fighters except the F-22; (2) the closure of all but one U.S. production line for fixed-wing military fighter aircraft in the next six years; and (3) reduction in the numbers of fielded F-22’s and potential reduction in numbers of the Joint Strike Fighter. At least one witness told a gap panel that “without the next generation fighter [F-22, Joint Strike Fighter], the U.S. will not be able to penetrate Chinese airspace in the future...Twenty years out it would be suicide to fly into Chinese airspace in an F-18.”

The implications of not being able to achieve air dominance are significant for U.S. forces to prevail, especially in a future confrontation with the PRC over Taiwan. In this, or in other such conflicts where adversaries are able to challenge U.S. air dominance, attrition of U.S. air, naval, and ground forces would be much higher. Additionally, air and naval forces could be required to operate at much longer ranges, requiring the expenditure of longer-range and more

expensive weapons to address required targets. A challenge to U.S. air superiority in an area such as the Taiwan Strait could allow a Chinese amphibious landing to build combat power ashore more effectively and therefore require a much longer time for U.S. forces to achieve military objectives at a much higher resource cost.

3.4.5 – Land Power

The committee believes that today both the Army and Marine Corps are severely stressed to carry out one major contingency on the scale of OEF and OIF in a world that demands they be prepared to carry out at least two such operations. Neither service appears to have sufficient depth of capacity and capability to sustain a second simultaneous major conventional campaign, particularly if the second campaign required something beyond a quick military victory—say the requirement to set conditions for restoration of civil society following the military victory—or, if either service were to absorb unanticipated losses or face unplanned force requirements.

This broad assessment is based on:

- The Army’s current inability to solely sustain the requirements of OEF and OIF, requiring not only the continuing commitment of some 25,000 Marine Corps personnel, but also the continuing diversion from their primary missions of several thousand Air Force and Navy personnel to perform OIF and OEF combat support and combat service support functions traditionally assigned in a theater of war to the Army;
- The inability of either the Marine Corps or the Army to achieve desired unit rotation goals in OEF and OIF that undermines long term readiness;
- The lack of depth – essentially the absence of a military reserve -- in both the Army and the Marine Corps as indicated by the necessity of adopting a “for the duration” deployment policy should two conventional conflicts occur; and
- Personnel and equipment challenges that increase the difficulties facing non-deployed forces in the U.S. in readying themselves for future missions.

Furthermore, to carry out OEF and OIF, both services have necessarily sustained manpower levels substantially above the levels supported in the budget requests of recent years. Given the evidence collected during the review, the committee does not believe that the ability of either the Army or Marine Corps to meet the requirements of two simultaneous contingencies would be improved by compelling either service to return as a steady state to 2004 authorized manning levels (Army: 482,400; Marine Corps: 175,000).

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United States Army

In the fall of 2005, as the committee examined the force requirements that the conventional war fighting plans of the combatant commanders had established for Army forces, the Army asserted to the committee that its fully modularized force (i.e., 77 brigade combat teams—43 active and 34 National Guard) equipped with the Future Combat System (FCS) would provide the capability and structure to meet the future combatant command war fighting requirements for a future global war on terrorism, as well as for the scenarios examined by the committee. To support that assertion, the Army provided material showing that collectively the projected Army war fighting requirements would not exceed 77 brigade combat teams.

The committee, therefore, has substantial concerns with the recent QDR report that an Army of 70 brigade combat teams (i.e., 42 active and 28 National Guard) and steady state end strengths of 482,400 active, 333,000 National Guard and 200,000 Army Reserve are sufficient to achieve the QDR's conventional campaign surge requirements: wage two nearly simultaneous conventional campaigns (or one conventional campaign if already engaged in a large scale, long duration irregular campaign of the level of the current OIF/OEF), while selectively reinforcing deterrence against opportunistic acts of aggression. The military must prepare to remove a hostile regime in one of the two campaigns, destroy its military capacity, and set conditions for the transition to, or for the restoration of, civil society.

Among the major changes to the Army that emerged from the QDR were:

- Creation of additional SOF force structure and capability instead of adding one active component BCT. The additional Army SOF structure includes five Special Forces battalions, one Ranger battalion, one Special Operations aviation battalion and additional civil affairs units and capability.
- Creation of additional combat support and combat service support structure in the Army National Guard instead of 6 National Guard brigade combat teams, 2 division headquarters, and one aviation brigade.

While the committee understands the need to increase Army SOF and support structure, it does not understand the rationale for the apparent trade-off: reduced combat forces for increased SOF and support capability. Overall, such tradeoffs heighten the committee's concerns about the QDR conclusions and at this point the committee does not agree that the Army envisioned by the QDR report would be adequate to achieve the objectives expressed in the QDR report. The committee notes that soon after the release of the QDR report, the Chief of Staff of the Army agreed to reexamine the plan to reduce the Army National Guard force structure allowance below 342,000 and he committed to sustain Army Guard end strength at 350,000, if Guard recruiting demonstrated an ability to maintain that level.

Furthermore, the committee is concerned about the feasibility of the Secretary of the Army's end strength plan to achieve a steady-state active end strength of 482,400 by 2011. This steady-state objective contrasts with the fiscal year 2009 target of 532,000 set for the Army by Congress, and is well below the Army's current authorized end strength of 512,400. The Secretary's plan, announced in November 2005, would cut 40,000 military personnel out of the

non-deploying parts of the Army to provide the additional military manpower required for the operational Army – that is for the deployable units. Specifically, that plan would reduce by 28 percent the military personnel in the so-called institutional Army (personnel such as instructors, recruiters, and military garrison personnel required to sustain, equip, train, deploy and mobilize the deployed force), and a 17 percent cut in the so-called Trainees, Transients, Holders, and Students (TTHS) account, which includes students in basic and initial entry training, in professional development schools; personnel on leave between assignments, in hospitals, and processing for separation and retirement.

United States Marine Corps

From a structure and manning standpoint, the Marine Corps, like the Army, is in a period of transition. Two initiatives are key. First, the Marine Corps is using the additional manpower authorized by Congress in the past two years—4,000 more than provided by DOD budget requests—to create new war fighting structure and ensure that its infantry battalions are filled to 100 percent of requirements. Previously, the Marine Corps resourced its infantry battalion manning at 90 percent of requirement. Second, the Marine Corps is creating a dedicated component within the U.S. Special Operations Command. Over a five-year phase in period, the Marines Corps, from within its authorized end strength will provide 2,600 personnel to the new Special Operations Command element.

The committee finds both initiatives worthwhile, but notes this would require additional Marine Corps end strength and funding within the normal budget request cycle. The two most recent budget requests have only funded Marine Corps end strength at 175,000. Congress has indicated in both the fiscal year 2005 and fiscal year 2006 National Defense Authorization Acts that the Marine Corps might grow from its authorized level today of 179,000 to as much as 184,000.

The committee believes that, as in the case of the Army, the QDR recommendations with regard to the Marine Corps do not provide for the capacity and capability needed to meet even the objectives set out in the QDR report. The committee notes that not long after the release of the QDR report, General Mike Hagee, then-Commandant of the Marine Corps, announced that he believed an 180,000-strong active component Marine Corps was “about right” and, based on the lessons of OIF and OEF, a smaller Marine Corps would be a less capable Corps. He has ordered a three-month study to assess how the operational Marine Corps, active and reserve components, should be structured, and what capabilities would be lost at a strength below 180,000. His objective appears to be to use the results of the study in the fiscal year 2008 budget request.

3.4.6 – Global Mobility

Global mobility means the capability and capacity to transport and deliver forces and supplies anywhere they are required with sufficient speed and mass to prevail. Airlift, sealift and pre-positioned equipment (both land- and sea-based) are the key elements of the U.S. global mobility capability. Given the distances over which large U.S. military operations must be conducted, global mobility requirements are significant. Moreover, the stress of supporting OEF and OIF has required operational rates well in excess of planned service life and will require the replacement of equipment much sooner than anticipated. For example, the Air Force expressed concern about its aging airborne tanker fleet with an average age of 45 years and C-130s flying twice their programmed rate.

Given these factors, the committee reviewed numerous concerns about impending gaps in both capability and capacity, including:

- A mismatch between a strategy for fighting regional conflicts and the airlift program decisions to support the strategy. Program decisions that were criticized were the attempt to terminate the C-130J intra-theater airlift program; an apparent unwillingness to extend the C-17 program beyond 180 aircraft; and the failure to implement a replacement program for aerial refueling tankers.
- The lack of a recapitalization plan for an aging fleet of sealift ships with useful service lives that expire in 2020.
- Reduced capability in Army pre-positioned ships and Marine Corps' afloat pre-positioning squadrons (APS) and because the equipment has been committed in Iraq.
- Concerns that the future Navy shipbuilding program might not support the minimum war fighting requirements for amphibious ships. At present, 30 amphibious ships is the minimum operational requirement. The Marine Corps indicated that a fleet of at least 35 amphibious ships is necessary to ensure that the minimum operational requirements are met. However, the committee notes that the operational availability rates of ships are generally about 65 per cent. Given that, the size of the amphibious fleet necessary to provide 30 operationally capable ships would be substantially larger than 35.
- A significant and increasing capability of potential U.S. opponents to close (by use of chemical and biological weapons, ballistic and cruise missiles, and special operations forces) the improved ports and airfields upon which the U.S. now relies heavily to deliver forces and supplies required by war fighting plans.

The committee has reviewed the Department of Defense's Mobility Capabilities Study and does not believe it adequately addresses the challenges that would flow from the need to maintain operations in the GWOT and confront two major regional contingencies.

3.4.7 – Prepositioned Stocks

Combatant commanders rely on the availability and good working condition of pre-positioned stocks to field combat ready forces in days rather than weeks. Without them, units must transport needed equipment and supplies to theater or spend time repairing these items when they get there. In either case, time is wasted and commanders have lost strategic flexibility. The importance of these strategic war reserves was highlighted during recent operations in Iraq. Much of the equipment and supplies stored at land sites in the region and aboard pre-positioning ships were used to support Operation Iraqi Freedom (OIF). The Government Accountability Office (GAO) reported in September 2005 that the Department of Defense (DOD) faces near-term operational risks should another large-scale conflict emerge. The report states that the DOD “...has drawn heavily on its pre-positioned stocks to support ongoing operations in Iraq. And, although remaining stocks provide some residual capability, many of the programs face significant inventory shortfalls and, in some cases, maintenance problems (GAO 05-427).”

For example, GAO found in March 2005 that the Army pre-positioned stocks in South Korea (APS-4) were significantly below the acceptable level of mission capability. Records indicated that the equipment was in poor condition and much of the periodic maintenance had not been performed in several years. In addition to maintenance problems, some of APS-4 is stored outside, where exposure to the elements had led to damage by corrosion. Furthermore, the small size of the installation where APS-4 is located does not provide adequate room to routinely “exercise” the equipment. Over the past year, U.S. Forces Korea and the Army Material Command have been working to alleviate the conditions that led to the dangerously low mission capability of APS-4. More needs to be done, however, to ensure that improvements will continue and safeguards against future disrepair will be established.

Another strategic asset to PACOM is Army Pre-positioned Stock-3. APS-3 currently consists of two flotillas: Army Strategic Flotilla (ASF) I at Guam and ASF II at Diego Garcia (two ships per flotilla). Army leadership has directed the download of ASF II at the end of FY06. During this five-year period (FY06-FY11), the equipment will be offloaded from the ships and used to fill equipment shortages elsewhere. While this might provide needed resources to other parts of the Army, this could pose a dangerous risk to operational plans within the PACOM area of operations. The Army reports that downloading ASF II will save roughly \$266 million over the FYDP.

3.4.8 – Other Findings

The committee believes that DOD must address the following areas of concern with regard to the ability to meet the war fighting requirements in the scenarios the committee examined:

- Bandwidth availability is a challenge;

- U.S. mine warfare and counter-mine capabilities are inadequate for requirements, especially those in any future conflict involving Korea, China or Iran;
- Shortages of conventional munitions, as well as ammunition distribution shortfalls created by the demands of OEF and OIF, exist;
- Adequate special operations capabilities are not available to meet the multiple worldwide demands, but Department of Defense efforts to expand special forces capabilities should not come at the expense of meeting conventional force structure and manpower requirements;
- Foreign language speakers and area experts need to be increased;
- Civil affairs structure and capabilities must be expanded; and
- Several scenarios reviewed by the committee may include hard, deep targeting requirements.

3.5 – Strategic Forces

In response to the emerging global security environment, the congressionally mandated Nuclear Posture Review (NPR) built on the findings of the 2001 Quadrennial Defense Review and established a "New Triad" of capabilities to meet defense policy goals. The New Triad is composed of offensive strike systems (both nuclear and non-nuclear), defenses (both active and passive) and a revitalized infrastructure to enable new capabilities to meet emerging threats. This triad is bound together by enhanced command and control (C2) and intelligence systems.

The New Triad conceptually reduces dependence on nuclear weapons and improves our ability to deter an attacking enemy by increasing defenses. Non-nuclear strike forces are integrated to increase flexibility and diversity while ensuring a credible and scalable response. In order to provide the flexibility of response required by the New Triad, offensive strike forces need the ability to reach targets without warning, to strike world-wide targets on short notice, to be effective across a broad range of missions to include hardened or deeply buried targets, and to be capable of precise attack. Many of these capabilities, both nuclear and conventional, currently exist in the U.S. inventory and weapons developments such as the Joint Stand Off Weapons (JSOW), and Joint Direct Attack Munitions (JDAM), augment an array of existing conventional weapons options for striking traditional targets.

Although implementation of the Moscow Treaty will reduce the number of strategic nuclear warheads to 1700-2200 by 2012, the old nuclear triad of intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs), and strategic bombers remains a subset of the New Triad's strike capabilities. This aging, but still viable, fleet of nuclear platforms is undergoing needed modernization and sustainment programs to ensure nuclear safety and weapons employment capability through 2015. The current inventory of 500 Minuteman III ICBMs was fielded in the 1970s and a modernization program is underway to

ensure Minuteman III viability until 2020 by seeking solutions to system aging and reliability issues. This program incorporates a broad range of initiatives to ensure reliability, maintainability, and supportability of the systems. Current efforts seek to correct age degradation in the solid rocket motors, replacement of 1960s-era electronics in the missile guidance systems and propulsion system rocket engines, and development of hardware/software to enable deployment of the Mark 21 reentry vehicle. The program also includes improvements to launch facility security systems, environmental control systems, and support equipment such as test stations for maintenance of missile subsystems.

The current Navy fleet of 14 Trident SSBNs supports the force structure requirements of the NPR, but the current inventory of Trident II (D5) missiles will be 108 missiles short of the projected inventory objective of 533 in 2020. As with the Minuteman III, the Trident II (D5) SLBM is undergoing a life extension modification. The D5LE system design concept is a low risk approach and maintains the same form, fit, and function at the system, subsystem, and package levels. The program seeks to modernize and improve missile electronics and guidance subsystem to include the reentry subsystem and uses commercial off-the-shelf technologies to modernize the instrumentation, navigation, fire control, and launch subsystems of the SSBN. An on-going evaluation of the D5 rocket motor seeks to identify shortfalls due to missile aging. The life extension program is to continue through 2020 and should ensure D5 capability through 2040. However, the panel notes that the SSBN fleet hull life estimates will be reached by 2030.

Rounding out the U.S. nuclear arsenal is the fleet of strategic bombers. There are currently 94 B-52H bombers in service as the U.S. Air Force's principal strategic nuclear and conventional weapons platform. The B-52H entered service in 1961; system and structural upgrades have extended its service life beyond 2030. The B-52H, with a weapons payload of more than 70,000 pounds, is capable of carrying a diverse range of weapons to include: AGM-129 Advanced Cruise Missiles, B-61 nuclear bomb, AGM-86A Air Launched Cruise Missiles, AGM-84 Harpoon missiles, AGM-142 Raptor missiles, 20 AGM-86C Conventional Air Launched Cruise Missiles, JSOWs, JDAMs, and Wind Corrected Munitions Dispenser.

The Air Force's B-2 is a low-observable, strategic, long-range, heavy bomber capable of penetrating air-defense shields. It has a range of more than 6,000 nautical miles unrefueled and more than 10,000 nautical miles with one refueling, which gives it the ability to fly to any point in the world within hours. The Air Force began receiving B-2s in 1993; there are currently 21 in the inventory. The B-2 can carry up to 40,000 pounds of weapons, including an array of conventional and nuclear weapons similar to the B-52H. A Generic Weapons Interface System (GWIS) has been fitted as part of the Block 30 upgrade to the B-2. The GWIS is an integrated digital software package, which allows the B-2 to carry different mixes of stand-off weapons and direct attack munitions on a single sortie, enabling the aircraft to attack up to four different types of targets on a single mission. Engineering data indicates the B-2 airframe should be structurally sound to approximately 40,000 flight hours using current mission profiles, taking fleet viability out to 2030.

It should further be noted that changing technology is affecting the calculus of what is, and is not, "strategic." During the Cold War, strategic systems were largely defined in terms of a major nuclear exchange between the United States and the Soviet Union. With the end of the U.S.-Soviet confrontation and the rise of precision capabilities, it is no longer appropriate to

think of strategic warfare solely in terms of nuclear weapons. Thus, the Nuclear Posture Review posited that strategic effects could be achieved with non-nuclear weapons by redefining strategic effects to include the capability to promptly strike targets anywhere in the world, rather than focusing on the “assured destruction” capabilities that dominated Cold War thinking. The committee believes that this approach to strategic warfare can dramatically lessen the role of nuclear weapons in securing the country and recognizes the need to develop a warning/identification mechanism by which other nations can discriminate a conventional global strike weapon from a nuclear global strike weapon to avoid an inadvertent nuclear retaliatory response.

The defensive portion of the New Triad encompasses the active defenses, passive defenses, and defensive information operations needed by the United States in case deterrence fails. Active defenses intercept ballistic missiles, cruise missiles, and strike aircraft. Passive defenses protect against missile and air attack by means of concealment, hardening, redundancy, warning, dispersal, mobility, and other measures.

The third leg of the New Triad, responsive infrastructure, is the aggregate of the facilities and workforce that develop, build, and support the other elements of the New Triad. This includes both the nuclear weapons complex and the industrial base that produces delivery platforms, weapons, sensors, communications systems, data processors, and other items needed for offensive strikes and defensive protection.

As was the case with many of the gap panels, the panel on current and emerging nuclear threats reviewed much of its information in classified session. Nevertheless, the review identified limitations in U.S. capabilities, which are summarized below.

Command and Control (C2) and Intelligence

- Integrated intelligence across international boundaries.
- Human intelligence capability, including the use of indigenous personnel or non-military U.S. foreign language experts in intelligence operations.
- Adequate Intelligence, Surveillance and Reconnaissance (ISR) assets, to include unmanned aerial vehicles and signal collections equipment.

Offensive Strike

- Enhanced strategic, non-nuclear capability.
- Capability to hold hardened and deeply buried targets at risk.
- Follow-on systems to replace aging ICBM and SLBM systems.
- Follow-on systems to replace aging strategic bomber capability.

Defensive Capabilities

- Passive defenses—warning systems, emergency shelters, decontamination capabilities, and medical countermeasures.
- Active defenses against ballistic missiles and cruise missiles.
- Underground facilities to ensure survivability in event of an attack against U.S. with nuclear or precision conventional weapons.

Responsive Infrastructure

- Integration, communication and coordination between government, defense and international agencies.
- Industrial base to maintain and modernize nuclear capability.
- Nuclear weapons complex infrastructure to maintain and support follow-on systems.
- Diminishing number of engineers and scientists who meet security clearance requirements and have a desire to work on nuclear weapons and system sustainment projects.

3.6 – Domestic Contingencies

3.6.1 – Weapons of Mass Destruction (WMD) Incidents

While the Department of Homeland Security (DHS) has the lead role in emergency management, the distinctive capabilities required to respond to a WMD attack are resident within DOD. DHS will rely on DOD for chemical, biological, and radiological decontamination and containment equipment and facilities. These capabilities were developed over the course of

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DOD's long history in: counter-proliferation; weapons technology; chemical, biological, nuclear, and high explosives research and development; explosive ordnance disposal; and experience operating in hostile physical environments.

DOD has a comprehensive WMD program that spans the spectrum from research and development to response. Early stage chemical, biological, radiological, and nuclear (CBRN) research and development is consolidated within the Defense Threat Reduction Agency (DTRA), which also serves as a counter-WMD practitioner, through its combat support, weapons inspection, and treaty compliance roles. Later stage research is consolidated with acquisition through a Joint Program Executive Office within the Office of the Secretary of Defense. The Department of Defense also has a single combatant command, U.S. Strategic Command (USSTRATCOM), dedicated to deterring and combating WMD across the globe. USSTRATCOM provides enabling capabilities to regional combatant commands, in the areas of ISR; space and global strike operations; information operations; integrated missile defense and command and control. While current plans call for USSTRATCOM to retain overall responsibility for integrating and synchronizing the Defense Department's combating WMD activities, USSTRATCOM has assigned functional authority to DTRA to plan and execute missions in this area.

In addition to decontamination equipment and facilities, DOD also has robust WMD modeling and simulation capability, which aids in planning and defining requirements for WMD consequence management. Planning activities have resulted in standing, executable orders at U.S. Northern Command (USNORTHCOM) for responding to various types of WMD attacks in the homeland.

The National Guard has chemical, biological, radiological, nuclear, and high explosives (CBRNE) packages located in 12 U.S. geographical regions. Likewise, DOD has specially trained personnel for WMD response. There are fifty-five National Guard WMD-Civil Support Teams, with at least one such team planned for every state and territory and with thirty-two already trained and certified by the Department of Defense. Within the active component, the U.S. Marine Corps has a 380-person Chemical Biological Incident Response Force (CBIRF) prepared for rapid deployment. USNORTHCOM has a 3,000+-person task force configured to provide WMD response in the United States.

Beyond specialized plans, equipment, and personnel, many of the same capabilities that the Department of Defense offers in response to a natural disaster may be called upon after a WMD event. These activities include, but are not limited to, airlift, damage assessment, search and rescue, medical evaluation, water purification, and contracting for consumable goods.

3.6.2 – Disaster Response

With regard to international incidents, the U.S. Agency for International Development (USAID) leads U.S. response efforts. The Department of Defense may or may not be asked to assist. When requests are made, careful consideration is given to the impact on readiness and force protection, recognizing that the U.S. Armed Forces possesses some resources not resident

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in other agencies. In catastrophic events, such as Hurricane Katrina, the Department of Defense must bring such resources to bear, as required, particularly unique capabilities such as command, control, and communications, logistics, and mobility.

DOD has indeed provided notable support to many international catastrophes, most recently in Southeast Asia after the tsunami and in Pakistan following the major earthquake. The relationship between USAID and DOD has recently been formalized through the establishment of an Office of Military Affairs at USAID to coordinate with DOD response teams.

The key Department of Defense capabilities in disaster response include:

- Strategic airlift and rotorcraft for search and rescue;
- ISR assets for enhanced situational awareness;
- Supplies such as Meals Ready to Eat (MREs), tents, blankets, and fuel;
- Water purification assets;
- Engineering assets for clearing debris and restoring infrastructure; and
- Medical care.

Furthermore, DOD can offer a particularly unique capability in sea-based relief. By responding with aircraft carriers and other large naval vessels, DOD can deliver supplies and medical care, while minimizing host nation concerns about the presence of the U.S. military and also reducing concerns about force protection. The military's Theater Security Cooperation Programs promote pre-event cooperation and facilitate response. These programs remove impediments other organizations may face gaining access to airstrips, local transportation, and local authorities. Lastly, the U.S. Transportation Command (USTRANSCOM) has a robust command & control and distribution / deployment planning process at its headquarters that is mirrored in each regional combatant command. This allows USTRANSCOM to identify and redeploy any military transportation asset at a moment's notice to respond to events as they unfold.

The committee recognizes the importance of international assistance. Much as other countries have responded gratefully to the United States' assistance in times of need, the United States may rely heavily on assistance from the international community during a catastrophic disaster or in the worst case scenario previously described. The committee encourages military-to-military cooperation efforts by the Department to facilitate such assistance, should it be required due to a catastrophic disaster as described.

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Domestically, the committee found that the Department offers many of the same response capabilities it offers internationally, yet the military has both greater flexibilities and greater limitations domestically. Through the Army Corps of Engineers, the military has experience and design responsibility for much of the nation's flood control infrastructure. This enhances its ability to rapidly evaluate and repair flood control structures.

The military also has vast experience with pre-event planning and coordination among large numbers of players, including training exercises with civilian and military personnel. This capability is easily shared with other Federal agencies, state, and local communities to assist them with their pre-event planning. The Department of Defense also has established mechanisms in place to assist other Federal agencies. The Office of the Assistant Secretary of Defense for Homeland Defense has policies and procedures in place for providing support to the Department of Homeland Security for domestic natural disasters.

The committee determined that during hurricanes Katrina and Rita, DOD's active component response was forward-leaning, responsive, and organized. According to plan, USNORTHCOM created a joint task force (JTF) for on-site coordination of efforts of DOD and other Federal agencies in response to state and local needs. DOD seeks to create unity of effort between the state Adjutant General and the JTF commander, even when the National Guard is under state control. It is often desirable to keep the National Guard under state control, as one of DOD's domestic limitations is that it may not normally perform law enforcement activities.

The committee considers the National Guard to be a significant piece of DOD's overall response to domestic natural disasters. National Guard forces are the first military assets to respond and comprise the preponderance of military forces with local knowledge of geography and population. The National Guard has its own equipment, including helicopters, high water vehicles, boats, and radios, available for search and rescue and recovery operations. The Committee has some equipment concerns, discussed below, but equipment shortages appear to be ameliorated by the Emergency Management Assistance Compact (EMAC). EMAC enables non-affected states to rapidly provide National Guard assets (both personnel and equipment) to the affected region to assist in recovery efforts. The National Guards from other states are placed under the control of the affected state's governor, in order to achieve unity of command.

3.6.3 – Pandemics

Key Observations

- DOD's primary responsibility is to protect its personnel so that DOD may continue to perform its functions in both foreign and domestic contingencies.
- Other government agencies should not depend on DOD to perform their functions.
- DOD does have unique capabilities that can help mitigate a crisis.

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DOD's primary responsibility during a pandemic is the protection of its military personnel, dependents of military personnel on military installations, and civilian DOD personnel. However, a large-scale pandemic would constitute a national emergency, in which the Department of Defense would provide support to the lead Federal agency, the Department of Health and Human Services (HHS). The committee understands that the availability of DOD support is contingent on the impact that the pandemic would have on DOD personnel, on commitments abroad, and on readiness levels. Thus, while certain capabilities currently exist within the Department, they may not be available during a pandemic. The committee cautions other Federal agencies, as well as state and local authorities from relying too heavily on the Department as they develop their individual preparedness plans.

This caution notwithstanding, the Department of Defense does have laboratory and medical research capacity that can supplement HHS' capacity. While the Department does not have an influenza biological defense program, it does have a long history of vaccine research and is developing generic technologies for rapid vaccine creation. The Department has some biocontainment laboratories up to BSL-4, the highest level.

The military also may play an important role in global surveillance via U.S. military installations positioned around the globe. In particular, the U.S. Air Force is the Executive Agent for surveillance of influenza. Military personnel interact with local communities in some of the highest risk locations and may provide advanced warning of virus progression. Further, international military laboratories in Bangkok, Jakarta, Cairo, and Peru may supplement the World Health Organization's ability to track mutations of existing viruses. The military services also have automated systems for daily communicable disease reports and patient monitoring. A military diagnosis of pandemic influenza can be rapidly disseminated to states, as military labs are a component of the Centers for Disease Control (CDC) Lab Response Network.

Should an outbreak occur, the U.S. Army has rapid response medical assessment teams positioned throughout the United States, Europe, and the Pacific. There are currently 43 Special Medical Augmentation Response Teams (SMART) that are prepared to deploy within 12 hours to support other Federal agencies in medical needs assessments. Some of these teams specialize in preventative medicine, while others focus on medical isolation. The military also has a cadre of doctors, nurses, and medics who may provide patient care. The Army's regional medical commands would be responsible for day-to-day health care, and these commands are closely aligned with the Federal Emergency Management Agency's regional commands to facilitate cooperation between agencies. While the military has fewer brick and mortar hospitals than it once had, the Services do maintain deployable units, which could supplement fixed facilities.

A sampling of the U.S. Army's capability includes:

- Hospitals – 9 in Active Component (AC), 19 in U.S. Army Reserve (USAR)
- Evacuation Facilities – 18 AC, 8 USAR, 22 associated with National Guard
- Preventative Medicine – 12 AC, 28 USAR

- Medical Laboratory – 2 AC
- Veterinary – 4 AC, 7 USAR
- Medical Logistics – 5 AC, 2 USAR

The fixed and deployable assets within the military are supported through reach-back capability resident in the Army's Center for Health Promotion and Preventative Medicine (CHPPM). CHPPM can provide consultative expertise on decontamination and disinfection, medical waste handling, infection control, and epidemiological analysis. Beyond consultation and training, the military may also provide public health communication through its radio, television, and print resources. The military is also prepared to collaborate with local communities in developing risk communication strategies and by providing isolation care facilities. These facilities are being pre-identified at this time. Finally, the Department has unparalleled logistics capability and a surge capacity to provide most consumable commodities, including medical supplies, personal protective equipment, food and water.

3.7 – Allies and Coalition Partners

Key Observations

- Allies and coalition partners remain critical to U.S. contingency operations for—at a minimum—access to strategic regions.
- Allies and coalition partners may be unable to contribute significant military forces to a contingency.
- It is necessary to strike a constantly shifting balance between the inefficiency and constraints of coalition warfare and the benefits.

As discussed elsewhere, allies and coalition partners are important to U.S. national security. In general, the committee believes that U.S. interests in deterring and defeating aggression, winning the GWOT, and maintaining peace and security in the world are shared by its allies and most countries in the world. During the Cold War, major U.S. allies provided significant military, basing, and economic support to deterring and defeating aggression across national borders. In so doing, they also provided bases that enabled the United States to project its armed forces around the world, into areas not otherwise easily reached from the United States. At the time, the United States was reasonably able to predict areas of potential conflict of importance to it and its allies: namely Europe and the western Pacific. By garrisoning its forces in countries close to those areas, the United States ensured that it could have substantial military forces available in the places where it anticipated a possible conflict.

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As often noted by policymakers, scholars, and analysts, the post-Cold War world represents a more fluid security situation. It is no longer possible to reliably predict when and where U.S. military forces might be engaged. One scholar, for instance, described an arc of instability stretching from the Balkans to Southeast Asia that also included the bulk of the African continent as a potential battlefield. Clearly, forces garrisoned in Europe and Japan are not ideally situated to respond to aggression in this so-called arc.

That leads the committee to several conclusions. First, as has been noted elsewhere, allies and coalition partners will remain critical in providing the U.S. armed forces access to potential conflict areas. It would have been extraordinarily difficult, if not impossible, for the United States to deploy forces to Afghanistan without the support and permission of several states in the region. Similarly, several Persian Gulf states provided extensive basing and deployment sites to U.S. forces prior to and during OIF.

Second, allies and coalition partners may have more developed relations with countries of interest to the United States. As a result, they may be able to use their political, economic, or diplomatic influence to shape events and policy in those countries. Similarly, they may have better intelligence about how that country functions.

Third, many allies and coalition partners do possess useful military capabilities. After 9/11, NATO countries sent Airborne Warning and Control System aircraft to help patrol U.S. airspace, reducing the burden on the U.S. Air Force and enabling it to focus more resources on Afghanistan. NATO members have already contributed military forces to Provincial Reconstruction Teams in Afghanistan, supporting efforts by the Afghan government and coalition forces to conduct stability and reconstruction activities outside of Afghanistan's major cities. British, Polish, Italian, Ukrainian, and South Korean military forces, among others, contributed to security operations in Iraq, and Japan has led reconstruction efforts there as well.

That said, the United States will not always be able to assume that its allies or coalition partners are capable of committing substantial military support to any given operation. The simple fact is that traditional U.S. allies do not have much military power to offer. For example, the conflicts in Afghanistan and Iraq have seriously stretched the British military, raising questions about its availability for any new contingencies that present themselves. NATO and its members have also stretched the limit of their deployable capacity in maintaining troops in the Balkans (under management of the European Union in Bosnia) and Afghanistan. Defense budgets across NATO's members continue to fall and most countries have failed to meet their Prague commitments to developing deployable niche capabilities. In cases where the United States works with countries that are not its traditional allies, it quickly finds that they often lack the lift and logistical capability needed to move and sustain their forces any significant distance away from their borders. Indeed, the United States has assumed many of those responsibilities in Iraq.

Fourth, working with allies and coalition partners brings with it certain obligations and limitations that may limit U.S. freedom of action. During the 1999 conflict with Yugoslavia, for example, the Supreme Allied Commander Europe, who also heads U.S. European Command, had to coordinate his command decisions twice with 19 NATO members represented on both the Military Committee and the North Atlantic Council. This process slowed decision-making and it

can limit U.S. options to the lowest common denominator that all states find politically acceptable, regardless of that option's military utility.

Fifth, an ally or coalition partner's international or domestic interests may not lead it to share U.S. perceptions of any given security issue at a particular moment in time. As a result, that ally or partner may significantly affect U.S. military options at inopportune times. Prior to Operation Iraqi Freedom, for instance, the Turkish government decided that it would not permit U.S. forces to open a second front in operations against the Hussein regime from Turkish territory. As a result, a campaign plan that called for a two front war with the 3rd Infantry Division and I Marine Expeditionary Force attacking from the South and the 4th Infantry Division attacking from the north had to be rewritten on short notice. As it was, the 4th Infantry Division was not able to enter Iraq until coalition forces had largely defeated Iraq's conventional military forces.

As a result of these conclusions, the committee determined that the United States should continue to seek allies and coalition partners as appropriate for a military operation, but that defense planners should not assume that allied or coalition support will be readily available. That determination affected the force-sizing construct used to develop recommendations about U.S. force structure and described in greater detail in chapter four.

3.8 – Interagency Coordination, Cooperation, and Capabilities

Key Observations

- DOD's unique capabilities make it a logical/inevitable partner in many contingencies for which it is not the lead government entity.
- The interagency process does not demonstrate the same ability to coordinate in planning or operations that it does in policy development.
- Non-DOD departments and agencies lack robust capabilities to plan, exercise, train, surge, or deploy overseas in response to contingencies and have not been required to develop these capabilities in the past. U.S. national interests will require them to develop some of these capabilities.

The committee reviewed roles and missions extensively in assessing the threats that face the United States in the 21st century and the military capabilities that will be required to meet them. In general, the committee notes that the U.S. armed forces are not primarily responsible for domestic contingencies, but play a supporting role in them. The committee further acknowledges the critical role that other departments and agencies can play in shaping other nation's development so as to prevent conflict. The committee also notes that the armed forces are engaged in a broad range of non-combat operations, for which they may not be ideally suited. These include nonproliferation activities, peacekeeping, stability, and reconstruction operations.

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In other words, the U.S. armed forces often find themselves conducting operations that do not involve defeating enemies of the United States. As a result, the Department of Defense often finds itself working with a plethora of federal departments and agencies when it performs these missions. In its domestic roles, it must also operate in conjunction with large numbers of different state and local departments or agencies.

As noted elsewhere, these kinds of activities may increase stress on the force, reduce preparedness, and limit the armed forces' ability to respond to contingencies. Nevertheless, these operations can be critical to the safety and security of the United States. The Department of Defense further possesses unique capabilities—not generally resident elsewhere in the federal government—that make it a logical partner in such activities.

Unique DOD capabilities within the federal government (in addition to those assets mentioned in reference to natural disasters above):

- Large numbers of ground vehicles capable of carrying personnel and cargo;
- Large numbers of deployable personnel;
- Command, control, and communications capabilities;
- The ability to surge into an area; and
- A relatively large budget.

With that in mind, the committee's review of interagency operations in these areas led it to several conclusions:

The interagency process does not work optimally when it comes to bringing multiple departments together to perform a mission. While policy development and coordination may be done effectively within the National Security Council process—where time is not always a critical factor—interagency coordination for operational purposes is often done in an ad hoc manner. In some cases, departments and agencies with lead responsibility for policy development may not be prepared to lead operational activities, in part because their departments have little operational capability or capacity.

With a few exceptions, U.S. government personnel do not train, exercise, or plan together effectively – due in part to the fact that many non-DOD departments lack general planning, training, and exercise capabilities. While DOD is designed to spend time and resources preparing for its primary mission of episodic combat, other departments and agencies perform their primary missions on a daily basis. They are not structured to train personnel or rehearse that mission before they perform it. This can limit their ability to prepare for non-routine activities. Thus, relationships must often be worked out as an activity unfolds, rather than beforehand. For that matter, most departments do not possess the Department of Defense's

extensive planning capabilities or experience, in part because such capabilities have not been necessary to perform their normal functions.

There are breakdowns in command, control, and communications. There is no common lexicon/frame of reference within the United States government for planning or operating. Thus, departments and agencies do not speak the same jargon or necessarily understand one another's intentions or capabilities. From a physical standpoint, command and control systems are not interoperable and individuals from different departments are not easily able to communicate with one another.

With a few exceptions, non-DOD departments lack a surge capability. Again, non-DOD departments and agencies perform their functions every day. Unlike the peacetime preparation for war, those functions have not historically required a surge capability. Thus, when episodic events occur, those departments and agencies must stretch more than the Department of Defense. It should be noted, however, that the demands of the GWOT and continual combat are stretching the U.S. armed forces. The committee is concerned that the Department's surge capabilities may themselves be diminished as a result.

With a few exceptions, non-DOD departments are not "deployable," meaning that personnel cannot be involuntarily sent away from their normal duty stations on short notice. This is of particular concern overseas and in the GWOT, which increasingly demands that the United States government improve its operational capabilities to perform non-military missions, such as stability and reconstruction operations. The committee noted that the Department of State has taken steps to rectify this situation in creating the Coordinator for Stability and Reconstruction Operations, known as S/CRS. That office has sought to identify a corps of deployable personnel who would embed themselves with military forces to assist in operations for which the military is not ideally suited.

Finally, it bears remembering that DOD is the only federal department capable of, and responsible for, defeating state aggression against the United States and its interests. *It must be prepared to do that at all times.* To the degree that the armed forces engage in other missions that undermine their ability to defeat aggression—especially if other departments and agencies are primarily responsible for performing those missions—the United States must accept some risk that the Department will be less able to perform its primary mission. The committee believes that in many cases that risk is reasonable to accept, but also believes that it must always be considered, lest the convenience of using DOD's unique capabilities lead the country to forego the development of appropriate capabilities elsewhere in the federal government.

3.9 – Intelligence, Surveillance, and Reconnaissance

The committee found that intelligence, surveillance and reconnaissance (ISR) problems appear in every single kind of activity the military performs. The committee singles them out here for special attention.

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Intelligence is a prerequisite for effective combat operations today and will grow in importance as the armed forces seek to apply firepower with greater precision and are required to operate amongst a larger number of foreign cultures. With the evolution of technologies that permit near real time acquisition and distribution of information, data, and imagery, the institutional separation of the intelligence and operations functions is proving an impediment to the most effective execution of military operations.

In particular, surveillance information must flow seamlessly from collection platforms/assets directly to those who can act on it. Persistent surveillance is necessary for most combat/humanitarian/domestic operations, yet the current stock of unmanned aerial vehicles cannot provide for 24/7 persistent surveillance. The committee further notes that ISR assets are generally available at lower rates than current planning assumes, meaning it takes more assets than planned to achieve the planned amount of capability.

The committee also found that U.S. intelligence systems are vulnerable to asymmetric threats (electro-magnetic pulse, cyber attack) and are not easily reconstituted. As a result, ISR are likely to grow as the Armed Forces “Achilles heel” in any conflict with an adversary capable of launching effective asymmetric attacks, barring new U.S. approaches to protecting and fielding its ISR systems.

As noted elsewhere, language and cultural knowledge and intelligence are increasingly critical to the U.S. armed forces. With that in mind, the committee concludes that Defense Human Intelligence services should be increased and that they require need new operational skills to penetrate enemy organizations.

Finally, the committee concluded that the intelligence community must have a broader program to gather and organize open source intelligence (e.g., information generated daily over the internet or other media outlets) so that it understands potential adversaries or operating environments.

IV. COMMITTEE RECOMMENDATIONS

During the course of the defense review, members of the Committee on Armed Services: reviewed threats to U.S. national security; identified specific scenarios involving those threats that they believed the U.S. Armed Forces must be prepared to handle; considered the non-traditional missions that the military is often called upon to perform; and assessed the strengths and weaknesses of the U.S. Armed Forces in performing all of those functions.

The most important conclusion that the committee reached is that today's U.S. military is the most professional, dedicated, and capable force the world has ever known. The committee confirmed as a result of the review that the security of the American people is in good hands with the U.S. Armed Forces.

That said, the committee does believe that the capabilities and capacity of the Armed Forces must improve to minimize risks associated with meeting the 21st century challenges to U.S. security. In this, there is much in the Department of Defense (DOD) Quadrennial Defense Review (QDR) with which the committee strongly agrees, including expanding Special Operations Forces, recognizing the need to work with allies and coalition partners, and improving the capacity and capabilities of other countries to contribute to the system of international security.

However, the committee also believes that some current defense trends are moving in the wrong direction and that DOD officials may not recognize the seriousness of such trends. First, the committee has concerns that force structure reductions and low modernization budgets during the 1990s created unacceptable levels of risk in responding to two nearly simultaneous major regional conflicts, which was the force sizing benchmark defense planners used during most of the last fifteen years. Yet, the committee believes that the requirement to deal with two simultaneous regional conflicts exists. While the committee believes that the United States must do everything it can to deter and prevent aggression, it is particularly concerned about possible conflicts with the People's Republic of China, North Korea, and Iran.

Second, defense and budget planners appear to believe that the current demand for military forces in the GWOT is an aberration and that the strains currently placed on our military will subside over time. While the committee hopes that this proves to be the case, it is less optimistic about the future and believes that the current level of operations should serve as a baseline for future force planning. In other words, the U.S. Armed Forces should be organized and funded at a level adequate to prevail in both the GWOT and two simultaneous major regional conflicts. This sizing construct is discussed in greater detail below. Anything less involves accepting risks to U.S. national security that the committee views as excessive.

Third, the committee is concerned about trends in defense planning and acquisition that are reducing military force structure and replacing platforms at a ratio below 1:1. The committee understands the expectation that modernization is making each individual platform theoretically more capable than the two or more platforms that it might replace. The committee also understands the argument that modernization improves the capabilities of individual units in the

force structure, making it possible to do more with less. The committee also acknowledges and supports DOD efforts to improve the availability of military units by reforming internal processes and developing new deployment modes. Finally, the committee also fully appreciates the dilemma that rapidly growing personnel costs are creating for DOD and the likelihood that health care costs alone will outstrip procurement funding if current trends continue. However, reductions in force structure and a shrinking number of platforms reduce our strategic depth and flexibility, increase operational rates (i.e., accelerating the rate at which platforms reach the end of their operational life and stress on personnel), make it more difficult to influence the strategic environment through military presence, weaken our defense industrial base, and limit our ability to support a long conflict, particularly if that conflict results in high attrition rates. The committee believes that these costs exceed the benefits of the current trend.

Fourth, the committee is concerned that DOD has retired operational systems before proving and deploying new capabilities. The committee appreciates the fiscal constraints that drive DOD in this direction but notes with alarm that such decisions increase the risks to U.S. national security. Just as there is uncertainty about how threats may evolve, there is also uncertainty about how new platforms will perform and whether they will be appropriate for future conflicts. Retiring proven capability before proving the worth of, and deploying, new capabilities opens the United States up to the possibility that it will be ill-prepared to respond to certain contingencies.

With these trends in mind and an eye towards threats and missions, the committee developed a new force structure concept for the U.S. Armed Forces, which is discussed below.

4.1 – Force Structure

The committee assumes that the U.S. Armed Forces must possess the ability to maintain the current level of operations in the Global War on Terrorism (GWOT) and the capacity to surge forces and conduct two simultaneous major regional conflicts. In one of those conflicts, the United States would seek to win decisively—that is, remove a hostile regime, destroy its military capacity, and set conditions for the restoration of civil society. This conflict could prove to be relatively lengthy. In the second campaign, the U.S. Armed Forces would be prepared to swiftly defeat and achieve strategic objectives short of changing the regime. The committee assumes that such a campaign would be of shorter duration than a campaign involving regime change. In addition, the committee believes that the force structure should be of sufficient depth to deter opportunistic acts of aggression, or to provide homeland defense resources, or to maintain a minimal rotation capability, or to cushion the effect of unanticipated losses.

The committee believes that the required force structure to complete these three tasks would include:

- 78 Army Brigade Combat Teams;
- 43 U.S. Marine Corps Infantry Battalions;

- 4 U.S. Marine Corps Preposition Squadrons;
- 55 Amphibious ships;
- 15 U.S. Navy carrier strike groups;
- 15 carrier air wings;
- 55-68 attack submarines; and
- 15 U.S. Air Force Air Expeditionary Wings.

Figure 4.1 summarizes this force structure, and figures 4.1.1 through 4.1.4 explore it in greater detail.

The committee believes that preparing to deal with two major regional contingencies simultaneously while maintaining the current level of effort in the GWOT is critical to deterring aggression by any potential state adversary. Thus, the committee judges that the force structure recommendations made here would best protect U.S. security interests against regional powers by deterring them from acts of military aggression against those interests.

In developing this force structure, the committee made several assumptions about the force:

- All units have a full complement of personnel and equipment;
- The number of operationally available units is a subset of the total force as described in the table;
- Contributions by allies/coalition partners are not significant in terms of absolute military capability; and
- Military forces are not already committed to a simultaneous major domestic or foreign non-combat contingency, such as disaster relief, weapons of mass destruction (WMD) consequence management, or peacekeeping/stability/reconstruction operations.

The committee-recommended force structure is illustrative and does not go into prescriptive detail on the nature of some of the units recommended. For example, it does not discuss the ratio of heavy to light ground forces or the tradeoffs often made between rapid deployability and combat power. Many experts in the analytical community have suggested that transformation and improved use of information on the battlefield can render these tradeoffs largely moot. The committee hopes that their conclusions are correct. However, members are not entirely convinced that speed, mobility, and precision on the battlefield will convincingly replace armor and firepower. The committee notes that in Iraq, heavy forces have proven their worth in unexpected ways during a conflict that, ostensibly, would stress light and mobile

capabilities. During the major combat phase of Operation Iraqi Freedom (OIF), tanks provided a shock value that may have contributed as much to the collapse of Hussein's regime as their firepower. The so-called "thunder runs" into downtown Baghdad that precipitated the regime's abandonment of Baghdad might not have been effective, or even possible, without the heavy armor units of the Third Infantry Division. Similarly, in the battle for Fallujah, tanks proved critical in providing direct fire support against relatively lightly-armed insurgents who had fortified themselves inside buildings, saving infantry from having to clear out those buildings in close-order fighting. Also, the Iran and North Korea scenarios under consideration by the committee include potential adversaries that possess some large, heavy armored formations.

The force structure also does not directly address tradeoffs between specific platforms, such as the F-22 or the F-15, reflecting a conscious decision to focus on the capacity and size of the force rather than the performance of individual platforms. As discussed elsewhere, the committee has clear concerns with an acquisition trend that is not replacing current platforms on a one-for-one basis. Having concluded that this trend creates risks for U.S. national security, the committee seeks to draw attention to the problem. However, members will take up specific programmatic decisions during the annual budget process, for reasons already discussed.

4.1.1 – Explanation of the Committee Defense Review (CDR) Force Structure

In general, the committee assessed the force structure simultaneously required to conduct the GWOT, support two conventional regional conflicts, and defend the homeland or execute a contingency operation (GWOT + 2 Surge Requirement). Current operational deployments provide the basis for GWOT requirements. Existing war plans that, in the committee's judgment, would maximally stress the force provide the basis for requirements to win two regional conflicts. A contingency operation is the level of DOD effort required by a natural disaster on the scale of Hurricane Katrina.

The CDR compares this assessed GWOT + 2 Surge Requirement to either the current force structure or that recommended by the QDR, after correcting for operational availability. The correction for operational availability accounts for the fact that some portion of the force will not be immediately available due, for example, to refit and retraining cycles following return from operational deployment, restricted availability for maintenance or complex overhaul, or historically representative non-mission capable rates. Also, the proposed CDR force structure took into consideration the need to provide some minimal rotation capability for forces in the event that United States was committed to a GWOT + 2, as well as having forces available to sustain unforeseen losses, and provide credible deterrent in GWOT + 2 scenario.

The CDR Structure at Low Risk is either the difference between the GWOT + 2 Surge Requirement and the Operationally Available force incremented to the QDR Recommended force or the force required to provide the GWOT + 2 Surge Requirement given an assumed availability (reflected in table notes). The Additional Minimum Structure Needed is simply the difference between the CDR Structure at Low Risk and the QDR Recommended force.

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Table 4.1 and supporting tables within Chapter 4 show the recommended U.S. Force Structure at Low Risk. Specifically, the set of tables lay out the following:

- Of the 70 Army Brigade Combat Teams (BCTs) in the QDR Recommended force, 20 would not be immediately available due to recent rotation, leaving 50 operationally deployable. The Committee judged the GWOT + 2 surge requirement as 45-58 BCTs, leaving a shortfall of up to 8 BCTs. The CDR Structure at Low Risk is thus $70+8=78$ BCTs. The composition of the BCTs is in Table 4.1.3.
- A similar analysis of U.S. Marine Corps Infantry Battalion requirements identifies a shortfall of 10 battalions and a CDR Structure at Low Risk of 43 battalions.
- One additional Preposition Squadron, for a total of four, would meet the GWOT + 2 Surge Requirement, under the assumption that all squadrons are operationally available. (Table 4.1 reflects the unavailability of one squadron due to OIF).
- The QDR Recommended fleet is 34 amphibious ships while the committee assessed a GWOT + 2 Surge Requirement of 36 operationally available ships. Assumption of a 65 percent availability rate for immediate deployment results in a CDR Structure at Low Risk of 55 hulls, or 21 ships above the QDR Recommended force.
- Similarly, the Committee determined a CDR Structure at Low Risk of 15 Navy Carrier Strike Groups, or four more than the QDR Recommended force (three more than the current structure). Table 4.1.4 shows the composition of a Carrier Strike Group and reflects the Committee's assessment that generally, additional escort vessels would not be required, though ships assigned to escort duty would be unavailable for other operations.
- Table 4.1 shows an Additional Minimum Structure Needed of four Carrier Air Wings to support strike group flight operations. As reflected in Table 4.1.1, this requires 444 additional aircraft, primarily strike/air superiority aircraft and helicopters.
- The CDR Structure at Low Risk in Table 4.1 also outlines the need for 55-68 attack submarines, a number that reflects not only GWOT + 2 requirements but also the number of boats necessary to meet the peacetime presence needs highlighted by geographic combatant commanders. This number also reflects an operational availability rate of approximately 70 percent.
- Table 4.1 shows an Additional Minimum Structure Needed of five Air Expeditionary Forces (AEFs) for a CDR Structure at Low Risk of 15. The Committee assessed a requirement of 13 AEFs for two major regional conflicts, with 1.5 AEFs to support GWOT and .5 AEF for the Homeland Defense mission. Table 4.1.2 shows the composition of a standard Air Force AEF. The Additional Minimum Structure Needed implies a requirement for 680 aircraft (excluding air refueling), including 45 long range strike platforms for which there is currently no acquisition program.
- Table 4.1.2.1 specifically addresses force projection aerial refueling and long range airlift requirements to support two simultaneous air bridges, and combat operations in two theaters, assuming historical aircraft mission capable rates. The Committee assesses a need for significant additional C-17 and C-17 equivalent (C-5 replacement) airlift capacity. The Committee also notes a shortfall in refueling capacity, and that the Department still has no program to recapitalize existing or acquire new capability.

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Figure 4.1 U.S. Force Structure at Low Risk

Force Structure Element	GWOT + 2 Surge Requirement	Current Structure or QDR Recommended	Operationally Available ¹³	Additional Minimum Structure Needed ¹⁴	CDR Structure at Low Risk ¹⁵	Notes
Army Brigade Combat Teams	45-58	70	50 (70-20)	8	78	20 BCTs unavailable due to recent rotation from GWOT; provides force depth.
USMC Infantry Battalions	33	33	23 (33-10)	10	43	10 battalions unavailable due to recent rotation from GWOT; provides force depth
USMC Preposition Squads	4	3	2 (3-1)	1	4	
Amphibious Ships	36	34	22 (34-12)	21	55	Assumes 65 percent of amphibious ships are available at any given time
Navy Carrier Strike Groups	10	11	7 (11-4)	4	15	Assumes 65 percent of ships are available at any given time
Carrier Air Wings	10	11	7 (11-4)	4	15	
Attack Submarines	30	48	34 (48-14)	7-20	55-68	Structure reflects GWOT+2 requirements <u>and</u> increased forward presence capability to better meet combatant commander requirements. Total submarines available drops to 52 in 2007, 50 in 2012 and 40 in 2028. Operationally available subs will be approximately 70 percent of total.
Air Expeditionary Forces	14.5	10	9.5 (10-.5)	5	15	

¹³ Operationally available number reflects the current forces less the force structure most recently rotated from GWOT deployment or not available due to maintenance/overhaul.

¹⁴ “Additional Minimum Structure Needed” is the number of units required above the current structure/QDR recommended structure to achieve a U.S. force structure at low risk.

¹⁵ Minimum CDR structure requirement is to 1) Wage a long duration irregular campaign like the current OIF/OEF; 2) Conduct two simultaneous conventional campaigns, with one campaign to remove a hostile regime, destroy its military capacity and set conditions to, or for restoration of civil society, and a second campaign to achieve objectives short of regime change; and, 3) Provide depth to the force in order to deter opportunistic acts of aggression, or to provide homeland defense resources, or to maintain a minimal rotation capability, or to cushion the effect of unanticipated losses.

Figure 4.1.1 Standard Navy Air Wing Deployed At Sea

Type	PAA ²	Training/Test	BAI/AR ³	Total	CDR Additional Structure Needed Basic x4 ¹
F/A-18E/F or JSF	52	8	6	66	264
EA-18G	5	1	2	8	32
E-2D	5	1	2	8	32
MH-60R/S	20	3	2	25	100
C-2	2	1	1	4	16
Total				111	444

1. Aircraft required to support 4 additional carrier air wings
2. Primary Assigned Aircraft
3. Backup Aircraft Inventory / Attrition Reserve

Figure 4.1.2 Standard Air Force Air Expeditionary Force (AEF) At Deployed Location

Type	PAA ²	Training/Test	BAI/AR ⁴	Total	CDR Additional Structure Needed Basic x5 ¹
Air Superiority (F-15 or F-22)	24	4	2	30	150
Fighter/PGM Attack (F-15E/F-16/JSF)	24	4	2	30	150
Fighter SEAD (F-16/JSF)	18	3	2	23	115
Close Air Support (F-16/A-10/JSF)	15	2	2	19	95
Long Range Strike (B-1/B-2/B-52)	6	1	2	9	45
Air Refueling KC-135E/R	19	7	2	28	See Table 4.1.2.1
Air Refueling KC-10	4	1	1	6	See Table 4.1.2.1
Tactical Airlift C-130	20	3	2	25	125
Total					680 ³

1. Assumes a 13 AEF requirement to fulfill two simultaneous Major Regional Contingencies for Combatant Commanders, 1 AEF to fulfill the Global War On Terrorism mission requirement, and 1 AEF to fulfill the Homeland Defense mission requirement
2. Primary Assigned Aircraft
3. Does not include KC-135 or KC-10 aircraft total
4. Backup Aircraft Inventory / Attrition Reserve

Figure 4.1.2.1 Long Range Airlift and Aerial Refueling Bridge Aircraft Requirements¹

Type	2 Air Bridge Requirement	PAA ²	Training/Test	BAI/AR ⁵	Total	CDR Additional Structure Needed ³
C-17	144	160	23	20	203	23
C-5A/B	76	127	12	15	154	42
KC-10	60	71	6	9	86	57 ⁴
KC-135E/R	290	363	31	44	438	47 ⁴
Total						169

1. Aircraft requirements to support two simultaneous Major Regional Contingencies
2. Primary Assigned Aircraft; Assumes Mission Capability Rates of 90% for C-17, 60% for C-5A/B, 85% for KC-10, 80% for KC-135E/R
3. Additional aircraft needed when Total column of Table 4.1.2.1 is subtracted from current Air Force aircraft inventory
4. CDR Additional Structure Needed Basic x5 column of Table 4.1.2 plus Total column of Table 4.1.2.1 subtracted from current Air Force aircraft inventory
5. Backup Aircraft Inventory / Attrition Reserve

Figure 4.1.3 Army Brigade Combat Teams

Type	Pre-QDR BCT#	QDR BCT#	CDR BCT#	CDR Additional Structure Needed
Heavy BCT 70 Abrams, 140 Bradleys, 3,700 personnel	28	24	30	6 Heavy BCTs 420 Abrams, 840 Bradleys, 22,200 personnel
Infantry BCT 608 LTVs, 302 MTV/HTVs, 3,300 personnel	41	38	40	2 Infantry BCTs 1216 LTVs, 604 MTV/HTVs, 6,600 personnel
Stryker BCT 318 Strykers, 3,900 personnel	7	7	7	0
Armored Cavalry Regiment 123 Abrams, 138 Bradleys, 4,300 personnel	1	1	1	0
Total	77	70	78	8

Figure 4.1.4 Navy Carrier Strike Groups

Type Ship	Basic Carrier Strike Gp	GWOT +2 Surge Require- ment	Current Structure or <i>QDR Recom- mended</i>	Operationally Available (65 percent of Structure)	CDR Additional Structure Needed
Aircraft Carrier	1	10	11	7	4
Guided Missile Cruiser	1	10	22	14	0
Destroyer (DDG)	2	20	47	31	0
Attack Submarine (SSN)	1	10	54	38	1-15
Oiler	1	10	15	9	1

4.1.2 – Additional Requirements

The force structure described in the following charts focuses primarily on major equipment and personnel areas while the text below outlines broad recommendations regarding critical enablers such as lift, combat support, or combat service support capabilities. The charts also do not review the increased infrastructure requirements that would result from adopting the recommended force structure. There are several elements, however, that the committee believes require increased attention.

First, the natural temptation in sizing combat support (CS), combat service support (CSS), and Intelligence, Surveillance, and Reconnaissance (ISR) capabilities would be to increase them arithmetically, maintaining the current ratio of CS/CSS/ISR capabilities to combat capabilities. However, the committee notes that CS/CSS capabilities are often the most useful in non-traditional missions at home and abroad. Thus, ultimate decisions about CS/CSS force structure must take into account not only the need to support combat units, but also the likelihood that CS/CSS units will be in greater demand due to their suitability for non-combat operations.

In the area of ISR, the committee concluded that the capacity of existing ISR assets is insufficient to support the existing demands made on the U.S. Armed Forces. Witnesses before the gap panels and commanders in the field consistently stressed that the Armed Forces need more ISR assets at every level of command. In addition, the committee found that ISR units do not achieve planned levels of operational availability. In fact, their availability rates are generally lower than those of combat units. As a result, the committee believes that ISR capacity and capabilities would have to increase over and above their current ratio to combat units to make the force structure recommended here fully capable. These needs are discussed in greater detail below.

The committee also did not review the basing and maintenance infrastructure needed to support the force structure recommended here. Clearly, to the degree that such infrastructure as currently exists is designed for a smaller force, it may be unable to accommodate the larger force recommended. Indeed, the Overseas Basing Commission noted that the current infrastructure will be stretched just to accommodate the return of military units garrisoned overseas during the Cold War.

The committee also did not review specific lift requirements in greater detail. In general, the committee concluded that existing lift capabilities are only adequate if the major regional contingencies are slightly phased and the armed forces are able to make effective use of the Civil Reserve Air Fleet (CRAF) and acquire enough commercial sea lift to move large amount of material. CRAF use, of course, assumes that safe airfields with reasonable proximity to a potential area of operations are available during a conflict. It should also be noted that most commercial sea lift is not U.S.-owned. The countries under whose flag sea lift vessels sail may choose to deny the United States use of those vessels.

4.1.3 – Strategic Depth and Risks

The recommended force structure provides some limited strategic depth should the demands made on the force significantly exceed the GWOT-plus-two-major-regional-contingencies sizing mechanism. As discussed earlier in this report, the committee does not believe that it would likely face a situation in which more than two potential adversaries could coordinate simultaneous aggressive military actions. That said, the committee is accepting a degree of risk with this judgment and realizes that this assumption is vulnerable to criticism.

The sizing mechanism assumes that forces not already committed to the GWOT are ready and available for use elsewhere—i.e., they are not already committed to non-traditional foreign or domestic operations. In many ways, that assumption runs counter to recent trends. The assumption involves accepting some additional risk. Based on the work done in the CDR, the committee is prepared to accept that risk because: (1) such missions tend to be episodic; (2) lengthy overseas non-traditional operations, such as peacekeeping in the Balkans, tend to involve relatively small numbers of U.S. forces; (3) many military capabilities required for such missions are also required for prevailing in the GWOT and major regional conflicts; and (4) the United States has some discretion about conducting or continuing these missions.

The force structure recommended also does not assume that a major regional conflict would inevitably involve a simultaneous weapons of mass destruction (WMD) incident or incidents in the United States. This assumption also runs somewhat counter to the committee's findings about threats. As noted earlier, the committee concludes that a nuclear detonation in the United States could occur during a major regional conflict involving another state. The assumption also discounts the likelihood that terrorists would successfully conduct a large WMD attack on U.S. territory at the same time the United States was involved in the GWOT and two major regional conflicts. That conclusion also invites risk, since, clearly, the most opportune time for terrorists to strike would be when the United States was engaged in two major regional conflicts. Surely, states involved in a conflict with the United States recognize this. In the committee's judgment, these risks can be mitigated by a robust and credible strategic deterrent, active and passive defenses, effective and successful operations by the Department of Homeland Security, and state and local security personnel, which are discussed in elsewhere in this chapter.

Finally, the committee acknowledges that its recommended force structure does not include a contribution of major combat forces by allies or coalition partners. In practice, the committee believes that other countries would recognize the importance of joining any U.S. effort to repel aggression and defeat aggression-minded regimes. In the scenarios considered by the committee, other states would clearly have a critical national interest in repelling aggression by a major regional power. However, as discussed in chapter three, other countries may be unable to provide significant military support in the kinds of contingency operations for which the committee believes the Armed Forces should be prepared.¹⁶ Ultimately, the United States must accept responsibility for its own security. While the committee welcomes strong, cooperative security relationships with other countries, it believes that U.S. defense planners must plan for a U.S. force adequate to secure U.S. interests.

4.2 – Improved Capabilities

One key “lesson learned” from the CDR process is the importance of improving capabilities that support or otherwise enable major pieces of U.S. force structure. Aside from how such overall force structure changes as outlined in the above charts would impact the U.S. Army, Navy, Air Force, and Marines Corps is the issue of improving specialized capabilities in and of themselves. Several critical areas for improvement are discussed below.

4.2.1 – Deep Strike

Air Force Chief of Staff General T. Michael Moseley has defined “deep strike” as “the capability to achieve the desired effects rapidly and persistently upon any target set in any environment, anywhere, at any time... to hold any enemy target set at risk at any point on the Earth.” Several factors and trends highlight the growing importance of this type of capability. For example, forward U.S. bases, especially in likely areas of regional conflict (e.g., Northeast

¹⁶ The committee fully recognizes the importance of access, basing, and overflight privileges provided by partners and allies and appreciates the willingness of governments to help U.S. forces in this way.

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Asia, the Middle East), are at risk from ballistic missiles or weapons of mass destruction, the use of which could render tactical platforms unavailable. Moreover, modernization trends show that potential adversaries are improving air defense capabilities to neutralize well-known U.S. airpower advantages.

In light of such an emerging global security environment, in 2001, the Department of Defense completed its congressionally mandated Nuclear Posture Review, in which it outlined a “New Triad” to enable new capabilities to meet emerging threats. In addition to defenses (active and passive) and a revitalized infrastructure, the triad includes offensive strike systems (nuclear and non-nuclear), which would be integrated to increase flexibility and diversity while ensuring a credible and scalable response.

Current planning for deep strike capabilities seems to be defined by both U.S. treaty obligations and the synergy created by integration of joint capabilities. First, the Moscow Treaty on Strategic Offensive Reductions, which was signed on May 24, 2002, by President George W. Bush and President Vladimir Putin, states that the United States and Russia will each reduce and limit their respective inventories of operationally deployed strategic nuclear warheads to 1,700-2,200 by 2012. Given that Russia currently possesses the most significant nuclear arsenal of any peer competitor – and will continue to do so for the foreseeable future – planners assume that a U.S. nuclear arsenal that deters Russia will also deter any other state actor with nuclear weapons. Thus, the Moscow Treaty has become the primary driver of future delivery platform requirements.

Second, while long-range bomber aircraft (e.g., B-52 and/or B-2) have traditionally handled deep strike operations, the integration of long-range land-based and sea-based platforms has significantly enhanced the U.S. ability to conduct such operations. Future strike delivery platforms will build upon existing air-, land-, and sea-based platforms, including intercontinental ballistic missiles, Trident submarine launched ballistic missiles, and some form of long-range bomber (e.g., B-52 and/or B-2 replacements). For example, the Air Force is currently conducting a research and development project for a future strike aircraft to replace the B-52.

However, the committee believes that merely building upon current platforms through upgrades will not address key shortfalls in such capabilities. Specifically, the ranges and limited quantity of current platforms cannot support high sortie rates or persistent over target areas. In addition, maintaining the offensive leg of the “strategic triad” (i.e., nuclear and precision non-nuclear strike forces, passive and active defenses, and a revitalized defense infrastructure) will require new platforms to replace systems, which will reach the end of useful life in 2020-2030.

Improving the U.S. deep strike capability requires a hard look at additional considerations and options:

- *International Enablers* – To achieve promptness and precision in future operations and avoid unnecessary delays caused by international misunderstanding, the United States Government must develop streamlined processes to: secure overflight rights from foreign capitals; flag policy issues for discussion with other nations; and agree to identification procedures that inform third parties about the U.S. use of deep strike options that may cause consternation within those parties' populations or governments.
- *Non-Nuclear Ballistic Missiles* – In the conference report for the National Defense Authorization Act for Fiscal Year 2006 (P.L. 109-360), the conferees highlighted the need for the United States to address the need for non-nuclear, long-range precision strike options for consideration by the national leadership. The committee believes that the administration proposal to deploy an initial capability to deliver conventional warheads using Trident-class submarine launched ballistic missiles should be explored. As mentioned in chapter three, the committee also recognizes the need for developing a warning/identification mechanism by which other nations can discriminate a conventional global strike weapon from a nuclear global strike weapon to avoid an inadvertent nuclear retaliatory response.
- *Stealth* – The committee has determined that while the Joint Air-to-Surface Missile may provide the right capability for two major regional conflicts, such operations may require an F-22 stealth-like capability for optimal effectiveness.
- *Strategic Bombers and Nuclear Submarines* – It is imperative that further consideration be given to the sustainment and eventual replacement of aging platforms with systems that can strike a number of long-range, high-value, and/or time-sensitive targets with minimal regard to anti-access threats.

4.2.2 – Hard and Deeply Buried Targets

The committee notes that the proliferation of Hard and Deeply Buried Targets (HDBTs) worldwide poses a threat to U.S. national security. These facilities can: act as safe havens for a nation state's continuity of government operations; offer sanctuaries for producing, storing, and deploying weapons of mass destruction; provide a protected location for decisive military command and control; and serve other military functions. The United States has limited options against many of these HDBTs. The ongoing DOD penetrator study may provide data supporting other options for HDBT defeat. Regardless of the type of weapons or attack employed, precise, real-time intelligence is required to target HDBTs.

4.2.3 – Space

The committee notes with concern that a number of contingencies—ranging from adversarial attacks to accidental loss—could deprive the U.S. Armed Forces of critical space assets. For example, a detonation as small as five kilotons in the Low Earth Orbit (LEO) would distribute radioactive particles throughout the orbital regime. As satellites orbited the Earth, they would be bombarded by these particles, which would slowly degrade the satellites' functionality, and within a period of four to six months, all LEO satellites would cease to function. To hedge against such debilitation, the committee believes that the United States must develop a reasonable, affordable alternative to “big satellites,” encourage appropriate redundancies, and achieve the ability to generate or regenerate, as appropriate, space assets.

Alternatives to big satellites primarily revolve around the use of smaller satellites, the use of which could provide acquisition benefits as well as tactical advantage. The committee acknowledges that smaller satellites cannot yet duplicate the range or sophistication of services provided by larger satellites. However, in acquisition terms, they can offer a cheaper, more responsive set of alternatives. They would have shorter lives, take less time to build, and more easily incorporate evolving technologies. Acquisition strategies for small satellites could take advantage of economies of scale and an “assembly line” process. Evolving satellites could be produced in less than two years compared to the seven to eight years currently required. Current and iterative technology could be fielded to the warfighter in drastically shorter timelines.

Tactically, smaller satellites could supplement and complement the capabilities of larger satellites, and they would likely present a significant targeting challenge to would-be-adversaries. Their lower cost would force adversaries to develop more cost effective measures to maintain an asymmetric advantage. Finally, the deployment of many small satellites would minimize the marginal operational and financial loss of a single satellite, creating a natural deterrent to adversaries.

The committee realized that the Office of Force Transformation within the Office of the Secretary of Defense, in conjunction with the Department of the Air Force and Department of the Navy, is developing a program called TACSAT that involves tactical satellites that are much smaller than traditional satellites. However, a lack of discipline in vision has evolved: the planned satellites have doubled in size and tripled in cost over the last year; and the first launch has been delayed by more than two years. Additionally, unless the launch rate is greatly accelerated, the current launch rate of one TACSAT per year will not provide enough demonstration capability for several years and will delay fielding of an operational capability for several more years. The Department must address this lack of discipline and get this program—or one like it—on track.

One complement to the development of alternatives to big satellites would be a practical responsive space launch capability – i.e., the development of “back-up” launch, infrastructure, and readily-deployable modular small satellites that could perform critical functions and focus on the needs of combatant and theater commanders in the event that space-based assets are lost.

Such rapid generation/regeneration of assets could ensure that there will be sufficient capability to allow the continued provision of space services and could also form the basis of a “surge

capacity” for space. Clearly, this type of responsive, low-cost launch program must take into consideration development timelines and industrial capacity.

To encourage other approaches to developing necessary redundancies, the committee also urges the United States government to consider how space assets could be incorporated into an integrated architecture based on the model of the internet in which multiple nodes of collection and dissemination of data are established. Such a system would preclude single point failures and ensure maximum options for continuity of operations. In addition, the complementary use of foreign and commercial satellites could ensure data integrity and provide additional sources of space capability to be leveraged by the U.S. military. Leverage of these assets poses a problem for adversaries in a multi-national sense by forcing them to weigh the impacts and consequences of attacking a third party or non-governmental asset. Finally, the use of manned aircraft, unmanned aerial vehicles, and near-space vehicles can provide additional redundancy for all mission areas.

4.2.4 – Cyberspace

The committee notes that there is much room for improvement in the emphasis placed on, and funding designated for, several key aspects of assuring U.S. information superiority and safeguarding critical information technology (IT) and telecommunications infrastructure. First, it may prove valuable for the U.S. Government to provide more focused guidance in this field. For example, a high-level directive could set national policy and procedures that assure the security of critical U.S. information technology and telecommunications infrastructures. Such a policy would help minimize possible confusion and unnecessary duplication by organizing the roles and responsibilities of all of the information security-related government entities. To complement such a policy document, it may prove valuable to define and assure an explicit, prominent role for systems designers and operators so that purchasing decisions do not override national security requirements. Increasingly, it appears to the committee that procurement officers, who are not subject matter experts with knowledge of the risks and needs for cyber defenses, are making DOD acquisition and deployment decisions in this field. Such a policy could also highlight the need for a systems-level view of information security by trained personnel who understand the “big picture” of IT security (i.e., they understand how components and systems can be used and possibly misused).

Second, in the area of research and development, the committee has noted that need for increased focus in several areas. For example, the committee strongly recommends that the U.S. Government consider more aggressively pursuing scientific research into issues of security and protection of IT systems, including research into the development of metrics for security and risk. Acquiring systems based on cost as the primary criterion is not reasonable for most mission-critical applications, and the government must be able to differentiate among different vendor solutions and set standards of performance. Moreover, the U.S. Government should consider research on developing better, more affordable software engineering and on how to build reliable systems from untrusted components. The military needs to reengage in this domain to ensure that their unique and critical needs are met.

Third, the committee notes that some IT-related decisions, particularly in the area of national security, may require some additional scrutiny. For example, the committee may have concerns about the use of commercial, off-the-shelf (COTS) products in certain mission-critical circumstances. The lowest cost product is not necessarily the best fit for use, and COTS products may contain hidden, unwanted features. In addition, DOD officials should reexamine the automation of critical systems. In particular, key considerations in this respect should include whether the United States has adequate alternate methods of processing, in the event core systems become unavailable or inaccessible and whether there are adequate non-computer copies of critical data that can be used operationally and to verify the integrity of online data. It would also be important to investigate whether automated systems may have included flaws in the pre-automation form such that the new IT-based versions are similarly flawed.

The committee understands that the creation of heterogeneous environments would mitigate the risk of common avenues of attack. While requiring additional expenditures at first, such heterogeneity may lead to increased compliance with standards, increased innovation, and increased choice in the marketplace, thus lowering costs while increasing security. If experts and officials develop and implement real standards (rather than de facto ones), interoperability should not be a concern. It may also prove useful to examine different architectures in appropriate circumstances that better meet policy objectives. For instance, rather than a computer on each desktop, thin-client technologies based on a mid-size computer in a centralized location may provide all the same mission-critical services but remove many of the dangerous aspects of distributed personal computers. In this situation, patches need only be applied in one location, and there is a greatly reduced possibility of untrained users loading untested media or software.

Finally, it is important to consider the personnel aspects of IT-related security. The committee notes that the current climate in many military commands and government agencies seems to penalize operators for flaws, thus leading many of them to dread enhancement and exploration of better security. In addition, there are issues of the “insider threat” to mission critical systems (e.g., uncleared personnel providing software, individuals using COTS products that are not designed for security and reliability, untrained or unsupervised personnel having access to and operating mission critical systems). DOD officials should consider how to develop and use incentives to encourage creative problem-solving in information technology while also hedging against possibly risky behavior.

4.2.5 – Non-Lethal Weapons

The development and fielding of non-lethal capabilities, to include training and doctrine development, among U.S. servicemembers may prove essential, especially in light of their possible involvement in stability, peacekeeping, and reconstruction operations overseas. In such situations, the use of lethal force may result in possibly unnecessary collateral damage and may alienate the local population. Should that occur, a secondary effect could be the erosion of U.S. domestic and foreign support for the U.S. deployment and even the policy reasons behind the deployment.

In addition, the effective use of non-lethal capabilities could have two other positive effects. First, by exhibiting suitable restraint and a measured response, the U.S. military could provide a valuable example to indigenous and other forces overseas. Second, such capabilities may prove useful in domestic U.S. crisis response contingencies, should civil authorities request military support.

4.2.6 – Development of Defenses

Oftentimes, experts and others focus on offensive capabilities, finding that developing policies, guidance, doctrine, and the actual capabilities themselves more interesting than developing defenses against adversaries' capabilities. The committee, however, believes that concentrating on defensive capabilities is a critical component to ensuring that the United States armed forces can effectively, efficiently, and successfully engage a range of adversaries. Acknowledging that constraints on time and expertise used for this review have perhaps limited valuable discussion, the committee focused on five critical areas for improving U.S. defense capabilities.

First, United States armed forces must be capable of defeating the foreign anti-access/area denial capabilities derived from ballistic missiles. U.S. efforts to develop a successful theater missile defense is a large component of this capability, not only to protect the American population and servicemembers deployed overseas but also to help U.S. allies and coalition partners in defending themselves against the missile threat.

Also, expanding from that theater missile defense capability, a robust ballistic missile defense (BMD) would help to defeat strategic threats to the United States and its friends. The committee considers the current BMD program to be adequate for the foreseeable future. In addition, the committee believes that this program must be scalable in response to the evolution of the threat and that there must be a higher priority implementation of Presidential deployment decisions.

Third, the committee has concerns that key survivable/underground facilities must be maintained for the foreseeable future. Such facilities exist to ensure the continuity of government and survivability of critical assets against nuclear or precision attack.

Fourth, critical space equipment must be hardened or made redundant, as discussed earlier, to prevent intentional or environmental damage. Survivability of certain space capabilities is key to the ability of military authorities, including combatant and theater commanders, to continue to operate successfully.

Finally, the committee believes strongly that requirements to protect the force from biological weapons must be prioritized and overarching. This can be accomplished by pursuing three parallel tracks:

- (1) Stockpiles of vaccines and treatment can help to ensure that U.S. military operations can continue in a biological weapons environment. It will prove necessary for the

- United States Government to receive commitments from pharmaceutical companies in advance to meet those needs;
- (2) DOD must focus on the research and development of a rapid manufacture and dissemination program of vaccines and anti-virals to anticipate, where possible, and meet the force requirements; and
 - (3) DOD must encourage more strongly the development of such capabilities and could work more diligently within the interagency to leverage the expertise of other departments and agencies.

4.2.7 – Intelligence, Surveillance, and Reconnaissance (ISR)

As mentioned above, the committee believes that ISR capacity and capabilities must improve to support the committee's recommended force structure. Witnesses before the gap panels noted that while any given combatant commander might have sufficient ISR assets at this command's disposal during any given campaign, most of these assets are shared among several commands. If one uses the assumption that the United States armed forces must be capable of prosecuting the GWOT and two major regional conflicts near-simultaneously, it becomes clear that low-density/high-demand assets—like ISR—will not only be stretched thin. They will be insufficient.

Testimony before the gap panels consistently highlighted the need for increased ISR capacity, and most experts emphasized two key areas for improvement: persistent surveillance and human intelligence. They agreed that persistent surveillance is a capability that would prove most useful in the full range of operations (i.e., combat, counterterrorism, stability, peacekeeping, reconstruction, humanitarian response, and domestic crises). An often-mentioned observation from experts was that unmanned aerial vehicles (UAVs) could provide a reliable picture of the battlefield on a 24-hours-a-day/7-days-a-week basis. The committee is inclined to agree that the armed forces require more UAVs. Members note with growing concern, however, that while the Department of Defense also values persistent surveillance, it is insisting on retiring the U2 aircraft, which has served the United States well in several conflicts, including the 1991 Operation Desert Storm and 1999 Operation Allied Force (Kosovo). At a time when experts, government officials, and Congressional members tout the need for surveillance, the committee believes that DOD should carefully re-visit this decision.

Experts also agreed that the United States must devote more attention and resources to developing human intelligence assets. The committee believes that operations have highlighted critical intelligence gaps and vulnerabilities and that the armed forces stand much to lose, should these gaps and vulnerabilities go unaddressed. Recruitment and retention of human intelligence personnel, who speak key foreign languages, understand and are sensitive to other cultures, and can operate effectively within such environments, are vital to the protection and advancement of U.S. national interests. In addition, the United States government should develop red-teaming capabilities and improve counterintelligence capabilities.

Finally, the committee notes that command and control in this day and age of “real-time” communications can exacerbate the confusion already caused by possibly competing demands, particularly if such demands are not prioritized as they develop. Rapid course corrections and constant information updates can complicate operations. Given the premium on low-density/high-demand ISR assets, the armed forces must develop more streamlined command and control that reduces inefficiencies. For example, the committee believes that the military leaders should increase tactical control over ISR assets for the performance of specific missions. Most “non-strategic” ISR assets should be directly controlled by operational/maneuver commanders, and surveillance assets should be organic, where possible, to maneuver elements – down to the lowest appropriate echelons.

4.2.8 – Special Operations Forces

DOD officials have proposed continuing and further bolstering the major increase in investment in special operations forces begun three years ago and views United States Special Operations Command (USSOCOM) as a vital asset and the lead element in planning the military effort to prosecute the GWOT. Evidence of this continued reliance on special operations forces is seen both in current operations and in USSOCOM’s designation in the 2004 Unified Command Plan as the lead combatant command for planning, synchronizing, and executing global operations against terrorist networks in coordination with other combatant commanders.

To provide the resources to execute these responsibilities, the Committee agrees with the QDR’s findings that DOD should:

- Further increase Special Operations Forces (SOF) capability and capacity to conduct low visibility, persistent presence missions and a global unconventional warfare campaign;
- Increase active duty special forces battalions by one third;
- Expand psychological operations and civil affairs units by 3,700 personnel, a 33 per cent increase to provide support to USSOCOM and regular Army units;
- Establish a Marine Corps Special Operations Command of 2,600 Marines to train foreign military units, conduct direct action, and special reconnaissance;
- Increase SEAL team force levels to conduct direct action missions;
- Establish a USSOCOM unmanned aerial vehicle squadron to provide organic capabilities to locate and target enemy capabilities in denied or contested areas; and
- Enhance capabilities to support SOF insertion and extraction into denied areas from strategic distances.

4.2.9 – Stability and Reconstruction Operations

As noted in chapter three, cooperation with other countries to improve their ability to police their territory and support the reduction of ungoverned space will be necessary in order to deny terrorists long-term safe-haven. The committee noted that foreign assistance programs are not currently designed to achieve this goal and that there is a general lack of agreement among various entities of the United States government about what “capacity building” means, both in the near- and long-term. The committee believes that the question requires additional review. Ultimately, “capacity building” may turn out to be little more than a euphemism for nation-building. That said, the committee’s review did identify some options for consideration.

First, it will be necessary for the federal government to define the strategic effects it hopes to achieve in building foreign government capacity. As discussed in chapter two, the task of eliminating ungoverned spaces globally by building competent foreign governments is likely beyond the means of the American people. Thus, the U.S. government must carefully and more narrowly define and apply “capacity building”.

Second, it may be necessary to rebuild U.S. foreign assistance programs from the ground up. The committee believes that adequate legal authority exists for the President to conduct a wide range of foreign security assistance activities. However, it accepts that the current security assistance process may be too burdensome to be effective. Unfortunately, the committee finds little evidence that U.S. security assistance strategy is integrated or that it has evolved from pre-9/11 thinking. Seventy-five percent of the \$4.6 billion fiscal year 2004 (FY04) foreign military financing budget, for example, was committed to just two countries. Meanwhile, the entire budget request for international military education and training in FY05 was just \$90 million, still up from the \$58 million budget of FY01. This does not appear to be a foreign security assistance program designed for the 21st century.

Third, roles and missions in security assistance may need to be reconsidered. Traditionally, the Department of State directed foreign security assistance program with the Defense Security Cooperation Agency serving as executor. To the degree that security and stabilization operations are becoming a priority mission for the U.S. Armed Forces, it would be useful for the military to have greater abilities to reduce their own burden while deployed by helping local authorities build their own capacity to provide security. This definition is much narrower, however, than pursuing general foreign capacity building as a means of eliminating ungoverned spaces. For reasons discussed in chapter three, the committee has concerns that a broader role may reduce the ability of the Armed Forces to conduct missions for which only they are suited. Thus, appropriate players within the U.S. government must strike the right balance in defining roles and responsibilities and requesting legislative authorities. The committee will continue to investigate implications of any current and future decisions in this regard.

4.3 – Industrial Base

4.3.1 – Defense Industrial Base

The foundation of our national defense must be a stable, productive and globally competitive industrial base. Continuing globalization, market pressures from foreign competitors and increased demand for scarce resources all contribute to an erosion of the domestic defense industrial base and are reason for deep concern.

In the spirit of previous legislation intended to promote a strong industrial base, measures must be taken to ensure that domestic preferences protect those items that are critical to maintaining our national defense industrial base, including items and raw materials that are critical to defense programs. Currently, DOD approaches classification of those items on an ad hoc basis through a series of inconsistent metrics including the Military Critical Technologies List and the Military System Essential Items List. While these classifications are important for identifying technologies and specific system components, they fail to identify cohesively the underlying source materials required to ensure our long-term national defense. Congress must reassess those items that are covered by domestic protection to ensure that we are protecting those items critical to national security and embracing the efficiencies of the global market, where appropriate. Congress and the executive branch must work together to achieve a delicate balance to ensure that U.S. domestic preference measures, including the Buy American Act and the Berry Amendment, not only protect the existing industrial base where appropriate, but also meet their original intent of ensuring growth in the industrial base by encouraging new entry into the market. Domestic preferences should not only provide protection for U.S. businesses but should ultimately work to set market conditions that encourage investment and growth of the U.S. industrial base.

In particular, the committee is concerned about the industrial base for tactical aviation assets. Analysts reviewing improved performance by the armed forces over the last fifteen years have attributed much of that to better integration of air, naval, and land forces, particularly as it relates to the application of precise firepower on a fluid battlefield. Yet, today, DOD has only two fixed wing combat aircraft programs underway: the F-22 and the Joint Strike Fighter. Cuts to either program could significantly undermine the U.S. industrial base at a time when foreign modernization trends in both ground-based air defense and aircraft are calling U.S. predominance into question. A weaker industrial base may not be capable of quickly adapting or responding to sudden changes in threats. Thus, the committee concludes that some programmatic decisions may have to be made on the basis of preserving U.S. production capabilities, not solely in response to current threats.

The committee also has grave concerns about the future of the shipbuilding industrial base. The U.S. capability has gone from the largest in the world to near extinction in less than a generation. Near-peer competitors in the Pacific region have outpaced U.S. industry in technology and capacity. Investment in shipyard modernization and the related industrial base is required if the United States is to remain a global maritime power.

DOD must also continue to make efforts to incorporate more non-traditional domestic suppliers in the defense industrial base, particularly as information technology becomes more

and more critical to warfare. By expanding the defense industrial base beyond just the traditional firms that focus largely on the defense market, DOD can benefit from more of the rapid technological advances and efficiencies of the commercial sector. To achieve this, DOD must reassess the significant barriers to entry it has established for non-traditional domestic suppliers.

4.3.2 – Access to Strategic Resources

Similar to concerns over the industrial base at large, the CDR identified a need for DOD to take aggressive steps to ensure the future availability of strategically critical technologies, components, and manufacturing capacities. As globalization continues and domestic corporations continue to outsource large percentages of their operations, DOD must develop new and innovative ways to encourage domestic production of strategic materials. While current domestic source preferences can be useful in protecting existing industry, DOD should explore alternative means of setting the conditions to encourage new entry into the defense industrial base. Possible areas for exploration include tax incentives, contract preference for U.S. business that invest, or plan to invest, in the recapitalization of the aging defense industrial base, particularly in the areas of machine tools, manufacturing technology and production facilities, to encourage new business in defense industries critical to our national security. An area of particular concern is the domestic availability of specialty metals for aircraft production. Ensuring the availability of materials such as titanium must be considered as part of our long-term defense strategy, especially in light of foreign state-owned interest in the production of such metals.

4.3.3 – Uncertain Fuel Costs

Recent events underscore the need for DOD officials to examine the effect of widely fluctuating fuel prices as it develops future capabilities. Considering the extraordinary lifespan of major defense systems, some as long as fifty years, replacement systems cannot be developed by simply focusing on the technology currently available to fuel these platforms. Future systems must consider future fuels. DOD should consider alternative fuels (including nuclear power), more fuel-efficient technologies, and better concepts of operations to reduce our current dependence on foreign oil. The wildly fluctuating price of petroleum based fuels account for over a \$3 billion increase in Operations and Maintenance (O&M) accounts just to cover the increasing cost of fuel between FY06 and FY07. This increasing strain on the operations and maintenance account will manifest itself by diverting resources from traditional O&M functions such as base operating support, depot maintenance, or facilities sustainment and restoration, to cover any increased costs of fuel.

4.3.4 – Critical Infrastructure

Increased maintenance and repair requirements related to the GWOT highlight the need to maintain a critical defense industrial base infrastructure. The increased workload in shipyards and depots across the nation illustrates the need for surge capacity to support combat related maintenance requirements. There is concern over the viability of the current depot and shipyard structures as workloads decrease with a drawdown in Iraq and Afghanistan. Without a carefully crafted approach to future depot and shipyard maintenance, these assets may be unable to sustain themselves through periods of decreased workload. DOD should consider long-term plans for “level-loading” both depots and shipyards to maintain capacity in a time of decreasing requirements. History demonstrates that the nation must maintain surge capacity in its depots and shipyards for the next upswing in demand. The long lead-time necessary to stand-up these maintenance facilities makes it impracticable to maintain capacity under a peacetime construct. Members believe that the nation should maintain depot and shipyard infrastructure at today’s capacity based on the workload required to meet the demands of supporting both Operation Enduring Freedom and Operation Iraqi Freedom.

4.3.5 – Research and Development

Experts generally acknowledge that the U.S. military is the most technologically advanced military in the world and that it has been for some time. Nonetheless, the U.S. military must maintain its technical competence and advantages for three critical reasons.

First, the technology gap is shrinking. As in many other sectors, science and technology is becoming increasingly globalized. While countries, such as China and India, have been labeled “fast-followers” and have yet to emerge as technological innovators, there are clear signs that the United States no longer has a *de facto* edge on science and engineering. In reality, the United States is now a net importer of high-technology products. In his 2005 bestselling book, *The World is Flat*, Thomas Friedman notes, “in 2001, India graduated almost a million more students from college than the United States did. China graduates twice as many students with bachelor’s degrees as the U.S., and they have six times as many graduates majoring in engineering. In the international competition to have the biggest and best supply of knowledge workers, America is falling behind.” In fact, China now graduates more engineers than the United States, Japan, and Germany combined. Beyond whole numbers of graduates, the United States is falling behind in scientists and engineers on a percentage basis. In 2004, only 5.7 percent of 24-year olds in the United States held a science or engineering degree, falling behind Switzerland, Germany, Japan, the United Kingdom, South Korea, Taiwan, and Finland. U.S. and international technology firms, such as Motorola, Texas Instruments, GE, Intel, Microsoft, Oracle, and SAP, are actively choosing to establish research & development centers in developing nations, such as India.

Further, economic progress has been made by these challengers. China now has the world’s second highest national gross domestic product and India has the fourth highest, behind Japan. Indeed, one might say that China is run by scientists and engineers; all nine members of China’s Politburo Standing Committee, which is the highest level of the Chinese Communist

Party, are engineers. Finally, as the United States has witnessed in Iraq and Afghanistan, enemy combatants do not have to be technologically superior to the U.S. armed forces in order to inflict substantial damage. Innovation diffusion, which is increasing at an ever expanding rate, is as important as the creation of innovation. Indeed, our enemies reap substantial benefits from being technology followers, capitalizing on the lessons learned by others. What is more, they are masters of technology adaptation. The United States must continue to maintain its technological advantages, but also become technologically responsive to changing enemy tactics.

Second, DOD must maintain its commitment to research and development (R&D), because U.S. investment R&D has not changed with changing global competition. As a percentage of Gross Domestic Product (GDP), R&D is not significantly different now than it was in the late 1960s. Investments in the physical sciences, math, and engineering, which are the foundation for applied research and breakthrough innovation, have fallen. Virtually all increases to science and engineering have occurred in the biomedical sector. The National Academies of Science note that federal funding of research in the physical sciences, as a percentage of GDP, was 45 percent less in FY04 than in FY76. In particular, DOD's investment in basic research, as a portion of its total budget, has declined from 3.3 percent in FY94 to 1.9 percent in FY05. The choices made by both the federal and private sector are an additional driver in the shrinking gap between the technological capabilities of the United States and its global competitors.

Third, a robust defense-oriented science and technology program serves as an incubator for technologies with commercial application, which can only strengthen our economic security. Many studies have concluded that science and technology are the cornerstones for economic prosperity. Widely published estimates of return on investment (ROI) for publicly funded R&D range from 20-67 percent, while the public ROI for private investments range between 200-100 percent%. Investments in science and technology foster new industries, create new jobs, improve public health, improve standards of living, and directly correlate to GDP. Defense science and technology has been at the forefront of many technological innovations that have created benefits. The military has been an early adopter for automotive, aeronautical/aerospace, electronics and communications, information technologies, and imaging technologies, just to name a few. Without federal investments in technologies for the armed forces and in the basic sciences that stimulate such progress, the United States would not have the military, nor the economic advantage it enjoys today.

4.4 – Acquisition Policy

4.4.1 – Acquisition Workforce

In the wake of a ten-year decrease in the acquisition workforce, DOD faces a critical shortage of certain acquisition professionals with technical skills related to systems engineering, program management and cost estimation. While Congress has directed this decrease in the acquisition workforce over the past decade, the Committee Defense Review has identified dissatisfaction with the approach to these statutory decreases. Instead of cutting overhead and bureaucracy related to the acquisition workforce, the Department chose to cut critical resources such as production and systems engineers, opting to outsource these functions to contractors. As

a result of these workforce structure decisions, there is a developing potential conflict of interest between contractors acting as “lead-system integrators” on projects for which they have oversight. In addition, the Department has outsourced too many processes closely related to “inherently governmental functions” and risks ceding de facto project responsibility and decision-making to industry. The acquisition workforce envisioned by the reductions of the past decade was a streamlined corps of acquisition professionals utilizing best practices to obtain the best value for all Department of Defense related acquisitions. Instead, the Department faces a critical shortage of those individuals necessary to ensure that the right systems are being created with the best technology on the fastest schedule at the most competitive price. The Committee Defense Review finds that the Department lacks a coherent strategic human capital plan for the future of the acquisition workforce. Such a strategy is necessary to define the shape of the workforce required to support the creation of a force structure outlined in this review.

In addition, training programs at Defense Acquisition University and elsewhere focus primarily on the contracting side of acquisition while no formal program exists to train requirements or financial management personnel in the process. DOD should create training programs to ensure that requirements personnel are adequately trained. DOD should also seek to integrate acquisition and financial management information technology systems to ensure interoperability.

4.4.2 – Requirements Process

Simply put, the DOD requirements process is broken. The Joint Capabilities Integration and Development System (JCIDS) and executing Joint Requirements Oversight Council (JROC) are not operating as envisioned. The spiraling costs of major defense acquisition programs and the decades long effort required to replace key weapons systems is forcing warfighters to try and cram all necessary—and imagined—capabilities onto developing platforms. The JCIDS/JROC process is under intense pressure to ensure that the “one shot” at a follow-on system meets all the services current, future and anticipated needs. As a consequence, by requiring one system to meet all requirements, DOD is increasing the costs and development time to field new systems. Ultimately, this relates in higher priced systems delivered on a longer schedule in lower quantities.

To react to these pressures, the unintended consequence is a JCIDS/JROC process with a culture of forced cooperation where members must approve a sister services program in order to have their program approved. While likely not overtly quid pro quo, the “jointness” required in the JROC process creates a culture wherein each member recognizes the criticality of approving a new system for a sister service. The process also encourages services to request expensive added capabilities on systems paid for by other services in the name of jointness.

The Deputy Secretary of Defense recently commissioned a comprehensive overview of the acquisition process. The Defense Acquisition Performance Assessment (DAPA) brought together a panel of leading acquisition experts from both the government and industry. Their review provided a series of recommendations that address many of the concerns found in this Committee Defense Review. Of particular note are the recommendations to have the JROC

presided over by an objective civilian, possibly the Under Secretary for Acquisition, Technology and Logistics. In the opinion of the DAPA, the JCIDS/JROC process does not adequately consider requirements from the Combatant Commanders, whom the DAPA believes should have a greater say in determining requirements for future programs. Additionally, the DAPA recommended that DOD should consider the prompt transition to a capabilities based acquisition system where Combatant Commanders are considered the major stakeholders and the services act solely as implementers.

Based on the recommendations of the DAPA and the work of the CDR, the following model for the future of the DOD acquisition system should be considered. By determining requirements based on capabilities required by combatant commanders, a revised JCIDS/JROC process could objectively validate programs. These validated “joint” capability requirements would be executed by the services who would conduct acquisition and program management functions in order to deliver a combatant commander identified “joint” capability. In addition, the Department should further consider “competing” missions among the services. This does not mean that one service will only conduct one mission with one platform. Instead, the services should compete designs and concepts to encourage creative means of accomplishing a mission with new and innovative solutions.

Ultimately, DOD must carefully consider its ability to cost effectively put metal on targets. Some missions do not require cutting-edge technology to accomplish their objectives. The Undersecretary of Defense for Acquisition, Technology and Logistics, in collaboration with the JROC should reemphasize the need to focus on best value as it relates to accomplishing current and future Department of Defense missions.

4.4.3 – Rapid Acquisition

As the nation enters the fifth year in the Global War on Terror, there is a continuing concern about the ability of the Department of Defense, and particularly the services and combatant commands, to conduct rapid acquisition. The committee defense review places a high priority on rapidly fielding those goods and services needed by the warfighter to accomplish their mission. In addition, the CDR is concerned that the “lessons learned” in Operations Iraqi Freedom and Enduring Freedom will not be institutionalized by the Department. The CDR, consistent with direction given by the House Armed Services Committee in Section 817 of the FY06 National Defense Authorization Act, recommends that DOD expediently develop and implement a joint policy on contingency contracting. This policy should ensure that a senior officer in the grade of Lieutenant General, or Vice Admiral in the case of the Navy, be responsible for the implementation and execution of this policy. The CDR identified unnecessary layers of bureaucracy that prevent requirements identified by the warfighter from being met, as administrative and bureaucratic processes ensue. A senior commissioned officer, within each Combatant Command, should be responsible for eliminating this bureaucracy and ensuring requirements generated at the lowest levels are given attention at the most senior levels, in order to ensure that goods and services are ultimately delivered in a timely fashion to support “boots on the ground.”

4.5 – Modernization

4.5.1 – Systems Modernization

The 21st century security environment will continue to require ongoing upgrades and innovative solutions to meet our force structure needs, however, the Department of Defense cannot continue to fund the future force on the back of the current force. By retiring current systems before replacement systems are deployed or even developed, the Department is taking an unacceptable risk. DOD must carefully review its plans in the surface ship and tactical air arenas before proceeding with plans to reduce current force structure prior to fielding of follow-on systems.

By funding traditional “procurement” and “Milcon” programs from O&M accounts, DOD officials are consciously deciding to decrease resources for traditional O&M activities such as base operating support (BOS), facilities sustainment restoration and maintenance (FSRM), defense health program (DHP), fuels, and flying hours to name a few. The Department should realign its priorities to effectively capture non-O&M missions funded by O&M and acknowledge this investment in modernization. In addition, the Department must develop standards to use appropriately service-type contracting related to the legislative reforms envisioned in the 1990s. Overuse of these flexible contracting vehicles will invite reform that will limit the appropriate use of these tools.

Ultimately, replacement systems must be capable, affordable and future capabilities should be “spiraled” in as technology comes available. Delaying system production in order to field the “perfect” solution results in unacceptably long delays in fielding follow-on systems.

4.5.2 – Infrastructure

The committee notes that the recommendations contained within this report would result in significant infrastructure requirements. For example, additional personnel will require barracks, family housing, administrative facilities, training ranges, child development centers, and dining facilities, additional ship force structure will require berthing space, and additional aircraft will require hangar and apron space. The committee recognizes that such infrastructure will require significant increases to military construction, family housing, and operations and maintenance budgets, but notes that such investments are critical to sustaining military readiness and quality of life for military personnel and their families.

As the Department begins implementation of the 2005 Base Realignment and Closure (BRAC) round and the new global posture strategy, military personnel increases at bases within the continental United States have resulted in large requirements for infrastructure investments. While the post-BRAC 2005 inventory of military installations will, after proper BRAC and military construction investments are made, be capable of supporting the QDR force, the committee believes that the force structure recommended in this report is likely to bring the post-BRAC 2005 installation inventory close to or even beyond maximum capacity. As such, the

committee believes that reductions to base infrastructure beyond the BRAC 2005 level would represent an unacceptable risk of cutting into both core and surge capacity.

Finally, the committee believes that military infrastructure is a critical component of both current and future military capabilities under both current and recommended force structure. Sustainment, base operations, military construction, and family housing accounts have historically been underappreciated contributors to military readiness, operational capability, recruitment and retention, and quality of life. Full funding and execution of these accounts must become a priority or long- and short-term military readiness will suffer.

4.6 – Interagency Structure and Processes

The United States has faced the challenge of getting disparate departments and agencies to work together to achieve the same mission before. After World War II, for example, Congress enacted the National Security Act of 1947, merging the Departments of War and the Navy into the Department of Defense, adding a civilian superstructure to it, and establishing the United States Air Force as a separate service. It also created the National Security Council as a formal interagency coordinating body. Nearly forty years later, Congress passed the Goldwater-Nichols Act to further force coordination and “joint” operations among the military services. Congress also enacted the Homeland Security Act of 2001 to create the Department of Homeland Security and enacted the Intelligence Reform Act of 2004 to create the Director of National Intelligence. While it may be too soon to pass judgment on the latter two acts, the creation of the Department of Defense and the Goldwater-Nichols reforms have generally improved the ability of the military services to work together towards a common purpose.

At this time, the committee does not have specific recommendations for improving the interagency process. The committee understands the arguments being made by officials in the Department of Defense and outside experts for an interagency “Goldwater-Nichols” style reform. This is an ambitious undertaking that, in the Congress, would cross the jurisdiction of many committees. Nevertheless, the committee believes it is a proposal worthy of, and requiring, careful review and one that the committee intends to consider through a series of hearings, briefings, and discussions in the coming years.

In the interim, the committee offers, in the spirit of promoting discussion, some options that Congress and the executive branch should explore together. *At the cabinet level*, the President may want to consider tasking a single department as the executive agent for the Global War on Terrorism. All agencies necessary for ultimate victory could play a supporting role to that single department. The executive agent could have authority to task an interagency regional command to plan and conduct broad missions. The committee is concerned that tasking multiple departments to lead various high priority missions (such as counter-narcotics, counter-proliferation, etc) could contribute to a lack of focus and coordination in the field, since each lead department might view its responsibilities through the narrow prism of its priority mission, instead of looking at them as an integrated whole.

At the operational level, the executive branch should consider forming standing regional interagency task forces with staff elements from relevant departments or agencies to jointly plan with DOD's combatant commanders. Without harming the chain of command, such entities could quickly operationalize policy guidance from the National Security Council. They could develop regional campaign plans, establish joint, interagency operations centers, and direct military, intelligence, or diplomatic initiatives as needed in the U.S. efforts in fighting terrorism, counter proliferation, counter-narcotics and other defense and foreign policy missions. Such task forces could also conduct realistic exercises to test plans and accustom the staffs to operating together under crisis conditions. Presumably, these task forces would also focus on "enabling" capabilities, such as financing, weapons and explosives, and smuggling, that help adversaries carry out attacks on U.S. national security interests at home and abroad. In addition, they would help non-DOD agencies improve their ability to work together and with the armed forces to achieve the nation's goals. As many have noted in Iraq, achieving political, military, and economic goals are intertwined, yet the Department of Defense only has responsibility for security/military goals. Those goals cannot be achieved if other lead agencies fail to adequately plan, staff, and resource operations intended to achieve non-military/non-security tasks. For some, this will entail a larger overseas mission than they are accustomed to undertaking. The committee believes such an interagency task force could help non-DOD agencies understand where their activities fit in the broader process and improve their ability to perform those missions.

4.7 – Education and Expertise

Ultimately, the U.S. military's greatest asset is its people. Investments in personnel pay dividends across the range of missions that the armed forces might be called upon to perform. The committee believes several steps should be taken to improve the educational opportunities and expertise levels of the United States armed forces.

First, expanding language skills and regional expertise will be critical in preparing the armed forces to operate in unfamiliar areas. The GWOT, capacity building, peacekeeping, stability and reconstruction operations are likely to draw on language and cultural knowledge that the armed forces customarily lack. Because they have principally trained for combat against other military forces, some argue that the U.S. military personnel are ill-equipped to deal with local populations, depriving the armed forces of human intelligence and local situational awareness in foreign lands. The committee recommends expanding the foreign area officer career track and providing additional recruitment and retention bonuses to individuals who demonstrate the kinds of language and cultural skills that have proven useful to the military since September 11, 2001. The Congress may also want to consider reauthorizing a 21st century version of "The Lodge Act," which enabled DOD to recruit foreign nationals into the service, as a means for quickly expanding the language and cultural skills resident in the armed forces.

The committee also notes that many of the asymmetric threats that potential adversaries are likely to employ in a conflict with the United States require unique and relatively specialized technical skills. Space and cyber operations in particular involve training and experience that is rewarded much better in the private sector than in the public sector. While the committee

believes that there will be no shortage of technically proficient individuals who want to serve their country in uniform, it recommends consideration of incentives to ensure that the U.S. Armed Forces possess those skills in adequate numbers and sophistication. In particular, scholarship programs and educational assistance, cooperative agreements with private sector entities, increased partnerships between federal laboratories and academic institutions, improved internal educational programs, and specialized career development programs could help the Armed Forces expand and retain the kinds of technical experts it will need to defend the country in these unique areas.

Finally, the committee notes that many of the foreign and domestic missions that the Armed Forces may perform draw heavily on conflict resolution, diplomatic, and law enforcement-type skills typically resident outside the armed forces. Indeed, the committee found anecdotal evidence that Guard and Reserve units deploying to Afghanistan and Iraq were some of the most successful in combating insurgents and establishing security, in part because such units were populated with personnel who perform civil governance and law enforcement activities in their civilian lives. The committee understands that the Department has internalized many of these lessons and is seeking to rebalance such skill sets between the active and reserve components. The committee applauds that effort—which should also help address too frequent call-ups of unique Guard and reserve units—but also believes that the Department should consider increased training and educational opportunities in these skills.

4.8 – Resources and Implications

Clearly, the force structure and capabilities recommendations made in this report would require a significant increase in national resources devoted to defense and national security. The committee fully acknowledges that marginal increases in defense spending would be inadequate to fund the recommendations made as a result of this review. Based on their regular work as authorizers, committee members suspected this would be the case early in the process. Nevertheless, they decided to proceed with a threat-based assessment because they wanted to know what our security required, without reference to arbitrary resource constraints. In crafting a bipartisan answer to that question, the review accomplished one of its main goals.

As a result of the review, it will be necessary to reconsider the framework in which the United States makes decisions about its national security. Today, the United States spends less than four percent of its Gross Domestic Product (GDP) on defense, less than the height of the Reagan buildup. It is a testament to the enterprise and productivity of the American people that such a small percentage has created so much capability. The committee commends the men and women of our Armed Forces and our country, who work every day to maximize the value and military capability that the American people receive for the defense dollars spent.

Yet, after reviewing the threats and missions it expects our military forces to handle, the committee concluded that our force structure must expand and our capabilities must improve in order to reduce the risk to the security of the American people to an acceptable level.

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The United States is a wealthy country. Such expansion is hardly unprecedented, nor does the committee consider it unwarranted. As a matter of perspective, it is useful to consider that the force structure recommended as a result of the review is still smaller than the force structure the United States possessed during the 1980s, when it was not engaged in an active global war on terror. During the roughly forty years of the Cold War, U.S. defense expenditures exceeded five percent of the GDP in all but a handful of years. Since September 11, 2001, increases in defense spending have largely paid for the operational costs of the Global War on Terrorism; they have not created the force structure needed to secure the country from the threats and missions it faces. As a result, the Armed Forces have experienced strain. That stress is manageable and the military is far from “broken,” but there is a creeping danger that any additional strains may overwhelm its ability to respond as effectively as the American people have come to expect, no matter how dedicated, professional, and talented the personnel serving their country are. The committee believes that the United States can sustain a modest, but not insignificant, increase in defense spending.

APPENDIX – LIST OF PANEL MEETINGS

Threat Panel

- 21 September 2005—Threats in Latin America
- 22 September 2005—Threats in Eurasia
- 27 September 2005—Threats in Asia
- 28 September 2005—Threats in the Middle East and Africa

Regional Powers Gap Panel

- 26 October 2005—Hearing on the military capabilities and threats presented by China/Taiwan, North Korea, Iran, Pakistan, and India
- 27 October 2005—Briefing from U.S. Pacific Command
- 28 October 2005—Briefing from U.S. Central Command
- 2 November 2005—Briefing from the U.S. Army
- 3 November 2005—Briefing from the U.S. Marine Corps
- 4 November 2005—Briefing on the interagency planning capabilities and coalition non-military coordination capabilities as demonstrated in experimentation at Joint Forces Command
- 4 November 2005—Hearing on the U.S. response to the military capabilities presented by China, Korea, Iran, and Pakistan and the capacity of interagency planning and cooperation to prepare for or to avoid conflict
- 8 November 2005—Briefing from the U.S. Navy
- 9 November 2005—Hearing on regional powers' threats to the United States' interests
- 9 November 2005—Briefing from U.S. Transportation Command
- 10 November 2005—Briefing from the U.S. Air Force

Asymmetric and Unconventional Threats Gap Panel

- 26 October 2005—Briefing on Cyber Security
- 27 October 2005—Hearing on Cyber Security, Information Assurance and Information Superiority
- 1 November 2005—Hearing on Space Security
- 3 November 2005—Briefing on Space Security
- 8 November 2005—Briefing on the Defense Logistics Agency
- 9 November 2005—Briefing on Critical Infrastructure Protection and Air Defense
- 10 November 2005—Briefing on Weapons of Mass Destruction

Current and Emerging Nuclear Powers Gap Panel

- 27 October 2005—Briefing on Nuclear Threats and Scenarios from Russia and China
- 1 November 2005—Briefing on U.S. Nuclear Policy, Doctrine, and Scenarios
- 2 November 2005—Briefing on Nuclear Threats and Scenarios from Iran, North Korea, India, and Pakistan
- 8 November 2005—Briefing on Hard and Deeply Buried Targets and Global Strike
- 9 November 2005—Briefing on State Department Counterproliferation Programs and the Nuclear Fuel Cycle
- 16 November 2005—Briefing on Alternative Solutions to the Nuclear Threat 20 Years Out

Regional Conflicts Gap Panel

- 27 October 2005—Briefing on U.S. European Command
- 2 November 2005—Briefing on Threat Mitigation
- 8 November 2005—Briefing on Force Planning for Ungoverned Regions and Failed States

Terrorism and Radical Islam Gap Panel

- 26 October 2005—Hearing on Alternative Views on U.S. Counterterrorism Policy
- 27 October 2005—Briefing on Combatant Command Overviews
- 27 October 2005—Briefing on Combatant Command Overviews
- 1 November 2005—Briefing on DOD Overviews
- 3 November 2005—Hearing on Understanding Aspirations of Radical Islam:
Why Mainstream Islam is Radically Different
- 4 November 2005—Briefing on Combatant Command Overviews
- 8 November 2005—Briefing on Combatant Command Overviews
- 8 November 2005—Briefing on DOD Counter Terrorism Technology
- 9 November 2005—Briefing on Classified Terrorism Intelligence
- 10 November 2005—Briefing on Counter Terrorism Policy

Non-Traditional Missions and Catastrophic Disasters Gap Panel

- 1 November 2005—Hearing on Natural Disasters and Weapons of Mass
Destruction
- 3 November 2005—Hearing on DOD Capabilities for Responding to a Pandemic
- 4 November 2005—Hearing on Natural Disasters and Weapons of Mass
Destruction Capabilities Assessment
- 8 November 2005—Hearing on FEMA, National Guard, and State and Local
Roles in Disaster Response
- 9 November 2005—Briefing on Threat Mitigation
- 10 November 2005—Hearing on HHS Plan for Pandemic Influenza

Integration Panel

- 23 February 2006—Integration Panel Meeting

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9 March 2006—Integration Panel Meeting

30 March 2006—Integration Panel Meeting