2017 INDEX OF
U.S. Military Strength
Assessing America’s Ability to Provide for the Common Defense

DAVIS INSTITUTE FOR NATIONAL SECURITY AND FOREIGN POLICY

Edited by Dakota L. Wood
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The 2017 *Index of U.S. Military Strength* is dedicated to the memory of Richard M. Scaife.
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Any views presented in or reflecting the results of any prepublication review of this document by an officer or employee of the United States are rendered in his or her individual capacity and do not necessarily represent the views of the United States or any agency thereof.
Acknowledgments

While no publication of this type is possible without the contributions of a great many people, there are usually a few special contributors whose talents, work ethic, and willingness to go the extra mile make it something quite special.

Policy Analyst for Defense and Security Studies Brian Slattery sustained the additional responsibilities of project management, working with the team of authors, editors, and graphics and production professionals that made this Index a reality, both in print and on the Web. He was assisted admirably by Rachel Zissimos, Research Assistant in the Center for National Defense, who contributed to specialized research, writing, and fact-checking and also took on production management duties as needed.

Senior Copy Editor William T. Poole was instrumental in not only maintaining a consistent tone throughout this multi-author document—a challenging feat all its own—but also checking every reference to ensure accuracy in reporting and coherence throughout the Index. Manager of Data Graphics John Fleming expertly managed the transition of all graphics to a revised format size without compromising the important information they convey. Director of Digital Strategy Ory Rinat and Creative Director Melissa Bluey, assisted by the detailed efforts of Jay Simon, Assistant Art Director, and Maria Sousa, Manager for Web and Digital Media, ensured that the presentation of Index materials was tuned to account for changes in content delivery as our world becomes increasingly digital, portable, and driven by social media.

We believe this Index helps to provide a better informed understanding and wider appreciation of America’s ability to “provide for the common defence” that undergirds The Heritage Foundation’s vision of “an America where freedom, opportunity, prosperity, and civil society flourish.” Judging by reception of the Index during this past year—some 300,000 unique visitors to the 2016 Index website alone—we are encouraged that so many Americans are similarly concerned about the state of affairs in and the multitude of factors affecting our country.

The Heritage Foundation seeks a better life for Americans, which requires a stronger economy, a stronger society, and a stronger defense. To help measure the state of the economy, our Institute for Economic Freedom and Opportunity publishes annually the Index of Economic Freedom. To help measure the state of society, our Institute for Family, Community, and Opportunity publishes annually the Index of Culture and Opportunity. Now, to help Americans everywhere more fully understand the state of our defenses, our Davis Institute for National Security and Foreign Policy publishes this third edition of the annual Index of U.S. Military Strength.

Finally, in addition to acknowledging all of those who helped to prepare the 2017 Index of U.S. Military Strength, The Heritage Foundation expresses its profound appreciation to the members of the U.S. armed forces who continue to protect the liberty of the American people in a dangerous world.
Preface
Jim DeMint

During the past year, well over a quarter-million Americans sought a more informed understanding of the condition of our military and its ability to protect our country and its critical national security interests, according to web-traffic statistics for our 2016 Index of U.S. Military Strength. It is clear to us that Americans are intensely interested in this topic, concerned by the worrisome stories they are hearing about the rising number of terrorist attacks at home and abroad; the aggressive and destabilizing actions of major countries like Russia and China in Europe, the Middle East, and Asia; and efforts by Iran and North Korea to acquire or improve nuclear weapon capabilities.

Here at Heritage, we understand the profound relationship that exists between a strong economy, a strong military, and a civic framework that maximizes individual freedom, liberty, and privacy. Each supports and amplifies the other, and when balanced and working in concert, they create a powerful context that enables America to be “that shining city on a hill.”

All the more reason, then, for us to be so committed to sharing with the American public our assessment of conditions and trends in the world as they pertain to challenges to our country’s most important security interests and the ability of our military to defend those interests both at home and abroad.

Unfortunately, our work for this year’s Index reveals that the trends identified in our 2015 and 2016 editions continue in a negative direction. Our competitors continue to be more aggressive and are investing greater efforts to be more capable of imposing their will on their neighbors. In fact, our score for the “threat environment” was raised a notch to “High,” the second highest category on our scale.

As a consequence of moribund economies, ill-advised national fiscal policies, and shortsighted foreign policies, our friends and allies have on average less ability and in some cases less willingness to contribute not only to their own security, but also to collective arrangements that would benefit both their local regions and U.S. interests more broadly. Our own military still struggles under the effects of historically low levels of funding imposed by the Budget Control Act of 2011 while sustaining a high tempo of operations with a shrinking, aging, and less ready force.

This combination of conditions threatens to unbalance the strategic triad of critical enablers—economy, military, and civil liberties—upon which America’s greatness depends.

It continues to be our aim to inform Congress, the executive branch, and the American people about these issues so that better decisions can be made and resources commensurate with national security demands can be invested to keep our country safe, prosperous, and free.

Jim DeMint, President
The Heritage Foundation
October 2016
Introduction

The United States maintains a military force primarily to protect the homeland from attack and to protect its interests abroad. There are secondary uses for the military—such as assisting civil authorities in times of emergency or deterring enemies—that amplify other elements of national power such as diplomacy or economic initiatives; but above all else, America’s armed forces exist so that the U.S. can physically impose its will on an enemy and change the conditions of a threatening situation by force or the threat of force.

This Heritage Foundation Index of U.S. Military Strength gauges the ability of the U.S. military to perform its missions in today’s world, and each subsequent edition will provide the basis for measuring the improvement or weakening of that ability.

The United States prefers to lead through “soft” elements of national power: diplomacy, economic incentives, and cultural exchanges. When soft approaches such as diplomacy work, that success often owes much to the knowledge of all involved that U.S. “hard power” stands silently in the diplomatic background. Soft approaches cost less in manpower and treasure than military action costs and do not carry the same risk of damage and loss of life; but when confronted by physical threats to U.S. national security interests, soft power cannot substitute for raw military power. In fact, an absence of military power or the perception that one’s hard power is insufficient to protect one’s interests often invites challenges that “soft power” is ill-equipped to address. Thus, hard power and soft power are complementary and mutually reinforcing.

The continuing decline of America’s military hard power is thoroughly documented and quantified in this report. More difficult to quantify, however, are the growing threats to the U.S. and its allies that are engendered by the perception of American weakness abroad and doubts about America’s resolve to act when its interests are threatened. The anecdotal evidence is consistent with direct conversations between Heritage scholars and high-level diplomatic and military officials from countries around the world: The perception of American weakness is destabilizing many parts of the world. For decades, the perception of American strength and resolve has served as a deterrent to adventurous bad actors and tyrannical dictators. Unfortunately, the deterrent of American strength is fast disappearing, and the result is an increasingly dangerous world threatening a significantly weaker America.

Consequently, it is critical to understand the condition of the United States military with respect to America’s vital national security interests, threats to those interests, and the context within which the U.S. might have to use hard power. It is likewise important to know how these three areas—operating environments, threats, and the posture of the U.S. military—change over time given that such changes can have substantial implications for defense policies and investments.

In the opening paragraph of the U.S. Constitution, “We the People” stated that among their handful of purposes in establishing the
Constitution was to “provide for the common defence.” The enumeration of limited powers for the federal government in the Constitution includes the powers of Congress “To declare War,” “To raise and support Armies,” “To provide and maintain a Navy,” “To provide for calling forth the Militia,” and “To provide for organizing, arming, and disciplining, the Militia” and the power of the President as “Commander in Chief of the Army and Navy of the United States, and of the Militia of the several States, when called into the actual Service of the United States.” With such constitutional priority given to defense of the nation and its vital interests, one might expect the federal government to produce a standardized, consistent reference work on the state of the nation’s security. Yet no such single volume exists, especially in the public domain, to allow comparisons from year to year. Thus, the American people and even the government itself are prevented from understanding whether investments made in defense are achieving desired results.

What is needed is a publicly accessible reference document that uses a consistent, methodical, repeatable approach to assessing defense requirements and capabilities. The Heritage Foundation has filled this void with the Index of U.S. Military Strength, an annual assessment of the state of America’s hard power, the geographical and functional environments relevant to the United States’ vital national interests, and threats that rise to a level that put or have the strong potential to put those interests at risk.

From the outset, it was clear that any assessment of the adequacy of military power would require two primary reference points: a clear statement of U.S. vital security interests and an objective requirement for the military’s capacity for operations that would serve as a benchmark against which to measure current capacity. A review of relevant top-level national security documents issued by a long string of presidential Administrations makes clear that three interests are consistently stated:

- Defense of the homeland;
- Successful conclusion of a major war that has the potential to destabilize a region of critical interest to the U.S.; and
- Preservation of freedom of movement within the global commons: the sea, air, outer-space, and cyberspace domains through which the world conducts business.

Every President has recognized that one of the fundamental purposes of the U.S. military is to protect America from attack. While going to war has always been controversial, the decision to do so has been based consistently on the conclusion that one or more vital U.S. interests are at stake.

This Index embraces the “two-war requirement”—the ability to handle two major wars or two major regional contingencies (MRCs) successfully at the same time or in closely overlapping time frames—as the most compelling rationale for sizing U.S. military forces. In the 2015 Index, Dr. Daniel Gouré provided a detailed defense of this approach in his essay, “Building the Right Military for a New Era: The Need for an Enduring Analytic Framework,” which is further elaborated upon in the military capabilities assessment section. The basic argument, however, is this: The nation should have the ability to engage and defeat one opponent and still have the ability to do the same with another to preclude someone’s exploiting the perceived opportunity to move against U.S. interests while America is engaged elsewhere.

The Index is descriptive, not prescriptive, reviewing the current condition of its subjects within the assessed year and describing how conditions have changed from the previous year, informed by the baseline condition established by the inaugural 2015 Index. In short, the Index answers the question, “Have conditions improved or worsened during the assessed year?”

This study also assesses the U.S. military against the two-war benchmark and various
metrics explained further in the military capabilities section. Importantly, this study measures the hard power needed to win conventional wars rather than the general utility of the military relative to the breadth of tasks it might be (and usually is) assigned to advance U.S. interests short of war.

Assessing the World and the Need for Hard Power

The assessment portion of the Index is composed of three major sections that address the aforementioned areas of primary interest: America’s military power, the operating environments within or through which it must operate, and threats to U.S. vital national interests. For each of these areas, this publication provides context, explaining why a given topic is addressed and how it relates to understanding the nature of America’s hard-power requirements.

The authors of this study used a five-category scoring system that ranged from “very poor” to “excellent” or “very weak” to “very strong” as appropriate to each topic. This particular approach was selected so as to capture meaningful gradations while avoiding the appearance that a high level of precision was possible given the nature of the issues and the information that was publicly available.

Some factors are quantitative and lend themselves to discrete measurement; others are very qualitative in nature and can be assessed only through an informed understanding of the material that leads to an informed judgment call.

Purely quantitative measures alone tell only a part of the story when it comes to the relevance, utility, and effectiveness of hard power. Assessing military power or the nature of an operating environment using only quantitative metrics can lead to misinformed conclusions. For example, the mere existence of a large fleet of very modern tanks has little to do with the effectiveness of the armored force in actual battle if the employment concept is irrelevant to modern armored warfare (imagine, for example, a battle in rugged mountains). Also, experience and demonstrated proficiency are often decisive factors in war—so much so that numerically smaller or qualitatively inferior but well-trained and experienced forces can defeat a larger or qualitatively superior adversary.

However digital and quantitative the world has become thanks to the explosion of advanced technologies, it is still very much a qualitative place, and judgment calls have to be made in the absence of certainty. We strive to be as objective and evenhanded as possible in our approach and transparent in our methodology and sources of information so that readers can understand why we came to the conclusions we reached and perhaps reach their own. The end result will be a more informed debate about what the United States needs in military capabilities to deal with the world as it is. A detailed discussion of scoring is provided in each assessment section.

In our assessment, we begin with the operating environment because it provides the geostategic stage upon which the U.S. sees to its interests: the various states that would play significant roles in any regional contingency; the terrain that enables or restricts military operations; the infrastructure—ports, airfields, roads, and rail networks (or lack thereof)—on which U.S. forces would depend; and the types of linkages and relationships the U.S. has with a region and major actors within it that cause the U.S. to have interests in the area or that facilitate effective operations. Major actors within each region are identified, described, and assessed in terms of alliances, political stability, the presence of U.S. military forces and relationships, and the maturity of critical infrastructure.

Our assessment focuses on three key regions—Europe, the Middle East, and Asia—because of their importance relative to U.S. vital security interests. This does not mean that Latin America and Africa are unimportant. Rather, the security challenges within these regions do not currently rise to the level of direct threats to America’s vital security interests as we have defined them. We addressed
their current condition in the 2015 Index and will provide an updated assessment when it is warranted.

Next is a discussion of threats to U.S. vital interests. Here we identify the countries that pose the greatest current or potential threats to U.S. vital interests based on two overarching factors: their behavior and their capability. We accept the classic definition of “threat” as a combination of intent and capability, but while capability has attributes that can be quantified, intent is difficult to measure. We concluded that “observed behavior” serves as a reasonable surrogate for intent because it is the clearest manifestation of intent.

We based our selection of threat countries and non-state actors on their historical behavior and explicit policies or formal statements vis-à-vis U.S. interests, scoring them in two areas: the degree of provocative behavior they exhibited during the year and their ability to pose a credible threat to U.S. interests irrespective of intent. For example, a state full of bluster but with only a moderate ability to act accordingly poses a lesser threat, while a state that has great capabilities and a pattern of bellicose behavior opposed to U.S. interests still warrants attention even if it is relatively quiet in a given year.

Finally, we address the status of U.S. military power in three areas: capability (or modernity), capacity, and readiness. Do U.S. forces possess operational capabilities that are relevant to modern warfare? Can they defeat the military forces of an opposing country? Do they have a sufficient amount of such capabilities? Is the force sufficiently trained and its equipment materially ready to win in combat? All of these are fundamental to success even if they are not de facto determinants of success (something we explain further in the section). We also address the condition of the United States’ nuclear weapons capability, assessing it in areas that are unique to this military component and critical to understanding its real-world viability and effectiveness as a strategic deterrent.

Topical Essays
The four topical essays in this 2017 Index continue the themes established in the 2015 edition: top-level strategic issues that provide context for defense, major regional issues that drive defense planning, and functional or component topics that are important to understand if one is to understand the larger story of U.S. military power.

- Professor Mackubin T. Owens’s essay, “On Strategy and Strategic Planning: Repairing America’s Strategic ‘Black Hole,’” begins this year’s Index with a concise discussion of strategy: what it is, what it has become in the national security community, and what U.S. national leadership must do to correct a glaring deficiency in our national security planning process. “Strategy and strategy-making are complex phenomena, not reducible to a simplistic mechanical process,” writes Dr. Owens, “and the making of strategy deserves more study than it often receives. In many respects, U.S. strategic planning has been rendered nearly useless because the processes have become routinized and thereby trivialized.”

- In “Alliances and U.S. National Security,” Dr. Martin N. Murphy makes the historical case for the value of alliances, addressing the tension between the burden they represent and their importance in securing national interests. Dr. Murphy presents 10 reasons why alliances have proven to be America’s great strategic advantage for more than two centuries and reminds us of Winston Churchill’s view that “[t]here is only one thing worse than fighting with allies, and that is fighting without them.”

- Paul Rosenzweig goes well beyond the standard discussion of cyber warfare, which usually describes types of malware and the importance of protecting one’s systems from attack. In “The Reality of
Cyber Conflict: Warfare in the Modern Age,” he characterizes cyber conflict as waged between various combinations of combatants (state vs. state, state vs. non-state, etc.); outlines key factors that should guide thinking about strategy for cyber warfare; and discusses how America should organize for this evolving form of conflict.

Antulio Echevarria II closes our collection of essays with a superb primer on “Operational Concepts and Military Strength.” Noting that such concepts “provide the conceptual basis for operational planning and influence the design and employment of military forces,” Echevarria succinctly highlights the mixed track record for these key guiding documents over the past few decades, explaining why some were very successful and others failed miserably and how the military services should think about them today given the rapid evolution of modern technologies and the opportunities and challenges they make possible.

Scoring U.S. Military Strength Relative to Vital National Interests

The purpose of this Index is to make the national debate about defense capabilities better informed by assessing the ability of the U.S. military to defend against current threats to U.S. vital national interests within the context of the world as it is. Each of the elements can change from year to year: the stability of regions and access to them by America’s military forces; the various threats as they improve or lose capabilities and change their behavior; and the United States’ armed forces themselves as they adjust to evolving fiscal realities and attempt to balance readiness, capacity (size and quantity), and capability (how modern they are) in ways that enable them to carry out their assigned missions successfully.

Each region of the world has its own set of characteristics that include terrain; man-made infrastructure (roads, rail lines, ports, airfields, power grids, etc.); and states with which the United States has relationships. These traits combine to create an environment that is either favorable or problematic when it comes to U.S. forces operating against threats in each respective region.

Various states and non-state actors within these regions possess the ability to threaten, and have consistently behaved in ways that threaten, America’s interests. Fortunately for the U.S., these major threat actors are currently few in number and continue to be confined to three regions—Europe, the Middle East, and Asia—thus enabling the U.S. (if it will do so) to focus its resources and efforts accordingly.

As for the condition of America’s military services, they continue to be beset by aging equipment, shrinking numbers, and rising costs: three factors that have accelerated over the past year at a time when threats to U.S. interests continue to rise.

These three elements interact with each other in ways that are difficult to measure in concrete terms and impossible to forecast with any certainty. Nevertheless, the exercise of describing them and characterizing their general condition is worthwhile because it informs debates about defense policies and the allocation of resources that are necessary for the U.S. military to carry out its assigned duties. Further, as seen in this 2017 Index, noting how conditions have changed from the preceding year helps to shed light on the effect that policies, decisions, and actions have on security affairs involving the interests of the United States, its allies and friends, and its enemies.

It should be borne in mind that each annual Index assesses conditions as they are for the assessed year. This 2017 Index of U.S. Military Strength builds on the baseline condition of 2014 as described in the 2015 Index and assesses changes that have occurred in the years since then.

Assessments for U.S. Military Power, Global Operating Environment, and Threats to Vital U.S. Interests are shown below. Factors
that would push things toward “bad” (the left side of the scales) tend to move more quickly than those that improve one’s situation, especially when it comes to the material condition of the U.S. military.

Of the three areas measured—U.S. Military Power, Global Operating Environment, and Threats to Vital U.S. Interests—the U.S. can directly control only one: its own military. The condition of the U.S. military can influence the other two because a weakened America arguably emboldens challenges to its interests and loses potential allies, while a militarily strong America deters opportunism and draws partners to its side from across the globe.

Conclusion

During the decades since the end of the Second World War, the United States has underwritten and taken the lead in maintaining a global order that has benefited more people in more ways than at any other period in history. Now, however, that American-led order is under stress, and some have wondered whether it will break apart entirely. Fiscal and economic burdens continue to plague nations; violent, extremist ideologies threaten the stability of entire regions; state and non-state opportunists seek to exploit upheavals; and major states compete to establish dominant positions in their respective regions.

America’s leadership role remains in question, perhaps more so than at any other time since the end of the Cold War, and its security interests are under significant pressure. Challenges are growing, old allies are not what they once were, and the U.S. is increasingly bedeviled by debt that constrains its ability to sustain its forces commensurately with its interests.

Informed deliberations on the status of the United States’ military power are therefore needed today more than at any other time since the end of the Cold War. This Index of U.S. Military Strength can help to inform the debate.
Executive Summary

The United States maintains a military force primarily to protect the homeland from attack and to protect its interests abroad. There are secondary uses—for example, to assist civil authorities in times of disaster or to deter opponents from threatening America’s interests—but this force’s primary purpose is to make it possible for the U.S. to physically impose its will on an enemy when necessary.

Consequently, it is critical that the condition of the United States military with respect to America’s vital national security interests, threats to those interests, and the context within which the U.S. might have to use “hard power” be understood. Knowing how these three areas—operating environments, threats, and the posture of the U.S. military—change over time, given that such changes can have substantial implications for defense policies and investment, is likewise important.

Each year, The Heritage Foundation’s Index of U.S. Military Strength employs a standardized, consistent set of criteria, accessible both to government officials and to the American public, to gauge the ability of the U.S. military to perform its missions in today’s world. The inaugural 2015 edition established a baseline assessment on which this and future annual editions will build, with each edition assessing the state of affairs for its respective year and measuring how key factors have changed from the previous year.

What the Index Assesses

The Index of U.S. Military Strength assesses the ease or difficulty of operating in key regions based on existing alliances, regional political stability, the presence of U.S. military forces, and the condition of key infrastructure. Threats are assessed based on the behavior and physical capabilities of actors that pose challenges to U.S. vital national interests. The condition of America’s military power is measured in terms of its capability or modernity, capacity for operations, and readiness to handle assigned missions successfully. This framework provides a single-source reference for policymakers and other Americans who seek to know whether our military power is up to the task of defending our national interests.

Any discussion of the aggregate capacity and breadth of the military power needed to address threats to U.S. security interests requires a clear understanding of precisely what interests must be defended. Three vital interests have been stated consistently in various ways by a string of Administrations over the past few decades:

- **Defense** of the homeland;
- **Successful conclusion** of a major war that has the potential to destabilize a region of critical interest to the U.S.; and
- **Preservation** of freedom of movement within the global commons (the sea, air, outer-space, and cyberspace domains) through which the world conducts its business.

To defend these interests effectively on a global scale, the United States needs a military
force of sufficient size, or what is known in the Pentagon as “capacity.” Due to the many factors involved, determining how big the military should be is a complex exercise. However, successive Administrations, Congresses, and Department of Defense staffs have managed to arrive at a surprisingly consistent force-sizing rationale: an ability to handle two major wars or “major regional contingencies” (MRCs) simultaneously or in closely overlapping time frames. This “two-war” or “two-MRC” requirement is embraced in this Index.

At the core of this requirement is the conviction that the United States should have the ability to engage and decisively defeat one major opponent and simultaneously have the wherewithal to do the same with another to preclude opportunistic exploitation by any competitor. Since World War II, the U.S. has found itself involved in a major “hot” war every 15–20 years while simultaneously maintaining substantial combat forces in Europe and several other regions. The size of the total force roughly approximated the two-MRC model. Accordingly, our assessment of the adequacy of today’s U.S. military is based on the ability of America’s armed forces to engage and defeat two major competitors at roughly the same time.

This Index’s benchmark for a two-MRC force is derived from a review of the forces used for each major war that the U.S. has undertaken since World War II and the major defense studies completed by the federal government over the past 30 years. We concluded that a standing (i.e., Active Duty component) two-MRC–capable Joint Force would consist of:

- **Army**: 50 brigade combat teams (BCTs);
- **Navy**: 346 surface combatants and 624 strike aircraft;
- **Air Force**: 1,200 fighter/ground-attack aircraft; and
- **Marine Corps**: 36 battalions.

This force does not account for homeland defense missions that would accompany a period of major conflict and are generally handled by Reserve and National Guard forces. Nor does this recommended force constitute the totality of the Joint Force, which includes the array of supporting and combat-enabling functions essential to the conduct of any military operation: logistics; transportation (land, sea, and air); health services; communications and data handling; and force generation (recruiting, training, and education), to name a very few. Rather, these are combat forces that are the most recognizable elements of America’s hard power but that also can be viewed as surrogate measures for the size and capability of the larger Joint Force.

**The Global Operating Environment**

Looking at the world as an environment in which U.S. forces would operate to protect America’s interests, the Index focused on three regions—Europe, the Middle East, and Asia—because of the intersection of our vital interests and actors able to challenge them.

**Europe.** For the most part, Europe is a stable, mature, and friendly environment, home to America’s oldest and closest allies. The U.S. is tied to it by treaty, robust economic bonds, and deeply rooted cultural linkages. In general, America’s partners in the region are politically stable; possess mature (if increasingly debt-laden) economies; and have fairly modern (though shrinking) militaries. America’s longtime presence in the region, Europe’s well-established basing and support infrastructure, and the framework for coordinated action provided by NATO make the region quite favorable for military operations.

**The Middle East.** In contrast, the Middle East is a deeply troubled area that continues to be riven with conflict, ruled by authoritarian regimes, and populated by an increasing number of terrorist and other destabilizing entities. Though the United States does enjoy a few strong partnerships in the region, its interests are beset by security and political
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challenges, expanding transnational terrorism, and the maturing threat of a nuclear Iran. Offsetting these challenges to some extent are the U.S. military’s experience in the region and the basing infrastructure that it has developed and leveraged for nearly 25 years, although these positive elements are decaying as a consequence of America’s withdrawal from Iraq, its reduced presence in neighboring countries, and the increasingly problematic political environment in countries that historically have hosted U.S. forces.

**Asia.** Asia’s defining characteristic is its expanse, covering 30 percent of the globe’s land area. Though the region includes longstanding allies of the U.S. that are stable and possess advanced economies, the tyranny of distance makes U.S. military operations in the region difficult in terms of the time and sealift and airlift that are required, a challenge that is only exacerbated as the size of the U.S. military continues to shrink.

Summarizing the condition of each region enables us to get a sense of how they compare in terms of the challenge the U.S. would have in projecting military power and sustaining combat operations in each one.

As a whole, the global operating environment currently rates a score of “favorable,” meaning that the United States should be able to project military power anywhere in the world as necessary to defend its interests without substantial opposition or high levels of risk, although conditions in the Middle East (and perhaps Europe) could easily tip this aggregate score into the “moderate” category if conditions continue to degrade in 2017.

**Threats to U.S. Interests**

Our selection of threat actors discounted troublesome states and non-state entities that lacked the physical ability to pose a meaningful threat to the vital security interests of the U.S. This reduced the population of all potential threats to a half-dozen that possessed both the means to threaten U.S. vital interests and a pattern of provocative behavior that should draw the focus of U.S. defense planning. This Index characterizes their behavior and military capabilities on five-point, descending scales.

Each of the six threat actors continued to be particularly aggressive during 2016, with a not altogether surprising correlation of physical capability and state robustness or coherence. Our scoring resulted in the individual marks depicted below.

Combining the assessments of behavior and capability led to a general characterization of each threat, ranging from “severe” to “low.” Worryingly, all six noted threat actors now rank “high” on the scale of threats to U.S. interests, although the threat from North Korea dropped one category from “severe” to “high.”

While all six threats have been quite problematic in their behavior and in their impact on their respective regions, Russia and China continue to be the most worrisome, both because of the investments they are making in the modernization and expansion of their offensive military capabilities and because of the more enduring effect they are having within their respective regions. Russia has maintained its active involvement in the conflict in Ukraine and has inserted itself into the Syrian conflict, and China’s provocative behavior has expanded to include militarization of islands that it has built in highly disputed international waters in the South China Sea. China has also adopted aggressive naval tactics to intimidate such neighboring countries as Japan and the Philippines.

North Korea warrants sustained attention. It has reportedly developed a nuclear-capable ballistic missile with sufficient range to reach the United States and continues to invest heavily in developing a submarine-launched ballistic missile, an effort that has generated heightened concerns among U.S. allies in the region.

Terrorism based in Afghanistan and Pakistan continues to hold a strong potential to spark a large-scale conflict between Pakistan and India (two nuclear powers) or even to pose a nuclear threat to others should
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radicalized Islamists gain control of Pakistan’s nuclear arsenal or destabilize Pakistan’s government, which would result in the loss of positive control of Pakistan’s inventory of nuclear weapons.

In addition, Iran and the various terrorist groups operating in the Middle East would be a greater threat to U.S. security interests than they currently are if they possessed a greater physical ability to project military power outside of their immediate areas. Such a concern was amplified during 2016 when the U.S. Administration finalized an international agreement pertaining to Iran’s nuclear aspirations that effectively enables Iran to maintain its nuclear research and development infrastructure and associated ballistic missile capabilities even if placed under moratorium for the next decade.

With these threats taken together, the globalized threat to U.S. vital national interests as a whole during 2016 rose one level to “high.”

The Status of U.S. Military Power

Finally, we assessed the military power of the United States in three areas: capability, capacity, and readiness. We approached this assessment by military service as the clearest way to link military force size; modernization programs; unit readiness; and (in general terms) the functional combat power (land, sea, and air) largely represented by each service. We treated the United States’ nuclear capability as a separate entity given the truly unique elements that make it possible, from the weapons themselves to the supporting infrastructure that is fundamentally different from that which supports conventional capabilities.

These three areas of assessment (capability, capacity, and readiness) are central to the overarching questions of whether the U.S. has a sufficient quantity of appropriately modern military power and whether military units are able to conduct military operations on demand and effectively.

As reported in the 2016 Index, the common theme across the services and the U.S. nuclear enterprise is one of force degradation resulting from many years of underinvestment, poor execution of modernization programs, and the negative effects of budget sequestration (cuts in funding) on readiness and capacity. While the military has been heavily engaged in operations, primarily in the Middle East but elsewhere as well, since September 11, 2001, experience is both ephemeral and context-sensitive. Valuable combat experience is lost over time as the servicemembers who individually gained experience leave the force, and it maintains direct relevance only for future operations of a similar type (e.g., counterinsurgency operations in Iraq are fundamentally different from major conventional operations against a state like Iran or China).

Thus, although the current Joint Force is experienced in some types of operations, it is still aged and shrinking in its capacity for operations.

We characterized the services and the nuclear enterprise on a five-category scale ranging from “very weak” to “very strong,” benchmarked against criteria elaborated in the full report. These characterizations should not be construed as reflecting the competence of individual servicemembers or the professionalism of the services or Joint Force as a whole; nor do they speak to the U.S. military’s strength relative to other militaries around the world. Rather, they are assessments of the institutional, programmatic, and material health or viability of America’s hard military power.
In aggregate, the United States’ military posture is rated as “Marginal” and is trending toward “Weak,” a condition unchanged from the 2016 Index.

Overall, the 2017 Index concludes that the current U.S. military force is capable of meeting the demands of a single major regional conflict while also attending to various presence and engagement activities—something it is doing now and has done for the past two decades—but that it would be very hard-pressed to do more and certainly would be ill-equipped to handle two nearly simultaneous major regional contingencies. The consistent decline in funding and the consequent shrinking of the force over the past few years have placed it under significant pressure. Essential maintenance continues to be deferred; the availability of fewer units for operational deployments increases the frequency and length of deployments; and old equipment is being extended while programmed replacements are either delayed or beset by developmental difficulties.

The military services have continued to prioritize readiness for current operations by shifting funding to deployed or soon-to-deploy units at the expense of keeping units that are not deployed in “ready” condition; delaying, reducing, extending, or canceling modernization programs; and sustaining the reduction in size and number of military units. These choices and their resulting condition, driven by the lack of funding dedicated to defense, hazard America’s ability to secure its interests now and erode America’s ability to shape conditions to its advantage by assuring allies and deterring competitors.

As currently postured, the U.S. military is only marginally able to meet the demands of defending America’s vital national interests.

Our analysis concluded with these assessments:

- **Army as “Weak.”** The Army’s score remained “weak” for reasons similar to those cited in the 2016 Index. The Army has continued to trade end strength and modernization for improved readiness for current operations. However, accepting risks in these areas has enabled the Army to keep only one-third of its force at acceptable levels of readiness, and even for units deployed abroad, the Army has had to increase its reliance on contracted support to meet maintenance requirements. Budget cuts have affected combat units disproportionately: A 16 percent reduction in total end strength has led to a 32 percent reduction in the number of brigade combat teams and similar reductions in the number of combat aviation brigades. In summary, the Army is smaller, older, and weaker, a condition that is unlikely to change in the near future.

- **Navy as “Marginal.”** The Navy’s readiness score increased from 2016 Index’s “marginal” to “strong,” but only by sacrificing long-term readiness to meet current operational demands. While the Navy is maintaining a moderate global presence, it has little ability to surge to meet wartime demands. Deferred maintenance has kept ships at sea but is also beginning to affect the Navy’s ability to deploy. With scores of “weak” in capability (due largely to old platforms and troubled modernization programs) and “marginal” in capacity, the Navy is currently just able to meet operational requirements. Continuing budget shortfalls in its shipbuilding account will hinder the Navy’s ability to improve its situation, both materially and quantitatively, for the next several years.

- **Air Force as “Marginal.”** While its overall score remains the same as last year’s, the US-AF’s accumulating shortage of pilots (700) and maintenance personnel (4,000) has begun to affect its ability to generate combat power. The Air Force possesses 1,159 tactical fighter aircraft, which normally would support a score of “very strong” for capacity, but the lack
of ability to fly and maintain them, especially in a high-tempo/threat combat environment, means that its usable inventory of such aircraft is actually much smaller. This reduced ability is a result of funding deficiencies that also result in a lack of spare parts, fewer flying hours, and compromised modernization programs.

- **Marine Corps as “Marginal.”** The Corps continues to deal with readiness challenges driven by the combined effects of high operational tempo and low levels of funding. At times during 2016, less than one-third of its F/A-18s, a little more than a quarter of its heavy-lift helicopters, and only 43 percent of its overall aviation fleet were available for operational employment. Pilots not already in a deployed status were getting less than half of needed flight hours. The Corps’ modernization programs are generally in good shape, but it will take several years for the new equipment to be produced and fielded. As was the case in preceding years, the *Index* assesses that the Corps has only two-thirds of the combat units that it actually needs, especially when accounting for expanded requirements that include cyber units and more crisis-response forces.

- **Nuclear Capabilities as “Marginal.”** Modernization, testing, and investment in intellectual and talent underpinnings continue to be the chief problems facing America’s nuclear enterprise. Delivery platforms are good, but the force depends on a very limited set of weapons (in number of designs) and models that are quite old, in stark contrast to the aggressive programs of competitor states. Of growing concern is the “marginal” score for “Allied Assurance” at a time when Russia has rattled its nuclear saber in a number of recent provocative exercises; China has been more aggressive in militarily pressing its claims to the South and East China Seas; North Korea is heavily investing in a submarine-launched ballistic missile capability; and Iran has achieved a nuclear deal with the West that effectively preserves its nuclear capabilities development program for the foreseeable future.

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The Importance of Alliances for U.S. Security

Martin Murphy

“No man is an island, entire of itself,” wrote the English poet John Donne in 1624. The same is true of nations.

The United States now sits at the apex of an international network of alliances brought together during the Cold War, but this has not always been America’s situation. In earlier times, especially at its inception, the U.S. benefited from alliances, generally as the junior partner. Success in the Revolutionary War was helped by a crucial alliance with France, a country that the infant U.S. shortly thereafter fought in the undeclared Quasi-War (1798–1800).

It is true that George Washington, in his Farewell Address of 1796, warned his countrymen that they should not “entangle our peace and prosperity in the toils of European ambition,” an admonition that has come to be viewed as a warning against “foreign entanglements.” But while he urged Americans to take advantage of their country’s geographical isolation from the world’s troubles, he was not advancing an argument for political isolationism. If anything, he was anticipating (and sharing) the sentiment of British Prime Minister Lord Palmerston, who, speaking in the House of Commons on March 1, 1848, avowed that “We have no eternal allies, and we have no perpetual enemies. Our interests are eternal and perpetual, and those interests it is our duty to follow.”

Washington’s argument, like Palmerston’s, was that no nation, especially a nation as influential at various times as the United States or Great Britain, can disengage from the world. Such a nation must instead be free to choose when to engage and when not to engage—and, most momentously, when to go to war and when to walk away.

Wisdom and Utility of Alliances

An equally spirited debate about the wisdom and utility of alliances continues today. Repeatedly, alliances are referred to as burdens, an elastic term that can be stretched to include everything from moral hazard to free riding.

The burden of moral hazard is that states, including states of roughly equivalent weights, may feel emboldened to pursue riskier foreign policies because their allies are obligated to come to their rescue. Perhaps the most famous example of what is also referred to as “entrapment” was Germany’s alliance with Austria–Hungary before World War I. Emboldened by this alliance and German encouragement, Austria–Hungary felt that it could safely make humiliating demands of Serbia even though Serbia was allied to Russia. It was wrong: Russia failed to restrain Serbia and initiated military preparations of its own, the chain gang of alliance obligations snapped into place, and Europe found itself on the way to war.

The reciprocal of entanglement is abandonment. The U.S., for example, is at risk of
being pulled both ways in its relationship with allies in Asia, a concern that Beijing is evidently attempting to use to its own advantage.8

Concerns about free riding, “that America’s allies, especially the smaller ones, have simply been unfair in not bearing large shares of the common burdens,” has bedeviled America’s relations with its allies—especially its NATO allies—for many years.9 In straightforward economic terms, the U.S. does make a greater contribution to alliance resources than other members, and there is a risk that this could become unsustainable during a period when America’s economic power is in relative decline. However, the costs of alliances, including the sometimes disproportionate cost of alliance leadership, must not be weighed against cash savings but rather against the cost of possible conflict in blood as well as treasure without them.10

America’s treaty with France committed it to joining France in war if it was attacked by Great Britain. Since 1792, France had been engaged in its own revolutionary war with its neighbors, including Britain, and the political grouping led by Thomas Jefferson and James Madison was arguing strongly that the United States should fulfill its treaty obligations. Washington, who issued his 1793 Proclamation of Neutrality (subsequently the Neutrality Act of 1794) to avoid this obligation, wrote his address in part to deflect their criticism of his actions.11

The Royal Navy was now much stronger than it had been when it was defeated by the French at the Battle of the Virginia Capes in 1781, the action that had precipitated Cornwallis’s surrender at Yorktown, thus ending the War of Independence. Washington, well aware of Britain’s renewed naval strength, refused to see American trade ravaged and U.S. ports set ablaze.

Unlike Madison, who when President launched the War of 1812 that saw the White House burned and, as the naval historian Alfred Thayer Mahan memorably recorded, grass grow in the streets of Boston as a consequence of the British blockade, America’s first President had no intention of exposing his country to such peril.12 He recognized that the young republic lacked the military wherewithal to deliver on its treaty promise even if it wanted to and assessed that the costs of joining France in a protracted conflict with Great Britain far outweighed any potential benefit for America. The gap in capabilities between the young United States and Britain and the geographic distance separating America from France were simply too great.

The United States and Great Britain concluded no formal military alliance during the 19th century. There were several disagreements, some severe enough on occasion for both sides to contemplate war prior to what historians have called “The Great Rapprochement” between the two beginning in the 1890s,13 but even before that, there was also complementarity in their actions that accorded with the principle of eternal interests rather than eternal allies. For example, the Monroe Doctrine, set forth by President James Monroe in 1823 to prevent European nations from colonizing territory or threatening states in North or South America, might have been largely impossible to implement given the Royal Navy’s ability to intervene when and where it chose.14 Britain, however, elected not to challenge the Monroe’s policy because it accorded with Britain’s interest in ensuring that the disintegrating Spanish empire in the Americas did not fall piece by piece into the hands of its imperial rivals.15

Clearly, America has chosen to engage in or refuse alliance depending on its interests. So what are the benefits of military alliances if, on occasion and between some powers at least, solemn agreements can be ignored, while in other situations, so much can apparently be achieved in their absence?

Alliance Typology

Alliances have been a fact of international political life since antiquity.16 They perform a number of different functions for states, often at the same time, which makes categorization difficult. Nonetheless, their primary function
is military, and the three primary classifications used in the academic literature bear this out:

- **Defense pacts**, by which signatories are obliged to intervene militarily on the side of any treaty partner that is attacked militarily;

- **Neutrality and non-aggression pacts**, which obligate signatories to remain militarily neutral if any co-signatory is attacked (neutrality pacts are usually more specific than non-aggression pacts); and

- **Ententes**, by which signatories agree to consult with one another and potentially cooperate in a crisis, including one involving an armed attack.\(^{17}\)

The common features shared by all three types of alliances lead to a definition like the one proposed by Stephen Walt: that alliances are formal or informal commitments for security cooperation between two or more states. “Although the precise arrangements embodied in different alliances vary enormously,” Walt argues, “the defining feature of any alliance is a commitment for mutual military support against some external actor(s) in some specified set of circumstances.”\(^{18}\)

Viewed in this loose way, alliances can be either formal, written treaties or informal, unwritten agreements based on anything from tacit understandings to verbal assurances. These, however, may be good enough. Formal agreements have often said little about actual commitment. The Franco–American treaty sidestepped by George Washington, for example, provided more assurance that support would be forthcoming than turned out to be the case. The French sense of betrayal was one of the factors that contributed to the Quasi-War. On the other hand, America’s alliance with Britain before Pearl Harbor was largely tacit, even secret, but nonetheless very real.

Alliances exist to advance their members’ collective interests by combining their capabilities—which can be industrial and financial as well as military—to achieve military and political success. How these are combined can vary, as the academic classifications suggest.

The degrees to which alliances are institutionalized also differ. Most alliances throughout history have been loose, often ad hoc arrangements and subject to the vagaries of fortune and commitment. Most European alliances, such as the various coalitions that Great Britain assembled to defeat Napoleon, were of this type.\(^{19}\) The French emperor was defeated only when the coalition participants finally realized that if they were to free themselves from endless conflict, they had to stand together rather than cut deals for short-term advantage.

Ad hoc alliances often contain strange bedfellows. Britain, a constitutional monarchy with laws passed by Parliament, established common cause with autocratic Russia to defeat Napoleon. Similarly, in World War II, the Anglo–American democracies found it necessary, if they were to defeat Nazi Germany, to join forces with Stalin’s totalitarian state, which had been their enemy and would be again. Throughout the conflict, each side was suspicious that the other might cut a separate deal with the German dictator, and the desire to ensure that neither side did so sustained the alliance as much as military capability did. In fact, as Robert Osgood argues, “next to accretion, the most prominent function of alliances has been to restrain and control allies.”\(^{20}\)

Most alliances are, to some degree at least, asymmetrical. When it comes to commitments, one signatory may expect less of the other militarily. For example, the 1839 Treaty of London in which Britain guaranteed Belgium’s neutrality, while not a military alliance, was necessarily a one-sided commitment by Britain to come to Belgium’s aid if it was invaded, a commitment that Britain honored in 1914.\(^{21}\)

When it comes to capabilities, alliance members can likewise make very different
contributions. Britain’s input to the defeat of Napoleon was primarily financial and naval; apart from Arthur Wellesley’s campaign in Spain and victory at Waterloo, few British troops were involved. In fact, it was a classic demonstration of how maritime powers achieve their victories.

In World War II, despite the ferocity of the fighting on the Eastern Front and the beaches of Normandy, the war in Europe was won by Anglo–American air and sea power, which crushed Germany’s ability to prosecute the war. Arguably, the Red Army would not have prevailed over the Wehrmacht absent the combined bomber offensive and the British convoys that fought to deliver American war matériel to Archangel and Murmansk. Despite Stalin’s bombast and demands for a second front, he was probably aware of this truth.

Cold War Alliances

When the United States considered how the post–World War II world should be organized, it thought first of collective security institutionalized in the United Nations. This accorded with its core value of democracy and the liberal ideal that international organizations were a way to transcend national differences and antagonisms. However, in geopolitical terms, the U.N. turned out to be a concert of the great powers that sit on its Security Council, each one of which holds a veto over its decisions. With the sole exception of the Korean War, when a U.N. force under U.S. leadership repelled the North’s invasion of the South in the absence of a Soviet veto, the United Nations was quickly shown to be an inadequate bulwark against Soviet expansion.

Realizing this, the U.S. sought an alternative way to respond to Soviet adventurism, adopting a policy of containing the Soviet Union politically and militarily. This was enunciated in the 1947 Truman Doctrine and formalized in alliance terms with the foundation of the North Atlantic Treaty Organization (NATO), often referred to simply as “the alliance,” in 1949.

NATO started with relatively modest ambitions that accorded with America’s historical antipathy to entanglements. The initial strategy was for an integrated defense of the North Atlantic area in which the Europeans would contribute the land forces while the American contribution would be confined largely to naval force and strategic bombing. However, post-Korea, the alliance rapidly became more complex as the Cold War with the Soviet Union evolved. Maturing into a “highly institutionalized alliance with elaborate decision-making procedures and an extensive supporting bureaucracy” with its own military command structure, it gained the solidity to outlast the defeat of the Soviet Union, its original antagonist, and retain just enough of its military and organizational capability and capacity to oppose that antagonist when it shed its Communist ideology and rediscovered Russian nationalism.

The arguments for NATO’s creation were several. Perhaps most important, it made clear that a free Europe was a vital American interest and made manifest America’s commitment to Europe’s defense. If Europe had been overrun by Soviet forces, this would have compromised two of America’s eternal interests: retention of its continental integrity by undermining control of the sea and air approaches to America’s eastern seaboard and preventing the Eurasian landmass from being dominated by a single power.

The arguments against NATO arose out of American ideals:

• Alliance membership, and especially the commitment to Article Five, allegedly compromised the nation’s freedom of action contrary to the U.S. Constitution in that “an armed attack” against any signatory would “be considered an attack against them all” requiring the provision of all necessary assistance, including the use of armed force.

• It also allegedly undermined the United Nations and the principle of collective
security by accepting the validity of military alliances and what internationalists regarded as the discredited notion of power balancing.30

Between 1948 and 2014, the United States accumulated some 66 defense commitments,31 including commitments to NATO members (the Washington Treaty of 1949) and adherence to a second, multilateral treaty, the Rio Treaty of 1947,32 which took in most countries in Latin America. The U.S. is also linked in formal alliances to South Korea (with which, like NATO, it shares a military command structure) and Japan, Thailand, the Philippines, Australia, Liberia, and some small Pacific island states that previously were U.S. territories.33

In the 1980s, the U.S. created a new category of alliance called “major non-NATO allies” (MNNA), primarily to ease arms transfers and facilitate military cooperation.34 States in this category include Afghanistan, Argentina, Bahrain, Egypt, Israel, Jordan, Kuwait, Morocco, New Zealand, and Pakistan. In 2015, President Barack Obama announced his intention to designate Tunisia an MNNA. Meanwhile, Congress proposed that Georgia, Moldova, and Ukraine should be extended MNNA status following Russia’s 2014 invasion of Crimea, and President Obama similarly proposed, following a 2015 meeting with the Gulf Cooperation Council, that the same offer should be made to Oman, Qatar, Saudi Arabia, and the United Arab Emirates, presumably to soften the blow of the upcoming nuclear détente with Iran that was signed later that same year.

While it is conceivable that U.S. protection might be extended to some countries on this list if they were attacked, there is no guarantee that any military measures would be forthcoming. The standing of some is particularly problematic: Pakistan, for example, which is still linked to the U.S. by the 1954 Mutual Defense Assistance Agreement but has moved closer to China (while the U.S. has moved closer to Pakistan’s rival, India), and Saudi Arabia, with which the U.S. has close ties but no formal alliance.

The most problematic relationship of all is with Taiwan. U.S. government intentions toward Taiwan have been mired in uncertainty ever since diplomatic recognition was switched from the Republic of China (ROC) to the People’s Republic of China (PRC) on January 1, 1979. Even though this ambiguity has persisted through successive Administrations, the U.S. Congress has always maintained a keen interest in the continuation of contacts and preservation of Taiwan’s status consistent with the will of its people. The Taiwan Relations Act came into force in 1979 to govern unofficial relations between the two states. Official military relations, however, were essentially ended on January 1, 1980, when the U.S. terminated the U.S.–ROC Mutual Defense Treaty.

Post–Cold War Changes

Two trends characterize the period since the fall of the Soviet Union:

- NATO’s enlargement and search for a new raison d’être and
- The preference for “coalitions of the willing.”

The fall of the Berlin Wall in 1989 triggered a wave of popular uprisings that drove Communist regimes from power across Central and Eastern Europe, culminating in the dissolution of the Soviet Union itself in December 1991. Even before the final collapse occurred, NATO’s counterpart in the East, the Warsaw Pact, had disbanded itself at a ministerial meeting held in Budapest in February 1991.

Historically, when a threat disappears, the military alliance assembled to confront it folds its tent and leaves. Instead, and almost instinctively, all of NATO’s member governments felt that the alliance should continue without, as Stanley Sloan put it, being “fully agreed as to why.”35 Some officials argued that it was more than a military alliance: It was a
community of values transcending any specific military threat. Others were more specific, suggesting that although the Soviet Union was going through its death throes and the Russia that was reemerging appeared to be moving closer to the West, this could change, and Russia could adopt a threatening posture in the future. Finally, and most broadly, NATO was a source of stability. The investment that had been made in physical infrastructure and the pooling of organizational and cooperative experience was too good an insurance policy against future threats to European security to let go.

However, events in the 1990s unsettled alliance relations.

- The first event was NATO’s initial post–Cold War Strategic Concept. Issued in 1991, it emphasized a broader approach to security. In effect, the alliance now needed to manage not one but two core missions: collective defense and “out of area” security tasks ranging from crisis response to military-to-military engagement, which together were more complex militarily and diverse politically than its previously singular Cold War purpose.36

- The second, enlargement of the alliance by the admission of previously Warsaw Pact powers, was a source of contention from the very beginning. While it removed the stain of Yalta, the U.S. was concerned that it would strengthen nationalist factions in Russia that were already suspicious of Western intentions.37 These reservations were to be borne out when Russia invaded Crimea and the Ukraine in 2014. In addition, the populations of Central and Eastern Europe that had direct experience of Communist and Russian rule were adamantly opposed to the idea that Russia was entitled to absorb them into a sphere of influence simply to appease its own historic sense of insecurity and great-power entitlement.

- The third was the wars in Bosnia and Kosovo that gave the world the term “ethnic cleansing” as Croats and particularly Serbs used violence to disaggregate ethnically mixed communities with the aim of creating ethnically homogeneous and contiguous areas. Although both conflicts were precisely the type that NATO’s new strategy was intended to defuse, failures in the alliance’s performance on the ground—particularly its inability to prevent the genocide committed at Srebrenica in 1995—pushed America to implement a bombing campaign that drove the warring factions to sign the Dayton Accords by the year’s end.38

Differences between Europeans and Americans, particularly over the Balkan wars, became so acute that, Lawrence Kaplan suggests, the sides drew as far apart as they had been during the Suez–Hungarian Uprising crises of 1956.39 All that held them together was their representation on the Contact Group, a diplomatic device quite separate from NATO that had been created originally to give a voice to Russia in recognition of its traditional role as Serbia’s ally.40 These divisions effectively paved the way for America’s adoption of so-called coalitions of the willing in the early years of the 21st century.

Alliance Management

All great powers that have entered into alliances have encountered problems that have required sometimes enormous diplomatic skills to overcome. An overwhelming external threat often concentrates allied minds, but not always: The British assembled five coalitions against revolutionary France and Napoleon before the sixth defeated him not once but twice. The difference was political maturity. As Richard Hart Sinnreich has written:

> The cohesion of any coalition depends on each participating nation’s self-restraint, above all that of the most powerful... That self-restraint is the more necessary the closer the coalition
comes to achieving its military objectives, when the proximity of victory tempts the stronger power or powers to go it alone rather than accommodate the inconvenient preferences of weaker partners…. In repeatedly subordinating the desirable to the attainable without forfeiting the central aim of a Europe free of domination by a single untrammeled will, the authors of the Sixth Coalition revealed statesmanship of a high order.41

The United States managed its Cold War alliances, for the most part, with great skill, but it was helped by the fact that it faced a great threat:

As long as the Soviet arsenal of nuclear weapons and superior manpower on the ground remained in place NATO’s solidarity was assured…. Notwithstanding mutual displays of annoyance, Europeans regarded the American commitment to the Alliance for almost two generations as a guarantee of stability in the West.42

That sense of overwhelming danger was not strong enough in Asia to prevent the Southeast Asia Treaty Organization (SEATO) from dissolving itself in 1977. It had also dissipated in much of Europe by 1992 when the Balkan Wars broke out, leading to a reawakening of the belief that collective security was preferable to collective defense. For some states, including at that point the United States, Operation Desert Storm in 1991 was a powerful reassertion of the importance of the U.N. and a model for what could be achieved in a world that elevated collective security above narrow state interests. There was even a sense that, potentially, the door was now open for the U.N. Security Council to reassert the military role that the antagonism between the great powers (with one opportunistic exception) had rendered impossible for 45 years.

By 1998, the United States was exploring how, under certain circumstances, the alliance could extend its mandate beyond collective defense in the absence of a U.N. mandate. The 1991 Gulf War, for example, had been mandated by the U.N., but the main players involved in the fighting had been NATO powers, and while the coalition formed specifically for the war was an ad hoc creation, the whole campaign had given the impression of a NATO operation.

These discussions, which took place in the context of a planned revision of NATO’s Strategic Concept, were caught up in the controversy over NATO’s role in the Kosovo War. Although in the end, and in the face of the threatened Russian and Chinese vetoes, the operation went ahead without U.N. approval, France insisted that NATO continue to acknowledge the primacy of the Security Council and, in the European context, the “essential role” of the Organization for Security Cooperation in Europe (OSCE), which had been established to monitor compliance with the 1975 Helsinki Accords. Despite this, the door was left open for the allies to operate without a U.N. mandate in the future.43 Thus, America’s membership in NATO has given it options to act with partners even in cases where broader consent or support vis-à-vis the U.N. is problematic.

The September 11, 2001, terrorist attacks on the United States triggered a powerful reaction from the international community and among America’s alliance partners.

- The U.N. Security Council passed two separate resolutions condemning terrorism;
- NATO invoked Article Five (an attack on one is an attack on all) for the first time in its history;
- The NATO–Russia Permanent Joint Council condemned the attacks and promised to cooperate;
- Australia invoked the Australia–New Zealand–United States (ANZUS) Pact and instructed Australian personnel to deploy with U.S. forces as necessary;
- The Organization of American States (OAS) invoked the Rio Treaty; and
Japan departed from post–World War II practice by authorizing its self-defense forces to assist U.S. forces, albeit in a limited number of non-combatant roles.

America’s efforts over many years to foster wide-ranging alliances in various forms and with a multitude of partners resulted in an outpouring of support from friends around the world. The U.S. declined most of these offers of support, and this rebuff went down especially poorly with several NATO partners in Europe. The reasons were certainly not straightforward. The Washington Times reported that, “according to Undersecretary of Defense Douglas Feith, the United States was so busy developing its war plans in the early stage of the conflict that it did not have time to focus on coordinating Europe’s military role.” In the same article, NATO expert Stanley Sloan was quoted as saying that Washington “may have been wrong about the potential utility of at least making a nod in the direction of the NATO offer and using it as a platform for future construction of a more relevant role for the alliance.”

The real reason may have been that, scared by their experiences working with NATO in the Balkans, U.S. officials were reluctant to be drawn into a ponderous and consensual decision-making process, while the political leadership viewed NATO’s offer as a thinly veiled attempt to gain some sort of institutional control over its response to the attacks. However, the U.S. did make immediate use of NATO E-3 surveillance planes to monitor American domestic air space and in 2003 gave NATO command of the (by then United Nations-mandated) International Security Assistance Force (ISAF) in Afghanistan.

Coalitions of the Willing

It has always been necessary to measure the cost of alliances against their advantages. By the first decade of the 21st century, the United States appeared to view the costs of formal alliances as too high. The gulf that emerged in the 1990s between America’s technological capabilities and those of every one of its allies was in some cases so big as to be unbridgeable. U.S. forces struggled to be able to work with some of them. On top of that, some allies no longer valued a U.S. connection as highly as they once did because the threats they faced appeared to them to be less serious.

To long-standing American complaints of allied free riding—letting the U.S. pay for their defense so that they could spend money on social welfare or economic projects—was added a new complaint: If alliance memberships do not help to ensure that allies do not actively oppose U.S. policy decisions, what are they good for? Arguments with European allies over Bosnia and Kosovo, for example, or U.S. withdrawal from the Philippines in the years following the fall of Ferdinand Marcos, or the continuing opposition to the U.S. base footprint on Okinawa all left question marks in American minds about the value of formal alliances.

Alliances are inseparable from their contexts. The world was changing. The context was no longer the Fulda Gap but events in far-off places that, while they concerned the world’s sole surviving superpower, could be of little relevance to other members of the alliance or, for that matter, any static, geographically specific grouping of states. The fear that a spark in some distant brushfire war could ignite a global conflagration had gone. But America could not be so sanguine, and when attention switched to the Middle East, what it needed was not battle tanks but basing rights everywhere from Saudi Arabia to Uzbekistan.

In November 2002, President George W. Bush announced at a NATO summit that the United States would lead a “coalition of the willing” if Iraqi President Saddam Hussein refused to surrender his weapons of mass destruction (WMD). The model was akin to the sheriff’s calling for a posse: It was the mission that decided the coalition, not the coalition that decided the mission. If NATO could not be persuaded to support U.S. foreign policy objectives in Iraq en bloc, then individual
members could band together in a coalition whose legitimacy in this case derived from the fact it was made up of free, democratic states. However, that was not essential: All that was required was a common interest or perception of the threat perception and a willingness to do something about it.

Another coalition of the willing but not a military alliance is the Proliferation Security Initiative (PSI), also initiated in 2002. It has now been endorsed by 105 countries interested in preventing the spread of WMD.51

Such coalitions, military or otherwise, are “limited associations of convenience [that leave] countries free to pick and choose specific issues, locations and moments for cooperation based on their individual calculations of the national interest” without requiring them to subscribe to any set of common values or political philosophy.52 They put Realpolitik at the service of America’s predominant liberal internationalism, reinforcing the point that states do not have eternal allies, only eternal interests.

What coalitions of the willing do not do, as Kurt Campbell has pointed out, is institutionalize and encourage habits of cooperation and deep engagement, characteristics that embodied NATO’s operating style during the Cold War and America’s formal alliances like those with Japan and South Korea.53 Relying exclusively on global coalitions of the willing may give the United States maximum flexibility, but it will be in exchange for an increased share of the military burden.54 In Europe and perhaps in Asia, where political and military burdens can and should be shared, it may therefore be premature to call time on alliances, which for nearly three-quarters of a century have been among America’s greatest strategic assets.

Alliances: America’s Great Strategic Advantage

Since 1941, “alliances have proven to be a crucial and enduring source of advantage for the United States.”55 How so?

- **Alliances prevent war.** Not every war, of course, but by driving up the cost of aggression, defensive alliances have an effective record of deterring revanchist states from using violence as a means of settling disputes or gambling on a quick military thrust to achieve relatively risk-free advantage. History suggests strongly that states with allies are less at risk of attack than those without them, an observation borne out by the success of U.S. alliances during the Cold War.

  This does not mean that aggressors will refrain from using other means to achieve their objectives; in fact, they already are doing so, and campaigns designed deliberately to remain below the level of violent confrontation are likely to become more common. General Valery Gerasimov, chief of the Russian General Staff, has observed that in recent conflicts, non-violent measures occurred at a rate of four to one over military operations and that objectives previously viewed as attainable by direct military action alone could now be achieved by combining organized military violence with a greater emphasis on economic, political, and diplomatic activity.56 Defensive alliances will therefore need to extend the breadth of their activities to avoid being outflanked by opponents that use unconventional means to acquire political advantage.

- **Alliances control rivals.** The United States is first and foremost an air and naval power. It wins its wars by retaining control of its own movement and access to supply and denying similar freedom to its adversary. To do that successfully requires a global network of bases and the ability to control the world’s key chokepoints. Geography and the current U.S. basing structure mean that China, Iran, and Russia are likely to be bottled up in any future conflict—although China’s recent island-building activity in the South China Sea
reveals a determination to secure its trade routes to the south and west and overcome what has been termed its “Malacca dilemma,” and using non-military means has enabled it to confuse and blunt an effective U.S. and allied response to this expansion.

- **Alliances control allies.** Entrapment is a concern for any dominant alliance partner. Germany failed to restrain Austria–Hungary in 1914—indeed, encouraged it to act quickly to win what it expected would be a short war. This risk makes management of alliance relations essential, something at which the U.S. has proved to be remarkably adept. Conversely, the U.S. has felt constrained on occasion by its alliance partners, but mostly when they were being asked to operate in ways that were removed from the alliance’s primary task.

- **Alliances enable balancing.** When regional states attempt to disrupt the status quo, smaller regional states will either balance against it in an effort to retain their independence or join it (“bandwagon”) in an attempt to curry favor and, by being seen as friends, retain sufficient influence over its actions to limit damage to their own interests. A core of U.S. allies in each region can act as a center of attraction around which balancing can be built, as is occurring now in East Asia. Without them, the sole option for regional powers may be to bandwagon with the regional aggressor.

- **Alliances prevent alliance formation by others.** Most of the world’s military powers are members of U.S. alliances. If these alliances did not exist or were abandoned, states would almost inevitably be drawn closer to China, Russia, and Iran and possibly into alliances in active opposition to the United States.

- **Alliances control the bulk of the world’s military power.** The nations that are allied with the U.S. spend around $1 trillion on defense (about 62 percent of global military expenditure) and have 6 million people (31 percent of their populations) under arms. China, Iran, and Russia collectively spend roughly 17 percent of global defense expenditure and are able to draw upon around 19 percent of global military manpower (roughly 3.7 million people under arms).}

- **Alliances can hold the line.** In a multipolar world in which a reduced U.S. defense establishment might have to face multiple threats, strong and confident allies can hold the line even if they may not be able to roll back the aggression by themselves. This allows the U.S. time to prioritize threats and respond when it is able to do so.

- **Alliances facilitate global power projection.** The United States is isolated geographically behind two great oceans. To be able to exert power in Asia, the homeland of revanchist power, it requires bases in Europe, the Middle East, and East Asia. From these bases, it can exert influence and power where and when it needs to do so and in small packets early on to deter and prevent challenges from arising that later could be defeated only by the application of overwhelming force. The notion that the United States could mount a campaign using long-range U.S.-based air power or the concept of prompt global strike alone is based on a misunderstanding of what both capabilities are designed to achieve.

- **Alliances are the cost-effective option.** Preserving peace and sustaining the global political and economic system’s current U.S. orientation can be achieved most cost-effectively with allied support. The alternatives would call for either the maintenance of a huge U.S. military presence overseas far in excess of what is
being maintained now or the holding of substantial forces in readiness at home in case the need arose to fight their way back into Europe or Asia to confront trouble in support of what is called “offshore balancing.”

- **Alliances enhance international legitimacy.** They mean that the United States never has to walk alone. When it resists aggression, it is able to do so with the moral authority of the free world.

**The U.S., Allies, and a Free World**

The free world: a phrase that unfortunately has dropped out of fashion since the end of the Cold War yet is as relevant as ever. China, Iran, and Russia are revanchist powers. All three aim to revise the existing order in their respective regions unilaterally and at the least possible political and military cost to themselves. America is the leader of the free world, and revanchist powers know that if they are to succeed, they must diminish U.S. power globally and undermine the tenets of the current, American-led global order.

Each successful step they take along that path diminishes U.S. security and the security of U.S. partners and allies who accept the current global order as one that serves their own political and economic interests as much as it serves those of the U.S. To achieve their aims, the leaders of China, Iran, and Russia are suppressing individual liberty in their own countries, isolating their populations from information that undermines their control, and concentrating power in their own hands. America has seen the world darken this way before and knows that a darker world is one in which conflict is more likely.

That conflict is arguably underway already: China, Iran, and Russia all act as if it is. In such circumstances, as Winston Churchill put it memorably in 1945, “There is only one thing worse than fighting with allies, and that is fighting without them.”
Endnotes:


24. Collective security exists when all states pledge to defend the security of all other states under international law. Collective security arrangements are systemic. They involve all—or almost all—states that constitute an international system. Axiomatically, the threats they seek to prevent arise for the most part from within the system, not externally. The United Nations is a collective security system. It and systems like it are not alliances. In contrast, collective defense arrangements are alliances whose members pledge to defend all other members from collectively acknowledged attack arising from outside the alliance. In practice, collective defense arrangements work to defuse disagreements between members in order to maintain internal cohesion.


26. Osgood, Alliances and American Foreign Policy, p. 43.


34. 22 CFR §120.32—Major Non-NATO Ally.


38. Sloan, NATO, the European Union, and the Atlantic Community, pp. 93–97.


40. Ibid., pp. 190–192.


45. Ibid.


49. Jung, “Willing or Waning?”


52. Jung, “Willing or Waning?”


54. Ibid.


The Reality of Cyber Conflict: Warfare in the Modern Age

Paul Rosenzweig

Consider a fairly typical incident from 2014. In March of that year, The New York Times reported a persistent cyber threat, known by the code name “Snake,” that had infiltrated the cyber systems operated by the Ukrainian government. The program gave its operators full remote access to the compromised systems, which allowed the attackers to steal information as well as insert additional malware to create further harm. Citing confidential U.S. government sources, the newspaper attributed Snake to Russian actors and connected the deployment of the Snake virus to Russian intelligence collection and disruption of Ukrainian command-and-control systems.¹

At the same time, of course, Russian troops were on the ground in Crimea, and the potential for kinetic conflict between Ukrainian and Russian military forces loomed. Russia formally annexed Crimea just a few weeks later and since then has rather brazenly supported “separatists” in the Eastern Ukraine.

That single episode captures the new reality of military operations in the cyber domain in many ways. At a minimum, cyber conflict will be part of combined operations against physical opponents. Cyber tools will partake of the character of both espionage activities and traditional military activities. At times, the effect of cyber tools may be equivalent to kinetic weapons; at other times, they will be used in a more limited manner to degrade, disrupt, or destroy data and information. In some cases, the origin and source of the tools used in a cyber conflict will be difficult, if not impossible, to discern, rendering attribution of responsibility for an attack problematic; in others, the origins are likely to be crystal clear but the long-term effects of the tool obscured. And all of this will occur at a time when legal norms about appropriate conduct in cyberspace are in a state of flux, without settled definition.

Perhaps even more confusingly, the nature of the conflict in the cyber domain may diverge from settled patterns of military conflict. We will, of course, likely see conflict between nation-states, but we will also see nation-states in conflict with non-state actors and, oddest of all, can also anticipate conflicts in the cyber domain between two non-state parties. How these conflicts will manifest themselves and the nature of the American military response to them will vary significantly in each context.

State vs. State

In a state-vs.-state conflict, we are likely to see cyber activity coupled with conventional operations. For example, since 2014, the cyber-enabled nature of the Russian–Ukrainian conflict has morphed even further. A partial list of cyber activities associated in open-source media with the conflict between Russia and Ukraine over Crimea and Eastern Ukraine would include:
• Russian pre-attack cyber espionage and network mapping of Ukrainian systems;

• Degradation of Ukrainian telecommunications links to Crimea during the Russian invasion, followed by the severing of cross-border telecommunications connections;

• Russian social network sites blocking sites and pages with pro-Ukrainian messages;

• Russia Today (the Russian English-language website) being hacked with the word “Nazi” prominently inserted into headlines to describe Russian actors;

• An IP-telephonic attack on the mobile phones of Ukrainian parliamentarians;

• Russian forces jamming cell phones, severing Internet connections with Ukraine, and seizing telecommunications facilities in Crimea;

• Multiple hacking operations under the #OpRussia and #OpUkraine hashtags including recruitment operations among local cyber-capable actors;

• A large-scale DDoS attack on Russian websites including the Kremlin and the Russian central bank;

• Similar DDoS attacks on Ukrainian news sites, most noticeably during the Crimean “independence” vote, using the DirtJumper botnet; and

• Noticeable activity by hackers of Turkish, Tunisian, Albanian, and Palestinian origin, more commonly attacking Russian sites in support of Ukraine.

One aspect of the conflict worthy of commentary is the evident restraint by both parties. It appears, for example, that no efforts have been made to have a kinetic, destructive effect on critical infrastructure on either side of the border.

But that does not mean that the critical infrastructure is immune. To the contrary, Russia has been strongly implicated in an attack that took six Ukrainian power companies offline. The power outage was caused by a sophisticated attack using destructive malware known as BlackEnergy, which wrecked computers and wiped out sensitive control systems for parts of the Ukrainian power grid. The attack was so severe that it knocked out internal systems intended to help the power companies restore power. While the power generation systems themselves were not attacked, controlling computers were destroyed, and even the call centers used to report outages were knocked out.²

State vs. Non-State

Sometimes a state may be confronted by actions by a non-state actor (or perhaps a putative non-state actor whose activity cannot be convincingly attributed to a nation). Consider the recent late 2014 intrusion at Sony, which provides an instructive case both for testing the limits of our understanding of the legal definition of war and for demonstrating that the laws of armed conflict are not the only means of addressing cyber intrusions.³

The intrusion, conducted by a group identified as the “Guardians of Peace,” exfiltrated terabytes of data from Sony. Some of the data involved unreleased films; other data included embarrassing internal e-mails and proprietary information. Additionally, the hackers demanded that Sony withhold from release The Interview, a movie depicting the assassination of North Korean leader Kim Jong-Un. After delaying the release for several days, Sony eventually made the movie available through several alternate outlets. The FBI (relying in part on information provided by the National Security Agency) attributed the intrusion to North Korean government agents.⁴ Sony is not saying how great the damage to its financial interests is, but estimates range upward of $50 million.
Here we have a state actor, North Korea, or its non-state affiliates using cyber means to degrade the economic interests of the citizens of another nation, the U.S. How shall we characterize this action? It had no kinetic effects, nor did it significantly affect the American economy. No matter how we view it, Sony is not “critical infrastructure” of the United States (though, oddly enough, the Department of Homeland Security does characterize it as such), so this is not an “armed attack” triggering the laws of armed conflict. Nor is it even an act of espionage. But calling this a state-sponsored criminal act seems to trivialize its geopolitical context.

In the end, the Sony intrusion and Russia’s disruption of the Ukrainian power grid seem to reflect a new category of conflict: a quasi-instrumental action by a nation-state or its surrogates that has significant but non-kinetic effects on a target nation. Such “attacks” are not a “use of force” or an “armed attack,” but they are likely to generate reciprocal responses from the target state that involve a wide array of state powers. The United States, for example, has publicly announced financial sanctions against North Korea and may very well have taken other, non-public actions in response.

**Individual vs. State**

Then we have the case of a well-placed or technically proficient individual “attacking” a state, often from inside an organization in much the same way a mole would operate to conduct espionage for a foreign intelligence service. In many ways, this insider threat is the most challenging for a nation because it takes advantage of asymmetric attack capabilities that are especially pronounced in the cyber domain.

Consider the following question: What or who has been the most significant cause of damage to the national security of the U.S. through cyber means in recent years? By any absolute measure, the most likely answer is Edward Snowden—a single individual who, through his own activities or perhaps with a small cadre of a few fellow travelers, caused immense damage to American national security interests. The consequences of Snowden’s actions in 2013 include:

- Major damage to formal diplomatic relations between the U.S. and numerous countries identified as targets of U.S. surveillance or “cyber snooping”;
- Popular outrage among U.S. allies and friends in Europe over what they perceive as egregious American spying against their own national security interests (even though people generally accept that spying occurs even among friends, it becomes a different matter when it is revealed so publicly); and
- Opportunities for countries like China and Russia to create a perception of false equivalence between the nature of what they are doing (rampant economic espionage) and what the United States has been doing (more traditional national security intelligence activities).

Even worse, Snowden disclosed intelligence sources and methods to the detriment of the United States. As a result, terrorist groups and other governments have changed their communication activities so that the U.S. cannot as readily intercept their communications and understand their plans. China, for example, was alerted to a particularly significant penetration of one of their cyber systems—a penetration that, presumably, has since been terminated.

The scope of the damage caused by Snowden is nearly incalculable, and he did it as an independent actor rather than as an agent of a foreign government, which in past times would have been critical to his ability to operate at this level. Advances in the cyber domain have made it possible for individuals or small groups operating unaffiliated with any nation-state to cause profound, national-level damage that would have been unthinkable in
previous eras. And as non-state entities, they have no sovereign interest that might be leveraged as would be the case in a conflict between states.

Therefore, when we look at cyber conflict and threats to national security, we should not focus exclusively on other national opponents. Rather, our cyber conflict strategy needs to account for the “democratization” of conflict in and extending through the cyber domain, by which we mean simply that the tools and weapons of attack are now widely available and that the use of force—and in the context of modern societies, information is very much a tool of force—is no longer the exclusive province of nation-states.

**Non-State vs. Non-State**

In this light, the U.S. is in the midst of what scientist-philosopher Thomas Kuhn would call a paradigm shift. It is a shift that is empowering individuals to act with force in ways that were beyond our conception a few short years ago. To see one example of how that paradigm shift operates in practice, reflect on what we might call the “WikiLeaks War” from 2010—a conflict exclusively between non-state actors—and what role (if any) a national government might have in such a conflict.

With the disclosure of classified information from American sources like Chelsea (née Bradley) Manning, WikiLeaks appeared to be launching an assault on state authority and, more particularly, that of the United States, though other governments were also identified. Interestingly, the most aggressive and decisive response came not from government, but from the institutions of traditional commerce. There is no evidence that any of the governments ordered any actions, but the combination of governmental displeasure and clear public disdain for WikiLeaks Editor-in-Chief Julian Assange soon led a number of major Western corporations (MasterCard, PayPal, and Amazon, to name three) to withhold services from WikiLeaks. Amazon reclaimed rented server space that WikiLeaks had used, and the two financial institutions stopped processing donations made to WikiLeaks.

What followed might well be described as the first cyber battle between non-state actors. Supporters of WikiLeaks, loosely organized in a group under the name Anonymous, began a series of distributed denial-of-service (DDoS) attacks on the websites of the major corporations that they thought had taken an anti-WikiLeaks stand, flooding the websites with “hits” to prevent legitimate access to them. The website of the Swedish prosecuting authority, who is seeking Assange’s extradition to Sweden to face criminal charges, was also hacked.

Some of the coordination for the DDoS attacks was done through social media, such as Facebook or Twitter. Meanwhile, other supporters created hundreds of mirror sites, replicating WikiLeaks content, so that WikiLeaks could not be effectively shut down. The hackers even adopted a military-style nomenclature, dubbing their efforts “Operation Payback.”

When Anonymous attacked, the other side fought back. The major sites used defensive cyber protocols to oppose Anonymous, rendering attacks relatively unsuccessful. The announced attack on Amazon, for example, was abandoned shortly after it began because the assault was ineffective. Perhaps even more tellingly, someone (no group has publicly claimed credit) began an offensive cyber operation against Anonymous itself. Anonymous ran its operations through a website, AnonOps.net, and that website was subject to DDoS counterattacks that took it offline for a number of hours.

In short, a conflict readily recognizable as a battle between competing forces took place in cyberspace, waged almost exclusively between non-state actors.

Anonymous’s failure to target corporate websites effectively and its relative vulnerability to counterattack are likely only temporary circumstances. Anonymous and its opponents will learn from this battle and approach the next one with a greater degree of skill and
a better perspective on how to achieve their ends. Many of their more recent attacks, such as the effort to shut down the Vatican’s website, have already shown a great deal more sophistication and effectiveness.

Moreover, Anonymous has demonstrated that even with its limited capacity, it can inflict significant damage on individuals and companies. When Aaron Barr, corporate head of the security firm HB Gary, announced that his firm was investigating the identity of Anonymous participants, Anonymous retaliated by hacking the HB Gary network (itself a significantly embarrassing development for a cybersecurity company) and taking possession of internal e-mails that suggested that HB Gary was engaged in some questionable business practices. As a result, Barr was forced to resign his post.

More to the point, Anonymous has made quite clear that it intends to continue to prosecute its cyber war against the United States, among others. “It’s a guerrilla cyberwar—that’s what I call it,” says Barrett Brown, 29, a self-described senior strategist and “propagandist” for Anonymous. “It’s sort of an unconventional asymmetrical act of warfare that we’re involved in, and we didn’t necessarily start it. I mean, this fire has been burning.”7

Or consider the manifesto posted by Anonymous, declaring cyberspace independence from world governments: “I declare the global social space we are building together to be naturally independent of the tyrannies and injustices you seek to impose on us. You have no moral right to rule us nor do you possess any real methods of enforcement we have true reason to fear.”8 In February 2012, Anonymous went further by formally declaring “war” against the United States and calling on its citizens to rise and revolt.

In many ways, Anonymous conducts itself much as an opposing military organization might conduct itself. In February 2012, for example, it was disclosed that Anonymous had hacked into a telephone conversation between the FBI and Scotland Yard, the subject of which was the development of a prosecution case against Anonymous. That sort of tactic—intercepting the enemy’s communications—is exactly the type of tactic any government or insurgent force might use, and by disclosing the capability, Anonymous successfully created uncertainty about how much else it might be intercepting.

In advancing their agenda, the members of Anonymous look somewhat like the anarchists who led movements in the late 19th and early 20th centuries, albeit anarchists with a vastly greater network and far more ability to advance their nihilistic agenda through individual action. And like the anarchists of old, they have their own internal disputes, thus making comprehensive or singular analysis of objectives, methods, and potential points of leverage quite difficult. In 2011, for example, another group called Black Hat effectively declared war on Anonymous because it disagreed with the Anonymous agenda.

Even more important, however, Anonymous and its imitators look like the non-state insurgencies that the U.S. has faced in Iraq and Afghanistan: small groups of non-state actors using asymmetric means of warfare to destabilize and disrupt existing political authority.

**A Strategy for Cyber Warfare**

What are the implications of this paradigm shift for cyber/military strategy? They appear to be profound.

From Russia and China, we can expect some form of rationality in action. We can understand their motivations. We know why the Chinese are stealing intellectual properties to jumpstart their economy. We can make some judgments about what would and would not annoy them. In the end, they are rational actors just as the Russians were during the Cold War.

In the cyber domain, by contrast, the motivations of the actors are as diverse as the number of people who are there, and the closer you look, the more unclear things become. There are indeed many actors with many different motivations. They are often characterized as irrational chaotic actors. Perhaps it is a little
unfair to call them chaotic, but what seems to unify them is disrespect for authority, for hierarchy, for structure, a dislike of it and an effort to work outside of it. In this structure, they look much more like insurgents than national military forces.

Given this evolving shift from primary state actors to the n-player world of cyber warfare, a compelling case can be made for a new strategy that is relevant to the changed security environment. There are three factors that should guide thinking about a new cyber strategy—factors that are remarkably similar to those that shape counterinsurgency strategies.

- Cyber warfare favors asymmetries. Non-state actors with power nearly equal to the power of governmental actors are going to be the rule, not the exception. They can serve as proxies for state actors, as the Russian “patriotic hackers” do, but they are not nation-states themselves and thus exploit extraordinary flexibility in adapting to evolving conflicts.

- The capabilities of non-state actors are currently rather limited. They cannot take down the electric grid in the United States, for example, but that will change. We have five or perhaps even 10 years at the outside before the capabilities of non-state actors become almost equivalent to those of nation-state actors. Thus, the window of opportunity to get our strategy right is limited, and the U.S. must take advantage of the time while it can.

- The hardest part of the game is attribution. Knowing who the other side is and what their motivations are is the most difficult challenge of all. How does the U.S. deal with that? Who are these people? What are their true motivations? That is not something that can be fixed technologically. In the end, the U.S. must get better at it, but it is not something for which the same confidence in identifying the enemy can be obtained that is often found in the kinetic world.

The military often talks about “whole of government” approaches to winning wars when “winning” is more than just the battlefield victory over an enemy’s military force. When it comes to cyber warfare, “whole of government” is the only approach that will work against the array of potential adversaries that are exploiting the cyber domain to accomplish their objectives. Integrating military and civilian activities, collecting intelligence, and building a host nation’s security capabilities are all critical elements when combating both state and non-state entities. The full suite of military, intelligence, diplomatic, law enforcement, information, financial, and economic tools will come into play in the new age of cyber warfare.

Organizing for Cyber Warfare

A strategy implies proper organizations and capabilities for fighting a war, but the current manifestations of both are in need of substantial review and investment. During the past several years, many cyber analysts—this author among them—thought the best approach for the U.S. government in dealing with growing cyber threats was to maximize federal government control. What was needed, so the argument went, was a strong cyber czar who had budgetary and directive authority over as much of the government’s cyber capabilities and responsibilities as possible in order to centralize planning for and response to cyber attacks.

Unfortunately, this was precisely the wrong approach to take in dealing with cyber warfare as it has evolved over time. Cyberspace is the world’s most distributive dynamic domain. More than 3.5 billion people and more than a trillion things are connected to the network across the globe. It changes on a daily, even hourly, basis. The advanced, persistent threats that are intruding on Department of Defense (DOD) .mil computers today did not exist six months ago. They are newly
and purposefully built for that enterprise. A centralized hierarchy seems a poor fit for conflict with a diverse, multifaceted, morphing opponent in a battle space that changes every day.

The “big military” complex does a lot of things well, but one of the things it does not do well is turn quickly. The military’s conceptual turning radius is like that of an aircraft carrier, not a Corvette. The military’s major component in dealing with the cyber threat is U.S. Cyber Command (CYBERCOM), a sub-unified command that reports to U.S. Strategic Command. Though it was established only seven years ago in 2009, proposals are already being made to turn it into an independent command.

Given a lengthy pattern of behavior within the Pentagon, it is reasonable to expect that in spite of best efforts to the contrary, CYBERCOM is likely to feature many of the defining characteristics of very large military organizations: lots of rules; lengthy, hierarchical reporting chains; stifling acquisition rules; and a battalion of staff judge advocates (lawyers) who will oversee cyber activities down to the lowest levels of the organization. In this conflict space, however, a model based on “big military” design is the wrong model to pick. Rather, the cyber force needs to be much more akin to special operations: lean, quick to react, and flexible, with a flat administrative structure and possessing the tactical equivalent of a small operational detachment that has top-tier skills and broad authorities to conduct “special mission operations.”

Consider the cyber aspects of some of the recent conflicts America has faced. President Obama continues to consider physical action in Syria or Iraq to confront ISIS. What will ISIS’s cyber response be? What might Syria’s be? The Syrian Electronic Army has already told us that it is going to counterattack if American troops ever go to Syria, and ISIS has threatened to disrupt the American economy. The complexities of conflict are compounded by tactical interdependencies and a lack of actionable intelligence.

- What do we know about their capabilities? On the public record, very little—though, to be fair, this may reflect less a gap in our understanding than the existence of capabilities that have not been publicly disclosed. As far as can be seen from the public sources, we do not have anybody on the inside of many of these non-hierarchical organizations.

- What are their likely targets? We may not know, because we do not have any sense of what their capabilities are or any intelligence on their targeting methodologies or what they think are our soft points.

- Do we have targeted weapons that can find the ISIS or Syrian Electronic Army command-and-control servers and take them out without taking offline the entire Syrian and Iraqi electric grids? I suspect that whatever such weapons we have are limited.

- Do we want to take down the entire Syrian and Iraqi electric grid? No, because that is both what the anti-ISIS militia and the Iraqi government are using for their command and control and what the civilians are using to ameliorate the horrible effects of the warfare they are undergoing.

When it comes to the zeroes and ones of DOD efforts to wage cyber warfare, DOD’s organization for battle in cyberspace is typical: offense, defense, functionally focused teams, specified and rigidly envisioned command authorities. DOD speaks of its awareness that “talent” is critical to acquire but hard to find, yet it operates largely within the conventional military model—recruit, train, assign, rotate, and promote—rather than finding and leveraging raw “organic” talent that is optimally suited for this sort of warfare but is very likely not to be found in a conventional military mold.

CYBERCOM has to work trans-domain and trans-COCOM (combatant command), accounting for the nature of the weapons
being used, the diversity and character of actors involved, and the combination of actor interactions. Yet CYBERCOM does not control most of the resources and lacks the authority to dictate to the broad range of largely non-government, private-sector entities that are of critical importance to cyber warfare.

A Separate Command for a Distinct Domain?

One final note: U.S. cyber organization reflects a relatively controversial decision to characterize cyber as a distinct domain. Often, cyber conflict is thought of as a component of information operations (using the cyber domain and related tools to shape perceptions and understanding) or as a subset of electromagnetic warfare (leveraging the same to cause effects on an opponent's physical ability to conduct operations). Both characterizations are plausible, the first looking at the target area of a conflict (particularly the people in the battle zone) and the latter looking at the cognate physical domain (the assets the people are using to wage war). For this reason, many think that cyber weapons, as a tool of warfare, should be no different from other tools that are incorporated directly into the operational planning of geographic combatant commanders.

The counterargument is that it is useful to characterize the cyber domain as a separate domain, if only because its characteristics are sufficiently different in degree from those of warfare in the kinetic realm that they tend over time to become differences in kind. Under this construct, CYBERCOM is seen as akin to SOCOM (Special Operations Command), managing and employing a unique, highly valued capability that is not defined by region and can be used both for strategic effect and to support conventional military operations of the geographic COCOMs.

Whatever the merits of the debate, the U.S. government has chosen its course. For better or worse, we have characterized the domain based principally on the type of tool (or weapon, if you will) that is used.

But that characterization as a separate command resonates with even greater adverse consequences than a mere category mistake. It seems on reflection to be emblematic of a fundamental misperception of the nature of cyber conflict. To be sure, senior officials often speak of the newness of cyber warfare and acknowledge that new ways of thinking are required, but seven years on, most of the military response to cyber vulnerability reflects, to this author, an inability to reconceptualize military organization and response in light of the domain’s unique characteristics. For example:

- The principal tenet of U.S. legal policy in the domain was a successful effort to adopt existing laws of armed conflict for cyberspace.

- Each of the military services has created within the service a cyber-focused military organization modelled on the fleet/air force model that governs the organization of kinetic military platforms.

- Similarly, CYBERCOM has organized itself along traditional lines with 13 teams, known as Cyber National Mission Teams, responsible for responding to an attack on U.S. critical infrastructure, accompanied by Cyber Combat Mission Teams. To address a lack of training, CYBERCOM has instituted a training system to create “common and strict operating standards” for U.S. cyber operators.

Perhaps this is the right course. To be fair, the Mission Team approach does look somewhat like a special operations approach of the sort this author has advocated. Looking back 10 years from now, we may conclude that these more or less traditional military approaches to conflict in the cyber domain were the right ones.

Nevertheless, one may be skeptical. Considering how cyber capabilities are morphing into a hybrid form of conflict, some of this
seems misguided. Traditional military law, training, procurement, and organization are insufficiently nimble to be responsive to the democratization of conflict in cyberspace. We are seeing a sea-change in the capability of non-state actors, ad hoc groups, and even individuals that allows them to compete on an almost level playing field with nation-states and do significant damage to our national security interests. If we do not reconceptualize how we are thinking about cyber security, cyber policy, and cyber conflict, we are going to miss the boat.

**Conclusion**

We are facing a new world that is replete with new challenges and rapidly evolving requirements for new ways to respond to those challenges. Anonymous and its ilk are a harbinger: Power and force are being democratized, and we are not ready for it. We are in the midst of a Kuhnian paradigm shift from a time when nation-states had a monopoly on the use of significant force to a time when destructive potential in cyberspace is increasingly available to anyone with the technical skills to employ it anywhere in the world from anywhere in the world irrespective of borders, authorities, or affiliations.

If this is the case, then our current military strategy for operations in cyberspace is focused on the wrong enemy at the wrong time, using the wrong tools and with the wrong hierarchy. This almost certainly means that we are setting ourselves up for catastrophic failure that will lead to nearly unimaginable consequences. Crafting a relevant and effective set of capabilities and response options is therefore a matter of increasing urgency.

The U.S. must get its cyber act together soon: Time is running out.
Endnotes:


Operational Concepts and Military Strength

Antulio J. Echevarria II

What are operational concepts, and how do they contribute to military strength? Essentially, operational concepts are generic schemes of maneuver. They provide the conceptual basis for operational planning and influence the design and employment of military forces. We can think of a military force as a specific slice of military strength. A party’s military strength is, in other words, the aggregate of its military forces. Operational concepts provide a way to convert military strength into military power: the ability to employ military force where and when we want to employ it.

Military power is, of course, relative; it depends as much on our own capabilities as it does on those of our rivals. An Air Force that cannot penetrate an opponent’s air defenses, for example, does not offer much in the way of genuine military power. Operational concepts can tilt the balance (or imbalance) in our favor by creating a functional or employment advantage, and the magnitude of that advantage can mean the difference between success and failure. Operational concepts can be tacit or explicit, planned or emergent. As generic schemes of maneuver, they link “ends” to “means” in military strategy and generally serve as the glue that holds it together.

At the same time, operational concepts have significant downsides. Specifically:

- They usually are poorly defined in military doctrine or shrouded in jargon, which in turn leads to confusion.
- The process by which they are developed is decidedly subjective. Despite many and varied efforts to make that process more objective, it invariably reflects service biases and preferences. That influence can be a virtue or a vice; often, it is a combination of both.
- While operational concepts clearly enable the exercise of military power, they also surely hinder it. This is true mainly because turning an operational concept into doctrine requires a broad and sustained commitment or buy-in, which in turn means opportunity costs in the form of exploring other ideas. This is especially the case with successful concepts such as AirLand Battle, which can breed complacency.

Operational Concepts in Joint Doctrine

The U.S. military’s definition of an operational concept can be found in the Joint Chiefs of Staff’s Joint Publication 1 (JP-1), the current version of which states:

Joint concepts examine military problems and propose solutions describing how the joint force, using military art and science, may
operate to achieve strategic goals within the anticipated future security environment. Joint concepts lead to military capabilities, both non-materiel and materiel, that significantly improve the ability of the joint force to overcome future challenges.¹

Unfortunately, this definition tells us what an operational concept does, not what it is. The failure to define something occurs frequently in U.S. military doctrine and stems from the dogmatic overuse of the active voice and a misplaced aversion to the verb “to be.” It amounts to a failure to communicate that undermines the chief purpose of doctrine, which is to establish a baseline for how the U.S. military operates. Such an understanding benefits not only all of the services, but also our allies and strategic partners. Achieving that purpose requires defining what things are, not just what they do.

Despite these definitional shortcomings, JP-1 does provide useful information about how the U.S. military develops its operational concepts. The purpose of such concepts is to propose “solutions to compelling, real-world challenges both current and envisioned.”² Operational concepts must offer “clear alternative[s]” to existing doctrine or capabilities and “demonstrate evidence of significant operational value relative to the challenges under consideration.” They are to be “idea-focused” and thus not “constrained by existing policies, treaties, laws, or technology.”³ Each concept is to be developed “collaboratively” with the participation of all U.S. military services and evaluated “rigorously” in war games, workshops, and other forums to identify its strengths and weaknesses and to ensure that it actually solves the specified problem.⁴

The evaluation process (Joint Concept Development Process) consists of five phases or steps: prospectus development, concept research and writing, concept evaluation, coordination and approval, and implementation.⁵ Once an operational concept is approved, which can take between 18 and 24 months, it is then fed into the “Joint Force Development Life Cycle.”⁶ The purpose of this cycle is to identify any changes in military doctrine, professional education and training, and equipment required by the new concept. Once operational concepts have passed through the joint development life cycle, they become the overarching “ways” that link “ends” and “means” within the framework of contemporary military strategy.

Today, military strategy is typically thought of in terms of four critical variables: ends or objectives (what we want to achieve); ways or courses of action (how we propose to achieve it); means or resources (what we can reasonably make available); and risk (our assessment of the probability of success).⁷ As generic ways to influence force structure and design, operational concepts can also affect the level of risk, both favorably and unfavorably.

However, there are notable pitfalls in this process. For instance, stripping away political constraints may allow for maximum intellectual creativity, but it also creates an artificial environment wherein policies can be set aside, which in turn leads to operational approaches divorced from the most important kind of real-world challenges: policy constraints. This particular pitfall seems all the more egregious given how the U.S. military’s experiences in Afghanistan and Iraq have revealed the necessity for greater interagency coordination, or a “Whole of Government Approach.”⁸ Would it not be better to acknowledge political realities, perhaps as both constraints and opportunities, at the outset and then develop an operational concept within them and with full interagency participation?

Moreover, while operational concepts can pinpoint the need for new military hardware, they can also be reverse-engineered to justify developing or retaining preferred pieces of equipment or force structure. Because operational concepts influence force structure and military strategy, the stakes are high for each service, which in turn makes cross-service collaboration and objective evaluation that much more difficult. As a consequence, the process of concept development can devolve into a form of horse-trading, with one service
supporting another in return for an endorsement of its own concept later. The result might be a concept that simply avoids making the hard choices.

An example of a concept that avoided hard choices was Joint Vision 2010 and its successor Joint Vision 2020. It essentially permitted each of the services to continue to develop its own suite of capabilities under the umbrella concept of Full Spectrum Operations. These capabilities—Dominant Maneuver, Precision Engagement, Focused Logistics, Full-Dimensional Protection—put a “mark on the wall” but ultimately meant business as usual for each of the services.

Operational Concepts in Practice

Given the vulnerabilities in the Joint Concept Development Process, it should not be surprising that our track record has been mixed. Some concepts, like AirLand Battle, have proved successful; others, such as Effects-Based Operations, have failed; and still others, such as Air-Sea Battle, are under development.

AirLand Battle. AirLand Battle, one of the most prominent examples of a successful operational concept, was true to most of the criteria specified in joint doctrine. In 1982, AirLand Battle became the foundation for U.S. military doctrine. It also served as one of the principal “ways” in the West’s military strategy of deterrence during the Cold War, which in turn supported its grand strategy of containment. Although it was never tested against the Warsaw Pact, it was the basis for the operational plan that defeated the Iraqi army in Operation Desert Storm in 1991. AirLand Battle provided a blueprint, a generic scheme of maneuver, for how air and ground forces should operate to stop and ultimately destroy a Soviet-style attack in Central Europe.

The compelling, real-world problem that the concept addressed was how to defeat a numerically superior foe while avoiding a costly war of attrition in a highly lethal environment, particularly one that might include nuclear and chemical weapons. The answer was to put a premium on quality: highly trained troops with better morale, armed with superior weapons, and able to shoot, move, and communicate more efficiently than their foes. Maintaining mobility and a high tempo of operations was essential, as was striking at vital elements beyond the first echelon of the enemy force. Armored and mechanized formations were to block and channel the first echelon of an enemy’s advance, while attack helicopters and fixed wing aircraft were to strike along the enemy’s flanks and concentrate on destroying the command-and-control elements in its second and third echelons.

The key methodological innovation, therefore, was attacking in a synchronized manner throughout the depth of the “extended battlefield.” That, in turn, meant tying the distance between each echelon to the time available to act, all of which was based on a doctrinal template of how the Soviets should attack. Had the Warsaw Pact been able to deviate from that template in any significant way, which was considered highly unlikely, AirLand Battle would have become unhinged, though it might not necessarily have failed outright.

AirLand Battle profoundly influenced the Army’s operational doctrine. It propelled the operational level of war from a matter of debate to an item of doctrine, and it converted Clausewitz’s theory of “center of gravity” and the concentration of superior combat power against it. It also reinforced the need for new land-power requirements: the M1 Abrams Tank, Bradley Fighting Vehicle, Patriot Antiaircraft System, Apache Attack Helicopter, and Blackhawk Utility Helicopter, which became known as the “Big Five.” These systems, it bears noting, were still outnumbered by the Soviets’ “Big 7” (T-72 Tank, BMP Amphibious Assault Vehicle, ZSU-23/4 Anti-Aircraft System, Hind-D Helicopter, 152mm SP Gun, 122mm SP Gun, and SA-3 Surface-to-Air Weapon) but were considered more than a match qualitatively.

AirLand Battle also had the advantage of replacing an unpopular, short-lived, and
perhaps dubious concept called Active Defense. This concept embraced rather than eschewed attrition—withdrawal just ahead of the Soviet advance, forcing it to deploy, attriting it while it did so, and withdrawing again before becoming decisively engaged. It was less about trading space for time than it was about achieving favorable exchange ratios (better than 3:1) on a relentless basis. As its critics noted, however, it aimed more at avoiding defeat than winning in a manner that might give political leaders something to bargain with at the negotiating table.

Collaboration between the U.S. Army and U.S. Air Force in the development of AirLand Battle was extensive, if fraught with friction. The U.S. Navy was involved only tangentially, since it already had a major mission, detailed in the 1986 Maritime Strategy: to protect sea lines of communication and supply across the Atlantic Ocean and the Mediterranean Sea, to provide supporting air cover where possible over Western and Central Europe, and to maintain the ability of its submarine fleets and carrier battle groups to strike targets inside the Soviet Union. The Navy’s mission clearly supported deterrence in Western Europe and containment, and because its service equities were not threatened, it had no reason to obstruct the development of AirLand Battle.

AirLand Battle was not without its opportunity costs. Those came in the form of “military operations other than war” (MOOTW, or missions ranging from shows of force to humanitarian assistance), which were treated as “lesser includeds.” However, not all such operations could be treated as miniature AirLand Battles. Some examples were the interventions in El Salvador (1979–1991) and Colombia (1978–2011); the aborted rescue operation in Iran (1980); the interventions in Grenada (1983) and Panama (1989); and the humanitarian assistance operation in Somalia (1992–1994). From this sample, the United States might claim four “wins” and two “losses,” or a 66 percent success rate—simply not good enough.

**Effects-Based Operations.** In contrast to AirLand Battle, Effects-Based Operations (EBO) did threaten service equities: specifically, those of the Army and Marine Corps. EBO was officially defined as a “process for obtaining a desired strategic outcome or ‘effect’ on the enemy through the synergistic, multiplicative, and cumulative application of the full range of military and other national capabilities at the tactical, operational, and strategic levels.” In short, it was to afford policymakers a menu of “effects” from which they might choose the one they desired.

EBO belonged to an umbrella concept referred to as Network-Centric Warfare, credit for which belongs chiefly to the late Admiral Arthur K. Cebrowski of the U.S. Office of Force Transformation. It did not respond to a specific real-world challenge, but rather attempted to leverage information technology in a manner that would make warfare more precise, less costly, and ultimately more useful as an instrument of policy.

Coalition forces attempted a version of EBO during the Kosovo conflict in 1999 and in the early stages of the campaigns in Afghanistan and Iraq. While destruction of matériel and disruption of infrastructure and communications were readily accomplished, effects beyond these accomplishments remained elusive. In 2008, the U.S. Joint Forces Commander, U.S. Marine Corps General James Mattis, shelved the concept for being inimical to war’s unpredictable nature. By then, however, EBO and NATO’s counterpart EBAO (Effects-Based Approach to Operations) were already integrated into several nations’ operational doctrines.

As happened with AirLand Battle, the West’s experiments with EBO led to significant opportunity costs in terms of exploring other concepts. In theory, EBO could be employed broadly across the diplomatic, informational, military, and economic (DIME) dimensions of national power; in practice, it was applied only to a narrow segment of the spectrum of operations, a segment in which the U.S. military already excelled. The other
agencies within the U.S. government failed to embrace it.

Consequently, EBO amounted to a refinement of military operations in a single portion of the spectrum of conflict; not unlike AirLand Battle, it proved ill-suited to humanitarian assistance or similar operations requiring physical control and human presence and interaction: in other words, shoes as well as boots on the ground.31 Put differently, if the post–Cold War security environment was really characterized by unprecedented uncertainty, as many claimed, it would have been wiser to develop a broad array of capabilities and ways of thinking to avoid what historian Sir Michael Howard famously referred to as “being too badly wrong.”32

**Air-Sea Battle.** Although EBO was shelved, it was by no means dead. Its principles resurfaced in the concept of Air-Sea Battle, which was unveiled (perhaps prematurely) in 2010. Air-Sea Battle generated controversy almost immediately, but it did respond to a specific real-world challenge. The version unveiled in 2010 was a “point-of-departure” concept designed to address China’s growing anti-access/area-denial (A2/AD) capabilities along the Pacific Rim. As its authors explained:

> These capabilities threaten to make US power projection increasingly risky and, in some cases and contexts, prohibitively costly. If this occurs, the United States will find itself effectively locked out of an area that has been declared a vital strategic interest by every administration for the last sixty years.33

The U.S. military already had a doctrine for conducting “forcible entry” operations, which was barely two years old, but it applied mainly to the kinetic use of force in time of war.34 It did not address the larger strategic goal of maintaining a “favorable conventional military balance throughout the Western Pacific region” with the ability to “deter China from acts of aggression or coercion in the region.”35 Thus, the problem posed by the People’s Liberation Army’s growing A2/AD capabilities was (and remains) a compelling real-world challenge worthy of a revised operational concept—provided that concept also addresses how to augment military capabilities with other forms of power in order to gain more deterrence value. The unclassified versions of Air-Sea Battle have not yet addressed this issue.

In addition, several failures related to insular thinking and timing undercut Air-Sea Battle. The concept’s authors did not adequately incorporate Army and Marine Corps equities into its development. That *faux pas* was later corrected, at least partially, when Air-Sea Battle was subordinated to the Joint Operational Access Concept (JOAC), which took a more service-integrated approach to solving the access problem.36 Nonetheless, it was an egregious error of omission at a time when rumors of significant downsizing across the Department of Defense (DOD) were gaining momentum.

The lack of full cross-service integration led senior Army and Marine Corps leaders to believe that their services were to be the “bill-payers” for the “Pacific Rebalance” and for implementing Air-Sea Battle. It is little wonder, then, that the concept was greeted with such hostility.

Second, although its authors took pains to explain that Air-Sea Battle was not about “containing” or “rolling back” China, but rather about “offsetting the PLA’s unprovoked and unwarranted military buildup,” it did not play that way in the media.37 Critics reacted sharply, claiming that Air-Sea Battle was a poor substitute for a military strategy (which, however, it was not intended to be) and that it would likely provoke China precisely when the United States wanted to avoid doing so. As official documents tried to make clear, Air-Sea Battle was not intended to function in isolation, but to be combined with “security assistance programs, and other whole-of-government efforts.”38 It signaled a commitment by the United States to maintain an “escalation advantage” in conflict while sustaining “security and prosperity” in peacetime.39

The central idea of Air-Sea Battle in its unclassified form is “to develop networked,
integrated forces capable of attack-in-depth to disrupt, destroy, and defeat adversary forces.”40 In this regard, it shows the influence of network-centric operations, a concept first advanced in the 1990s as part of a DOD-wide effort to capitalize on the revolution in military affairs (RMA).

- A “networked” force is one in which command and control can be exercised instantaneously across service-specific barriers or protocols not only through technological means, but also through “habitual relationships across service, component, and domain lines.”41

- The notion of an “integrated” force goes beyond the traditional idea of task-organizing for a mission; instead, units are to be “pre-integrated” with regard to joint and combined training and procedures well before arriving in theater and, ideally, in terms of material management, thereby ensuring interoperability and minimal redundancy.

- The ability to “attack-in-depth” refers to the use of kinetic and non-kinetic means in the form of offensive and defensive fire and movement to accomplish one of three outcomes or some combination of them: disrupting an adversary’s “effects chains” (the opponent’s process of finding, fixing, tracking, targeting, engaging, and assessing) by impeding command and control and the flow of information; destroying A2/AD platforms and systems; and defeating weapons and formations “post-launch.”42 Attack-in-depth thus reflects the influence of the ideas that underpinned EBO, though the term itself is avoided.

In fairness, Air-Sea Battle was exactly what it claimed to be: a single answer to a specific operational challenge. While that challenge is not new, the relentless advance of technology is making it more difficult. The concept placed a very high, perhaps idealistic “mark on the wall” with regard to the level of capabilities and competencies necessary to execute it. It is still under development as part of the Joint Operational Access Implementation Plan.43

In the interim, the JOAC serves as the doctrinal concept for the U.S. military’s working solution to the contemporary A2/AD challenge. In brief, the JOAC says we can project force in an A2/AD environment by using “cross-domain synergy” to achieve superiority in specific domains, which will then lead to a certain amount of “freedom of action.”44 Interestingly, the tone is reminiscent of the optimism that characterized military theory on the eve of World War I, which proposed using firepower superiority to overcome the anticipated strength of the defense.

Emergent Concepts

Some operational concepts are emergent. These concepts develop not in anticipation of future problems, but as responses to challenges that arise during a conflict.

An example occurred most recently in the campaigns in Iraq and Afghanistan with the emergence of U.S. counterinsurgency doctrine. The doctrine was not new; rather, it was a rediscovery of previously accepted principles. Both the Army and Marine Corps already had a substantial number of official publications addressing guerrilla warfare and insurgencies,45 but that doctrine had all but faded from institutional memory, partly because of the residual influence of AirLand Battle and partly because of the enthusiasm with which the Office of the Secretary of Defense pushed its technology-based transformation program in the 1990s. It thus had to be rediscovered and updated.

When enemy fighters shifted to insurgent techniques, therefore, many Coalition formations had to adapt without the benefit of either explicit or tacit operational concepts. Nonetheless, some American units were employing counterinsurgency techniques by 2004 and 2005, well before official U.S. counterinsurgency doctrine appeared.46 Several
scholars described this adaptation as a revolution from the top down, while others portrayed it as coming from the “bottom-up.”

In truth, it was neither. The emergence of counterinsurgency techniques came into play more or less from a “sideways” direction, or laterally, through mid-level officers and noncommissioned officers who exercised reach-back capabilities and consulted with civilian experts and with each other to exchange information and share knowledge about what worked and what did not. Many counterinsurgency principles and practices (as well as healthy criticism of them) emerged through sheer trial and error and through the common sense (or experienced judgment) of brigade and battalion commanders.

Official U.S. counterinsurgency doctrine, when it did appear, helped to codify and standardize—that is, render explicit—many of the procedures that were already in play, albeit unevenly and perhaps even poorly in some cases, and augmented them with others. It also situated such practices within a generic scheme of maneuver, which in turn rationalized them. The various stances in the counterinsurgency debate are well known and need not be addressed here.

The U.S. military’s rediscovery of counterinsurgency techniques was part of the process of adaptation that occurs relentlessly in wartime. Adaptation is simply how we cope with a situation or an adversary; in contrast, innovation is how we overcome one or the other—or, in some instances, both.

Conclusion

As we have seen, operational concepts are integral to military strength. They help to convert potential military strength into military power, an unquestionably essential function. However, they also have significant downsides. In part, these downsides stem from the processes by which operational concepts are developed. As JP-1 revealed, operational concepts are to be developed in a manner that affords a maximum amount of intellectual creativity. Paradoxically, this approach is also what makes operational concepts—whether AirLand Battle, Effects-Based Operations, Air-Sea Battle, or counterinsurgency doctrine—vulnerable.

In theory, each service should know best what it needs to be able to operate in the future security environment. In practice, however, what the services know is sometimes exquisitely irrelevant to the needs of policymakers. Armed conflict can have the effect of forcing policymakers and military professionals outside of their comfort zones. That, in short, is what led to the emergence of counterinsurgency as an operational concept; it was an answer of sorts, however flawed, to a situation that the concept development process, and all of its attendant evaluation and war-gaming, ought to have anticipated and yet did not.

The evaluation part of the process ought to force political and military leaders outside of their comfort zones long before the fighting starts. Otherwise, we are engaging in a tautology in which our operational concepts are designed to fight the abstract battles we like instead of the real wars we do not like. The bitter irony is that sometimes the tautology works. Operation Iraqi Freedom was the real war that suited the abstract battle. We would do well to remember, though, that such victories will offer little comfort when the opportunity costs of our tautology come due.

What about the future? Events in Eastern Europe and East Asia suggest that there is a need for an operational concept capable of exerting better deterrent and coercive leverage. Might we see some form of an intellectual blend—a maneuver-oriented concept that can coerce, married to an A2/AD concept that can deter? Certainly, the real-world challenge is there.
Endnotes:
2. Ibid., p. VI-9.
3. Ibid.
4. Ibid., p. VI-10.
11. Ibid.
16. Although the European theater was the concept’s primary focus, AirLand Battle could also apply to the defense of South Korea, albeit with some modifications due to differences in terrain and enemy capabilities.

27. Further qualifications are possible: The U.S. intervention in El Salvador (55 advisers, $6 billion) did not bring victory for the Salvadoran armed forces, but it did prevent their defeat; America’s assistance to Colombia since 2000 (800 soldiers, 600 contractors, $7 billion) coincided with the success of President Alvaro Uribe’s strategy. See Antulio J. Echevarria II, *Reconsidering the American Way of War: US Military Practice from the Revolution to Afghanistan* (Washington: Georgetown University Press, 2014), and Stephen Watts, Caroline Baxter, Molly Dunigan, and Christopher Rizzi, *The Uses and Limits of Small-Scale Military Interventions* (Santa Monica, CA: RAND Corporation, 2012).


35. Van Tol et al., *AirSea Battle*, p. xi.


37. Van Tol et al., *AirSea Battle*, p. x.


39. Ibid.

40. Ibid., p. 4.

41. Ibid., p. 6.

42. Ibid.


On Strategy and Strategic Planning: Repairing America’s Strategic “Black Hole”

Mackubin Thomas Owens

Strategy has long been the subject of scholarly study and policy analysis. Historians and social scientists alike have written widely about strategic thought, process, and practice. Scholars continue to dissect the meaning of strategy. War colleges teach courses on the subject, as do civilian colleges. Yale University, for instance, has a well-regarded program on grand strategy, and other universities have followed suit.

Strategy and strategy-making are complex phenomena, not reducible to a simplistic mechanical process, and the making of strategy deserves more study than it often receives. In many respects, U.S. strategic planning has been rendered nearly useless because the processes have become routinized and thereby trivialized. Legislatively required documents such as the National Security Strategy and the Quadrennial Defense Review (QDR) initially may have been useful but now are merely periodic bureaucratic exercises.

The result is what Colin Gray calls “a black hole where American strategy ought to reside.” What the United States needs is a return to the long-range strategic planning process that it implemented during the Cold War.

On Strategy and Policy

When all is said and done, strategy is ultimately best understood as the interaction of three things, all within the context of risk assessment:

- **Ends** (the goals or objectives that the strategic actor seeks to achieve);
- **Means** (the resources available to the strategic actor); and
- **Ways** (the strategic actor’s plan of action for utilizing the means available).

In essence, any strategy worth the name should articulate a clear set of achievable goals; identify concrete threats to those goals; and then, given available resources, recommend the employment of specific instruments to meet and overcome those threats.

A good strategy also seeks to minimize risk by, to the extent possible, avoiding mismatches between strategy and related factors. For instance, strategy must be appropriate to the ends as established by policy. Strategy also requires the appropriate tactical instrument to implement it. Finally, the forces required to implement a strategy must be funded, or else it must be revised. If the risk generated by such policy/strategy, strategy/force, and force/budget mismatches cannot be managed, the variables must be brought into better alignment.

History clearly teaches that the development of a coherent strategy is absolutely essential to national security in times of both war and peace. In the absence of a coherent strategy, non-strategic factors such as bureaucratic and organizational imperatives and the
vicissitudes of domestic politics will fill the void to the detriment of national security.

Modern strategic studies can be said to begin with the division of the art of war into the theory of “the use of engagements for the object of the war” (strategy) and “the use of armed forces in the engagement” (tactics) by the great interpreters of Napoleonic warfare, Baron Antoine Henri de Jomini and Carl von Clausewitz. As the latter wrote:

Strategy is the use of the engagement for the purpose of the war. The strategist must therefore define an aim for the entire operational side of the war that will be in accordance with its purpose. In other words, he will draft the plan of the war, and the aim will determine the series of actions intended to achieve it: in fact, shape the individual campaign and, within these, decide on the individual engagements.

These 19th century writers originated the modern conception of strategy as the art of assembling and employing military forces in time and space to achieve the goals of a war. While such writers normally limited their use of “strategy” to mean the application of military forces to fulfill the ends of policy, it is increasingly the practice today to employ the term more broadly so that one can speak of levels of strategy during both peace and war. Accordingly, more often than not, strategy now refers not only to the direct application of military force in wartime, but also to the use of all aspects of national power during peacetime to deter war and, if deterrence fails, win the resulting conflict.

This more expansive usage of strategy inevitably overlaps with the common meaning of “policy,” which is defined as the general overall goals and acceptable procedures that a nation might follow and the course of action selected from among alternatives in light of given conditions. In their military history of the United States, Allan Millett and Peter Maslowski define defense policy as “the sum of the assumptions, plans, programs, and actions taken by the citizens of the United States, principally through governmental action, to ensure the physical security of their lives, property, and way of life from external military attack and domestic insurrection.” For our purposes, “policy” refers primarily to such broad national goals as interests and objectives, and “strategy” to the alternative courses of actions designed to achieve those goals, within the constraints set by material factors and geography.

In general, strategy provides a conceptual link between national ends and scarce resources, both the transformation of those resources into means during peacetime and the application of those means during war. As such, it serves three purposes.

- Strategy relates ends or the goals of policy (interests and objectives) to the limited means available to achieve them. Both strategy and economics are concerned with the application of scarce means to achieve certain goals, but strategy implies an adversary who actively opposes the achievement of the ends.

- Strategy contributes to clarification of the ends of policy by helping to establish priorities in the light of constrained resources. In the absence of established priorities among competing ends, all interests and all threats will appear equal. In the absence of strategy, planners will find themselves in the situation described by Frederick the Great: “He who attempts to defend too much defends nothing.”

- Strategy conceptualizes resources as a means in support of policy. Resources are not means until strategy provides some understanding of how they will be organized and employed. Defense budgets and manpower are resources. Strategy organizes these resources into divisions, wings, and fleets and then employs them to deter war or to prevail should deterrence fail.

The first two functions make it clear that a broad national strategy must shape strategies for various regions and theaters by
prioritizing them. In terms of warfighting, the national strategy establishes the desired goals in a theater, linking operational considerations to the requirements established by national authorities. Based on guidance from higher authorities, the theater commander determines the desired outcome within his area of responsibility. The staff then develops war plans based on an array of plausible scenarios. Using various force planning models and war games to determine force size and mix, the theater commander’s staff then derives the force necessary at the outset of a campaign to achieve the desired outcome.

In addition to determining the required force, staffs at all levels also determine the schedule for deploying forces from out of theater. Part of this determination is establishment of the Time-Phased Force Deployment Line, designating in a detailed manner the timeline for forces to be deployed to the theater. The higher-level strategies also establish priorities among the various theaters, indicating which will be the site of the main effort and which might be designated “economy of force” in the event that crises occur in more than one theater simultaneously.

National strategy thus guides “force apportionment,” the distribution of existing forces among the various theaters. During World War II, national strategy dictated a policy of “Europe first.” During the Cold War, U.S. strategy dictated a focus on Europe followed by the Asia-Pacific and finally by the Greater Middle East.

Of course, warfighting and war planning are only part of the theater commander’s job. He is also responsible for shaping the theater in hopes of advancing U.S. interests without recourse to war, engaging the governments within the region and developing the necessary security infrastructure to maintain a favorable state of affairs. In this regard, the theater commander employs such tools as security assistance, military exercises, and humanitarian support. The theater commander’s actions are not strictly military in nature; diplomacy and interagency operations play a major role in the development and implementation of each geographic command’s Theater Security Co-operation Plan.

The final function of strategy is to serve as a guide to force planning. In theory, the strategy–force planning process is logical. The planner first identifies national interests and the objectives required to achieve those interests. The planner then conducts a net assessment in order to determine the ability of adversaries to threaten those interests or to interfere with the achievement of national objectives. These represent the “operational challenges” that U.S. forces must surmount in order to implement the strategy. Next, the planner forges a strategy to overcome operational challenges and a budget to fund the capabilities and operational concepts that are needed to implement the strategy.

The execution of any chosen strategy requires the fulfillment of certain strategic requirements. These requirements determine the necessary military capabilities and operational concepts, which in turn drive the acquisition of forces and equipment. Thus, if there is a strategic requirement for a particular capability, the forces or equipment needed to provide that capability presumably should be obtained. To overcome these operational challenges and confront plausible future areas of military competition, the United States must develop new operational concepts.

Although strategy can be described as the conceptual link between ends and means, it cannot be reduced to a mere mechanical exercise. Instead, it is “a process, a constant adaptation to shifting conditions and circumstances in a world where chance, uncertainty, and ambiguity dominate.” It is a mistake to attempt to reduce strategy to a single aspect, although it is not unusual for writers on strategy to try. Clausewitz dismissed as simplistic the reduction of strategy to “principles, rules, or even systems” because, on the contrary, strategy “involves human passions, values, and beliefs, few of which are quantifiable.”

Strategy, properly understood, is a complex phenomenon comprising a number of
elements. Among the most important of these are geography; history; the nature of the political regime, including such elements as religion, ideology, culture, and political and military institutions; and economic and technological factors. Accordingly, strategy can be said to constitute a continual dialogue between policy on the one hand and these various factors on the other.

Strategy as a Dialogue Between Policy and National Power

To be successful, strategy-making must be an interactive process that takes account of the interplay of all relevant factors. An inflexible strategy may be worse than no strategy at all, as the Germans discovered in 1914 and the French found in 1940. To paraphrase Gray, strategy is the product of the dialogue between policy and national power in the context of the overall international security environment. Real strategy must take account of such factors as technology, the availability of resources, and geopolitical realities. The strategy of a state is not self-correcting. If conditions change, policymakers must be able to discern these changes and modify the nation’s strategy and strategic goals accordingly. For instance, while the U.S. policy to contain the Soviet Union remained essentially constant during the Cold War, certain factors changed. Accordingly, it is possible to identify three distinct strategic periods during the Cold War, all of which had operational and force-structure implications.

When strategy-makers do not adapt to changing conditions, serious problems can result. Jakub Grygiel shows how a failure to adapt strategy to geopolitical change led to the decline of Venice (1000–1600); the Ottoman Empire (1300–1699); and Ming China (1364–1644). Each actor faced changing circumstances but made wrong strategic choices. These cases are cautionary for the United States, since it has faced substantial geopolitical changes of great magnitude since the end of the Cold War: the decline and then reassertion of Russian power, the expansion of terrorist organizations, the rise of China, disorder in the Greater Middle East, and the new geopolitics of energy.

Strategic Culture

Another important aspect of strategy-making is the “strategic culture” of a state or nation. By applying the notion of strategic culture, analysts attempt to explain continuity and change in national security policies, thereby creating a framework that can explain why certain policy options are pursued by states that share a given strategic culture. For instance, historians have noted that the strategic culture of sea powers tends to differ from the strategic culture of land powers. Thus, one sees similarities between the strategic approaches of Athens, Great Britain, and the United States on the one hand as opposed to the strategic approaches of Sparta, Germany, and Russia on the other. China seems to possess a discernible strategic culture traceable to Sun Tzu and other Chinese military thinkers. The same holds for Islamic states.

According to Kerry Longhurst:

[A] strategic culture is a distinctive body of beliefs, attitudes and practices regarding the use of force, which are held by a collective and arise gradually over time, through a unique protracted historical process. A strategic culture is persistent over time, tending to outlast the era of its original inception, although it is not a permanent or static feature. It is shaped and influenced by formative periods and can alter, either fundamentally or piecemeal, at critical junctures in that collective’s experiences.

For Carnes Lord, strategic culture constitutes the traditional practices and habits of thought by which military force is organized and employed by a society in the service of its political goals. One of the charges often brought against American strategic culture is that it confuses technological superiority with strategy itself. For instance, critics of the efforts to
“transform” the U.S. military in the early years of the 21st century claimed that America tends to seek technological fixes for strategic problems in an attempt to remove itself from the sharp end of war.24

Strategy vs. Nonstrategic Factors

In any case, strategy is an indispensable element of national security. Without it, something else will fill the void. For example, in wartime, service doctrines will dominate the conduct of operations if strategy is absent. This state of affairs is captured by Andrew Krepinevich in his characterization of the Vietnam War as “a strategy of tactics.”25

In peacetime, defense planning is usually dominated by domestic policy considerations such as organizational imperatives and congressional politics. In his 1961 book *The Common Defense*, Samuel Huntington observed that military policy exists in two worlds: the world of international politics and the world of domestic politics. The first world is shaped by such factors as balance of power, wars and alliances, and the use of force and diplomacy to influence the actions of other states in the international arena. The principal “currency” of this arena is “power,” primarily military power. The second world is shaped by interest groups, corporate interest groups, political parties, social classes, and the like. The currency here is the resources provided by society, personnel, money, and matériel.

Military decisions influence and are influenced by both worlds, and a decision in one currency is payable in the other. Huntington called the decisions in the currency of international politics strategic in character. Decisions in the currency of domestic politics are structural. Unless there is a strong and coherent strategic vision to guide defense decisions even during peacetime, defense decision-making is likely to be dominated by structural decisions.26

Levels of Strategy

War and conflict can be divided into several levels. As noted, Clausewitz distinguished between tactics, “the use of armed forces in the engagement,” and strategy, “the use of engagements for the object of war.” It is now common to speak of an intermediate level between strategy and tactics: the “operational level of war,” a realm concerned with the planning and conduct of campaigns to achieve strategic goals within a theater of war.27 The central focus of this essay is the strategic level of war and conflict, which in itself is subject to further subdivision.28

In its broadest sense, strategy is grand strategy. In the words of Edward Mead Earle:

> Strategy is the art of controlling and utilizing the resources of a nation—or a coalition of nations—including its armed forces, to the end that its vital interests shall be effectively promoted and secured against enemies, actual, potential, or merely presumed. The highest type of strategy—sometimes called grand strategy—is that which so integrates the policies and armaments of the nation that resort to war is either rendered unnecessary or is undertaken with the maximum chance of victory.29

Thus, grand strategy is intimately linked to national policy in that it is designed to bring to bear all the elements of national power—military, economic, and diplomatic—in order to secure the nation’s interests and objectives. Grand strategy can also refer to a nation’s overarching approach to international affairs: isolationism or disengagement, cooperative or collective security, selective engagement, and primacy.30

Finally, grand strategy can allude to a geopolitical orientation: “continental” or “maritime.”31 Whichever meaning is emphasized, the choice of a grand strategy has a major impact on the other levels of strategy and force structure.

Military power is one instrument of grand strategy. How military power is employed in both war and peace is the province of military strategy. In peacetime, military strategy provides a guide to what Samuel Huntington calls “program decisions” and “posturing.” Program decisions involve the strength of military
forces, their composition and readiness, and the number, type, and rate of development of weapons. Posturing is defined by how military forces are deployed during peacetime to deter war (Clausewitz’s “preparation for war”). In wartime, military strategy guides the employment of military force in pursuit of victory (Clausewitz’s “war proper”).

U.S. Strategic Planning and the Strategic “Black Hole”

Given the relatively secure position of the United States at least after the War of 1812, the early American national security apparatus—the State Department, War Department, and Navy Department—remained small and primitive compared to those of the European states. Nonetheless, the United States in fact pursued a consistent grand strategy from the Founding until the outbreak of World War II. The objective of this grand strategy—often mistaken for isolationism—was to maintain the security of the United States by means of skillful diplomacy combined with preemption and unilateralism.

With the outbreak of World War II, the requirements of fighting a global conflict in conjunction with allies impelled the United States to develop the sort of national security apparatus we see today, but it was not until the Cold War, the National Security Act of 1947, and subsequent amendments that this structure came of age.

The problem today is that the documents that supposedly inform U.S. strategy do no such thing. They are, at best, pro forma bureaucratic exercises. For instance, the National Security Strategy (NSS), required by the Goldwater–Nichols Act of 1986, presumably serves as the U.S. grand strategy document, defining U.S. security interests, objectives, and goals and providing guidance to those who are charged with executing that strategy. But while there have been some excellent examples in the past, the NSS has lately become little more than a list of aspirations with no real strategic plan for achieving its stated goals.

Other documents intended to supplement the NSS—the National Defense Strategy, National Military Strategy, and Quadrennial Defense Review—have served only to confuse strategic planning. This is especially true of the QDR, which has long been little more than a bureaucratic budgetary exercise that the services “game” in order to protect or expand their shares of the defense budget. In addition, the QDR has recently been required to address the latest fashionable issues of the day, such as “climate change.”

In short, the United States has failed to provide useful strategic guidance for translating national policy into theater strategy and force employment, shaping force structure, and integrating and synchronizing the planning and activities of the Joint Staff, combatant commands, the services, and combat support agencies. As Michele Flournoy and Shawn Brimley have observed:

The U.S. government currently lacks both the incentives and the capacity to support strategic thinking and long range planning in the national security arena. While individuals on the National Security Council (NSC) staff may develop planning documents for their respective issues, the NSC staff lacks adequate capacity to conduct integrated long-range planning for the president. While some capacity for strategic planning exists in the Department of Defense (DOD), no other department devotes substantial resources to planning for the long-term future. Although the State Department’s policy planning office develops a “big picture” approach in specific policy areas, such as North Atlantic Treaty Organization enlargement or relations with China, it tends (with some exceptions) to focus on issues already on the policy agenda rather than challenges that might loom over the horizon. Nor does it address the types of capabilities the United States should seek to develop to deal with future challenges.

The result is Colin Gray’s strategic “black hole.”

A Return to Strategic Planning

Colin Dueck has offered a useful critique of what currently passes for strategic planning.
In particular, he criticizes the centralization of foreign policy planning in the White House under President Obama. He offers six suggestions to correct the problem:

- Develop and execute a meaningful national security strategy early on.
- Restore a proper balance of responsibilities between the NSC and line departments and agencies.
- Appoint a strong national security advisor to play the role of genuine honest broker, policy entrepreneur, and presidential agent.
- Appoint and empower a strategic planning directorate on the NSC staff.
- Create an effective strategic planning board.
- Learn from private[-]sector experience.36

It would also be useful to revisit the U.S. strategic planning approach during the Cold War. Two of the most important documents shaping early Cold War policy and strategy were NSC-20/4, “U.S. Objectives with Respect to the USSR to Counter Soviet Threats to U.S. Security,” signed by President Harry Truman in 1948, and NSC-68, “United States Objectives and Programs for National Security,” signed by President Truman in 1950. Both documents argued for a policy of “containment” against the Soviet Union, the purpose of which was to prevent Soviet expansionism and guarantee the security of America and its allies.37 NSC-68 in particular served as the foundation of the U.S. approach to the Soviet Union until its collapse in the late 1980s.

However, the cost associated with NSC-68 was high: It called for a tripling of the defense budget to build up U.S. conventional forces and to develop a thermonuclear weapon. Concerned about the high cost of defense, President Dwight Eisenhower sought a way to examine existing American containment policy and compare alternative policy options. He settled on a systematic policy exercise to review U.S. foreign policy objectives and recommend a course of action. The exercise, called “Project Solarium,”38 pitted three teams against each other.

- Team A would make the best possible argument for the existing policy of containment, seeking to prevent Soviet expansion in Europe while minimizing the risk of general war.
- Team B would accept containment as a viable policy but be less tentative about its implementation. It would assert that any Soviet or Soviet-sponsored aggression would lead to general war and threaten massive U.S. and allied retaliation using any means necessary.
- Team C would argue for “rollback,” meaning a policy to halt and then reverse Soviet efforts to hold territory by the presence of the Red Army.39

Five weeks later, the teams reconvened and presented their findings to the President.

- Team A argued that the U.S. should develop and implement a more dynamic campaign of political and psychological action against the Soviets. The group rejected any strategy that based its arguments on the acceptance of a risk of general war and recommended “waging peace” with U.S. power by emphasizing the importance of negotiations. It also sought to prevent the use of an active military threat from driving national security strategy even though it gave the concept of force an important role to play—primarily the role of augmenting diplomatic, economic, and political initiatives.
- Team B warned about the rigid nature of “drawing a line,” implying that it could actually increase the risk of war through
inflexibility, but argued that a preponderant show of U.S. force combined with a definitive geographical boundary line could lead to a change in Soviet policy and/or a mellowing of the overall regime. Team B further explained that the allies would not readily accept where to draw the line and that this strategy would be extremely expensive. However, it made the case that the external threat to the U.S. ultimately outweighed the threat to domestic economic stability.

- Team C argued that mere containment was flawed because it had no endgame and let the Soviets read American inaction as fear and acquiescence. It acknowledged that the benefits of “rollback” were speculative but claimed that political and military actions short of general war (for example, covert operations and economic pressure) would be an effective way to take back regions from the Soviet area of control until, ultimately, the Soviet Union changed. Therefore, the U.S. must first put indirect pressure on the Soviet Union by engaging its satellite states and then direct pressure on the Soviet Union itself.40

After listening to the presentations, President Eisenhower summarized the arguments of the three teams and opted for the course of action recommended by Team A, which served as the foundation of NSC-162/2, “Basic National Security Policy,” signed by Eisenhower on October 30, 1953. As one commentator notes:

While NSC 162/2 did not represent a radical shift in policy, just as NSC-68 was not a radical departure from NSC 20/04, the exercise itself forced policymakers to justify a number of key assumptions about Soviet objectives and American capabilities. This not only strengthened the intellectual basis for containment as a long-term policy, but conferred legitimacy on the President’s ultimate decision to follow the basic recommendations of Team A. The substance of the policy, in other words, had benefited from the process used to design it.41

As Eisenhower observed, “The plans are nothing, but the planning is everything.”42

Conclusion

Strategy is designed to secure national interests and to attain the objectives of national policy by the application of force or threat of force. Strategy is dynamic, changing as the factors that influence it change. Strategic requirements continue to evolve.

The evolution of strategy over the past 50 years illuminates the interrelationship of ends, means, and the security environment. Potential mismatches between ends and means create risks. If the risks resulting from an ends–means mismatch cannot be managed, ends must be reevaluated and scaled back, means must be increased, or the strategy must be adjusted.

Strategy-making is a central component of defense policy. Without a coherent, rational strategy to guide the development and employment of forces, structural factors such as bureaucratic and organizational imperatives will dominate the allocation of resources for defense, leading to a suboptimal result.

Good strategy requires an effective strategic planning process. Unfortunately, U.S. strategic planning is defective. As a result, U.S. actions against China, Iran, Russia, ISIS, and the like are uncoordinated and incoherent. To advance its national interests in a dangerous and uncertain world, the United States must restore strategic planning and the idea of strategy as a guide to action to a central role.

Strategic planning must look beyond the next budget cycle in order to address the wide array of international challenges the United States faces and advance long-term U.S. interests. The best strategic planning process incorporates both constructive competition and creative cooperation in order to reconcile diverging perspectives. Otherwise, the U.S. strategic black hole will persist.
Endnotes:

4. Ibid., p. 177.
8. I am indebted to Dr. Robert S. Wood, former dean of the Center for Naval Warfare Studies, Naval War College, for this formulation.
11. For instance, in Strategy, Luttwak reduces strategy to a manifestation of “paradoxical logic.” In his monumental The Art of War in the Western World (Urbana: University of Illinois Press, 1987), Archer Jones reduces strategy to a choice between “persisting” and “raiding.” In World Politics and the Evolution of War (Baltimore: Johns Hopkins University Press, 1995), John Weltman explicates warfare in terms of a simplistic version of Delbrück’s distinction between strategies of annihilation and attrition.
39. Named for the room in the White House where the President issued the directive for the study.
40. Ibid.
41. Ibid.
Global Operating Environment
Assessing the Global Operating Environment

Measurement of the “strength” of a military force—the extent to which that force can accomplish missions—requires examination of the environments in which the force operates. Aspects of one environment may facilitate military operations, but aspects of another may work against them. A favorable operating environment presents the U.S. military with obvious advantages; an unfavorable operating environment may limit the effect of U.S. military power. The capabilities and assets of U.S. allies, the strength of foes, the geopolitical environment of the region, and the availability of forward facilities and logistics infrastructure all factor into whether an operating environment is supportive of U.S. military operations.

When assessing an operating environment, particular attention must be paid to any treaty obligations the United States has with countries in the region. A treaty defense obligation ensures that the legal framework is in place for the U.S. to maintain and operate a military presence in a particular country. In addition, a treaty partner usually yields regular training exercises and interoperability as well as political and economic ties.

Additional factors—including the military capabilities of allies that might be useful to U.S. military operations; the degree to which the U.S. and allied militaries in the region are interoperable (e.g., can use common means of command, communication, and other systems); and whether the U.S. maintains key bilateral alliances with nations in the region—also affect the operating environment. Likewise, nations where the U.S. has already stationed assets or permanent bases and countries from which the U.S. has launched military operations in the past may provide needed support to future U.S. military operations. The relationships and knowledge gained through any of these factors would undoubtedly ease future U.S. military operations in a region and contribute greatly to a positive operating environment.

In addition to U.S. defense relations within a region, additional criteria—including the quality of the local infrastructure, the political stability of the area, whether or not a country is embroiled in any conflicts, and the degree to which a nation is economically free—should also be considered.

Each of these factors contributes to the judgment as to whether a particular operating environment is favorable or unfavorable toward future U.S. military operations. The operating environment assessment is meant to add critical context to complement the threat environment assessment and U.S. military assessment detailed in subsequent sections of the Index.

This Index will refer to all disputed territories by the name employed by the United States Department of State and should not be seen as reflecting a position on any of these disputes.
Europe

The resurgence of Russia, brought into starkest relief in Ukraine, and the rise of the Islamic State in Iraq, Syria, and Libya have brought Europe back into the top tier of U.S. international interests with some force after a decade of attempted disengagement. It is clear why the region matters to the U.S. The 51 countries in the U.S. European Command (EUCOM) area of responsibility include approximately one-fifth of the world's population, 10.7 million square miles of land, and 13 million square miles of ocean. EUCOM's area has physical borders with Russia, the Arctic, Iran, Asia Minor, the Caspian Sea, and North Africa. Most of these areas have long histories of instability and a potential for future instability that could directly affect the security interests and economic well-being of the United States.

Some of America’s oldest (France) and closest (the United Kingdom) allies are found in Europe. The U.S. and Europe share a strong commitment to the rule of law, human rights, free markets, and democracy. Many of these ideas, the foundations upon which America was built, were brought over by the millions of immigrants from Europe in the 17th, 18th, and 19th centuries. U.S. sacrifice for Europe has been dear. During the course of the 20th century, millions of Americans fought for a free and secure Europe, and hundreds of thousands died.

America’s economic ties to the region are important as well. A stable, secure, and economically viable Europe is in America’s economic interest. Regional security means economic viability and prosperity for both Europe and the U.S. For more than 70 years, the U.S. military presence in Europe has contributed to European stability, economically benefiting both Europeans and Americans. The economies of the 28 (soon to be 27) member states of the European Union (EU), along with the United States, account for approximately half of the global economy. The U.S. and the members of the EU are each other’s principal trading partners.

**Geographical Proximity.** Europe is important to the U.S. because of its geographical proximity to some of the world’s most dangerous and contested regions. From the eastern Atlantic Ocean to the Middle East and up to the Caucasus through Russia and into the Arctic, an arc of instability is increasingly unsettled by demographic pressures, rising commodity prices, interstate and intrastate conflict, tribal politics, competition over water and other natural resources, religious tension, revolutionary tendencies, terrorism, nuclear proliferation, and “frozen conflicts” (i.e., conflicts in which active combat has ended but no real effort is made to resolve the conflict). The European region also has some of the world’s most vital shipping lanes, energy resources, and trade choke points.

The basing of U.S. forces in Europe generates benefits outside of Europe. Recent instability in North Africa, most notably ISIS operations in Libya, has shown the utility of basing robust U.S. military capabilities near potential global hot spots. For example, when ordered to intervene in Libya against Muammar Qadhafi, U.S. commanders in Europe were able to act effectively and promptly because of...
the well-established and mature U.S. military footprint in southern Europe.

The same can be said of the Baltic region. Soon after Russia annexed Crimea and invaded eastern Ukraine, the U.S. quickly deployed 600 U.S. soldiers to the Baltics and Poland from U.S. bases in Italy. The F-15s and F-16s (including their crews, maintenance staff, fuel, spare parts, etc.) that the U.S. Air Force initially sent to the region after the invasion of Ukraine were deployed to Eastern Europe from U.S. air bases in the United Kingdom and Italy, respectively. Without this forward presence in Europe, these deployments would have been costlier and slower.

The Arctic. The *2016 Index of U.S. Military Strength* identified the Arctic as an important operating environment in Europe. This has not changed in the 2017 edition. If anything, tension continues to increase as a result of Russian activity.

The Arctic region encompasses the lands and territorial waters of eight countries (Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the United States) spread across three continents. The region is home to some of the world’s roughest terrain and waters and some of its harshest weather. The Arctic region is rich in minerals, wildlife, fish, and other natural resources and, according to some estimates, contains up to 13 percent of the world’s undiscovered oil reserves and almost one-third of its undiscovered natural gas reserves.

The region represents one of the world’s least populated areas, with sparse nomadic communities and very few large cities and towns. Although official population figures are nonexistent, the Nordic Council of Ministers estimates that the figure in 2013 was slightly in excess of 4 million, making the Arctic’s population slightly bigger than Oregon’s and slightly smaller than Kentucky’s. Approximately half of the Arctic population lives in Russia, which is ranked 153rd out of 178 countries in the *2016 Index of Economic Freedom*.

The melting of Arctic ice during the summer months presents challenges for the U.S. in terms of Arctic security, but it also provides new opportunities for economic development. Less ice will mean new shipping lanes, increased tourism, and further exploration for natural resources. Many of the shipping lanes currently used in the Arctic are a considerable distance from search and rescue facilities, and natural resource exploration that would be considered routine in other locations in the world is complex, costly, and dangerous in the Arctic.

The economic incentives for exploiting these shipping lanes are substantial and will drive Arctic nations to press their interests in the region. For example, using the Northern Sea Route (NSR) along the Russian coast cuts the distance between Rotterdam and Shanghai by 22 percent and saves hundreds of thousands of dollars in fuel costs per ship. Unlike in the Gulf of Aden, no pirates are currently operating in the Arctic, and piracy is unlikely to be a problem in the future. But there is still a long way to go before the NSR becomes a viable option. In 2015, a total of 18 ships made the journey over the top of Russia (compared with the more than 17,000 that transited the Suez Canal) and carried only 39,586 tons of cargo. By comparison, in 2013, 71 vessels carrying a total of 1,355,000 tons of cargo shipped along the route, indicating the unpredictability of future shipping trends in the Arctic.

In June 2015, Russia adopted an Integrated Development Plan for the Northern Sea Route 2015–2030. The plan outlines expectations that NSR shipping volume will reach 80 million tons by 2030. However, the current reality casts doubt on these projections.

Of course, the U.S. has an interest in stability and security in the Arctic because the U.S. is one of the eight Arctic nations. The American commitment to NATO is also relevant because four of the five Arctic littoral powers are in NATO.

Threats to Internal Stability. In recent years, Europe has faced turmoil and instability brought about by economic uncertainty, epitomized by the ongoing sovereign debt crisis in Europe’s southern countries. Recently,
a large influx of migrants and the continued threat from terrorism have added more instability points to Europe.

Economically, the eurozone’s overall economic freedom is seriously undermined by the excessive government spending required to support elaborate welfare states. Economic policies being pursued by many eurozone countries hinder productivity growth and job creation, causing economic stagnation and rapidly increasing levels of public debt. Underperforming countries have not made the structural reforms needed for long-term adjustment.

Cyprus, Greece, Ireland, Portugal, and Spain have received multibillion-euro aid packages financed by their eurozone partners and the International Monetary Fund (IMF). European leaders are desperately seeking a way to keep the eurozone together without addressing the root causes of the crisis. Recipient countries have adopted stringent austerity measures in exchange for aid, but their populations oppose any spending cuts.

Many among Europe’s political elite believe that deeper European integration, not prudent economic policies, is the answer to Europe’s problem. However, there has been a public backlash against deeper political and economic integration across much of Europe. In a June 2016 referendum on EU membership, the United Kingdom voted to leave the European Union. In April 2016, Dutch voters voted against approving an EU–Ukraine Association agreement in a countrywide referendum, largely seen as a protest vote against the EU. Dissatisfaction with the EU affects France and Germany as well. According to a 2016 Pew Poll, only 38 percent of people in France have a favorable view of the EU; in 2004, 69 percent did. In Germany, only half of Germans have a favorable view of the EU.⁹

In 2015, the Eurozone grew by 1.7 percent,¹⁰ only a marginal improvement over 2014 growth rates. Relatively meager economic growth translated into small job gains, but unemployment remains an albatross around the neck of many European nations. Unemployment across the 19-country bloc stands at 10.1 percent, the lowest rate since July 2011 but still stubbornly high.¹¹ At 23.3 percent, Greece has the highest unemployment rate in the EU; Spain has an unemployment rate of 19.9 percent.¹² Youth unemployment in the eurozone is 20.8 percent but reaches 47.4 percent in Greece, 45.8 percent in Spain, 36.5 percent in Italy, and 30.1 percent in Croatia.¹³

The potential impact of this crisis on the U.S. makes European economic stability more important than ever. The eurozone crisis could turn into a security crisis. For example, political instability in Greece, made worse by a large influx of migrants, could spill over to other places in southeastern Europe—already one of Europe’s most unstable regions. American banks hold some eurozone debt and would take a hit in the event of any default, but the deepest effects would likely be felt through the interconnected global financial system. In a lagging European economy, for example, U.S. exports to European markets would start to fall off and continue to decline.

The economic situation also illustrates the importance of the greater European region to energy security and the free flow of trade. Some of the most important energy security and trade corridors are on the periphery of Europe—as are some of the world’s most dangerous and unstable regions. European economies depend on oil and gas transported through the volatile Caucasus and several maritime choke points.

On top of these difficulties, Europe has been trying to deal with a large-scale migrant crisis. Conflicts in Syria and Iraq, as well as open-door policies adopted by several European nations—importantly, Germany and Sweden in 2015—have led large numbers of refugees from across Africa, Asia, and the Middle East to travel to Europe in search of safety, economic opportunity, and a better life in Europe’s most generous welfare states.

The European Union’s Frontex border agency documented 1,820,000 detections of illegal border crossings along the external
borders of the EU in 2015. The real number is far higher. The migrant crisis and the response of European governments have led in part to some increased instability, have buoyed fringe political parties in some European nations, and already have imposed financial, security, and societal costs on the continent.

For example, one study found that the cost in Germany to house, provide benefits for, and work to assimilate migrants will equal €50 billion by 2017. Greece expects to spend €600 million, 0.3 percent of its GDP, on the migrant crisis in 2016. In April 2016, Sweden’s Finance Ministry announced projections that the migrant crisis will cost the nation €6.1 billion yearly until 2020. In an era of fiscal austerity and tight budgets, the unexpected and generational cost of this migrant crisis will affect European budgets for decades.

The migrant crisis has had a direct impact on NATO resources as well. In February 2016, Germany, Greece, and Turkey requested NATO assistance against illegal trafficking and illegal migration in the Aegean Sea. That month, NATO’s Standing Maritime Group 2 deployed to the Aegean to conduct surveillance, monitoring, and reconnaissance of smuggling activities, and the intelligence gathered was sent on to Greek and Turkish coast guards and to Frontex. In February 2016, former Supreme Allied Commander, Europe, General Philip Breedlove accused Russia of using migrants as a weapon against Europe.

Finally, Europe has suffered a string of terrorist attacks, many of them Islamist inspired, including attacks in Belgium, France, Germany, and Turkey during the past year alone. While terrorist attacks do not pose an existential threat to Europe, they do affect security by increasing instability, and forcing nations to spend more manpower and financial resources on counterterrorism activities.

Following attacks on the offices of satirical magazine *Charlie Hebdo* in January 2015, for example, France launched Operation Sentinelle, utilizing French soldiers to guard 682 sensitive tourist attractions, schools, and religious institutions. Following multiple terrorist attacks in Paris in November 2015, President Francois Hollande increased the number of troops taking part in Operation Sentinelle to 10,000. Of the French military deployed for military operations, half have been deployed domestically to guard against terrorist attacks. The deployment is reportedly having a deleterious impact both on morale among soldiers and on readiness.

In addition to manpower strains, Operation Sentinelle costs France $1.06 million a day, and early estimates from the French Treasury suggest that terrorism will ultimately cost the French economy $2.1 billion.

In addition, Belgium deployed over 500 soldiers to its streets to guard against terrorist attacks following the November attacks in Paris. In February 2015, Italy deployed 4,800 soldiers domestically to guard against terrorist attacks. There has even been a discussion in Germany of allowing for greater deployment of the German Bundeswehr to guard against terrorist attacks. Under the current German constitution, the army can be deployed domestically only “in cases of national emergency.”

The migrant crisis in Europe has exacerbated the threat from terrorism. General Breedlove testified in March 2016 that “what we have seen growing in the past months and year is that in that flow of refugees we see criminality, terrorism and foreign fighters.” James Clapper, U.S. Director of National Intelligence, testified similarly in February 2016 that ISIS is “taking advantage of the torrent of migrants to insert operatives into that flow. As well, they also have available to them and are pretty skilled at phony passports so they can travel ostensibly as legitimate travelers as well.”

While terrorism in Europe may undermine U.S. allies by siphoning financial and military resources toward counterterrorism operations, it also can jeopardize the safety of U.S. servicemembers, their families, and U.S. facilities overseas. In April 2016, for example,
an ISIS sympathizer was convicted in the U.K. of planning to carry out terrorist attacks on U.S. military personnel stationed in the U.K.32

**The South Caucasus**

One of the most important energy corridors for Europe is through Turkey and the South Caucasus. Fortunately, Europe has a very strong partner in the South Caucasus. The Republic of Georgia sits at a crucial geographical and cultural crossroads that for centuries has proven to be strategically important, both militarily and economically; today, its strategic location is also important to the U.S. and Europe. Georgia is modernizing key airports and port facilities, and a major railway project from Azerbaijan to Turkey through Georgia opened in 2015.

The transit route through Georgia provides one of the shortest and potentially most cost-effective routes to Central Asia. This is particularly important in meeting the need to bring alternative sources of oil and natural gas to the European market. In view of Russia’s willingness to use energy resources as a tool of foreign policy, this could not come at a more important time for Europe.

In 2015, construction began on two key natural gas pipelines: the Trans-Anatolian Natural Gas Pipeline (TANAP) and the Trans-Adriatic Pipeline (TAP). The TANAP will run 1,150 miles through the Caucasus and Turkey; the TAP will run from the Turkish–Greek border to Italy via Albania and the Adriatic Sea. It is expected that both will be completed by 2018. When constructed, both pipelines will link up with the existing South Caucasus Pipeline, which connects Turkey to the Azerbaijani gas fields in the Caspian Sea through Georgia. Together, all three pipelines will form the so-called Southern Gas Corridor.33

In July 2015, Russia took de facto control of a 1.6-kilometer section of the British Petroleum–operated Baku–Supsa pipeline when it moved border markers from Russian-controlled South Ossetia 300 meters (980 feet) further south. Russia’s creeping annexation in Georgia has expanded its territorial control in the nation and placed border markers within close range of Georgia’s main highway linking Azerbaijan and the Black Sea.34

**Georgia**

Georgia has been a strong partner of NATO and the U.S. It retains 861 troops in Afghanistan as part of NATO’s Resolute Support Mission, the third-largest contribution after the U.S. and Germany,35 and also trains with NATO nations. In May 2016, 650 U.S. soldiers, 150 from the U.K., and 500 Georgians took part in training exercise Noble Partner in Georgia.36 Georgian Defense Minister Tina Khidasheli described Noble Partner as “one of the biggest exercises that our country has ever hosted...the biggest number of troops on the ground, and the largest concentration of military equipment.”37

**Important Alliances and Bilateral Relations in Europe**

The United States has a number of important multilateral and bilateral relationships in Europe. First and foremost is NATO, the world’s most important and arguably most successful defense alliance. Other relationships, however, also have a strong impact on the U.S.’s ability to operate in and through the European region.

**The North Atlantic Treaty Organization.** NATO is an intergovernmental, multilateral security organization originally designed to defend Western Europe from the Soviet Union. It is the organization that anchored the U.S. firmly in Europe, solidified Western resolve during the Cold War, and rallied European support following the terrorist attacks on 9/11.

During the Cold War, the threat from the Soviet Union meant that the alliance had a clearly defined mission. Today, NATO is still trying to determine its precise role in the post–Cold War world. In the 1990s, NATO launched security and peacekeeping operations in the Balkans when the EU was unable to act. Since 2002, it has been engaged in Afghanistan, counterpiracy operations off the Horn of Africa, an intervention in Libya that led to the toppling of Muammar Qadhafi, and

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(most recently) efforts to stop illicit trafficking in people, drugs, weapons, and other contraband in the Mediterranean.

Since its creation in 1949, NATO has remained the bedrock of transatlantic security cooperation, and it is likely to remain so for the foreseeable future. With the NATO-led combat mission in Afghanistan finished and with an increasingly bellicose Russia on Europe’s doorstep, there is a growing recognition that NATO must return to its raison d’être: collective defense.

Today, many NATO countries view Moscow as a threat. In a way that seemed inconceivable to Western Europeans before Russia’s invasion of Ukraine and annexation of Crimea, it is now clear that NATO’s Eastern European members face legitimate security concerns: For those NATO members that lived under the iron fist of the Warsaw Pact or that were absorbed into the Soviet Union after World War II, Russia’s bellicose behavior is seen as a threat to their existence.

The broad threat that Russia poses to Europe’s common interests makes military-to-military cooperation, interoperability, and overall preparedness for joint warfighting especially important in Europe, yet they are not uniformly implemented. For example, day-to-day interaction between U.S. and allied officer corps and joint preparedness exercises were more regular with Western European militaries than with frontier allies in Central Europe, although the crisis in Ukraine has led to new exercises with eastern NATO nations. In the event of a national security crisis in Europe, first contact with an adversary might still expose America’s lack of familiarity with allied warfighting capabilities, doctrines, and operational methods.

Following the 2014 Wales summit, NATO announced its intent to create a Very High Readiness Joint Task Force (VJTF), “a new Allied joint force that will be able to deploy within a few days to respond to challenges that arise, particularly at the periphery of NATO’s territory.” However, mustering the 5,000-strong force has proven to be difficult. In addition, NATO reportedly believes the VJTF would be too vulnerable during its deployment phase to be utilized in Poland or the Baltics. At the Warsaw summit in July 2016, NATO agreed to an enhanced forward presence of one rotational battalion in each of the Baltic States and Poland, beginning in 2017. Canada, Germany, the U.S., and the UK have promised to serve as framework nations for the battalions.

For its part, in June 2014, the U.S. announced a $1 billion European Reassurance Initiative (ERI) meant to bolster transatlantic security. For fiscal year (FY) 2017, the U.S. proposed an increase in ERI funding to $3.4 billion. A portion of the funding was set aside to “increase exercises, training, and rotational presence across Europe but especially on the territory of our newer allies.” Additional funding for training exercises constituted $40.6 million of ERI funding in FY 2015, increased to $108.4 million in FY 2016, and is anticipated to increase to $163 million in FY 2017. While the additional funding is a step in the right direction, it is not a long-term solution; the need to sufficiently fund training programs remains unresolved. Funding for this initiative was included in the Overseas Contingency Operation (OCO) budget, generally considered to be a budget for temporary priorities—a fact that did not escape the attention of NATO allies, with the Poles dismissing it as “insufficient.”

There also are non-military threats to the territorial integrity of NATO countries that the alliance has only recently begun to find ways to address. The most likely threat to the Baltic States, for example, may come not from Russian tanks rolling into a country but from Russian money, propaganda, and establishment of pro-Russia NGOs and other advocacy groups—all of which can be leveraged to undermine the state. Russia’s aggressive actions in Ukraine have proven how effective these asymmetrical methods can be in creating instability, especially when coupled with conventional power projection.

The combat training center at Hohenfels, Germany, is one of a very few located...
Few NATO Members Follow Defense Spending Guidelines

NATO members are expected to spend at least 2 percent of their GDP on defense, and at least 20 percent of their defense spending is supposed to go to equipment. Only three of the 28 countries—the U.S., the U.K., and Poland—do both.

### Defense Spending as a Share of GDP, 2016

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage</th>
</tr>
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<tbody>
<tr>
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<tr>
<td>Greece</td>
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<tr>
<td>U.K.</td>
<td>2.21</td>
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<tr>
<td>Estonia</td>
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<td>France</td>
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### Equipment as a Share of Defense Expenditures, 2016

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<td>Slovenia</td>
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**Notes:** Figures are estimates for 2016 based on 2010 prices and exchange rates. Iceland is not listed because it has no military.

outside of the continental United States, and more than 60,000 U.S. and allied personnel train there annually. U.S.–European training exercises further advance U.S. interests by developing links between America’s allies in Europe and National Guard units back in the U.S. In a time when most American servicemembers do not recall World War II or the Cold War, cementing bonds with allies in Europe becomes a vital task. Currently, 22 nations in Europe have a state partner in the U.S. National Guard.44

General Breedlove has described NATO forces as being “at a pinnacle of interoperability.” But he also has cautioned that if NATO is to sustain these levels of interoperability, “We need to continue to build the capabilities and capacities to be a credible and effective Alliance and we need to sustain our interoperability through rigorous and sustained training, education, and exercises.”45

In 2014, the U.S. launched Operation Atlantic Resolve, a series of continuous exercises meant to reassure U.S. allies in Europe, particularly those bordering Russia. Operation Atlantic Resolve included among other initiatives 150 troops temporarily deployed to the Baltic States and Poland for training exercises.46 The troops were members of the Army’s 173rd Airborne Brigade, based in Italy and Germany.47 There have been some reports that U.S. soldiers stationed in the Baltics have been on the receiving end of “intimidatory approaches” from Russian intelligence officers.48 In March 2015, a U.S. convoy of 600 soldiers and 120 vehicles, including Strykers, took part in a 1,100-mile “Dragoon Ride” across the Czech Republic, Estonia, Latvia, Lithuania, and Poland before returning to base in Vilseck, Germany.49

The naval component of Operation Atlantic Resolve has consisted in part of increased deployments of U.S. ships to the Baltic and Black Seas. Additionally, the Navy has taken part in bilateral and NATO exercises. For example, BALTOPS 2015 was a 15-day exercise across the Baltic Sea region that involved 5,600 troops from Belgium, Canada, Denmark, Estonia, Finland, France, Germany, Georgia, Latvia, Lithuania, the Netherlands, Norway, Poland, Sweden, Turkey, the United Kingdom, and the United States.50

In addition to training with fellow NATO member states, the U.S., in conjunction with Canada, Lithuania, and the United Kingdom,51 has undertaken a program to train five Ukrainian army battalions and an additional battalion of special operations forces52 at the Joint International Peacekeeping Security Center near Yavoriv, Ukraine. U.S. training for Ukrainian forces began with border and national guards but has expanded to include regular army units.53 Ukraine has received additional training from NATO members that includes counter-IED training, flight safety, military police, and medical training.54 In September 2015, the U.S. and Ukraine cohosted the multinational maritime exercise Sea Breeze 2015 in the Black Sea.55

Quality of Armed Forces in the Region

When it comes to effective international combined operations, it is clear that Europe is not pulling its weight. Investment in defense across Europe has declined since the end of the Cold War. For most EU countries, the political will to deploy troops into harm’s way when doing so is in the national interest has all but evaporated. During the Libya operation, for example, European countries were running out of munitions.56 More recently, munition stocks in the Netherlands are reported to have only five days’ worth of ammunition on hand.57

As an intergovernmental security alliance, NATO is only as strong as its member states. Of NATO’s 28 members, 26 are European. European countries collectively have more than 2 million men and women in uniform, yet by some estimates, only 100,000 of them—a mere 5 percent—have the capability to deploy beyond their national borders.58

Article 3 of the 1949 North Atlantic Treaty, NATO’s founding document, states that members, at a minimum, will “maintain and develop their individual and collective capacity
to resist armed attack." Only a handful of NATO members can say that they are living up to their Article 3 commitment. In 2015, only five of 28 NATO member states (Estonia, Greece, Poland, the U.S., and the U.K.) spent the required 2 percent of gross domestic product (GDP) on defense. Recently, NATO total defense expenditures have moved in an upward direction. In 2016, the annual real change in defense outlays for Canada and European NATO members is estimated at 1.5 percent, a $3 billion increase. When cuts have occurred, they have been significantly less than in recent years. In 2015, 19 NATO members stopped cuts in defense spending, and 16 of those 19 also increased their defense spending in real terms.

Nevertheless, the lack of overall investment in substantial amounts has caused even smaller campaigns like the 2011 operation in Libya to flounder. What began as a military operation inspired by France and Britain had to be absorbed quickly into a NATO operation because the Europeans had neither the political will nor the military capability (without the U.S.) to complete the mission. Former Secretary of Defense Robert Gates summed up Europe’s contribution to the Libya operation:

> While every alliance member voted for the Libya mission, less than half have participated at all, and fewer than a third have been willing to participate in the strike mission. Frankly, many of those allies sitting on the sidelines do so not because they do not want to participate, but simply because they can’t. The military capabilities simply aren’t there.

The lack of defense investment by Europeans has also had a direct impact on recent overseas operations. At the height of the combat operations in Afghanistan, many European NATO members were having difficulty deploying just dozens of troops at a time. The Europeans’ contribution to the air campaign against the Islamic State has been meager considering the size of their air forces. When Europeans do send troops, many are often restricted by numerous nationally imposed limitations on their activities (commonly called “caveats”). In Afghanistan, examples included no flying at night or no combat patrols beyond a certain distance from a base that limits their usefulness to the NATO commander. In the campaign against the Islamic State, the few European countries that are conducting air strikes will do so only in Iraq even though the terrorist group is very active (and has its headquarters) in Syria. Lack of naval investment is also problematic. Jamie Shea, NATO’s Deputy Assistant Secretary General for Emerging Security Challenges, stated in May 2016 that a “lack of ships” is a growing problem for the alliance. This lack of capability is mainly the result of a decrease in defense investment by the members of NATO since the end of the Cold War and a lack of political will to use military capability when and where it is needed.

**Germany.** In 2015, Germany announced plans to increase defense spending by 6.2 percent over five years. In 2016, its defense budget increased by €1.2 billion. The planned increase will raise the overall defense budget from €34.3 billion in 2016 to €39.2 billion by 2020. However, at 1.2 percent of GDP in 2015, German defense spending is still well below the NATO benchmark of 2 percent of GDP. Germany reportedly will focus increased defense euros “on cyber defense and naval capabilities as well as aerial surveillance.”

The German military struggles with equipment that is in disrepair or short supply. In 2015, Germany spent only 13.3 percent of its defense budget on equipment, well below the 25 percent, 23.4 percent, and 26.1 percent spent by France, the U.K., and the U.S., respectively. The results of this underinvestment are evident. According to news descriptions of a Bundestag report, for example, only seven of 43 German naval helicopters are flightworthy, only one of four German submarines is operational, and only 70 of 80 GTK Boxer Armored Vehicles are fit for deployment.

The air force faces similar challenges. In 2014, according to a parliamentary report, less than half of Germany’s fighter jets were
ready for use,\textsuperscript{72} and in December 2015, a defense ministry report revealed that the situation had further deteriorated to the point where only 29 of 66 German Tornadoes were airworthy.\textsuperscript{73} Worse still, the Tornadoes currently flying surveillance missions over Iraq and Syria cannot “fly night missions because of a glare problem involving cockpit displays and pilots’ goggles.”\textsuperscript{74} Germany continues to utilize a 50-year-old transport plane because of a five-year delay in delivery of new Airbus A400M transports.\textsuperscript{75}

In September 2015, the German government announced plans to phase out the army’s standard G36 rifle starting in 2019 after embarrassing reports that the G36 loses accuracy when sustaining fire in hot temperatures.\textsuperscript{76} Funding for equipment for the army, however, was increased by 8.4 percent in 2015.\textsuperscript{77}

The German forces participating in a NATO training exercise in Norway substituted broomsticks for machine guns that they did not have.\textsuperscript{78} The units involved are assigned to the Spearhead force, which was created at the Wales summit as a key element in NATO’s response to Russian aggression against Ukraine.\textsuperscript{79} German Defense Minister Ursula von der Leyen has admitted that Germany is currently unable to meet NATO’s readiness targets.\textsuperscript{80} In an especially embarrassing episode, German soldiers taking part in the Cold Response 2016 exercise in Norway in February and March 2016 had to leave early after 12 days because they had exceeded their overtime limits.\textsuperscript{81}

The German army, buoyed by conscription, was 585,000 strong in 1990 at the end of the Cold War.\textsuperscript{82} Today, the Bundeswehr has only 177,000 members.\textsuperscript{83} Germany will add 7,000 new positions by 2023.\textsuperscript{84} The decision marks the first time since the end of the Cold War that the German army has added troops to its ranks. Additionally, civilian personnel in the army will rise from the current 56,000 to 60,400, an addition of 4,400 civilians on top of the 7,000 increase in soldiers.\textsuperscript{85} In May 2016, the German Defense Minister announced that the government would seek parliamentary approval to remove the 185,000-person cap for the Bundeswehr.\textsuperscript{86}

Germany will spend 240 million euros to keep dual-capable Tornado aircraft, an important piece of NATO’s nuclear deterrent, flying until 2024.\textsuperscript{87} However, it is also cutting procurement and decommissioning certain specific capabilities, a burden that will fall primarily on its army and air force. Germany has announced procurement of 18 Sea Lion-variant helicopters and 82 tactical transport helicopters from Airbus, reportedly to compensate for cancelled and reduced procurement elsewhere.\textsuperscript{88}

At the United Nations in September 2014, German Foreign Minister Frank-Walter Steinmeier called for greater German engagement in the world, but he focused principally on diplomatic rather than military engagement.\textsuperscript{89} Germany has supplied weapons to Kurdish troops fighting ISIS in Iraq, including rifles and MILAN anti-tank guided missiles and Panzerfaust 3 rockets.\textsuperscript{90} In 2016, it also increased the number of trainers it has on the ground in Iraq, but they are not allowed to engage in offensive operations.\textsuperscript{91}

Overall, Germany has been increasing its military participation abroad. As of December 2015, 2,696 German soldiers were deployed overseas.\textsuperscript{92} Included in this number are contributions to NATO’s KFOR peacekeeping mission in Kosovo and NATO’s Operation Active Fence in Turkey.\textsuperscript{93} In early 2016, Germany also increased its troop contribution to NATO’s Resolute Support Mission in Afghanistan to 980 soldiers, the second-largest contribution after the U.S.\textsuperscript{94} Germany participates in the EU Training Mission in Mali and in 2016 sent an additional 500 soldiers to support the U.N. Multidimensional Integrated Stabilization Mission in Mali.\textsuperscript{95} Germany has elected not to participate in the air campaign to bomb ISIS targets, although in 2016 it did send six Tornadoes to fly reconnaissance missions over Iraq and Syria, as well as a frigate to assist in protecting the French aircraft carrier \textit{Charles de Gaulle}.\textsuperscript{96} From September 2015–January 2016, Germany contributed four
Typhoons to Baltic Air Policing. It also has pledged 1,000 troops for the Very High Readiness Joint Task Force (VJTF), the spearhead force created after the NATO Wales summit.97 Despite increased engagement overseas, however, Germany has pushed back against NATO efforts to base troops and heavy weapons permanently in Eastern Europe.98 Germany is hemmed in by a largely historical legacy of public reluctance to support stronger military engagement beyond its borders. A Bertelsmann Foundation poll in April 2016 found that only 31 percent of Germans would support sending German troops to defend the Baltic States or Poland from Russian attack.99 As a result, German military contributions to NATO remain limited. Budget increases are still modest, and with much more time and money needed to build real defense capabilities, Germany will continue to be an economic powerhouse with mismatched military capabilities.

**France.** Although France rejoined NATO’s Integrated Command Structure in 2009, it remains outside the alliance’s nuclear planning group. France spent 1.8 percent of GDP on defense in 2015, spending a quarter of its defense budget on equipment (only Luxembourg, Poland, Turkey, and the U.S. spend a higher percentage on equipment).100 France had a defense budget of €31.4 billion in 2015; by 2019, the budget is expected to total €34 billion.101 While the country kept a NATO Wales summit commitment to protect defense from further budget cuts, its defense spending remains well below 2 percent of GDP. François Heisbourg has likened French defense spending under President Hollande and his predecessor Nicolas Sarkozy to “slow erosion, rather than severe cuts.”102

Despite this erosion, France maintains a competent, professional military with robust capabilities. France has a 209,000-strong active military force103 that includes 200 tanks; one aircraft carrier; 10 submarines, four of which are ballistic missile submarines; 202 combat aircraft; and 80 transport aircraft.104 France also remains politically and militarily dedicated to retaining an independent nuclear deterrent. Approximately one-fourth of France’s defense acquisition budget is spent on the nation’s nuclear deterrent.105 In February 2015, President Hollande reiterated the French commitment to maintaining this deterrent: “The international context does not allow for any weakness…. [T]he era of nuclear deterrence is therefore not over.”106

France withdrew the last of its troops in Afghanistan at the end of 2014, although all French combat troops had left in 2012. All told, France lost 89 soldiers and 700 wounded in Afghanistan.107 In September 2014, France launched Operation Chammal, its contribution to the air campaign against the Islamic State in Iraq. In February 2015, the aircraft carrier *Charles de Gaulle* joined the operation, halving the flying time needed for French fighters to strike targets in Iraq. Previously, all of France’s fighters had flown from bases in the United Arab Emirates or Jordan.108 The *Charles de Gaulle* left the Persian Gulf in April 2015 but returned to the eastern Mediterranean in late November 2015 to strike targets in Syria.109 In September 2015, a year after the commencement of Operation Chammal, France launched its first air strikes against targets in Syria.110

France has 1,000 soldiers,111 one frigate, eight Mirage and six Rafale fighter jets, one air-to-air refueling plane, one AWACS, and one maritime patrol aircraft,112 in addition to the approximately 26 aircraft on the *Charles De Gaulle*, involved in operations against ISIS.113 In December 2015, a French commander aboard the *Charles de Gaulle* took command of U.S. Naval Forces Central Command’s Task Force 50, overseeing naval strike operations against ISIS.114 It was the first time a French officer had ever commanded a U.S. Navy task force.115

The French military is also active in Africa, particularly in countries where France maintains cultural and historical ties. France has over 3,000 troops, 17 helicopters, 200 tanks, and six fighter jets involved in anti-terrorism operations in Burkina Faso, Chad, Mali,
Mauritania, and Niger as part of Operation Barkhane. In 2016, France will end Operation Sangaris in the Central African Republic (CAR), begun in 2013, but 300 of France’s 900 troops currently in the CAR will remain as part of the U.N. Peacekeeping mission and EU training mission there. France also continues to take part in the EU’s ATALANTA anti-piracy mission off the coast of Somalia and its own anti-piracy mission in the Gulf of Guinea in addition to a host of smaller U.N. and EU peacekeeping and training missions in Africa and Lebanon.

The French economy continues to sputter along, growing by 0.5 percent in the first quarter of 2016; an enormous debt hampers an economy in need of structural reforms. Many analysts believe that under the current reality, “it is unlikely that France will be able to return to sustained economic growth and thus broaden its budget base.” The lagging economy has put further pressure on investments in defense. However, in November, in the wake of terrorist attacks in Paris, President Hollande announced that planned cuts in defense personnel will be deferred through 2019.

The political and economic importance of the defense industry in France impedes deep defense cuts but does not prevent them altogether. The defense industry is so important, both in terms of cash flow to France’s coffers and to its prestige as a significant supplier of arms and advanced equipment, that the government waited months following Russia’s invasion of Ukraine to suspend indefinitely its delivery to Russia of two Mistral warships. The sale was finally cancelled in August 2015 and France sold the mistrals to Egypt. (The Egyptian navy is slated to take delivery of the mistrals by September 2016, and France is reported to have paid Russia $1.1 billion for cancellation of the sale.) In February 2015, France signed a deal with Egypt to export 24 Rafale fighter jets, the first foreign order for the planes. In March 2016, Qatar and France signed a $7.5 billion deal for 24 Rafale jets and an undisclosed number of MBDA missiles, including training for 36 pilots and 100 mechanics. In April 2016, the French group DCNS won a contract from Australia to build 12 submarines worth an estimated €34 billion. According to the French defense industry group GIFAS, orders were 2.3 percent higher in 2015 than in 2014.

The United Kingdom. America’s most important bilateral relationship in Europe is the Special Relationship with the United Kingdom. Culturally, both countries value liberal democracy, a free-market economy, and human rights at a time when many other nations around the world are rejecting those values. The U.S. and the U.K. also face the same global security challenges: a resurgent Russia, the rise of the Islamic State, increasing cyber attacks, and nuclear proliferation in Iran.

In his famous 1946 “Sinews of Peace” speech—now better known as his “Iron Curtain” speech—Winston Churchill described the Anglo–American relationship as one that is based, first and foremost, on defense and military cooperation. From the sharing of intelligence to the transfer of nuclear technology, a high degree of military cooperation has helped to make the Special Relationship between the U.S. and the U.K. unique. Then-U.K. Prime Minister Margaret Thatcher made clear the essence of the Special Relationship between the U.K. and the U.S. when she first met then-U.S.S.R. President Mikhail Gorbachev in 1984: “I am an ally of the United States. We believe the same things, we believe passionately in the same battle of ideas, we will defend them to the hilt. Never try to separate me from them.”

Since the 9/11 terrorist attacks, the United Kingdom has proven itself to be America’s number one military partner. For example, Britain provided 46,000 troops for the 2003 invasion of Iraq. At the height of this commitment, the U.K. also deployed 10,000 troops to one of the deadliest parts of Afghanistan—an area that at its peak accounted for 20 percent of the country’s total violence—while many other NATO allies operated in the relative safety of the North.
In 2015, the U.K. conducted a defense review, the results of which have driven a modest increase in defense spending and an effort to reverse some of the cuts that had been implemented pursuant to the previous review in 2010. Though its military is small in comparison to the militaries of France and Germany, the U.K. maintains the most effective armed forces in European NATO. In recent years, it has increased funding for its highly respected Special Forces. By 2020, the Royal Air Force (RAF) will operate a fleet of F-35 and Typhoon fighter aircraft, the latter being upgraded to carry out ground attacks. The RAF recently brought into service a new fleet of air-to-air refuelers, which is particularly noteworthy because of the severe shortage of this capability in Europe. With the U.K., the U.S. produced and has jointly operated an intelligence-gathering platform, the RC-135 Rivet Joint aircraft, which has already seen service in Mali, Nigeria, and Iraq and is now part of the RAF fleet.

The U.K. operates seven C-17 cargo planes and has started to bring the European A400M cargo aircraft into service after years of delays. The 2015 defense review recommended keeping 14 C-130Js in service even though they initially were going to be removed from the force structure. The Sentinel R1, an airborne battlefield and ground surveillance aircraft, originally was due to be removed from the force structure in 2015, but its service is being extended to at least 2025, and the U.K. will soon start operating the P-8 Poseidon maritime patrol aircraft. The U.S. and U.K. are in discussions with regard to filling the U.K.’s antisubmarine gap until the new P-8s come into service in 2019. In November 2015, a French maritime patrol aircraft had to assist the Royal Navy in searching for a Russian submarine off the coast of Scotland.

The Royal Navy’s surface fleet is based on the new Type-45 Destroyer and the older Type-23 Frigate. The latter will be replaced by the Type-26 Global Combat Ship sometime in the 2020s. In total, the U.K. operates only 19 frigates and destroyers, which most experts agree is dangerously low for the commitment asked of the Royal Navy. Nevertheless, the Royal Navy still delivers a formidable capability.

The U.K. will not have an aircraft carrier in service until around 2020 when the first Queen Elizabeth-class carrier enters service. This will be the largest carrier operated in Europe. Two of her class will be built, and both will enter service. Additionally, the Royal Navy is introducing seven Astute-class attack submarines as it phases out its older Trafalgar-class. Crucially, the U.K. maintains a fleet of 13 Mine Counter Measure Vessels (MCMVs) that deliver world-leading capability and play an important role in Persian Gulf security contingency planning.

Perhaps the Royal Navy’s most important contribution is its continuous-at-sea, submarine-based nuclear deterrent based on the Vanguard-class ballistic missile submarine and the Trident missile. In July 2016, the House of Commons voted to renew Trident, approving the manufacture of four replacement submarines. However, the replacement submarines are not expected to enter service until 2028 at the earliest.

Turkey. Turkey has been an important U.S. ally since the closing days of World War II. During the Korean War, it deployed a total of 15,000 troops and suffered 721 killed in action and more than 2,000 wounded. Turkey joined NATO in 1952, one of only two NATO members (the other was Norway) that had a land border with the Soviet Union. Today, it continues to play an active role in the alliance, but not without challenges. A significant low point in U.S.–Turkish relations came in 2003 when the Turkish parliament voted by a small margin (264 to 250) to deny the U.S. access to its territory for an invasion of Iraq. Under the leadership of President Recep Tayyip Erdogan, Turkey has been a challenging partner for the West, but it remains an important partner and NATO member.

Turkey is vitally important to Europe’s energy security. It is the gateway to the resource-rich Caucasus and Caspian Basin and
controls the Bosporus, one of the most important shipping straits in the world. Several major gas and oil pipelines run through Turkey. As new oilfields are developed in the Central Asian states, and given Europe’s dependence on Russian oil and gas, Turkey can be expected to play an increasingly important role in Europe’s energy security.

On July 15, 2016, elements of the Turkish armed forces attempted a coup d’état against the increasingly Islamist-leaning leadership of President Erdogan. This was the fourth coup since 1960 (the fifth if one counts the so-called post-modern coup in 1997). In each previous case, the military had been successful, and democracy was returned to the people; in this case, however, Erdogan immediately enforced a state of emergency and cracked down on many aspects of government, the military, and civil society. Tens of thousands of civil servants, judges, and academics have been arrested, dismissed, or banned from international travel. Approximately one-third of all general officers in the Turkish military have been dismissed. Although all opposition parties condemned the coup attempt, the failed plot has enabled Erdogan to consolidate more power. His response to the coup has further eroded Turkey’s democracy, once considered a model for the region. Senior government officials’ erratic and at times hyperbolic statements alleging U.S. involvement in the coup, combined with Erdogan’s rapprochement with Russian President Vladimir Putin, have brought U.S.-Turkish relations to an all-time low.

Notwithstanding the fallout from the coup, U.S. security interests in the region lend considerable importance to America’s relationship with Turkey. Turkey is home to Incirlik Air Base, a major U.S. and NATO air base. After an initial period of vacillation in dealing with the threat from the Islamic State, a spate of ISIS attacks that rocked the country has led Turkey to play a bigger role in attacking the terrorist group, and Turkey’s military contribution to international security operations still sets it apart from many of the nations of Western Europe. The Turks have deployed thousands of troops to Afghanistan and have commanded the International Security Assistance Force (ISAF) twice since 2002. Turkey continues to maintain more than 500 troops in Afghanistan as part of NATO’s Resolute Support mission, making it the fifth-largest troop contributor out of 40 nations. The Turks also have contributed to a number of peacekeeping missions in the Balkans, still maintain almost 400 troops in Kosovo, and have participated in counterpiracy and counterterrorism missions off the Horn of Africa. They also deployed planes, frigates, and submarines during the NATO-led operation in Libya.

Turkey’s 510,600-strong active-duty military is NATO’s second-largest after that of the United States. A number of major procurement programs in the works include up to 250 new Altay main battle tanks, 350 T-155 Fırtına 155mm self-propelled howitzers, six Type-214 submarines, and more than 50 T-129 attack helicopters.

With respect to procurement, the biggest area of contention between Turkey and NATO is Turkey’s selection of a missile defense system. In September 2013, Turkey selected China Precision Machinery Import–Export Corporation (CPMIEC) for a $3.44 billion deal to provide the system. NATO has said that no Chinese-built system could be integrated into any NATO or American missile defense system. U.S. officials also have warned that any Turkish company that acts as a local subcontractor in the program would face serious U.S. sanctions because CPMIEC has been sanctioned under the Iran, North Korea, and Syria Nonproliferation Act. After increased pressure from NATO allies, Ankara opened parallel talks with Eurosam, the European maker of the Aster 30, and Raytheon/Lockheed Martin, the U.S. company offering the Patriot system. As of October 9, 2015, a final decision had not been made.

The challenge for U.S. and NATO policymakers will be to determine whether the aftermath of the coup represents a long-term
shift in Turkey’s foreign policy or whether Erdogan’s leadership of Turkey is simply an anomaly in an otherwise constructive and fruitful security relationship that has lasted for decades.

**The Baltic States.** The U.S. has a long history of championing the sovereignty and territorial integrity of the Baltic States that dates back to the interwar period of the 1920s. Since regaining their independence from Russia in the early 1990s, the Baltic States have been staunch supporters of the transatlantic relationship. Although small in absolute terms, the three countries contribute significantly to NATO in relative terms.

**Estonia.** Estonia has been a leader in the Baltics in terms of defense spending and is one of five NATO members to meet the 2 percent of GDP spending benchmark. Although the Estonian armed forces total only 5,750 active duty service personnel (including the army, navy, and air force), they are held in high regard by their NATO partners and punch well above their weight inside the alliance. Since 1996, almost 1,500 Estonian soldiers have served in the Balkans. Between 2003 and 2011, 455 served in Iraq. Perhaps Estonia’s most impressive deployment has been to Afghanistan: more than 2,000 troops deployed between 2003 and 2014 and the second-highest number of deaths per capita among all 28 NATO members. In 2015, Estonia reintroduced conscription for men ages 18–27, who must serve eight or 11 months before being added to the reserve rolls.

Estonia has demonstrated that it takes defense and security policy seriously, focusing its defense policy on improving defensive capabilities at home while maintaining the ability to be a strategic actor abroad. Over the next few years, Estonia will increase from one to two the number of brigades in the order of battle. The goal is to see 50 percent of all land forces with the capability to deploy beyond national borders. Mindful of NATO’s benchmark that each member should spend 2 percent of GDP on defense, there is a planning assumption inside the Estonian Ministry of Defense that up to 10 percent of the armed forces will always be deployed overseas. Estonia is also making efforts to increase the size of its rapid reaction reserve force from 18,000 to 21,000 troops by 2022. This increase and modernization includes the recently created Cyber Defence League, a reserve force that relies heavily on expertise found in the civilian sector.

**Latvia.** Latvia’s recent military experience has also been centered on operations in Iraq and Afghanistan alongside NATO and U.S. forces. Latvia has deployed more than 3,000 troops to Afghanistan, and between 2003 and 2008, it deployed 1,165 troops to Iraq. In addition, Latvia has contributed to a number of other international peacekeeping and military missions. These are significant numbers considering that only 5,310 of Latvia’s troops are full-time servicemembers; the remainder are reserves.

Latvia’s 2012 Defense Concept is an ambitious document that charts a path to a bright future for the Latvian National Armed Forces if followed closely and resourced properly. Latvia plans that a minimum of 8 percent of its professional armed forces will be deployed at any one time but will train to ensure that no less than 50 percent will be combat-ready to deploy overseas if required. The government has stated that the NATO benchmark of 2 percent of GDP in defense spending will be met by 2018, and spending will be increasing steadily until then. Each year, no less than 20 percent of the Latvian defense budget will be allocated to modernizing and procuring new military equipment. Latvian Special Forces are well respected by their American counterparts. Latvia has continued to upgrade its ground-based air defense system, ordering seven new Sentinel radars from the U.S. in 2015.

**Lithuania.** Lithuania is the largest of the three Baltic States, and its armed forces total 16,400 active duty troops, an increase of 50 percent from the previous year. Lithuania has also shown steadfast commitment to international peacekeeping and military
operations. Between 1994 and 2010, more than 1,700 Lithuanian troops were deployed to the Balkans as part of NATO missions in Bosnia, Croatia, and Kosovo. Between 2003 and 2011, Lithuania sent 930 troops to Iraq. Since 2002, just under 3,000 Lithuanian troops have served in Afghanistan, a notable contribution divided between a special operations mission alongside U.S. and Latvian Special Forces and command of a Provisional Reconstruction Team (PRT) in Ghor Province, making Lithuania one of only a handful of NATO members to have commanded a PRT.

Although Lithuania does not meet the NATO goal of 2 percent of GDP spent on defense, like Latvia, it has pledged to do so by 2018. In 2017, Lithuania plans to spend €725 million on defense, approximately 1.8 percent of GDP. In addition, Lithuania’s decision to build a liquefied natural gas import facility at Klaipėda has begun to pay dividends, breaking Russia’s natural gas monopoly in the region. In 2016, Norway will overtake Russia as the top exporter of natural gas to Lithuania.

Poland. Situated in the center of Europe, Poland shares a border with four NATO allies, a long border with Belarus and Ukraine, and a 144-mile border with Russia alongside the Kaliningrad Oblast. Poland also has a 65-mile border with Lithuania, making it the only NATO member state that borders any of the Baltic States, and NATO’s contingency plans for liberating the Baltic States in the event of a Russian invasion are reported to rely heavily on Polish troops and ports. Poland has an active military force of almost 100,000 including a 48,000-strong army with 971 main battle tanks. Poland’s Defense Minister has declared that “we envisage a fundamental increase in the army, by at least 50 percent over the coming years, including the creation of three brigades for the territorial defense of the country on the eastern flank.”

While Poland’s main focus is territorial defense, the country has 198 troops deployed in Afghanistan as part of NATO’s Resolute Support Mission. Additionally, Poland has discussed the possibility of sending F-16s to Syria to fly reconnaissance missions. Poland’s air force has taken part in Baltic Air Policing six times since 2006 and most recently in the first half of 2015. In April 2016, Poland and the remaining three Visegrád Group nations announced plans, starting in 2017, to begin rotating units of 150 soldiers to the Baltics for three months.

Current U.S. Military Presence in Europe

Former head of U.S. European Command General Philip Breedlove has aptly described the role of U.S. basing in Europe:

The mature network of U.S. operated bases in the EUCOM AOR provides superb training and power projection facilities in support of steady state operations and contingencies in Europe, Eurasia, Africa, and the Middle East. This footprint is essential to TRANSCOM’s global distribution mission and also provides critical basing support for intelligence, surveillance, and reconnaissance assets flying sorties in support of AFRICOM, CENTCOM, EUCOM, U.S. Special Operations Command, and NATO operations.

At its peak in 1953, because of the Soviet threat to Western Europe, the U.S. had approximately 450,000 troops in Europe operating across 1,200 sites. During the early 1990s, both in response to a perceived reduction in the threat from Russia and as part of the so-called peace dividend following the end of the Cold War, U.S. troop numbers in Europe were slashed. Between 1990 and 1993, the number of U.S. soldiers in Europe decreased from 213,000 to 122,000. Their use, however, actually increased; during that same period, the U.S. Army in Europe supported 42 deployments that required 95,579 personnel.

Until 2013, the U.S. Army had two heavy brigade combat teams in Europe, the 170th and 172nd BCTs in Germany; one airborne Infantry BCT, the 173rd Airborne Brigade in Italy; and one Stryker BCT, the 2nd Armored Calvary Regiment in Germany, permanently based in Europe. Deactivation of the 170th BCT in October 2012—slightly earlier than
the planned date of 2013—marked the end of a 50-year period during which U.S. combat soldiers had been stationed in Baumholder, Germany. Deactivation of the 172nd BCT took place in October 2013. In all, this meant that more than 10,000 soldiers were removed from Europe. Moreover, because these two heavy brigades constituted Europe’s primary armored force, their deactivation left a significant capability gap not only in the U.S. ground forces committed to Europe, but also in NATO’s capabilities, a concern noted by the 2005 Overseas Basing Commission, which warned against removing a heavy BCT from Europe.

When the decision was announced in 2012 to bring two BCTs home, the Obama Administration said that the reduction in capability would be offset with a U.S.-based BCT that, when necessary, would rotate forces, normally at the battalion level, to Europe for training missions. This decision unsettled America’s allies because, in the words of General Breedlove, “[p]ermanently stationed forces are a force multiplier that rotational deployments can never match.” Today, with only 65,000 U.S. troops permanently based in Europe, “[t]he challenge EUCOM faces is ensuring it is able to meet its strategic obligations while primarily relying on rotational forces from the continental United States.”

The U.S. is on pace to have only 17 main operating bases left on the continent, primarily in Germany, Italy, the United Kingdom, Turkey, and Spain. The number of U.S. installations in Europe has declined steadily since the Cold War when, for example, in 1990, the U.S. Army alone had more than 850 sites in Europe. Today, the total number for all services is approximately 350. In January 2015, the Department of Defense announced the outcome of its European Infrastructure Consolidation review, under which 15 minor sites across Europe will be closed.

The U.S. has three different types of military installations in the European Command’s area of responsibility:

- **Main operating bases** are the large U.S. military installations with a relatively large number of permanently based troops and well-established infrastructure.

- **Forward operating sites** are intended for rotational forces rather than permanently based forces. These installations tend to be scalable and adaptable depending on the circumstances.

- **Cooperative security locations** have little or no permanent U.S. military presence and are usually maintained by contractor or host-nation support.

EUCOM’s stated mission is to conduct military operations, international military partnering, and interagency partnering to enhance transatlantic security and defend the United States as part of a forward defensive posture. EUCOM is supported by four service component commands and one subordinate unified command: U.S. Naval Forces Europe (NAVEUR); U.S. Army Europe (USAREUR); U.S. Air Forces in Europe (USAFE); U.S. Marine Forces Europe (MARFOREUR); and U.S. Special Operations Command Europe (SOCEUR).

**U.S. Naval Forces Europe.** NAVEUR is responsible for providing overall command, operational control, and coordination for maritime assets in the EUCOM and Africa Command (AFRICOM) areas of responsibility. This includes more than 20 million square nautical miles of ocean and more than 67 percent of the Earth’s coastline.

This command is currently provided by the U.S. Sixth Fleet based in Naples and brings critical U.S. maritime combat capability to an important region of the world. Some of the more notable U.S. naval bases in Europe include the Naval Air Station in Sigonella, Italy; the Naval Support Activity Base in Souda Bay, Greece; and the Naval Station at Rota, Spain. Naval Station Rota is home to four capable Aegis-equipped destroyers. In addition, the USS Mount Whitney, a Blue Ridge-class
command ship, is permanently based in the region. This ship provides a key command-and-control platform that was employed successfully during the early days of the recent Libyan operation.

In 2016, the Navy requested funds to upgrade facilities at Keflavik Air Station in Iceland to enable operations of P-8 Poseidon aircraft in the region. The P-8, with a combat radius of 1,200 nautical miles, is capable of flying missions over the entirety of the GIUK (Greenland, Iceland, and United Kingdom) gap, which has seen an increase in Russian submarine activity.

The U.S. Navy also keeps a number of submarines in the area that contribute to EUCOM’s intelligence, surveillance, and reconnaissance (ISR) capacities. The British Overseas Territory of Gibraltar, for example, frequently hosts U.S. nuclear-powered submarines. Docking U.S. nuclear-powered submarines in Spain is problematic and bureaucratic, making access to Gibraltar’s Z berths vital. Gibraltar is the best place in the Mediterranean to carry out repair work. Strong U.S.–U.K. military cooperation helps the U.S. to keep submarine assets integrated into the European theater. The U.S. Navy also has a fleet of P-3 Maritime Patrol Aircraft and EP-3 Reconnaissance Aircraft operating from U.S. bases in Italy, Greece, Spain, and Turkey. They complement the ISR capabilities of U.S. submarines.

**U.S. Army Europe.** USAREUR was established in 1952. Then as today, the U.S. Army formed the bulk of U.S. forces in Europe. At the height of the Cold War, 277,000 soldiers and thousands of tanks, armored personnel carriers, and tactical nuclear weapons were positioned at the Army’s European bases. USAREUR also contributed to U.S. operations in the broader region, such as the U.S. intervention in Lebanon in 1985, when it deployed 8,000 soldiers for four months from bases in Europe. In the 1990s, after the fall of the Berlin Wall, USAREUR continued to play a vital role in promoting U.S. interests in the region, especially in the Balkans.

USAREUR is headquartered in Wiesbaden, Germany. The core of USAREUR is formed around two BCTs and an aviation brigade located in Germany and Italy. In addition, the U.S. Army’s 21st Theater Sustainment Command has helped the U.S. military presence in Europe to become an important logistics hub in support of Central Command.

In June 2015, the U.S. announced the re-introduction into Europe of vehicles and equipment for one armored BCT. In December 2015, U.S. Army Europe and Army Materiel Command began to store the European Activity Set (EAS) in prepositioned sites in Bulgaria, Lithuania, and Romania. The EAS equipment will remain in Europe; after it is upgraded and repaired, it will be transitioned into the core of the static Army Prepositioned Stocks (APS), first announced in February 2016. The APS will be stored in Belgium, Germany, and the Netherlands. According to General Breedlove, while the U.S. plans to utilize preexisting locations for APS upgrades and storage, “new locations...may be needed given the 80% reduction of European infrastructure over the past 25 years and NATO’s expansion along its eastern boundary.”

The U.S. plans continuous troop rotations of U.S.-based armored brigade combat teams (ABCTs) to Europe. The additional rotational BCT in Europe will be in place by February 2017. The ABCTs will be on nine-month rotations and will travel with their assigned equipment to Europe to demonstrate an ability to deploy troops and equipment from the U.S. to Europe.

**U.S. Air Forces in Europe.** USAFE provides a forward-based air capability that can support a wide range of contingency operations ranging from direct combat operations in Afghanistan and Libya to humanitarian assistance in Tunisia and Israel. USAFE originated as the 8th Air Force in 1942 and flew strategic bombing missions over the European continent during World War II. In August 1945, the 8th Air Force was redesignated USAFE with 17,000 airplanes and 450,000 personnel.
Today, USAFE has seven main operating bases along with 114 geographically separated locations. The main operating bases are the RAF bases at Lakenheath and Mildenhall in the U.K., Ramstein and Spangdahlem Air Bases in Germany, Lajes Field in the Azores, Incirlik Air Base in Turkey, and Aviano Air Base in Italy. As part of the European Infrastructural Consolidation process, RAF Mildenhall, which houses KC-135 Stratotankers and 3,900 American military personnel, is expected to close in the next few years. By 2020, RAF Lakenheath will be home to two squadrons of F-35s, making it the first location in Europe for the USAF’s new fighter jets. Approximately 39,000 active-duty, reserve, and civilian personnel are assigned to USAFE.

As part of ERI, in August 2015, the United States temporarily deployed F-22 Raptors to Europe for the first time, as four were deployed to Spangdahlem Air Base in Germany for training exercises. The planes flew direct from Tyndall Air Force Base FL to Germany to showcase an ability to quickly reintroduce air power to Europe. In August 2015, two F-22s flew briefly to Poland and Estonia as a test of ability to get in and out of airbases in eastern member states. The planes returned to the U.S. in mid-September 2015.

In April and May 2016, 12 F-22s from Tyndall AFB were deployed to RAF Lakenheath for additional exercises. In April 2016, Romania’s Mihail Kogalniceanu Airport hosted two F-22s briefly for a NATO training exercise. The exercise to showcase rapid deployments to forward operating bases marked the first time F-22s had landed in Romania. Two F-22s also deployed briefly from Lakenheath to Šiauliai Air Base in Lithuania. General Frank Gorenc, commander of U.S. Air Forces in Europe and U.S. Air Forces in Africa, said that the deployment was conducted to “test our infrastructure, aircraft capabilities and the talented Airmen and allies who will host these aircraft in Europe.”

Additionally, in 2015, the U.S. sent three Theater Security Packages (TSPs) to Europe. The first consisted of 12 A-10C Thunderbolts from Arizona, deployed for six months from Spangdahlem, RAF Lakenheath, and Poland from February–August 2015. In April 2015, the second TSP, consisting of 12 F-15C fighters from Florida and Oregon, was deployed to Leeuwarden airbase in the Netherlands before being deployed to Bulgaria. Nine of the F-15Cs returned to the U.S. at the end of June 2015. In September 2015, a third TSP, consisting of 12 A-10s from Georgia, was deployed for six months to Amari Air Base in Estonia for training exercises.

In April 2016, the U.S. deployed a fourth TSP, consisting of 12 F-15C Eagles, to Europe for six months. Six F-15s were deployed to Leeuwarden in the Netherlands and took part in Exercise Frisian Flag. The remaining six F-15s deployed to Keflavik, Iceland, to take part in NATO’s Air Policing mission there. The F-15s will forward deploy temporarily to Bulgaria, Estonia, and Romania and remain in Europe until September 2016. Six F-15s and 100 members of Oregon’s National Guard deployed to Finland in May 2016.

**U.S. Marine Forces Europe.** MARFOREUR was established in 1980. It was originally a “designate” component command, meaning that it was only a shell during peacetime but could bolster its forces during wartime. Its initial staff was 40 personnel based in London. By 1989, it had more than 180 Marines in 45 separate locations in 19 countries throughout the European theater. Today, the command is based in Boeblingen, Germany, and has approximately 1,500 Marines assigned to support EUCOM, NATO, and other operations, such as Operation Enduring Freedom. It was also dual-hatted as the Marine Corps Forces, Africa (MARFORAF) under Africa Command in 2008.

In the past, MARFOREUR has supported U.S. Marine units deployed in the Balkans and the Middle East. MARFOREUR also supports the Norway Air Landed Marine Air Ground Task Force, the Marine Corps’ only land-based prepositioned stock. The Marine Corps has enough prepositioned stock in Norway to support a force of 13,000 Marines for 30 days, and the
U.S. Bases in Europe Provide Support Beyond Region

The bulk of the U.S. military presence in Europe remains concentrated in Germany and the U.K. U.S. bases in Europe help to provide tangible reassurance to NATO allies in Europe while also allowing the U.S. military to respond swiftly to threats emanating from the Middle East, Asia, and North Africa.
# U.S. Bases in Europe

<table>
<thead>
<tr>
<th>Host Country</th>
<th>Base Name</th>
<th>Military Branch</th>
<th>Closure</th>
<th>Mission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Norway</td>
<td>Marine Corps Prepositioning, Trendheim</td>
<td>Other</td>
<td>CA—Closure announced</td>
<td>Provides forward-deployed equipment and supplies</td>
</tr>
<tr>
<td>U.K.</td>
<td>RAF Croughton</td>
<td>Air Force</td>
<td></td>
<td>422nd Air Base Group (communications, information weapons)</td>
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<tr>
<td>U.K.</td>
<td>RAF Lakenheath</td>
<td>Air Force</td>
<td></td>
<td>Combat fighter wing provides air power, support, and services</td>
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<tr>
<td>U.K.</td>
<td>RAF Mildenhall</td>
<td>Air Force</td>
<td>CA</td>
<td>Air refueling, combat support, and expeditionary forces</td>
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<tr>
<td>U.K.</td>
<td>RAF Alconbury</td>
<td>Air Force</td>
<td>CA</td>
<td>Supports key NATO intelligence and information-sharing functions</td>
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<tr>
<td>U.K.</td>
<td>RAF Molesworth</td>
<td>Air Force</td>
<td>CA</td>
<td>Supports joint military and interagency operations in Northern Europe</td>
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<td>Belgium</td>
<td>Benelux</td>
<td>Army</td>
<td>CA</td>
<td>Provides base operations support and quality of life services</td>
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<td>Belgium</td>
<td>Brussels</td>
<td>Army</td>
<td>CA</td>
<td>Army base operations and community support</td>
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<td>Netherlands</td>
<td>Schinnen</td>
<td>Army</td>
<td></td>
<td>52nd Fighter Wing and radar systems supporting NATO air control</td>
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<tr>
<td>Germany</td>
<td>Spangdahlem Air Base</td>
<td>Air Force</td>
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<td>Supports deployment, redeployment, and force-protection operations</td>
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<td>Germany</td>
<td>Baumholder</td>
<td>Army</td>
<td>PC</td>
<td>21st Theater Sustainment Command and supports joint missile defense</td>
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<tr>
<td>Germany</td>
<td>Kaiserslautern</td>
<td>Army</td>
<td></td>
<td>86th Airlift Wing (combat airlift and aeromedical evacuation support)</td>
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<tr>
<td>Germany</td>
<td>Ramstein Air Base</td>
<td>Air Force</td>
<td></td>
<td>Medical care to military members, family members, and veterans</td>
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<tr>
<td>Germany</td>
<td>Landstuhl Regional Medical Center</td>
<td>Other</td>
<td>CA</td>
<td>Installation capabilities and services support for expeditionary operations</td>
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<tr>
<td>Germany</td>
<td>Wiesbaden</td>
<td>Army</td>
<td>PC</td>
<td>2nd Cavalry Regiment and rotational unit readiness/training facility</td>
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<tr>
<td>Germany</td>
<td>Schweinfurt</td>
<td>Army</td>
<td>X</td>
<td>Command, control, communications, and base operations</td>
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<tr>
<td>Germany</td>
<td>Bamberg</td>
<td>Army</td>
<td>X</td>
<td>12th Combat Aviation Brigade (restructured as a HQ element)</td>
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<tr>
<td>Germany</td>
<td>Baden-Württemberg</td>
<td>Army</td>
<td></td>
<td>Combat Maneuver Training Center (training in force-on-force exercises)</td>
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<tr>
<td>Germany</td>
<td>Stuttgart</td>
<td>Army</td>
<td>PC</td>
<td>Marshall European Center for Security Studies and NATO School</td>
</tr>
<tr>
<td>Germany</td>
<td>Ansbach</td>
<td>Army</td>
<td></td>
<td>31st Fighter Wing (two F-16 squadrons and one air control squadron)</td>
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<tr>
<td>Germany</td>
<td>Hohenfels</td>
<td>Army</td>
<td>PC</td>
<td>Headquarters of USAFRICOM and 173rd Airborne Brigade</td>
</tr>
<tr>
<td>Germany</td>
<td>Garmisch</td>
<td>Army</td>
<td>PC</td>
<td>Logistical support for combat deployments</td>
</tr>
<tr>
<td>Italy</td>
<td>Aviano Air Base</td>
<td>Air Force</td>
<td></td>
<td>Supports U.S. and NATO naval activities</td>
</tr>
<tr>
<td>Italy</td>
<td>Vicenza</td>
<td>Army</td>
<td></td>
<td>Routing point for military personnel and cargo-rotational support</td>
</tr>
<tr>
<td>Italy</td>
<td>Livorno</td>
<td>Army</td>
<td>PC</td>
<td>65th Air Base Wing (transit support for aviation assets)</td>
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<td>Air Force Mobility command and supports 6th Fleet</td>
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<td>PC</td>
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<td>Lajes Field (Azores)</td>
<td>Air Force</td>
<td></td>
<td>Provides staging and transit for rotational support</td>
</tr>
<tr>
<td>Spain</td>
<td>Rota Naval Station</td>
<td>Navy</td>
<td></td>
<td>39th Air Base Wing (provides global reach and regional stability)</td>
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<td>Greece</td>
<td>U.S. Naval Support Activity, Souda Bay</td>
<td>Navy</td>
<td></td>
<td>Provides advanced tracking to assist in interception and defense</td>
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<tr>
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<td>Mihail Kogălniceanu Airbase</td>
<td>Other</td>
<td></td>
<td></td>
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<tr>
<td>Turkey</td>
<td>Incirlik Air Base</td>
<td>Air Force</td>
<td></td>
<td></td>
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<tr>
<td>Turkey</td>
<td>U.S. X-band radar missile defense, Kureck</td>
<td>Other</td>
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Norwegian government covers half of the costs of the prepositioned storage. The prepositioned stock’s proximity to the Arctic region makes it of particular geostrategic importance.

Crucially, MARFOREUR provides the U.S. with rapid reaction capability to protect U.S. embassies in North Africa. The Special-Purpose Marine Air-Ground Task Force–Crisis Response–Africa (SPMAGTF) is currently located in Spain, Italy, and Romania and provides a response force of 1,550 Marines. In July 2015, Spain and the United States signed the Third Protocol of Amendment to the U.S.–Spanish Agreement for Defense and Cooperation, which allows the U.S. Marine Corps to station up to 2,200 military personnel, 21 aircraft, and 500 non-military employees permanently at Morón Air Base. The Defense Department states that “a surge capability was included in the amendment of another 800 dedicated military crisis-response task force personnel and 14 aircraft at Moron, for a total of 3,500 U.S. military and civilian personnel and 35 aircraft.” This has been particularly important since the tragic events of September 2013, when the U.S. ambassador to Libya and three others were killed in Benghazi, and the rise of the Islamic State, both in Libya as a result of the power vacuum left in the overthrow of the Qadhafi regime and elsewhere in North Africa. The Defense Department also states that the Morón Air Base deployments have led in part to a 50 percent increase in joint training exercises over the past two years.

The Marine Corps also maintains a Black Sea Rotational Force (BSRF) composed of rotational units sent to the Black Sea region to conduct training events with regional partners. In FY 2017, the BSRF is expected to receive $18 million to “increase the volume and scope of engagements with NATO Allies and partners conducted from Mihail Kogălniceanu (MK) Air Base, Romania and Novo Selo, Bulgaria.”

**U.S. Special Operations Command Europe.** SOCEUR is the only subordinate unified command under EUCOM. Its origins are in the Support Operations Command Europe, and it was initially based in Paris. This headquarters provided peacetime planning and operational control of special operations forces during unconventional warfare in EUCOM’s area of responsibility. In 1955, the headquarters was reconfigured as a joint task force and was renamed Support Operations Task Force Europe (SOTFE) and later Special Operations Task Force Europe. When French President Charles de Gaulle forced American troops out of France in 1966, SOTFE relocated to its current headquarters in Panzer Kasernen near Stuttgart, Germany, in 1967. It also operates out of RAF Mildenhall. In 1982, it was redesignated for a fourth time as U.S. Special Operations Command Europe.

Due to the sensitive nature of special operations, publicly available information is scarce. However, it has been documented that SOCEUR elements participated in various capacity-building missions and civilian evacuation operations in Africa; took an active role in the Balkans in the mid-1990s and in combat operations in the Iraq and Afghanistan wars; and most recently supported AFRICOM’s Operation Odyssey Dawn in Libya. SOCEUR also plays an important role in joint training with European allies; since June 2014, it has maintained an almost continuous presence in the Baltic States and Poland in order to train special operations forces in those countries. SOCEUR is expected to receive an additional $25 million in FY 2017 for an increased presence in Eastern Europe. The initiative will help allies to “counter malign influence” while expanding partnerships between U.S. National Guard units and European allies’ special operations forces.

EUCOM has played an important role in supporting other combatant commands, such as CENTCOM and AFRICOM. Out of the 65,000 U.S. troops based in Europe, almost 10,000 are there to support other combatant commands. The facilities available in EUCOM allowed the U.S. to play a leading role in combating Ebola in western Africa during the 2014 outbreak.
In addition to CENTCOM and AFRICOM, U.S. troops in Europe have worked closely with U.S. Cyber Command (CYBERCOM) to implement Department of Defense cyber policy in Europe and to bolster the cyber defense capabilities of America's European partners. This work has included hosting a number of cyber-related conferences and joint exercises with European partners.

In the past year, there have been significant advancements in improving cyber security in Europe. EUCOM’s first Cyber Combat Mission Team (CMT) and Cyber Protection Team (CPT) recently reached initial operational capability. These teams will provide the U.S. with new capabilities to protect systems, information, and infrastructure.195 EUCOM has also supported CYBERCOM’s work inside NATO by becoming a full member of the NATO Cooperative Cyber Defense Center of Excellence in Tallinn, Estonia.

**U.S. Nuclear Weapons in Europe**

In addition to the French and British nuclear capabilities, the U.S. maintains tactical nuclear weapons in Europe. It is believed that until the end of the Cold War, the U.S. maintained approximately 2,500 nuclear warheads in Europe. Unofficial estimates put the current figure at between 150 and 200 warheads based in Italy, Turkey, Germany, Belgium, and the Netherlands.196 All of these weapons are free-fall gravity bombs designed for use with U.S. and allied dual-capable aircraft. The bombs are undergoing a Life Extension Program that it is anticipated will add at least 20 years to the weapons’ life span.197

While some in NATO have suggested that American tactical nuclear weapons in Europe are a Cold War anachronism and should be removed from the continent, NATO’s 2012 Deterrence and Defense Posture Review (DDPR) affirmed that “nuclear weapons are a core component of NATO’s overall capabilities for deterrence and defence alongside conventional and missile defence forces.”198 As if to underscore NATO’s continued concern about sustaining a nuclear deterrent capability, Russia has acted in ways that highlight its status as a potent nuclear weapons power with an extensive nuclear weapons modernization program. Further, it has repeatedly violated a host of arms control agreements, including the Intermediate-Range Nuclear Forces Treaty, which is particularly relevant for the European allies.

**Key Infrastructure and Warfighting Capabilities**

Perhaps one of the major advantages of having U.S. forces in Europe is the access it provides to logistical infrastructure. For example, EUCOM supports the U.S. Transportation Command (TRANSCOM) with its array of airbases and access to ports throughout Europe.

EUCOM supported TRANSCOM with work on the Northern Distribution Network (NDN), which supplied U.S. troops in Afghanistan during major combat operations there. For example, in 2011, when the security situation in Pakistan did not allow passage for NATO supplies, EUCOM’s Deployment and Distribution Operations Center moved 21,574 containers and 32,206 tons of equipment through Europe to Afghanistan over the NDN. EUCOM could not support these TRANSCOM initiatives without the infrastructure and relationships established by the permanent U.S. military presence in Europe.

Europe is a mature and advanced operating environment. America’s decades-long presence there means that the U.S. has tried and tested systems that involve moving large numbers of matériel and personnel into, inside, and out of the continent. This offers an operating environment second to none in terms of logistical capability. For example, there are more than 166,000 miles of rail line in Europe (not including Russia), and an estimated 90 percent of roads in Europe are paved. The U.S. enjoys access to a wide array of airfields and ports across the continent. Major European ports used by the U.S. military include Rotterdam, the Netherlands; Bremerhaven, Germany; and Livorno,
Italy. The Rhine River also offers access to the heartland of Europe. General Gorenc has described plans to use additional funds from the ERI to further develop airfields in Eastern Europe, citing the Baltics, Poland, Romania, and Bulgaria as potential projects. Such airfield infrastructure projects could help to make airfields in Eastern Europe “an easier place to go to accomplish what I call high-volume/high velocity kind of operations.”

More often than not, the security interests of the United States will coincide with those of its European allies. This means that access to bases and logistical infrastructure is usually guaranteed. However, there have been times when certain European countries have not allowed access to their territory for U.S. military operations.

In 1986, U.S. intelligence connected the terrorist bombing of a nightclub in West Germany to the Libyan government and responded with an air strike. On April 15, 1986, the U.S. Air Force in Europe struck a number of Libyan military assets in retaliation. Because France, Spain, and Italy prohibited use of their airspace due to domestic political concerns, the U.S. aircraft flew around the Iberian Peninsula, which required multiple in-flight refuelings.

In 2003, on the eve of the U.S. invasion of Iraq, the Turkish Parliament voted to prevent the U.S. from using Turkish territory to open a northern front. Thankfully, the U.S. had access to excellent logistical infrastructure in Italy. The 173rd Airborne Brigade had moved all of its equipment by rail to the port of Livorno for movement to Kuwait by sea. Despite the Turkish decision to refuse use of its country for offensive operations, the brigade was still able to move it all back rapidly by rail to Aviano Air Base so that it could be parachuted into Northern Iraq.

Some of the world’s most important shipping lanes are also in the European region. In fact, the world’s busiest shipping lane is the English Channel, through which 500 ships a day transit, not including small boats and pleasure craft. Approximately 90 percent of the world’s trade travels by sea. Given the high volume of maritime traffic in the European region, no U.S. or NATO military operation can be undertaken without consideration of how these shipping lanes offer opportunity—and risk—to America and her allies. In addition to the English Channel, other important shipping routes in Europe include the Strait of Gibraltar; the Turkish Straits (including the Dardanelles and the Bosporus); the Northern Sea Route; and the Danish Straits.

Strait of Gibraltar. The Strait of Gibraltar connects the Mediterranean Sea with the Atlantic Ocean and separates North Africa from Gibraltar and Spain on the southernmost point of the Iberian Peninsula. The strait is about 40 miles long and approximately eight miles wide at its narrowest point. More than 200 cargo vessels pass through the Strait of Gibraltar every day, carrying cargoes to Asia, Europe, Africa, and the Americas.

The strait’s proximity to North Africa, combined with its narrowness, has presented security challenges for U.S. and allied warships. In 2002, Moroccan security forces foiled an al-Qaeda plot to attack U.S. and U.K. naval ships in the Strait of Gibraltar using the same tactics that had been used in the USS Cole attack. A 2014 article in the al-Qaeda English-language publication Resurgence urged attacks on oil tankers and cargo ships crossing the Strait of Gibraltar as a way to cause “phenomenal” damage to the world economy. The Spanish enclave of Ceuta off the coast of North Africa is less than 18 miles across the strait from Gibraltar. This past year, Ceuta has seen several arrests of ISIS recruiters and suppliers of bomb-making equipment and weapons. In April 2015, Spanish officials claimed to have uncovered Europe’s first all-female jihadi ring in Ceuta. Ceuta is frequently utilized by the Russian Navy as a stopover and resupply point. Since 2011, over 50 Russian Navy vessels have stopped there.

The Turkish Straits (Including the Dardanelles and the Bosporus). These straits are long and narrow: 40 and 16 miles long, respectively, with the narrowest point in the Bosporus, which connects the Black Sea with the
Sea of Marmara, only 765 yards wide. Approximately 46,000 ships each year transit the strait, including more than 5,600 tankers.205

The 1936 Montreux Convention gave Turkey control of the Bosporus and placed limitations on the number, transit time, and tonnage of naval ships from non–Black Sea countries that can use the strait and operate in the Black Sea.206 This places limitations on U.S. Navy operation in the Black Sea. However, even with these limitations, the U.S. Navy had a presence on the Black Sea for 207 days in 2014.207

**The Northern Sea Route.** As ice dissipates during the summer months, new shipping lanes offer additional trade opportunities in the Arctic. The Northern Sea Route along the Russian coast reduces a trip from Hamburg to Shanghai by almost 4,000 miles, cuts a week off delivery times, and saves approximately $650,000 in fuel costs per ship. However, realization of the NSR’s full potential lies far in the future. In 2015, only 18 ships made the journey.208

**GIUK Gap.** This North Atlantic naval corridor between Greenland, Iceland, and the United Kingdom is strategically vital. During the Cold War, Soviet submarines, bombers, and reconnaissance aircraft traversed the GIUK Gap frequently to gain access to the Atlantic Ocean from the Northern Russian coast. Recent increased Russian activity through and near the GIUK Gap has led the U.S. to return military assets to Keeflavik in southwest Iceland.

**The Danish Straits.** Consisting of three channels connecting the Baltic Sea to the North Sea via the Kattegat and Skagerrak seas, the Danish Straits are particularly important to the Baltic Sea nations as a way to import and export goods. This is especially true for Russia, which increasingly has been shifting its crude oil exports to Europe through its Baltic ports.209 More than 125,000 ships per year transit these straits.210

**Geostrategic Islands in the Baltic Sea.** Three other critically important locations are the Åland Islands (Finnish); Gotland Island (Swedish); and Bornholm Island. The Åland Islands have been demilitarized since the 1856 Treaty of Paris ending the Crimean War and have always been considered the most important geostrategic piece of real estate in the Baltic Sea. Gotland Island is strategically located halfway between Sweden and Latvia in the middle of the Baltic Sea. Sweden maintained a permanent military garrison on the island for hundreds of years until 2005. At the height of the Cold War, 15,000–20,000 Swedish military personnel were stationed on Gotland.211 Today, Sweden is standing up a 300-strong Battle Group Gotland, to be fully established on the island by 2018.212 The military facilities will need to be reconstituted, as most were sold off for civilian use after 2005. Bornholm Island is strategically located at the mouth of the Baltic Sea.

In March 2015, Russia carried out a large-scale training exercise with up to 33,000 soldiers, which included the capture of these three islands as part of its scenario. Reinforcing the Baltic region would be nearly impossible without control of these islands.

The biggest danger to infrastructure assets in Europe pertains to any potential NATO conflict with Russia in one or more of NATO’s eastern states. In such a scenario, infrastructure would be heavily targeted in order to deny or delay the alliance’s ability to move the significant numbers of manpower, matériel, and equipment that would be needed to retake any territory lost during an initial attack. In such a scenario, the shortcomings of NATO’s force posture would become obvious.

**Conclusion**

Overall, the European region remains a stable, mature, and friendly operating environment. Russia remains the preeminent threat to the region, both conventionally and non-conventionally, and the ongoing migrant crisis, continued economic sluggishness, and consistent threat from terrorism increase the potential for internal instability. The threats emanating from the previously noted arc of instability that stretches from the eastern Atlantic Ocean to the Middle East and up to the
MAP 2

Iceland’s Strategic Location in the North Atlantic

Thule Air Base
U.S. military’s northernmost base hosts ballistic missile early warning system

Severomorsk
Home of Russia’s northern fleet, accounts for two-thirds of the navy

Bodø
Norway’s National Joint HQ

RAF Lakenheath
Royal Air Force station is home to a U.S. fighter wing

SOURCE: Heritage Foundation research.
Caucasus through Russia and into the Arctic have spilled over into Europe itself in the form of terrorism and migrants arriving on the continent’s shores.

The United States, however, began to reverse some of its recent disengagement from Europe, reintroducing troops and equipment to the continent, albeit not permanently. The U.S. has also increased the number and consistency of exercises, especially with NATO partners, in large part through funding made available in the ERI, and defense spending by many European NATO members has finally begun to move incrementally in an upward direction.

America’s closest and oldest allies are located in Europe. The region is incredibly important to the U.S. for economic, military, and political reasons. Perhaps most important, the U.S. has treaty obligations through NATO to defend the European members of that alliance. This is especially important as Russia becomes more assertive in Central and Eastern Europe, increasingly utilizing economic, political, and diplomatic means in addition to military power to assert itself. If the U.S. needs to act in the European region or nearby, there is a history of interoperability with allies and access to key logistical infrastructure that makes the operating environment in Europe more favorable than the environment in other regions in which U.S. forces might have to operate.

However, the European nations’ diminished military forces and lack of political will to take on a greater portion of the security burden pose a substantial threat to all of this. NATO is only as strong as its member states, and while some have taken steps to increase defense spending, the situation remains a source of concern, especially in light of U.S. defense cuts.

Scoring the European Operating Environment

As noted at the beginning of this section, there are various considerations that must be taken into account in assessing the regions within which the U.S. may have to conduct military operations to defend its vital national interests against threats. Our assessment of the operating environment utilized a five-point scale, ranging from “very poor” to “excellent” conditions and covering four regional characteristics of greatest relevance to the conduct of military operations:

1. **Very Poor.** Significant hurdles exist for military operations. Physical infrastructure is insufficient or nonexistent, and the region is politically unstable. The U.S. military is poorly placed or absent, and alliances are nonexistent or diffuse.

2. **Unfavorable.** A challenging operating environment for military operations is marked by inadequate infrastructure, weak alliances, and recurring political instability. The U.S. military is inadequately placed in the region.

3. **Moderate.** A neutral to moderately favorable operating environment is characterized by adequate infrastructure, a moderate alliance structure, and acceptable levels of regional political stability. The U.S. military is adequately placed.

4. **Favorable.** A favorable operating environment includes good infrastructure, strong alliances, and a stable political environment. The U.S. military is well placed in the region for future operations.

5. **Excellent.** An extremely favorable operating environment includes well-established and well-maintained infrastructure, strong capable allies, and a stable political environment. The U.S. military is exceptionally well placed to defend U.S. interests.
The key regional characteristics consisted of:

a. **Alliances.** Alliances are important for interoperability and collective defense, as allies would be more likely to lend support to U.S. military operations. Various indicators provide insight into the strength or health of an alliance. These include whether the U.S. trains regularly with countries in the region, has good interoperability with the forces of an ally, and shares intelligence with nations in the region.

b. **Political Stability.** Political stability brings predictability for military planners when considering such things as transit, basing, and overflight rights for U.S. military operations. The overall degree of political stability indicates whether U.S. military actions would be hindered or enabled and considers, for example, whether transfers of power in the region are generally peaceful and whether there have been any recent instances of political instability in the region.

c. **U.S. Military Positioning.** Having military forces based or equipment and supplies staged in a region greatly facilitates the United States’ ability to respond to crises and, presumably, more quickly achieve successes in critical “first battles.” Being routinely present in a region also assists in maintaining familiarity with its characteristics and the various actors that might try to assist or thwart U.S. actions.

With this in mind, we assessed whether or not the U.S. military was well-positioned in the region. Again, indicators included bases, troop presence, prepositioned equipment, and recent examples of military operations (including training and humanitarian) launched from the region.

d. **Infrastructure.** Modern, reliable, and suitable infrastructure is essential to military operations. Airfields, ports, rail lines, canals, and paved roads enable the U.S. to stage, launch operations from, and logistically sustain combat operations. We combined expert knowledge of regions with publicly available information on critical infrastructure to arrive at our overall assessment of this metric.213

For Europe, scores this year moved in a positive direction largely as a result of increases in the alliance score and U.S. military positioning score. Scores for political stability in Europe turned slightly downward. However, none of these changes was large enough to affect the overall average scores in the 2017 Index:

- Alliances: **4—Favorable**
- Political Stability: **4—Favorable**
- U.S. Military Positioning: **3—Moderate**
- Infrastructure: **4—Favorable**

Leading to a regional score of: **Favorable**
## Operating Environment: Europe

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<tr>
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<th>VERY POOR</th>
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Endnotes:

1. On June 23, 2016, Great Britain voted by popular referendum to leave the European Union. Its exact departure date has yet to be determined.


8. The four NATO members are the U.S., Canada, Norway, and Denmark (Greenland). The non-NATO Arctic sea power is Russia.


12. Ibid.

13. Ibid.


23. Ibid.


54. McCormick, “ ‘Re-tooling an Army from Scratch,’ as It Fights a War.”


69. Tomkiw, “Germany Announces First Military Expansion Since Cold War Amid Cyber Threats, US Pressure.”


75. Wagstyl, “German Military No Longer Standing at Ease as Security Fears Grow.”


78. Ibid.


83. Ibid.


85. Ibid.

86. Knight, “German Military Gets a Personnel Boost.”


93. Ibid.


95. Agence France-Presse, “Germany to Send 550 More Troops to Mali, Iraq Missions.”


97. Wagstyl, “German Military No Longer Standing at Ease as Security Fears Grow.”

98. Ibid.


105. Di Paola et al., Alliance at Risk, p. 11.


112. Ibid.


119. Ibid., p. 17.


151. Ibid.


155. Ibid.
164. Breedlove, statement before Senate Committee on Armed Services, March 1, 2016, p. 11.
176. Ibid.
190. Ibid.
191. Ibid.
195. Ibid.
Middle East

Strategically situated at the intersection of Europe, Asia, and Africa, the Middle East has long been an important focus of U.S. foreign policy. U.S. security relationships in the region are built on pragmatism, shared security concerns, and economic interests, including large sales of U.S. arms to countries in the region that are seeking to defend themselves. The U.S. also maintains a long-term interest in the Middle East that is related to the region’s economic importance as the world’s primary source of oil and gas.

The region is home to a wide array of cultures, religions, and ethnic groups, including Arabs, Jews, Kurds, Persians, and Turks, among others. It also is home to the three Abrahamic religions of Judaism, Christianity, and Islam, in addition to many smaller religions like the Bahá’í, Druze, Yazidi, and Zoroastrian faiths. The region contains many predominantly Muslim countries as well as the world’s only Jewish state.

The Middle East is deeply sectarian, and these long-standing divisions, exacerbated by religious extremists vying for power, are central to many of the challenges that the region faces today. In some cases, these sectarian divides go back centuries. Contemporary conflicts, however, have less to do with these histories than they do with modern extremist ideologies and the fact that modern-day borders often do not reflect the region’s cultural, ethnic, or religious realities. Today’s borders are often the results of decisions taken by the British, French, and other powers during and soon after World War I as they dismantled the Ottoman Empire.1

In a way not understood by many in the West, religion remains a prominent fact of daily life in the modern Middle East. At the heart of many of the region’s conflicts is the friction within Islam between Sunnis and Shias. This friction dates back to the death of the Prophet Muhammad in 632 AD.2 Sunni Muslims, who form the majority of the world’s Muslim population, hold power in most of the Arab countries in the Middle East.

But viewing the current instability in the Middle East through the lens of a Sunni–Shia conflict does not show the full picture. The cultural and historical division between Persians and Arabs has reinforced the Sunni–Shia split. The mutual distrust of many Arab/Sunni powers and the Persian/Sha’i power (Iran), compounded by clashing national and ideological interests, has fueled instability, including in Bahrain, Iraq, Lebanon, Syria, and Yemen. Sunni extremist organizations such as al-Qaeda and the Islamic State have exploited sectarian and ethnic tensions to gain support by posing as champions of Sunni Arabs against Iran, Syria’s Alawite-dominated regime, and other non-Sunni governments and movements.

Current regional demographic trends also are destabilizing factors. The Middle East contains one of the world’s youngest and fastest-growing populations. In most of the West, this would be viewed as an advantage, but not in the Middle East. Known as “youth bulges,” these demographic tsunamis have overwhelmed the inadequate political, economic, and educational infrastructures in many countries, and the lack of access to education,
jobs, and meaningful political participation fuels discontent. Because more than 60 percent of regional inhabitants are less than 30 years old, this demographic bulge will continue to have a substantial effect on political stability across the region.

The Middle East contains more than half of the world’s oil reserves and is the world’s chief oil-exporting region. As the world’s biggest oil consumer, the U.S. has a vested interest in maintaining the free flow of oil and gas from the region. This is true even though the U.S. actually imports relatively little of its oil from the Middle East. Oil is a fungible commodity, and the U.S. economy remains vulnerable to sudden spikes in world oil prices.

Because many U.S. allies depend on Middle East oil and gas, there is also a second-order effect for the U.S. if supply from the Middle East is reduced or compromised. For example, Japan (the world’s third largest economy) is the world’s largest liquefied natural gas (LNG) importer, accounting for 37 percent of the global market share of LNG demand. Qatar is the second largest supplier of LNG to Japan. In 2016, another U.S. ally in Asia—South Korea, the world’s 15th largest economy—depended on the Middle East for 84 percent of its imports of crude oil. The U.S. might not be dependent on Middle East oil or LNG, but the economic consequences arising from a major disruption of supplies would ripple across the globe.

Financial and logistics hubs are also growing along some of the world’s busiest transcontinental trade routes. One of the region’s economic bright spots in terms of trade and commerce is found in the Persian Gulf. The emirates of Dubai and Abu Dhabi in the United Arab Emirates (UAE), along with Qatar, are competing to become the region’s top financial center. Although many oil-exporting countries recovered from the 2008 financial crisis and subsequent recession, they have since experienced the deepest economic downturn since the 1990s as a result of falling oil prices. Various factors such as weak demand, OPEC infighting, and increased U.S. domestic oil production have contributed to these plunging oil prices.

Nevertheless, the Middle East is full of economic extremes. For example:

- Qatar is the world’s wealthiest country in terms of gross domestic product (GDP) per capita, while Yemen, a mere 700 miles away, ranks 194th.
- Saudi Arabia has 265 billion barrels of proven oil reserves. It shares a nearly 500-mile border with Jordan, which has just 1 million barrels of proven oil reserves.
- According to the 2016 Index of Economic Freedom, published by The Heritage Foundation and The Wall Street Journal, Bahrain ranks 18th in the world in terms of economic freedom, and Iran ranks 171st.

These disparities are worsened by government corruption across most of the region, which not only squanders economic and human resources, but also restricts economic competition and hinders the development of free enterprise.

The economic situation, in part, drives the Middle East’s political environment. The lack of economic freedom was an important factor leading to the Arab Spring uprisings, which disrupted economic activity, depressed foreign and domestic investment, and slowed economic growth.

The political environment has a direct bearing on how easily the U.S. military can operate in a region. In many Middle Eastern countries, the political situation remains fraught with uncertainty. The Arab Spring uprisings that began in early 2011 formed a regional sandstorm that eroded the foundations of many authoritarian regimes, erased borders, and destabilized many countries in the region. Even so, the popular uprisings in Tunisia, Libya, Egypt, Bahrain, Syria, and Yemen did not usher in a new era of democracy and liberal rule, as many in the West
were hoping. At best, these uprisings made slow progress toward democratic reform. At worst, they added to political instability, exacerbated economic problems, and contributed to the rise of Islamist extremists. Five years later, economic and political outlooks remain bleak.\footnote{11}

There is no shortage of security challenges for the U.S. and its allies in this region. Iran has exacerbated Shia–Sunni tensions to increase its influence over embattled regimes and undermine adversaries in Sunni-led states. Tehran attempts to run an unconventional empire by exerting great influence over sub-state entities like Hamas (Palestinian territories); Hezbollah (Lebanon); the Mahdi movement (Iraq); and the Houthi insurgents (Yemen). In Afghanistan, Tehran exerts influence over some Shiite groups. Iran also provided arms to the Taliban after it was ousted from power by a U.S.-led coalition\footnote{12} and has long considered the Afghan city of Herat, near the Iranian border, to be part of its sphere of influence.

The Iran nuclear agreement has strengthened Tehran’s ability to establish regional hegemony. Tehran has recovered approximately $100 billion in frozen assets that will boost its economy and enhance its strategic position, military capabilities, and support for surrogate networks and terrorist groups.\footnote{13} The economic transfusion will enable Tehran to further tilt the regional balance of power in its favor.

Iran already looms large over weak and divided Arab rivals. Iraq and Syria have been destabilized by insurgencies and may never fully recover. Egypt is distracted by its own internal problems, economic imbalances, and the Islamist extremist insurgency in the Sinai Peninsula. Jordan has been inundated with a flood of Syrian refugees and is threatened by the spillover of Islamist extremist groups from Syria. Meanwhile, Tehran has continued to build up its missile arsenal (now the largest in the Middle East) and has increased its naval provocations in the Persian Gulf, intervened to prop up the Assad regime in Syria, and reinforced Shiite Islamist revolutionaries in Yemen and Bahrain.\footnote{14} In Syria, the Assad regime’s brutal repression of peaceful demonstrations in early 2011 ignited a fierce civil war that has led to the deaths of more than 470,000 people\footnote{15} and displaced about 4.5 million refugees in Turkey, Lebanon, Jordan, Iraq and Egypt.\footnote{16} More than 7.6 million people “are internally displaced within Syria.”\footnote{17} The destabilizing spillover effects of this civil war include the creation of large refugee populations that could become a reservoir of potential recruits for extremist groups. In Jordan, where King Abdullah’s regime has been buffeted by Arab Spring protests and adverse economic trends, Syrian refugees now account for more than 10 percent of the population. This has placed even more strain on Jordan’s small economy, scarce water resources, and limited social services, creating rising resentment among the local population.

In 2015, more than 1 million Syrian migrants and refugees crossed into Europe, the largest numbers of migrating people that Europe has seen since World War II.\footnote{18} This has sparked a crisis as countries struggle to cope with the massive influx and its social, economic, and political ramifications.

Thanks to the power vacuum created by the ongoing civil war in Syria, Islamist extremist groups, including the al-Qaeda-affiliated al-Nusra Front and the self-styled Islamic State (IS), formerly known as ISIS or ISIL and before that as al-Qaeda in Iraq, have carved out extensive sanctuaries where they are building proto-states and training militants from a wide variety of other Arab countries, Europe, Australia, and the United States. With a sophisticated Internet and social media presence, and by capitalizing on the civil war in Syria and sectarian divisions in Iraq, ISIS has been able to recruit over 25,000 fighters from outside the region to join its ranks in Iraq and Syria. These foreign fighters include over 4,500 citizens from Western nations, including approximately 250 U.S. citizens.\footnote{19}

In late 2013, the IS exploited the Shia-dominated Iraqi government’s heavy-handed
alienation, marginalization, and repression of the Sunni Arab minority in Iraq to reinvigorate its insurgency and seize territory in Iraq. In the summer of 2014, the IS spearheaded a broad Sunni uprising against Baghdad. The assault was incredibly effective, and by the end of the year, the IS controlled one-third of Iraq and one-third of Syria—a land mass roughly equal to the area of Great Britain—where the extremist group ruled upward of 9 million people. However, since then, the self-proclaimed caliphate has lost approximately 40 percent of the territory it once controlled in Iraq and 10 percent–20 percent of the territory it controlled in Syria. The Peshmerga militia of the Kurdistan Regional Government, an autonomous area in northeastern Iraq, took advantage of the chaos caused by the collapse of the Iraqi security forces and occupied the city of Kirkuk, long considered by Kurds to be rightfully theirs—a claim rejected by the central government in Baghdad. The IS continues to attack the Shia-dominated government in Baghdad, massacre Shia civilians and Sunnis who disagree with it, and terrorize religious and ethnic minorities in northern Iraq including the Christian community, Kurds, Turkmen, and Yazidis. In early 2016, Iraq's military and militia forces, backed by air power from the U.S.-led coalition and by Peshmerga forces, launched an offensive to retake Mosul, but at the time of publication, only limited progress has been made.

In April 2016, the Obama Administration announced that it was sending an additional 250 U.S. special operations forces to Syria. In Iraq, approximately 3,500 U.S. personnel were on the ground, although the numbers sometimes surpassed 5,000 due to rotations and temporary deployments. The U.S. led a coalition air campaign in Iraq and Syria with the help of Australia, Bahrain, France, Jordan, Saudi Arabia, Turkey, the United Arab Emirates, and the United Kingdom (U.K.). In early 2016, the IS experienced difficulty replenishing its foreign fighters as it struggled to pay fighters and recruit new ones to replace those who have deserted, defected, or died. The recruitment problem was compounded by a string of major battlefield defeats, including the Iraqi military’s liberation of Ramadi, which contributed to their loss of substantial territory in Iraq and Syria. In May 2016, Iraq launched an offensive to retake the ISIS-controlled city of Fallujah, which it managed to do in June.

Arab–Israeli tensions are another source of instability in the Middle East region. The repeated breakdown of Israeli–Palestinian peace negotiations and the rise of the Hamas regime in Gaza in a 2007 coup have created an even more antagonistic situation. Hamas, the Palestinian branch of the Muslim Brotherhood, seeks to transform the conflict from a national struggle over sovereignty and territory into a religious conflict in which compromise is denounced as blasphemy. Hamas invokes jihad in its struggle against Israel and seeks to destroy the Jewish state and replace it with an Islamic state.

Although elected to power with only 44 percent of the vote in the 2006 elections, Hamas has since forced its radical agenda on the people of Gaza. This has led in turn to diminished public support and a high degree of needless suffering. Hamas has provoked wars with Israel in 2008, 2009, 2012, and 2014. It continues to pose threats to Israel and to Arab leaders who have signed peace agreements with Israel (representatives of Egypt, Jordan, and the Palestinian Authority). As long as Hamas remains imbued with its Islamist extremist ideology, which advocates the destruction of Israel, and retains a stranglehold over Gaza, achieving a sustainable Israeli–Palestinian peace agreement appears impossible.

Important Alliances and Bilateral Relations in the Middle East

The U.S. has strong military, security, intelligence, and diplomatic ties with several Middle Eastern nations, including Israel, Egypt, Jordan, and the members of the Gulf Cooperation Council (GCC). Since the historical and political circumstances that led to the creation of NATO have largely been
absent in the Middle East, the region lacks a similarly strong collective security organization. Middle Eastern countries traditionally have preferred to maintain bilateral relationships with the U.S. and generally have shunned multilateral arrangements because of the lack of trust between Arab states.

Often, bilateral relationships between Arab Middle Eastern countries and Western countries, including the U.S., are secretive. The opaqueness of these relationships sometimes creates problems for the U.S. when trying to coordinate defense and security cooperation with European allies active in the region (mainly the U.K. and France).

Military training is an important part of these relationships. The main motivation behind these exercises is to ensure close and effective coordination with key partners in the region, demonstrate an enduring U.S. security commitment to regional allies, and train Arab armed forces so that they can assume a larger share of responsibility for regional security. In April 2016, the U.S. Naval Forces Central Command launched the world’s largest maritime exercise across the Middle East to demonstrate global resolve in maintaining freedom of navigation and the free flow of maritime commerce.31

Kuwait, Bahrain, the UAE, Saudi Arabia, and Qatar have participated in Combined Task Force-152, formed in 2004 to maintain maritime security in the Persian Gulf, with Bahrain commanding the task force on two separate occasions.32 The commander of the U.S. Central Command (CENTCOM) noted that Middle Eastern partners have begun to take more seriously the threat from transnational Islamist extremist groups as ISIS has gained momentum, increased in strength, and expanded its international influence.33 Middle Eastern countries have also participated further afield in Afghanistan; since 2001, Jordan, Egypt, Bahrain, and the UAE have supplied troops to the U.S.-led mission there. During the 2011 NATO-led operation in Libya, U.S. allies Qatar, Jordan, and the UAE participated to varying degrees.

In addition to military training, U.S. defense relations are underpinned by huge defense equipment deals. U.S. military hardware (and, to a lesser extent, British and French hardware) is preferred across the region because of its effectiveness and symbolic value as a sign of a close security relationship, and much of it has been combat tested. For example, Kuwait, the UAE, Jordan, and Saudi Arabia have over 400 F-15, F-16, and F/A-18 jet fighter aircraft combined. Following the Iran nuclear deal, threatened Arab states undertook military buildups and a flood of arms purchases. The U.S. approved $33 billion worth of weapons sales to its Gulf Cooperation Council allies between May 2015 and March 2016. The six GCC countries received weapons that included ballistic missile defense systems, attack helicopters, advanced frigates, and antiarmor missiles.34 The use of U.S.-made hardware helps with interoperability and lays the foundation for longer-term engagement and cooperation in the region.

Iran continues to incite violence against Israel by providing thousands of increasingly long-range rockets to Hamas, Palestine Islamic Jihad, and Hezbollah—all of which are committed to destroying Israel. Additionally, Iran has escalated its threats against Arab neighbors in the Persian Gulf by funding, training, equipping, and supporting anti-government militant groups in an attempt to undermine various Arab regimes. Saudi Arabia, in particular, has responded negatively to the 2015 Iran nuclear agreement by distancing itself from Washington and adopting more aggressive policies to push back against Iran and its allies in Syria, Yemen, and Lebanon.35

**Israel.** America’s most important bilateral relationship in the Middle East is with Israel. Both countries are democracies, value free-market economies, and believe in human rights at a time when many countries in the Middle East reject those values. Israel has been designated as a Major Non-NATO ally (MNNA)36 because of its close ties to the U.S. With support from the United States, Israel has developed one of the world’s most
sophisticated air and missile defense networks. No significant progress on peace negotiations with the Palestinians or on stabilizing Israel’s volatile neighborhood is possible without a strong and effective Israeli–American partnership.

In March 2015, incumbent Prime Minister Benjamin Netanyahu soundly defeated his chief rival faction, the center-left Zionist Union. Netanyahu’s reelection enabled him to criticize the July 2015 nuclear agreement with Iran from a position of strength and further strained political relations with the Obama Administration, but bilateral security cooperation with the United States remained strong.

**Saudi Arabia.** After Israel, the U.S. military relationship is deepest with the Gulf states, including Saudi Arabia, which serves as de facto leader of the GCC. The United States started to play a more active role in the Persian Gulf after the U.K. completed the withdrawal of its military presence from bases “east of Suez” in 1971. The U.S. is also the largest provider of arms to Saudi Arabia and in November 2015 approved a $1.3 billion sale to restock munitions stockpiles depleted by fighting in Yemen.

America’s relationship with Saudi Arabia is based on pragmatism and is important for both security and economic reasons. The Saudis enjoy huge influence across the Muslim world. Roughly 2 million Muslims participate in the annual Hajj pilgrimage to the holy city of Mecca. Saudi Arabia owns the world’s largest oil reserves and is the world’s foremost oil exporter. The uninterrupted flow of Saudi oil exports is crucial for fueling the global economy.

Riyadh has been a key partner in efforts to counterbalance Iran, safeguard the security of its GCC allies, remove Syria’s Assad regime from power, and stabilize Egypt and Yemen. Saudi Arabia also has played a growing role in countering the al-Qaeda terrorist network. Until 2003, Riyadh was in denial about Saudi connections to the 9/11 attacks. However, after Saudi Arabia was targeted by al-Qaeda terrorist attacks on its own soil, the government began to cooperate more closely in combating al-Qaeda. After the death of King Abdullah, his half-brother, Crown Prince Salman, ascended to the throne in late January 2015. The new Saudi leadership has taken a more assertive military role in the Middle East as a result of an emboldened Iran and a retreating United States. In early 2015, Saudi Arabia led a coalition of Arab states to intervene in Yemen’s civil war after Yemen’s government was ousted by Houthi rebels.

**Gulf Cooperation Council.** The countries of the GCC (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE) are located close to the Arab–Persian fault line, making them strategically important to the U.S. The root of the Arab–Iranian tensions in the Gulf is Tehran’s ideological drive to export its Islamist revolution and overthrow the traditional rulers of the Arab kingdoms. This ideological clash has further amplified long-standing sectarian tensions between Shia and Sunni Islam. Tehran has sought to radicalize Shia Arab minority groups to undermine Sunni Arab regimes in Saudi Arabia, Kuwait, Lebanon, Libya, and Yemen. It also sought to incite revolts by the Shia majorities in Iraq against Saddam Hussein’s regime and in Bahrain against the Sunni al-Khalifa dynasty.

Culturally, many Iranians look down on the Gulf states, many of which they see as artificial states carved out of the former Persian Empire and propped up by Western powers. Long-standing Iranian territorial claims in the Gulf add to Arab–Persian tensions. For example, Iran has long considered Bahrain to be part of its territory, a claim that has strained bilateral relations and contributed to Bahrain’s decision to break diplomatic ties after the attack on the Saudi embassy in Tehran in early 2016. Iran also occupies the small but strategically important islands of Abu Musa, Greater Tunb, and Lesser Tunb (also claimed by the UAE) near the Strait of Hormuz.

The GCC often has problems agreeing on a common policy on matters of security. This reflects the organization’s intergovernmental
nature and the desire of its members to place national interests above those of the GCC. Perhaps this is best demonstrated in the debates over Iran. On one end of the spectrum, Saudi Arabia, Bahrain, and the UAE take a hawkish view of the threat from Iran. Oman and Qatar, both of which share natural gas fields with Iran, view Iran’s activities in the region as less of a threat and maintain good relations with Tehran. Kuwait tends to fall somewhere in the middle. Inter-GCC relations also can be problematic. The UAE, Bahrain, and Saudi Arabia have been at odds with Qatar over Qatar’s support for the Muslim Brotherhood, which they see as a threat to internal security, and Qatar has recently decreased its overt support for the organization in order to strengthen relations with its GCC partners.

Apart from Bahrain, the GCC countries have weathered the political turbulence of the Arab Spring relatively well. Many of their citizens enjoy a high standard of living (made possible by millions of foreign workers and the export of oil and gas), which makes it easier for them to tolerate authoritarian rule. Of the six GCC states, Bahrain fared the worst during the 2011 popular uprisings due to persistent Sunni–Shia sectarian tensions worsened by Iranian antagonism and the increased willingness of Shiite youths to protest what they see as discrimination by the al-Khalifa monarchy.

**Egypt.** Egypt is also an important U.S. military ally. As one of only two Arab countries (the other being Jordan) that have diplomatic relations with Israel, Egypt is closely enmeshed in the Israeli–Palestinian conflict and remains a leading political, diplomatic, and military power in the region.

Relations between the U.S. and Egypt have been problematic since the 2011 downfall of President Hosni Mubarak after 30 years of rule. The Muslim Brotherhood’s Mohamed Morsi was elected president in 2012 and used the Islamist-dominated parliament to pass a constitution that advanced an Islamist agenda. Morsi’s authoritarian rule, combined with rising popular dissatisfaction with falling living standards, rampant crime, and high unemployment, led to a massive wave of protests in June 2013 that prompted a military coup in July. The leader of the coup, Field Marshal Abdel Fattah al-Sisi, pledged to restore democracy and was elected president in 2014. His government faces major political, economic, and security challenges. Egypt’s limping economy has been badly damaged by more than five years of political turbulence and violence that has reduced tourism revenues, deterred foreign investment, and raised the national debt. The new regime also faces an emboldened ISIS that launched waves of attacks in North Sinai in mid-2015, including the destruction of a Russian airliner over the Sinai Peninsula in October 2015.

The July 2013 coup against the Muslim Brotherhood–backed Morsi regime strained relations with the Obama Administration and resulted in a temporary hold on U.S. military assistance to Egypt. Cairo demonstrated its displeasure by buying Russian arms financed by Saudi Arabia in late 2013, but bilateral relations with the U.S. improved after Egypt’s military made good on its promises to hold elections. In April 2015, the Obama Administration released its hold on the annual $1.3 billion military aid package for Egypt.

**Lebanon and Yemen.** The United States has developed cooperative defense arrangements with Lebanon and Yemen, two states that face substantial threats from Iranian-supported terrorist groups as well as al-Qaeda and the Islamic State. The United States has provided arms, equipment, and training for the Lebanese Armed Forces (LAF), which has found itself increasingly challenged by Sunni Islamist extremist groups, including the IS, in addition to the long-term threat posed by Hezbollah. Hezbollah has emerged as Lebanon’s most powerful military force, adding to GCC fears about growing Iranian influence in Lebanon. In early 2016, Saudi Arabia cut off its funding for $4 billion worth of military aid to Lebanon because the country did not condemn attacks on Saudi diplomatic missions in Iran, thereby intensifying the proxy war with Iran.
Washington’s security relationship with Yemen has grown since the 9/11 attacks. Yemen, Osama bin Laden’s ancestral homeland, faces major security threats from al-Qaeda in the Arabian Peninsula (AQAP), one of the most dangerous al-Qaeda affiliates.

The overall political and security situation in Yemen deteriorated further in 2014–2016. In January 2015, the Houthis, a militant Shiite group based in northern Yemen and backed by Iran,47 overran the capital city of Sana’a and forced the internationally recognized government led by President Abd Rabbu Mansour Hadi to resign. The Houthis solidified their control throughout the North and West of Yemen, and President Hadi fled to Riyadh. Backed by the U.S., the U.K., and France, Saudi Arabia formed a coalition of 10 Sunni countries and led an air campaign against Houthi forces that began in March 2015. The coalition has rolled back the Houthis but is no closer to reinstating the internationally recognized government in Sana’a.

The Yemeni conflict has become a proxy war between Saudi Arabia and Iran. Riyadh supports the Yemeni government, and Iran has provided money, arms, and training to the Houthi rebels, who belong to the Zaidi sect of Shia Islam. The unstable political situation in Yemen caused the United States to evacuate its embassy and withdraw its special operations forces, severely undermining U.S. counterterrorism and intelligence capabilities in Yemen. The growing chaos enabled AQAP to expand its presence and establish a “mini-state” spanning more than 350 miles of coastline.48 IS entered Yemen in March 2015; however, estimates suggest that the number of IS personnel in Yemen is in the hundreds, while al-Qaeda numbers in the thousands.49

Quality of Armed Forces in the Middle East

The quality and capabilities of the armed forces in the region are mixed. Some countries spend billions of dollars each year on advanced Western military hardware, and others spend very little. Defense spending in the Middle East overall increased by 4.1 percent in 2015. Saudi Arabia was by far the region’s largest military spender, with an estimated $87.2 billion. Iraq had the region’s (and the world’s) largest increase in defense spending between 2006 and 2015: Its military spending in 2015 was $31.1 billion, up 35 percent from 2014 and up 536 percent from 2006. Iran’s military expenditure is expected to rise with the lifting of European Union and U.S. sanctions. Historically, defense spending figures for the Middle East have been very unreliable, but the lack of data has worsened; for 2015, there were no available data for Kuwait, Qatar, Syria, the United Arab Emirates, and Yemen according to a report by the Stockholm International Peace Research Institute.50

Different security factors drive the degree to which Middle Eastern countries fund, train, and arm their militaries. For Israel, which defeated Arab coalitions in wars in 1948, 1956, 1967, 1973, and 1982, the chief potential threats to its existence are now posed by an Iranian regime that has called for Israel to be “wiped from the map.”51 As a result of Israel’s military dominance, states and non-state actors in the region have invested in asymmetric and unconventional capabilities to offset Israel’s military superiority.52 For the Gulf states, the main driver of defense policy is the Iranian military threat combined with internal security challenges. For Iraq, the internal threat posed by insurgents and terrorists drives defense policy.

The Israel Defense Forces (IDF) are widely considered the most capable military force in the Middle East. On a conventional level, the IDF consistently surpasses other regional military forces.53 Other countries, such as Iran, have developed asymmetric tactics and have built up the military capabilities of proxy groups to close the gap in recent years,54 but the IDF’s quality and effectiveness remain unparalleled with regard to both technical capacity and personnel.55 This was demonstrated by Israel’s 2014 military operations against Hamas in the Gaza Strip: After weeks of conflict, the IDF mobilized over 80,000 reservists, demonstrating the depth and flexibility of the Israeli armed forces.56
Israel heavily funds its military sector and has a strong national industrial capacity, supported by significant funding from the U.S. Combined, these factors give Israel a regional advantage despite limitations of manpower and size.\textsuperscript{57} In particular, the IDF has focused on maintaining its superiority in missile defense, intelligence collection, precision weapons, and cyber technologies.\textsuperscript{58} The Israelis regard their cyber capabilities as especially important. In early 2016, the IDF unveiled a new five-year plan, worth roughly $78.6 billion, to enhance cyber-protected and networked combat capabilities in order to augment the IDF’s capacity to fight in multiple theaters.\textsuperscript{59} Cyber technologies are used for a number of purposes, including defending Israeli cyberspace, gathering intelligence, and carrying out attacks.\textsuperscript{60} Israel maintains its qualitative superiority in medium- and long-range missile capabilities.\textsuperscript{61} It also fields effective missile defense systems, including Iron Dome and Arrow, both of which the U.S. helped to finance.\textsuperscript{62} U.S. spending on Israel’s air and missile defense has soared in the past decade, from $133 million in 2006 to $619 million in 2015.\textsuperscript{63}

Israel also has a nuclear weapons capability (which it does not publicly acknowledge) that increases its strength relative to other powers in the region. Israel’s nuclear weapons capability has helped to deter adversaries as the gap in conventional capabilities has been reduced.\textsuperscript{64}

After Israel, the most technologically advanced and best-equipped armed forces are found in the Gulf Cooperation Council. Previously, the export of oil and gas meant that there was no shortage of resources to devote to defense spending, but the collapse of crude oil prices may force oil-exporting countries to adjust their defense spending patterns. At present, however, GCC nations still have the best-funded, although not necessarily the most effective, Arab armed forces in the region.

The GCC established a joint expeditionary force called the Peninsula Shield Force (PSF), which has had only modest operational success and has never met its stated ambition of deploying tens of thousands of soldiers. Created in 1984, its main purpose today is to counter Iran’s military buildup and help maintain internal security. The PSF first deployed a modest force of 3,000 troops to help liberate Kuwait during the first Gulf War. Its most recent deployment was to Bahrain in 2011 to help restore order after Iranian-backed Shiite protests brought the country to a standstill and threatened the monarchy.\textsuperscript{65} Internal divisions inside the GCC, especially among Qatar, UAE, and Saudi Arabia, have prevented the PSF from playing a more active role in the region.

All GCC members boast advanced defense hardware with a preference for U.S., U.K., and French equipment. Saudi Arabia maintains the most capable military force in the GCC. It has an army of 75,000 soldiers and a National Guard of 100,000 personnel reporting directly to the king. The army operates 730 main battle tanks including 200 U.S.-made M1A1s. Its air force is built around American and British-built aircraft and consists of more than 325 combat-capable aircraft including F-15s, Tornados, and Typhoons.\textsuperscript{66} These aircraft flew missions over Yemen against Houthi rebels in 2009–2010, during Operation Decisive Storm in Yemen beginning in March 2015, and most recently over Syria as part of the U.S.-led fight against ISIS.\textsuperscript{67} Both Saudi Arabia\textsuperscript{68} and the UAE\textsuperscript{69} have hundreds of Storm Shadow air-launched cruise missiles (known as Black Shaheen in the UAE) in their inventories. These weapons proved highly effective when the British and French used them during the air campaign over Libya in 2011.

In fact, air power is the strong suit of most GCC members. Oman operates F-16s and has purchased 12 Typhoons, to be delivered in 2017. According to \textit{Defense Industry Daily}, “The UAE operates the F-16E/F Desert Falcon, which holds more advanced avionics than any F-16 variant in the US inventory.”\textsuperscript{70} Qatar operates French-made Mirage fighters. The UAE and Qatar deployed fighters to participate in NATO-led operations over Libya.
in 2011 (although they did not participate in strike operations). Beginning in early fall 2014, all six GCC members joined the U.S.-led anti-ISIS coalition, with the UAE contributing the most in terms of air power. The navies of the GCC members rarely deploy beyond their Exclusive Economic Zones, but all members, other than Oman, have participated in regional combined task forces led by the U.S. In 2016, Oman and Britain launched a multimillion-dollar joint venture to develop Duqm as a strategic Middle Eastern port in the Indian Ocean to improve defense security and prosperity agendas.

Even with the billions of dollars invested each year by members of the GCC, most see security ties with the United States as crucial for their security. As former U.S. Defense Secretary Robert Gates once noted, the Saudis will “fight the Iranians to the last American.”

Egypt has the largest Arab military force in the Middle East, with 438,500 active personnel and 479,000 reserve personnel in its armed forces. It possesses a fully operational military with an army, air force, air defense, navy, and special operations forces. Until 1979, when the U.S. began to supply Egypt with military equipment, Cairo relied primarily on less capable Soviet military technology. Since then, its army and air force have been significantly upgraded with U.S. military weapons, equipment, and warplanes.

Egypt substantially increased troop deployments and military operations in 2015 following the onslaught of Islamist and insurgent activity at its borders. It has also sought closer security cooperation with other North African states to improve border and internal security.

The most visible expression of U.S. influence in Cairo is military aid, which was withheld in some areas after the 2013 military coup. This indefinite hold applied to Apache attack helicopters, F-16s, Harpoon ship-to-ship missile systems, and M1A1 tank kits. Since Egypt relies on U.S. assistance to combat Islamist militants and terrorists, the ability of its military to contain Islamist threats was undermined. Washington’s withholding of some U.S. military assistance in 2013 prompted Cairo to diversify its sources of arms. In February 2014, Egypt signed a deal to purchase weapons from Russia, including attack helicopters and air-defense systems but after President Obama lifted the hold on U.S. military aid to Egypt in March 2015, Egypt was slated to receive 12 Lockheed Martin F-16 aircraft, 20 Boeing Harpoon missiles, and up to 125 M1A1 Abrams tanks.

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Egypt has struggled with increased terrorist activity in the Sinai Peninsula, including attacks on Egyptian soldiers, attacks on foreign tourists, and the October 2015 bombing of a Russian airliner departing from the Sinai, for all of which the Islamic State’s “Sinai Province” terrorist group has claimed responsibility. The government response to the uptick of violence has been severe: arrests of thousands of suspected Islamist extremists and restrictive measures such as a law criminalizing media reporting that contradicts official reports.

Jordan is a close U.S. ally with small but effective military forces. Its principal security threats include ISIS, turbulence in Syria and Iraq, and the resulting flow of refugees. Jordan is currently home to more than 1.4 million Syrians. In January 2016, King Abdullah announced that Jordan had reached the saturation point in its ability to make more Syrian refugees. While Jordan faces few conventional threats from its neighbors, its internal security is threatened by Islamist extremists returning from fighting in the region who have been emboldened by the growing influence of al-Qaeda and other Islamist militants. As a result, Jordan’s highly professional armed forces have been focused in recent years on border and internal security. Nevertheless, Jordan’s conventional capability is significant considering its size.

Jordan’s ground forces total 74,000 soldiers and include 390 British-made Challenger 1 tanks. The backbone of its air force is comprised of 44 F-16 Fighting Falcons. Jordan’s special operations forces are highly capable, having benefitted from extensive
U.S. and U.K. training. Jordanian forces have served in Afghanistan and in numerous U.N.-led peacekeeping operations. Jordan became more deeply involved in coalition air operations against the Islamic State in February 2015 when the IS burned alive a Jordanian pilot who was captured in December 2014 after his plane crashed in Syria during a mission. Since then, Jordan has stepped up its air strikes in Syria.86

Iraq has fielded one of the region’s most dysfunctional military forces. After the 2011 withdrawal of U.S. troops, Iraq’s government selected and promoted military leaders according to political criteria. Shiite army officers were favored over their Sunni, Christian, and Kurdish counterparts. Then-Prime Minister Nouri al-Maliki chose top officers according to their political loyalties. The politicization of the armed forces also exacerbated corruption within many units, with some commanders siphoning off funds allocated for “ghost soldiers” who never existed or had been separated from the army for various reasons.

The promotion of incompetent military leaders, poor logistical support due to corruption and other problems, limited operational mobility, and weaknesses in intelligence, reconnaissance, medical support, and air force capabilities have combined to weaken the effectiveness of the Iraqi armed forces. In June 2014, up to four divisions collapsed and were routed by vastly smaller numbers of Islamic State fighters. Although the Iraqi army, backed by U.S. air support, Kurdish militias, and Shiite militias, including some controlled by Iran, has recovered some territory lost to the IS, it remains a work in progress that requires further reform, training, and support. The Iraqi Air Force has become increasingly involved in operations against IS since the end of 2014, following the delivery of Su-25s from Russia and Iran, while its intelligence, surveillance, and reconnaissance (ISR) capability has been enhanced by the acquisition of CH-4 unmanned aerial vehicles (UAVs) from China.87 In July 2015, four F-16IQ Viper fighter aircraft were delivered to Iraq, the first of 30 Iraq has ordered in addition to six twin seat trainers.88

Current U.S. Military Presence in the Middle East

The United States maintained a limited military presence in the Middle East before 1980, chiefly a small naval force based at Bahrain since 1958. The U.S. “twin pillar” strategy relied on prerevolutionary Iran and Saudi Arabia to take the lead in defending the Persian Gulf from the Soviet Union and its client regimes in Iraq, Syria, and South Yemen,89 but the 1979 Iranian revolution demolished one pillar, and the December 1979 Soviet invasion of Afghanistan increased the Soviet threat to the Gulf. President Jimmy Carter proclaimed in January 1980 that the United States would take military action to defend oil-rich Persian Gulf states from external aggression, a commitment known as the Carter Doctrine. In 1980, he ordered the creation of the Rapid Deployment Joint Task Force (RDJTF), the precursor to USCENTCOM, established in January 1983.90

Up until the late 1980s, a possible Soviet invasion of Iran was considered to be the most significant threat facing the U.S. in the Middle East.91 After the collapse of the Soviet Union, Saddam Hussein’s Iraqi regime became the chief threat to regional stability. Iraq invaded Kuwait in August 1990, and the United States responded in January 1991 by leading an international coalition of more than 30 nations to expel Iraqi forces from Kuwait. CENTCOM commanded the U.S. contribution of more than 532,000 military personnel to the coalition armed forces, which totaled at least 737,000.92 This marked the peak U.S. force deployment in the Middle East.

Confrontations with Iraq continued throughout the 1990s as a result of Iraqi violations of the 1991 Gulf War cease-fire. Baghdad’s failure to cooperate with U.N. arms inspectors to verify the destruction of its weapons of mass destruction and its links to terrorism led to the U.S. invasion of Iraq in 2003. During the initial invasion, U.S. forces
reached nearly 150,000, joined by military personnel from coalition forces. Apart from the “surge” in 2007, when President George W. Bush deployed an additional 30,000 personnel, American combat forces in Iraq fluctuated between 100,000 and 150,000. In December 2011, the U.S. officially completed its withdrawal of troops, leaving only 150 personnel attached to the U.S. embassy in Iraq.

Since the withdrawal from Iraq, the U.S. has continued to maintain a limited number of forces in the Middle East. The bulk of these personnel are based in GCC countries. As of October 2015, approximately 35,000 U.S. military personnel were operating in the Middle East. Their exact disposition is not made public because of political sensitivities in the region, but information gleaned from open sources reveals the following:

- **Kuwait.** Approximately 15,000 U.S. personnel are based in Kuwait. These forces are spread among Camp Arifjan, Ahmed Al Jaber Air Base, and Ali Al Salem Air Base. A squadron of fighters and Patriot missile systems are normally deployed to Kuwait.

- **UAE.** According to UAE and U.S. officials, about 5,000 U.S. personnel, mainly from the U.S. Air Force, are stationed at Al Dhafra Air Base. Their main mission in the UAE is to operate fighters, UAVs, refueling aircraft, and surveillance aircraft. The United States also has regularly deployed F-22 Raptor combat aircraft to Al Dhafra. Patriot missile systems are deployed for air and missile defense.

- **Oman.** Since 2004, Omani facilities reportedly have not been used for air support operations in either Afghanistan or Iraq, and the number of U.S. military personnel in Oman has fallen to about 200, mostly from the U.S. Air Force. The United States reportedly can use—with advance notice and for specified purposes—Oman’s military airfields in Muscat (the capital), Thumrait, and Masirah Island.

- **Bahrain.** The oldest U.S. military presence in the Middle East is found in Bahrain. Today, some 7,000 U.S. military personnel are based there. Bahrain is home to the Naval Support Activity Bahrain and the U.S. Fifth Fleet, so most U.S. military personnel there belong to the U.S. Navy. The U.S. recently signed on to a $580 million military construction program to improve the Al Salman Pier, to be completed in 2017. A significant number of U.S. Air Force personnel operate out of Shaykh Isa Air Base, where F-16s, F/A-18s, and P-3 surveillance aircraft are stationed. U.S. Patriot missile systems also are deployed to Bahrain. The deep-water port of Khalifa bin Salman is one of the few facilities in the Gulf that can accommodate U.S. aircraft carriers.

- **Saudi Arabia.** The U.S. withdrew the bulk of its forces from Saudi Arabia in 2003. Little information on the number of U.S. military personnel currently based there is available. However, elements of the U.S. 379th Air Expeditionary Wing, along with the six-decade-old United States Military Training Mission to the Kingdom of Saudi Arabia, the four-decade-old Office of the Program Manager of the Saudi Arabian National Guard Modernization Program, and the Office of the Program Manager—Facilities Security Force, are based in Eskan Village Air Base, approximately 13 miles south of the capital city of Riyadh.

- **Qatar.** Thousands of U.S. personnel are deployed in Qatar, mainly from the U.S. Air Force. The U.S. operates its Combined Air Operations Center at Al Udeid Air Base, which is one of the most important U.S. air bases in the world. Heavy bombers, tankers, transports, and ISR aircraft operate from there. Al Udeid Air Base also serves as the forward headquarters of
CENTCOM. In addition, the base houses prepositioned U.S. military equipment. It is defended by U.S. Patriot missile systems.

- **Jordan.** Although there are no U.S. military bases in Jordan, the U.S. has a long history of conducting training exercises in the country. Due to recent events in neighboring Syria, 1,500 American soldiers, a squadron of F-16s, a Patriot missile battery, and M142 High Mobility Artillery Rocket Systems have been deployed in Jordan.

- **Iraq.** In December 2011, the number of U.S. troops in Iraq was reduced to 150 personnel to protect the U.S. embassy. However, since the invasion of northwestern Iraq by the Islamic State, U.S. troop numbers in the country have gradually been increasing. As of March 2016, approximately 5,000 U.S. personnel were deployed on a temporary basis in Iraq, although the number of officially assigned forces remained below a cap of 3,870. In February 2015, the U.S. reportedly moved combat search-and-rescue teams to northern Iraq to support possible rescue missions in Syria.

In addition, there have been media reports that the U.S. government operates a secret UAV base in Saudi Arabia from which drone attacks against militants in Yemen are launched. There also are reports of an American base on Yemen's Socotra Island, which is located near the coast of Somalia, being used for counterterrorism operations off the Horn of Africa and Yemen.

CENTCOM’s stated mission is to promote cooperation among nations, respond to crises, deter or defeat state and non-state aggression, support economic development, and, when necessary, perform reconstruction in order to establish the conditions for regional security, stability, and prosperity. This mission statement is supported by several focus area objectives. According to the 2016 CENTCOM posture statement submitted to Congress, the 10 focus areas are:

- Dismantle and ultimately defeat ISIL in order to prevent further trans-regional spread of sectarian-fueled radical extremism and to mitigate the continuing Iraq–Syria crisis.
- Continue support to Afghanistan, in partnership with NATO, to assist Afghanistan as it establishes itself as a regionally integrated, secure, stable, and developing country; continue planning and coordination for the enduring U.S. and NATO partnerships in Afghanistan beyond the end of 2016.
- Defeat Al Qaeda, deny violent extremists safe havens and freedom of movement, and limit the reach of terrorists, to enhance protection of the U.S. homeland and allies and partner nation homelands.
- Counter the Iranian Threat Network’s malign activities in the region, to include the impacts of surrogates and proxies.
- Support a whole of government approach to developments in Yemen, preventing Yemen from growing as an ungoverned space for AQ/VEOs [violent extremist organizations]; and supporting regional stability efforts that retain U.S. CT [counterterrorism] capacity in the region.
- Maintain a credible deterrent posture against Iran’s evolving conventional and strategic military capabilities.
- Prevent, and if required, counter the proliferation of weapons of mass destruction; disrupt their development and prevent their use.
- Protect lines of communication, ensure free use of the shared spaces (including the cyber commons), and
secure unimpeded global access for legal commerce.

- Shape, support, incentivize, and maintain ready, flexible regional Coalitions and partners, as well as cross-CCMD and interagency U.S. whole-of-government teams, to support crisis response; optimize military resources.

- Develop and execute security cooperation programs, improving bilateral and multilateral partnerships, building partnered “capacities,” and improving information sharing, security, and stability.

CENTCOM is supported by four service component commands and one subordinate unified command: U.S. Naval Forces Middle East (USNAVCENT); U.S. Army Forces Middle East (USARCENT); U.S. Air Forces Middle East (USAFCENT); U.S. Marine Forces Middle East (MARCENT); and U.S. Special Operations Command Middle East (SOCCENT).

- **U.S. Naval Forces Central Command.** USNAVCENT is the maritime component of USCENTCOM. With its forward headquarters in Bahrain, it is responsible for commanding the afloat units that rotationally deploy or surge from the United States, in addition to other ships that are based in the Gulf for longer periods. USNAVCENT conducts persistent maritime operations to advance U.S. interests, deter and counter disruptive countries, defeat violent extremism, and strengthen partner nations’ maritime capabilities in order to promote a secure maritime environment in an area encompassing about 2.5 million square miles of water.

- **U.S. Army Forces Central Command.** USARCENT is the land component of USCENTCOM. Based in Kuwait, it is responsible for land operations in an area encompassing 4.6 million square miles (1.5 times larger than the continental United States).

- **U.S. Air Forces Central Command.** USAFCENT is the air component of USCENTCOM. Based in Qatar, it is responsible for air operations and working with the air forces of partner countries in the region. Additionally, USAFCENT manages an extensive supply and equipment prepositioning program at several regional sites.

- **U.S. Marine Forces Central Command.** USMARCENT is the designated Marine Corps service component for USCENTCOM. Based in Bahrain, it is responsible for all Marine Corps forces in the region.

- **U.S. Special Operations Command Central.** SOCCENT is a subordinate USCENTCOM unified command. Based in Qatar, it is responsible for planning special operations throughout the USCENTCOM region, planning and conducting peacetime joint/combined special operations training exercises, and orchestrating command and control of peacetime and wartime special operations.

In addition to the American military presence in the region, two U.S. allies—the United Kingdom and France—play an important role that should not be overlooked.

The U.K.’s presence in the Middle East is a legacy of British imperial rule. The U.K. has maintained close ties with many countries over which it once ruled and has conducted military operations in the region for decades. Approximately 1,200 British service personnel are based throughout the Gulf. The British presence in the region is dominated by the Royal Navy. In terms of permanently based naval assets, there are four mine hunters and one Royal Fleet Auxiliary supply ship. Generally, there are two frigates or destroyers in the Gulf or Arabian Sea performing maritime security duties. Although such matters are not the subject of public discussion, U.K.
attack submarines also operate in the area. As a sign of its long-term maritime presence in the region, the U.K. recently broke ground on an $11 million new headquarters for its Maritime Component Command at Bahrain’s Salman Naval Base.109

The U.K. also has a sizeable Royal Air Force (RAF) presence in the region, mainly in the UAE and Oman. A short drive from Dubai, Al-Minhad Air Base is home to a small contingent of U.K. personnel. An Expeditionary Air Wing recently stood up to support air transport links between the U.K. and forces deployed in the region and to provide logistical support to RAF assets visiting the region.110 The U.K. also operates small RAF detachments in Oman that support U.K. and coalition operations in the region. Although considered to be in Europe, the U.K.’s Sovereign Base Areas of Akrotiri and Dhekelia in Cyprus have supported U.S. military and intelligence operations in the past and will continue to do so in the future.

The British presence in the region extends beyond soldiers, ships, and planes. A British-run staff college recently opened in Qatar, and Kuwait recently chose the U.K. to help run its own equivalent of the Royal Military Academy at Sandhurst.111 The U.K. also plays a very active role in training the Saudi Arabian and Jordanian militaries.

The French presence in the Gulf is smaller than the U.K.’s but is still significant. France opened its first military base in the Gulf in 2009 in Abu Dhabi in the UAE. This was the first foreign military installation built by the French in 50 years.112 In total, the French have 700 personnel based in the country along with six Rafale fighter jets.113 French ships have access to the Zayed Port, which is big enough to handle every ship in the French Navy except the aircraft carrier Charles De Gaulle. In the wake of the Iran nuclear deal, Gulf states have increasingly looked to France to buy arms, partly to signal their discontent with U.S.–Iran policy. France secured billions in regional defense contracts in 2015, raising French arms exports to the highest level in 15 years.114

Key Infrastructure and Warfighting Capabilities

The Middle East is geographically situated in a critical location. Two-thirds of the world’s population lives within an eight-hour flight from the Gulf region, making it accessible from most of the globe. The Middle East also contains some of the world’s most critical maritime choke points, such as the Suez Canal and the Strait of Hormuz.

While infrastructure is not as developed in the Middle East as it is in North America or Europe, a decades-long presence means that the U.S. has tried and tested systems that involve moving large numbers of matériel and personnel into and out of the region. For example, according to the Department of Defense, at the height of U.S. combat operations in Iraq in the second Gulf War, there were 165,000 servicemembers and 505 bases. Moving personnel and equipment out of the country was an enormous undertaking—“the largest logistical drawdown since World War II”115—and included the redeployment of “the 60,000 troops who remained in Iraq at the time and more than 1 million pieces of equipment ahead of their deadline.”116

As of 2014, 60 percent of roads in the Middle East region were paved, but wide variation exists between countries. For example, 100 percent of the roads in Israel, Jordan, and the UAE are paved. Other nations, such as Oman (46 percent), Saudi Arabia (21.5 percent), and Yemen (8.7 percent), have poor paved road coverage.117 Rail coverage is also poor. For instance, Saudi Arabia has only 700 miles of railroads. By comparison, Maryland, which is roughly 1.5 percent the size of Saudi Arabia, has about the same amount.118 In Syria, five years of civil war has wreaked havoc on the rail system.119

Though only 45 percent of runways of the region’s 1,135 airports are paved, air traffic is set to grow and eventually to outpace world growth statistics. In an attempt to diversify their economies, some nations in the region have been upgrading their air transportation infrastructure to take advantage of their
location for connecting flights, thus opening up a competition. Qatar opened a new $15 billion airport in May 2014. Abu Dhabi International Airport is undergoing an expansion program that is expected to be completed in 2017; and Dubai International Airport, the world’s seventh busiest airport, is undergoing a $7.8 billion expansion project to boost capacity.

The U.S. has access to several airfields in the region. The primary air hub for U.S. forces in the region is at Al Udeid Air Base in Qatar. Other airfields include Ali Al Salem Air Base, Kuwait; Al Dhafra, UAE; Al Minhad, UAE; Isa, Bahrain; Eskan Village Air Base, Saudi Arabia; Muscat, Oman; Thumrait, Oman; Masirah Island, Oman; and use of the commercial airport at Seeb, Oman. In the past, the U.S. has used major airfields in Iraq, including Baghdad International Airport and Balad Air Base, as well as Prince Sultan Air Base in Saudi Arabia. Just because the U.S. has access to a particular air base today does not mean that it will be made available for a particular operation in the future. For example, it is highly likely that Qatar and Oman would not allow the U.S. to use air bases in their territory for strikes against Iran.

The U.S. has access to ports in the region, perhaps most importantly in Bahrain. The Naval Support Activity Bahrain has undertaken a $260 million expansion project that will enable the homeporting of littoral combat ships by 2018 in one of the world’s busiest waterways. The U.S. also has access to a deep-water port, Khalifa bin Salman, in Bahrain and naval facilities at Fujairah, UAE. The UAE’s commercial port of Jebel Ali is open for visits from U.S. warships and prepositioning of equipment for operations in the theater.

Approximately 90 percent of the world’s trade travels by sea, and some of the busiest and most important shipping lanes are located in the Middle East. For example, the Strait of Hormuz and the Bab el-Mandeb Strait combined have over 65,000 cargo ships travelling through them each year. Given the high volume of maritime traffic in the Middle East region, no U.S. military operation can be undertaken without consideration of how these shipping lanes offer opportunity and risk to America and her allies. The major shipping routes include:

- **The Suez Canal.** In 2015, 998.7 million tons of cargo transited the canal, averaging 47.9 ships each day. Considering that the canal itself is 120 miles long but only 670 feet wide, this is an impressive amount of traffic. The Suez Canal is important for Europe in terms of oil transportation. The canal also serves as an important strategic asset, as it is routinely used by the U.S. Navy to move surface combatants between the Mediterranean Sea and the Red Sea.

Thanks to a bilateral arrangement between Egypt and the United States, the U.S. Navy enjoys priority access to the canal. However, the journey through the narrow waterway is no easy task for large surface combatants. The canal was not constructed with the aim of accommodating 90,000-ton aircraft carriers and therefore exposes a larger ship to attack. For this reason, a variety of security protocols are followed, including the provision of air support by the Egyptian military.

- **Strait of Hormuz.** The Strait of Hormuz is a critical oil-supply bottleneck and the world’s busiest passageway for oil tankers. The strait links the Persian Gulf with the Arabian Sea and the Gulf of Oman. Nearly 17 million barrels of oil per day, “about 30% of all seaborne-traded oil,” pass through the strait for an annual total of more than 6 billion barrels of oil. Most of these crude oil exports go to Asian markets, particularly Japan, India, South Korea, and China.

The shipping routes through the Strait of Hormuz are particularly vulnerable to disruption, given the extremely narrow passage and its proximity to Iran. Tehran
has repeatedly threatened to close the strategic strait if it is attacked. While attacking shipping in the strait would drive up oil prices, Iran would also lose, both because it depends on the Strait of Hormuz to export its own crude oil and because it would undermine Tehran’s relations with such oil importers as China, Japan, and India. Tehran also would pay a heavy military price if it provoked a U.S. military response.

- **Bab el-Mandeb Strait.** The Bab el-Mandeb strait is a strategic waterway located between the Horn of Africa and Yemen that links the Red Sea to the Indian Ocean. Exports from the Persian Gulf and Asia destined for Western markets must pass through the strait en route to the Suez Canal. Oil tankers transport approximately 4.7 million barrels of oil per day through the strait.129 The Bab el-Mandeb Strait is 18 miles wide at its narrowest point, limiting passage to two channels for inbound and outbound shipments.130

Over the past decade, piracy off the coast of Somalia has dominated the focus of international maritime security efforts. Recently, however, the frequency of pirate attacks in the region has dropped off, reaching the lowest point since 2006, according to the International Maritime Bureau’s global piracy report. Pirate activity, however, continues to threaten international trade and the safety of the international commons.131

**Maritime Prepositioning of Equipment and Supplies.** The U.S. military has deployed non-combatant maritime prepositioning ships (MPS), containing large amounts of military equipment and supplies, in strategic locations from which they can reach areas of conflict relatively quickly as associated U.S. Army or Marine Corps units located elsewhere arrive in the areas. The British Indian Ocean Territory of Diego Garcia, an island atoll, hosts the U.S. Naval Support Facility Diego Garcia, which supports prepositioning ships that can supply Army or Marine Corps units deployed for contingency operations in the Middle East.

**Conclusion**

For the foreseeable future, the Middle East region will remain a key focus for U.S. military planners. An area that was once considered relatively stable, mainly due to the ironfisted rule of authoritarian regimes, is now highly unstable and a breeding ground for terrorism. Overall security in the region has deteriorated in recent years. Conflicts in Iraq, Libya, Syria, and Yemen have worsened, with Islamic State or al-Qaeda fighters playing major roles. The Russian and Iranian interventions in Syria have greatly complicated the fighting there. Egypt faces a growing insurgency in the Sinai that is gradually spreading. Iraq has managed to stem the advance and push back the Islamic State but needs substantial help to defeat it.

Many of the borders created after World War I are disappearing. In countries like Iraq, Libya, Syria, and Yemen, the supremacy of the nation-state is being challenged by non-state actors that wield influence, power, and resources comparable to those of small states. The main security and political challenges in the region are inextricably linked to the unrealized aspirations of the Arab Spring, surging transnational terrorism, and the potential threat of Iran. These challenges are made more difficult by the Arab–Israeli conflict, Sunni–Shia sectarian divides, the rise of Iran’s Islamist revolutionary nationalism, and the proliferation of Sunni Islamist revolutionary groups.

Thanks to decades of U.S. military operations in the Middle East, the U.S. has tried and tested procedures for operating in the region. Bases and infrastructure are well established. The logistical processes for maintaining a large force forward deployed thousands of miles away from the homeland are well in place. Unlike in Europe, all of these processes have recently been tested in combat. The
personal links between allied armed forces are also present. Joint training exercises improve interoperability, and U.S. military educational courses, which officers (and often royals) from the Middle East regularly attend, allow the U.S. to influence some of the region’s future leaders.

America’s relationships in the region are pragmatically based on shared security and economic concerns. As long as these issues remain relevant to both sides, the U.S. is likely to have an open door to operate in the Middle East when its national interests require it to do so.

Scoring the Middle East Operating Environment

As noted at the beginning of this section, various aspects of the region facilitate or inhibit the ability of the U.S. to conduct military operations to defend its vital national interests against threats. Our assessment of the operating environment utilizes a five-point scale, ranging from “very poor” to “excellent” conditions and covering four regional characteristics of greatest relevance to the conduct of military operations:

1. **Very Poor.** Significant hurdles exist for military operations. Physical infrastructure is insufficient or nonexistent, and the region is politically unstable. In addition, the U.S. military is poorly placed or absent, and alliances are nonexistent or diffuse.

2. **Unfavorable.** A challenging operating environment for military operations is marked by inadequate infrastructure, weak alliances, and recurring political instability. The U.S. military is inadequately placed in the region.

3. **Moderate.** A neutral to moderately favorable operating environment is characterized by adequate infrastructure, moderate alliance structure, and acceptable levels of regional political stability. The U.S. military is adequately placed.

4. **Favorable.** A favorable operating environment includes good infrastructure, strong alliances, and a stable political environment. The U.S. military is well placed in the region for future operations.

5. **Excellent.** An extremely favorable operating environment includes well-established and well-maintained infrastructure, strong and capable allies, and a stable political environment. The U.S. military is exceptionally well placed to defend U.S. interests.

The key regional characteristics consist of:

a. **Alliances.** Alliances are important for interoperability and collective defense, as allies would be more likely to lend support to U.S. military operations. Various indicators provide insight into the strength or health of an alliance. These include whether the U.S. trains regularly with countries in the region, has good interoperability with the forces of an ally, and shares intelligence with nations in the region.

b. **Political Stability.** Political stability brings predictability for military planners when considering such things as transit, basing, and overflight rights for U.S. military operations. The overall degree of political stability indicates whether U.S. military actions would be hindered or enabled and considers, for example, whether transfers of power in the region are generally peaceful and whether there have been any recent instances of political instability.

c. **U.S. Military Positioning.** Having military forces based or equipment and supplies staged in a region greatly facilitates
the ability if the United States to respond to crises and, presumably, achieve success in critical “first battles” more quickly. Being routinely present in a region also assists in maintaining familiarity with its characteristics and the various actors who might assist or thwart U.S. actions. With this in mind, we assessed whether or not the U.S. military was well positioned in the region. Again, indicators included bases, troop presence, prepositioned equipment, and recent examples of military operations (including training and humanitarian) launched from the region.

d. Infrastructure. Modern, reliable, and suitable infrastructure is essential to military operations. Airfields, ports, rail lines, canals, and paved roads enable the U.S. to stage, launch operations from, and logistically sustain combat operations. We combined expert knowledge of regions with publicly available information on critical infrastructure to arrive at our overall assessment of this metric.\footnote{132}

In summary, the U.S. has developed an extensive network of bases in the region and has acquired substantial operational experience in combatting regional threats, but many of its allies are hobbled by political instability, economic problems, internal security threats, and mushrooming transnational threats. Although the overall score remains “moderate,” as it was last year, it has fallen lower and is on the edge of dipping to “poor” because of increasing political instability and growing bilateral tensions with allies over the security implications of the nuclear agreement with Iran and how best to fight the Islamic State.

With this in mind, we arrived at these average scores for the Middle East (rounded to the nearest whole number):

- Alliances: \textbf{3—Moderate}
- Political Stability: \textbf{1—Very Poor}
- U.S. Military Positioning: \textbf{3—Moderate}
- Infrastructure: \textbf{3—Moderate}

Leading to a regional score of: \textbf{Moderate}
Endnotes:

1. For example, Sir Mark Sykes, Britain’s lead negotiator with the French on carving up the Ottoman Empire in the Middle East, during a 1916 meeting in Downing Street pointed to the map and told the Prime Minister that for Britain’s sphere of influence in the Middle East, “I should like to draw a line from the e in Acre [modern-day Israel] to the last k in Kirkuk [modern-day Iraq].” See James Barr, A Line in the Sand: Britain, France, and the Struggle That Shaped the Middle East (London: Simon & Schuster U.K., 2011), pp. 7–20. See also Margaret McMillan, Paris 1919: Six Months That Changed the World (New York: Random House, 2005).


14. Ibid.


16. Ibid.


27. Ibid.


30. Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.


36. The MNNA designation was established during the dying days of the Cold War in 1989 to acknowledge American partners that contribute to U.S. security, defense, and broader geopolitical goals but are not members of NATO. The first tranche of countries to become MNNA included South Korea, Israel, Egypt, Australia, and Japan. The most recent country to be awarded this title is Afghanistan, which was so designated in 2012 by President Barack Obama.


40. Ibid.

41. Created in 1981, the GCC was founded to offset the threat from Iran, which became hostile to Sunni-led Arab states after its 1979 revolution.


47. Laub, “Yemen in Crisis.”

48. Ibid.


52. Ibid.


58. Ibid.


79. Schenker and Trager, “Egypt’s Arms Deal with Russia: Potential Strategic Costs.”

80. Schenker and Trager, “Egypt’s Arms Deal with Russia: Potential Strategic Costs.”

81. Schenker and Trager, “Egypt’s Arms Deal with Russia: Potential Strategic Costs.”


86. Cooper and Barnard, “Jordan and Emirates Carry Out Airstrikes in Syria Against ISIS.”


88. During 1967 and 1990, South Yemen, officially known as the People’s Democratic Republic of Yemen, was a socialist state in the southeastern provinces of the present-day Republic of Yemen.


90. Ibid.


100. Ibid., pp. 22–23.
116. Ibid.
124. Ibid.
Asia

Since the founding of the American republic, Asia has been a key area of interest for the United States for both economic and security reasons. One of the first ships to sail under an American flag was the aptly named *Empress of China*, inaugurating the American role in the lucrative China trade in 1784. In the subsequent more than 200 years, the United States has worked under the strategic assumption that it was inimical to American interests to allow any single nation to dominate Asia. Asia constituted too important a market and was too great a source of key resources for the United States to be denied access. Thus, beginning with U.S. Secretary of State John Hay’s “Open Door” policy toward China in the 19th century, the United States has worked to prevent the rise of a regional hegemon, whether it was imperial Japan in Asia or the Soviet Union in Europe.

In the 21st century, the importance of Asia to the United States will continue to grow. Already, Asian markets absorb over a quarter of American exports in goods and services and, combined, support one-third of all American export-related jobs.\(^1\) This number is likely to grow.

Not only is Asia still a major market with two of the world’s most populous countries, but it is also a key source of vital natural resources and such goods as electronic components. Over 40 percent of the world’s hard drives, for example, are made in Thailand. The March 2011 earthquake that devastated Japan had global repercussions as supply chains for a variety of products from cars to computers were disrupted worldwide.

Asia is a matter of more than just economic concern, however. Several of the world’s largest militaries are in Asia, including those of China, India, North and South Korea, Pakistan, Russia, and Vietnam. The United States also maintains a network of treaty alliances and security partnerships, as well as a significant military presence, in Asia. Five Asian states (China, North Korea, India, Pakistan, and Russia) possess nuclear weapons.

The region is a focus of American security concerns both because of the presence of substantial military forces and because of the legacy of conflict. The two major “hot” wars the United States fought during the Cold War were both in Asia—Korea and Vietnam. Moreover, the Asian security environment is unstable. For one thing, the Cold War has not ended in Asia. Of the four states divided between Communism and democracy by the Cold War, three (China, Korea, and Vietnam) were in Asia. Neither the Korean nor the China–Taiwan situation was resolved despite the fall of the Berlin Wall and the collapse of the Soviet Union.

The Cold War itself was an ideological conflict layered atop long-standing—and still lingering—historical animosities. Asia is home to several major territorial disputes, among them:

- Northern Territories/Southern Kuriles (Japan and Russia);
- Senkakus/Diaoyutai/Diaoyu Dao (Japan, China, and Taiwan);
Dok-do/Takeshima (Korea and Japan);
Paracels/Xisha Islands (Vietnam, China, and Taiwan);
Spratlys/Nansha Islands (China, Taiwan, Vietnam, Brunei, Malaysia, and the Philippines);
Kashmir (India and Pakistan); and
Aksai Chin and parts of the Indian state of Arunachal Pradesh (India and China).

Even the various names applied to the disputed territories reflect the fundamental differences in point of view, as each state refers to the disputed areas under a different name. Similarly, different names are applied to the various major bodies of water: for example, “East Sea” or “Sea of Japan” and “Yellow Sea” or “West Sea.”

These disputes over names also reflect the broader tensions rooted in historical animosities—enmities that still scar the region. Most notably, Japan’s actions in World War II remain a major source of controversy, particularly in China and South Korea, where debates over issues such as what is incorporated in textbooks and governmental statements prevent old wounds from completely healing. Similarly, a Chinese claim that much of the Korean peninsula was once Chinese territory aroused reactions in both Koreas. The end of the Cold War did little to resolve any of these underlying disagreements.

It is in this light that one should consider the lack of a political–security architecture, or even much of an economic one, undergirding East Asia. Despite substantial trade and expanding value chains among the various Asian states, as well as with the rest of the world, formal economic integration is limited. There is no counterpart to the European Union or even to the European Economic Community, just as there is no parallel to the European Coal and Steel Community, the precursor to European economic integration.

The Association of Southeast Asian Nations (ASEAN) is a far looser agglomeration of disparate states, although they have succeeded in expanding economic linkages among themselves over the past 49 years. Less important to regional stability has been the South Asia Association of Regional Cooperation (SAARC), which includes Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. The SAARC is largely ineffective, both because of the lack of regional economic integration and because of the historical rivalry between India and Pakistan. Also, despite attempts, there is still no Asia-wide free trade agreement (although the Trans-Pacific Partnership, if passed, and the Regional Comprehensive Economic Partnership would help to remedy this gap to some extent).

Similarly, there is no equivalent of NATO, despite an ultimately failed mid-20th century effort to forge a parallel multilateral security architecture through the Southeast Asia Treaty Organization (SEATO). Regional security entities such as the Five Power Defence Arrangement (involving the United Kingdom, Australia, New Zealand, Malaysia, and Singapore in an “arrangement,” not an alliance) or discussion forums such as the ASEAN Regional Forum and the ASEAN Defense Ministers-Plus Meeting have been far weaker. Nor did an Asian equivalent of the Warsaw Pact arise. Instead, Asian security has been marked by a combination of bilateral alliances, mostly centered on the United States, and individual nations’ efforts to maintain their own security.

Important Alliances and Bilateral Relations in Asia

For the United States, the keys to its position in the Western Pacific are its alliances with Japan, the Republic of Korea, the Philippines, Thailand, and Australia. These five alliances are supplemented by very close security relationships with New Zealand, Afghanistan, Pakistan, and Singapore and evolving relationships with other nations in the region like...
India, Vietnam, Malaysia, and Indonesia. The U.S. also has a robust unofficial relationship with Taiwan.

The United States enjoys the benefit of sharing common weapons and systems with many of its allies, which facilitates interoperability. Many nations, for example, have equipped their infantries with M-16/M-4–based infantry weapons (and share the 5.56mm caliber); F-15 and F-16 combat aircraft; and LINK-16 data links. Consequently, in the event of conflict, the various air, naval, and even land forces will be capable of sharing information in such key areas as air defense and maritime domain awareness. This advantage is further expanded by the constant ongoing range of both bilateral and multilateral exercises, which acclimates various forces to operating together and familiarizes both American and local commanders with each other’s standard operating procedures (SOPs), as well as training and tactics.

**Japan.** The U.S.–Japan defense relationship is a critical centerpiece in the American network of relations in the Western Pacific. The U.S.–Japan Treaty of Mutual Cooperation and Security, signed in 1960, provided for a deep alliance between two of the world’s largest economies and most sophisticated military establishments, and changes in Japanese defense policies are now enabling an even greater level of cooperation on security issues between the two allies and others in the region.

Since the end of World War II, Japan’s defense policy has been distinguished by Article 9 of its constitution. This article, which states in part that “the Japanese people forever renounce war as a sovereign right of the nation and the threat or use of force as means of settling international disputes,” in effect prohibits the use of force by Japan’s governments as an instrument of national policy. It also has led to several other associated policies.

One such policy is a prohibition on “collective self-defense.” Japan recognized that nations have a right to employ their armed forces to help other states defend themselves (i.e., to engage in collective defensive operations) but rejected that policy for itself. Japan would employ its forces only in defense of Japan. In 2015, this changed. The U.S. and Japan revised their defense cooperation guidelines, and the Japanese passed necessary legislation to allow Japan to exercise collective self-defense in cases involving threats to the U.S. and multilateral peacekeeping operations.

A similar policy decision was made regarding Japanese arms exports. For a variety of economic and political reasons, Tokyo has chosen to rely on domestic production to meet most of its military requirements. At the same time, until very recently, it chose to limit arms exports, banning them entirely to:

- Communist bloc countries;
- Countries that are placed by the U.N. Security Council under arms exports embargoes; and
- Countries that are involved in or likely to be involved in international conflicts.

The relaxation of these export rules in 2014 enabled Japan, among other things, to pursue (ultimately unsuccessfully) an opportunity to build new state-of-the-art submarines in Australia, for Australia, and possible sales of amphibious search and rescue aircraft to the Indian navy. Japan has also sold multiple patrol vessels to the Philippine and Vietnamese Coast Guards.

Tokyo relies heavily on the United States for its security. In particular, it depends on the United States to deter nuclear attacks on the home islands. The combination of the pacifist constitution and Japan’s past (i.e., the atomic bombings of Hiroshima and Nagasaki) has forestalled much public interest in obtaining an independent nuclear deterrent. Similarly, throughout the Cold War, Japan relied on the American conventional and nuclear commitment to deter Soviet (and Chinese) aggression.

As part of its relationship with Japan, the United States maintains some 54,000
military personnel and another 8,000 Department of Defense civilian employees in Japan under the rubric of U.S. Forces Japan (USFJ). These forces include a forward-deployed carrier battle group (centered on the USS Ronald Reagan); a submarine tender; an amphibious assault ship at Yokosuka; and the bulk of the Third Marine Expeditionary Force (III MEF) on Okinawa. U.S. forces exercise regularly with their Japanese counterparts; in recent years, this collaboration has expanded from air and naval exercises to practicing amphibious operations together.

Supporting the American presence is a substantial American defense infrastructure established throughout Japan, including Okinawa. The array of major bases provides key logistical and communications support for U.S. operations throughout the Western Pacific, cutting travel time substantially compared with deployments from Hawaii or the American West Coast. They also provide key listening posts on Russian, Chinese, and North Korean military operations. This is likely to be supplemented by Japan’s growing array of space systems, including new reconnaissance satellites.

The Japanese government defrays a substantial portion of the cost of the American presence. At present, the government of Japan provides some $2 billion annually to support the cost of USFJ. These funds cover a variety of expenses, including utility and labor costs at U.S. bases, improvements to U.S. facilities in Japan, and the cost of relocating training exercises away from populated areas in Japan.

U.S.–Japanese defense cooperation is undergirded not only by the mutual security treaty, but also by the new 2015 U.S.–Japan Defense Guidelines. The guidelines allow both the geographic scope and the nature of Japan’s security contributions to include operations “involving the use of force to respond to situations where an armed attack against a foreign country that is in a close relationship with Japan occurs.” The revisions make Japan a fuller partner in the alliance.

At least since the 1990 Gulf War, the United States had sought to obtain expanded Japanese participation in international security affairs. This effort had generally been resisted by Japan’s political system, based on the view that Japan’s constitution, legal decisions, and popular attitudes all forbid such a shift. Attempts to expand Japan’s range of defense activities, especially away from the home islands, have often been met by vehement opposition from Japan’s neighbors, especially China and South Korea, due to unresolved differences on issues ranging from territorial claims and boundaries to historical grievances and Japanese visits to the Yasukuni Shrine. Even with the changes, these issues will doubtless continue to constrain Japan’s contributions to the alliance.

These issues have been sufficient to torpedo efforts to improve defense cooperation between Seoul and Tokyo, a fact highlighted in 2012 by South Korea’s last-minute decision not to sign an agreement to share sensitive military data, including details about the North Korean threat to both countries. In December 2014, the U.S., South Korea, and Japan signed a minimalist military data-sharing agreement limited only to information on the North Korean military threat and requiring both allies to pass information through the United States military. Similar controversies, rooted in history as well as in contemporary politics, have also affected Sino–Japanese relations and, to a lesser extent, Japanese ties to some Southeast Asian states.

Nonetheless, Prime Minister Shinzō Abe has pushed through a reinterpretation of the legality of Japanese participation in “collective self-defense” situations, as well as a loosening of restrictions on arms sales. The combination of reforms provides the legal foundation for much greater Japanese interaction with other states in defense arenas, including joint production of weapons and components and the potential for interaction with foreign military forces.

Republic of Korea. The United States and the Republic of Korea (ROK) signed the
Mutual Defense Treaty in 1953. That treaty codified the relationship that had grown from the Korean War, when the United States dispatched troops to help South Korea defend itself against invasion by Communist North Korea. Since then, the two states have forged an enduring alliance that supplements a substantial trade and economic relationship that includes a free trade agreement.

The United States currently maintains some 28,500 troops in Korea, the largest concentration of American forces on the Asian mainland. This is centered mainly on the U.S. 2nd Infantry Division and a significant number of combat aircraft.

The U.S.–ROK defense relationship involves one of the more integrated and complex command-and-control structures. A United Nations Command (UNC) established in 1950 was the basis for the American intervention, and it remained in place after the armistice was signed in 1953. UNC has access to a number of bases in Japan in order to support U.N. forces in Korea. In concrete terms, however, it only oversaw South Korean and American forces as other nations’ contributions were gradually withdrawn or reduced to token elements.

In 1978, operational control of frontline South Korean and American military forces transitioned from UNC to Combined Forces Command (CFC). Headed by an American officer (who is also the Commander, U.N. Command), CFC reflects an unparalleled degree of U.S.–South Korean military integration. Similarly, the system of Korean Augmentees to the United States Army (KATUSA), which places South Korean soldiers into American units assigned to Korea, allows for a degree of tactical-level integration and cooperation that is atypical.

Current command arrangements for the U.S. and ROK militaries are for CFC to exercise operational control (OPCON) of all forces on the peninsula in time of war, while peacetime control rests with respective national authorities (although the U.S. exercises peacetime OPCON over non-U.S., non-ROK forces located on the peninsula). In 2003, South Korean president Roh Moo-hyun, as agreed with the U.S., began the process of transferring wartime operational control from CFC to South Korean commanders, thereby establishing the ROK military as fully independent of the United States. This decision engendered significant opposition within South Korea, however, and raised serious military questions about the impact on unity of command. Coupled with various North Korean provocations (including a spate of missile tests as well as attacks on South Korean military forces and territory in 2010), Washington and Seoul agreed in late 2014 to postpone wartime OPCON transfer.

The domestic political constraints under which South Korea’s military operates are less stringent than those that govern the operations of the Japanese military. Thus, South Korea rotated several divisions to fight alongside Americans in Vietnam. In the first Gulf War, the Iraq War, and Afghanistan, South Korea limited its contributions to non-combatant forces and monetary aid. The focus of South Korean defense planning remains on North Korea, however, especially as Pyongyang has deployed its forces in ways that optimize a southward advance. Concerns about North Korea have been heightened in recent years in the wake of the sinking of the South Korean frigate Cheonan and the shelling of Yongpyeong-do, perhaps the most serious incident in decades. Moreover, in the past several conflicts (e.g., Operation Iraqi Freedom), Seoul has not provided combat forces, preferring instead to send humanitarian and non-combatant assistance.

Over the past several decades, the American presence on the peninsula has slowly declined. In the early 1970s, President Richard Nixon withdrew the 7th Infantry Division, leaving only the 2nd Infantry Division on the peninsula. Those forces have been positioned farther back so that there are few Americans deployed on the Demilitarized Zone (DMZ).

Washington has agreed to maintain 28,500 troops in the ROK. These forces regularly
engage in major exercises with their ROK counterparts, including the Key Resolve and Foal Eagle series. Both of these series involve the actual deployment of a substantial number of forces and are partly intended to deter Pyongyang, as well as to give U.S. and ROK forces a chance to practice operating together.

The ROK government also provides substantial resources to defray the costs of U.S. Forces–Korea. It provides some $900 million annually in either direct funding or in-kind support, covering cost-sharing for labor, logistics, and improvements in facilities.\(^\text{10}\)

**The Philippines.** America’s oldest defense relationship in Asia is with the Philippines. The United States seized the Philippines from the Spanish over a century ago as a result of the Spanish–American War and a subsequent conflict with Philippine indigenous forces. But the U.S., unlike other colonial states, also put in place a mechanism for the Philippines to gain its independence, transitioning through a period as a commonwealth until the archipelago was granted independence in 1946. Just as important, substantial numbers of Filipinos fought alongside the United States against Japan in World War II, establishing a bond between the two peoples. Following World War II and after assisting the newly independent Filipino government against the Communist Hukbalahap movement in the 1940s, the United States and the Philippines signed a mutual security treaty.

For much of the period between 1898 and the end of the Cold War, the largest American bases in the Pacific were in the Philippines, centered around the U.S. Navy base in Subic Bay and the complex of airfields that developed around Clark Field (later Clark Air Base). While the Philippines have never had the ability to provide substantial financial support for the American presence, the base infrastructure was unparalleled, providing replenishment and repair facilities and substantially extending deployment periods throughout the East Asian littoral.

These bases were often centers of controversy, however, as they were reminders of the colonial era. In 1991, a successor to the Military Bases Agreement between the U.S. and the Philippines was submitted to the Philippine Senate for ratification. The Philippines, after a lengthy debate, rejected the treaty, compelling American withdrawal from Philippine bases. Coupled with the effects of the 1991 eruption of Mount Pinatubo (which devastated Clark Air Base and damaged many Subic Bay facilities) and the end of the Cold War, closure of the bases was not seen as fundamentally damaging to America’s posture in the region.

Moreover, despite the closing of the American bases and consequent slashing of American military assistance, U.S.–Philippine military relations remained close, and assistance began to increase again after 9/11 as U.S. forces assisted the Philippines in countering Islamic terrorist groups, including Abu Sayyaf, in the south of the archipelago. From 2002–2015, the U.S. rotated 500–600 special operations forces regularly through the Philippines to assist in counterterrorism operations. That operation, Joint Special Operations Task Force-Philippines (JSOTF-P), closed in the first part of 2015, but the U.S. presence in Mindanao continues at reduced levels. Another 6,000 participate in combined exercises with Philippine troops.\(^\text{11}\)

In 2014, the United States and the Philippines announced a new Enhanced Defense Cooperation Agreement (EDCA), which allows for an expanded American presence in the archipelago,\(^\text{12}\) and in early 2016, they agreed on five specific bases subject to the agreement. Under the EDCA, U.S. forces will rotate through these locations on an expanded basis, allowing for a more regular presence (but not new, permanent bases) in the islands, and will engage in more joint training with AFP forces. The agreement also facilitates the provision of humanitarian assistance and disaster relief (HA/DR). The United States also agreed to improve the facilities it uses and to transfer and sell more military equipment to the AFP to help it modernize. This is an important step, as the Philippine military has
long been one of the weakest in the region, despite the need to defend an incredibly large expanse of ocean, shoreline, and territory.

One long-standing difference between the U.S. and the Philippines has been the application of the U.S.–Philippine Mutual Defense Treaty to disputed islands in the South China Sea. While the U.S. has long maintained that the treaty does not extend American obligations to disputed areas and territories, Filipino officials occasionally have held otherwise. The EDCA does not settle this question, but the growing tensions in the South China Sea, including in recent years at Scarborough Shoal, have highlighted Manila’s need for greater support from and cooperation with Washington. Moreover, the U.S. government has long been explicit that any attack on Philippine government ships or aircraft, or on the Philippine armed forces, would be covered under the Treaty, “thus separating the issue of territorial sovereignty from attack on Philippine military and public vessels.”

In 2016, the Philippines elected a new, very unconventional President, Rodrigo Duterte, to a six-year term. His rhetorical challenges to current priorities in the U.S.–Philippines alliance raise questions about the trajectory of the alliance and the sustainability of new initiatives that are important to it.

**Thailand.** The U.S.–Thai security relationship is built on the 1954 Manila Pact, which established the now-defunct South-East Asia Treaty Organization, and the 1962 Thanat–Rusk agreement. These were supplemented by the 2012 Joint Vision statement for U.S.–Thai relations. In 2003, Thailand was designated a “major, non-NATO ally,” giving it improved access to American arms sales.

Thailand’s central location has made it an important component of the network of U.S. alliances in Asia. During the Vietnam War, a variety of American aircraft were based in Thailand, ranging from fighter-bombers and B-52s to reconnaissance aircraft. In the first Gulf War and again in the Iraq War, some of those same air bases were essential for the rapid deployment of American forces to the Persian Gulf.

U.S. and Thai forces regularly exercise together, most notably in the annual Cobra Gold exercises, first begun in 1982. This builds on a partnership that began with the dispatch of Thai forces to the Korean War, where over 1,200 Thai troops died (out of some 6,000 deployed). The Cobra Gold exercises are among the world’s largest multilateral military exercises.

U.S.–Thai relations have been strained in recent years as a result of domestic unrest and two coups in Thailand. This has limited the extent of U.S.–Thai military cooperation, as U.S. law prohibits U.S. funding for many kinds of assistance to a foreign country in which a military coup deposes a duly elected head of government. Nonetheless, the two states continue to cooperate, including in joint military exercises and in the area of counterterrorism. The Counter Terrorism Information Center (CTIC) continues to allow the two states to share vital information about terrorist activities in Asia. CTIC is alleged to have played a key role in the capture of the leader of Jemaah Islamiyah, Hambali, in 2003.

Thailand has also been drawing closer to the People’s Republic of China (PRC). This process has been underway since the end of the Vietnam War but is accelerating due to expanding economic relations between the two states. Between 2005 and 2010, the value of trade between the two states doubled. Today, China is Thailand’s leading trading partner.

The Thai and Chinese militaries also have improved relations over the years. Intelligence officers began formal meetings in 1988. Thai and Chinese military forces have engaged in joint counterterrorism exercises since 2007, and the two nations’ marines have exercised jointly since 2010. Thai–Chinese military relations may have accelerated as a result of the U.S. restrictions imposed in the wake of Thai political instability.

**Australia.** Australia is one of the most important American allies in the Asia-Pacific. U.S.–Australia security ties date back to World War I, when U.S. forces fought under
Australian command on the Western Front. These ties deepened during World War II when, after Japan commenced hostilities in the Western Pacific, Australian forces committed to the North Africa campaign were not returned to defend the continent—despite British promises to do so. As Japanese forces attacked the East Indies and secured Singapore, Australia turned to the United States to bolster its defenses, and American and Australian forces subsequently cooperated closely in the Pacific War. Those ties and America’s role as the main external supporter for Australian security were codified in the Australia–New Zealand–U.S. (ANZUS) pact of 1951.

A key part of the Obama Administration’s “Asia pivot” was to rotate additional United States Air Force units and Marines through Northern Australia. Eventually expected to total some 2,500 troops, the initial contingents of Marine forces are based near the northern city of Darwin. The two sides continue to negotiate the terms of the full deployment, which it is now estimated will be complete by 2020. Meanwhile, the two nations engage in a variety of security cooperation efforts, including joint space surveillance activities. These were codified in 2014 with an agreement that allows sharing of space information data among the U.S., Australia, the U.K., and Canada.

The two nations’ chief defense and foreign policy officials meet annually in the Australia–United States Ministerial (AUSMIN) process to address such issues of mutual concern as security developments in the Asia–Pacific region, global security and development concerns, and bilateral security cooperation. Australia has also granted the United States access to a number of joint facilities, including space surveillance facilities at Pine Gap and naval communications facilities on the North West Cape of Australia.

Australia and the United Kingdom are two of America’s closest partners in the defense industrial sector. In 2010, the United States approved Defense Trade Cooperation Treaties with Australia and the U.K. These treaties allow for the expedited and simplified export or transfer of certain defense services and items between the U.S. and its two key partners without the need for export licenses or other approvals under the International Traffic in Arms Regulations. This also allows for much greater integration among the American, Australian, and British defense industrial establishments.

Singapore. Although Singapore is not a security treaty ally of the United States, it is a key security partner in the region. In 2005, the close defense relationship was formalized with the Strategic Framework Agreement (SFA), and in 2015, it was expanded with the U.S.–Singapore Defense Cooperation Agreement (DCA).

The 2005 SFA was the first agreement of its kind since the end of the Cold War. It built on the 1990 Memorandum of Understanding Regarding United States Use of Facilities in Singapore, as amended, which allows for U.S. access to Singaporean military facilities. The 2015 DCA establishes “high-level dialogues between the countries’ defense establishments” and a “broad framework for defense cooperation in five key areas, namely in the military, policy, strategic and technology spheres, as well as cooperation against non-conventional security challenges, such as piracy and transnational terrorism.”

New Zealand. For much of the Cold War, U.S. defense ties with New Zealand were similar to those between America and Australia. As a result of controversies over U.S. Navy employment of nuclear power and the possibility of deployment of U.S. naval vessels with nuclear weapons, the U.S. suspend its obligations to New Zealand under the 1951 ANZUS Treaty. Defense relations improved, however, in the early 21st century as New Zealand committed forces to Afghanistan and also dispatched an engineering detachment to Iraq. The 2010 Wellington Declaration and the 2012 Washington Declaration, while not restoring full security ties, allowed the two nations to resume high-level defense dialogues. In 2013, U.S. Secretary of Defense
Chuck Hagel and New Zealand Defense Minister Jonathan Coleman announced the resumption of military-to-military cooperation, and in July 2016, the U.S. accepted an invitation from New Zealand to make a single port call, reportedly with no change in U.S. policy to confirm or deny the presence of nuclear weapons on board. This may portend a longer-term solution to the nuclear impasse between the two nations.

Taiwan. When the United States shifted its recognition of the government of China from the Republic of China (on Taiwan) to the People’s Republic of China (the mainland), it declared certain commitments concerning the security of Taiwan. These commitments are embodied in the Taiwan Relations Act (TRA) and the subsequent “Six Assurances.”

The TRA is an American law and not a treaty. Under the TRA, the United States maintains programs, transactions, and other relations with Taiwan through the American Institute in Taiwan (AIT). Except for the U.S.–China Mutual Defense Treaty, which had governed U.S. security relations with Taiwan, all other treaties and international agreements made between the Republic of China and the United States remain in force. (The Sino–U.S. Mutual Defense Treaty was terminated by President Jimmy Carter following the shift in recognition to the PRC.)

Under the TRA, it is the policy of the United States “to provide Taiwan with arms of a defensive character.” The TRA also states that the U.S. will “make available to Taiwan such defense articles and services in such quantity as may be necessary to enable Taiwan to maintain a sufficient self-defense capability.” The U.S. has implemented these provisions of the TRA through sales of weapons to Taiwan.

The TRA states that it is U.S. policy to “consider any effort to determine the future of Taiwan by other than peaceful means, including by boycotts or embargoes, a threat to the peace and security of the Western Pacific area and of grave concern to the United States.” It also states that it is U.S. policy to “maintain the capacity of the United States to resist any resort to force or other forms of coercion that would jeopardize the security, or the social or economic system, of the people on Taiwan.”

The TRA requires the President to inform Congress promptly of “any threat to the security or the social or economic system of the people on Taiwan and any danger to the interests of the United States arising therefrom.” The TRA then states: “The President and the Congress shall determine, in accordance with constitutional processes, appropriate action by the United States in response to any such danger.”

Supplementing the TRA are the “Six Assurances” issued by President Ronald Reagan in a secret July 1982 memo, subsequently publicly released and the subject of a Senate hearing. These six assurances were intended to moderate the third Sino–American communique, itself generally seen as one of the “Three Communiques” that form the foundation of U.S.–PRC relations. These assurances of July 14, 1982, were as follows:

1. In negotiating the third Joint Communique with the PRC, the United States:

2. has not agreed to set a date for ending arms sales to Taiwan;

3. has not agreed to hold prior consultations with the PRC on arms sales to Taiwan;

4. will not play any mediation role between Taipei and Beijing;

5. has not agreed to revise the Taiwan Relations Act;

6. has not altered its position regarding sovereignty over Taiwan;

7. will not exert pressure on Taiwan to negotiate with the PRC.

Although the United States sells Taiwan a variety of military equipment, it does not engage in joint exercises with the Taiwan armed forces.
forces. Some Taiwan military officers, however, do receive training in the United States, attending American professional military education institutions. There also are regular high-level meetings between senior U.S. and Taiwan defense officials, both uniformed and civilian. The United States does not maintain any bases in Taiwan or its territories.

**Vietnam, Malaysia, and Indonesia.** The U.S. has security relationships with several key Southeast Asian countries, none of them as extensive and formal as its relationship with Singapore and its treaty allies but all still of growing significance. The U.S. “rebalance” to the Pacific has incorporated a policy of “rebalance within the rebalance” that has included efforts to expand relations with this second tier of American security partners.

Since shortly after the normalization of diplomatic relations between the two countries in 1995, the U.S. and Vietnam also have normalized their defense relationship, albeit very slowly. The relationship was codified in 2011 with a Memorandum of Understanding “advancing bilateral defense cooperation” that covers five areas of operations, including maritime security. The most significant development in security ties over the past several years has been the relaxation of the ban on sales of arms to Vietnam. In the fall of 2014, the U.S. lifted the embargo on maritime security–related equipment, and then on President Barack Obama’s visit to Hanoi in 2016, it lifted the ban completely. This full embargo had long served as a psychological obstacle to Vietnamese cooperation on security issues. Lifting it does not necessarily change the nature of the articles likely to be sold, and no transfers, including P-3 maritime patrol aircraft, discussed since the relaxation of the embargo two years ago, have been made. Lifting the embargo does, however, expand the potential of the relationship and better positions the U.S. to compete with Chinese and Russian positions there. The Joint Statement from President Obama’s visit also memorialized a number of other improvements in the U.S.–Vietnam relationship, including the Cooperative Humanitarian and Medical Storage Initiative (CHAMSI), which will advance cooperation on humanitarian assistance and disaster relief by, among other things, prepositioning related American equipment in Danang, Vietnam.32

There remain significant limits on the U.S.–Vietnam security relationship, including a Vietnamese defense establishment that is very cautious in its selection of defense partners, party-to-party ties between the Communist parties of Vietnam and China, and a foreign policy that seeks to balance relationships with all major powers. The U.S. remains, like others among Vietnam’s security partners, officially limited to one port call a year and has not docked a warship at Cam Ranh Bay since the end of the Vietnam War. This may change with the inauguration of a new international port there this year, but the benefits of that access will be shared among all capable Vietnamese partners, not just the U.S. Navy.

The U.S. and Malaysia have maintained a “steady level” of defense cooperation since the 1990s, despite occasional political differences. Each year, they now participate jointly in dozens of bilateral and multilateral exercises to promote effective cooperation across a range of missions. The U.S. has specifically discussed with Malaysia arrangements for rotating maritime patrol aircraft through Malaysian bases in Borneo.

The U.S.–Indonesia defense relationship revived in 2005 following a period of estrangement over American human rights concerns. It now includes regular joint exercises, port calls, and sale of weaponry. The U.S. is also working closely with Indonesia’s defense establishment to institute reforms in Indonesia’s strategic defense planning processes.

The U.S. is working across the board at modest levels of investment to help build Southeast Asia’s maritime security capacity. Most notable in this regard is the Maritime Security Initiative (MSI) announced by Secretary of Defense Ashton Carter in 2015.36

States, marking the beginning of Operation Enduring Freedom to combat al-Qaeda and its Taliban supporters. The U.S., in alliance with the U.K. and the anti-Taliban Afghan Northern Alliance forces, ousted the Taliban from power in December 2001. Most Taliban and al-Qaeda leaders fled across the border into Pakistan’s Federally Administered Tribal Areas (FATA), where they regrouped and started an insurgency in Afghanistan in 2003.

In August 2003, NATO joined the war in Afghanistan and assumed control of the International Security Assistance Force (ISAF). At the height of the war in 2011, there were 50 troop-contributing nations and a total of nearly 150,000 NATO and U.S. forces on the ground in Afghanistan.

On December 28, 2014, NATO formally ended combat operations and handed responsibility to the Afghan security forces, currently numbering around 326,000 (including army and police). After Afghan President Ashraf Ghani signed a bilateral security agreement with the U.S. and a Status of Forces Agreement with NATO, the international coalition launched Operation Resolute Support to train and support Afghan security forces. As of June 2016, approximately 13,200 U.S. and NATO forces were stationed in Afghanistan. Most U.S. and NATO forces are stationed at bases in Kabul and Bagram, with tactical advise-and-assist teams located in Mazar-i-Sharif, Herat, Kandahar, Jalalabad, and Gamberi.

In 2014, President Obama pledged to cut U.S. force levels to around 5,500 by the end of 2015 and then to zero by the end of 2016, but he reversed himself last fall, announcing that the U.S. instead would maintain this force level when he departs office. He revised plans again in 2016 to say that he would keep 8,400 in place, leaving any further reductions up to his successor.

Pakistan. During the war in Afghanistan, the U.S. and NATO relied heavily on logistical supply lines running through Pakistan to resupply coalition forces in Afghanistan. Supplies and fuel were carried on transportation routes from the port at Karachi to Afghan–Pakistani border crossing points at Torkham in the Khyber Pass and Chaman in Baluchistan province. During the initial years of the Afghan war, about 80 percent of U.S. and NATO supplies traveled through Pakistani territory. This amount decreased to around 50 percent–60 percent as the U.S. shifted to northern routes and when U.S.–Pakistan relations significantly deteriorated over U.S. drone strikes, continued Pakistani support to Taliban militants, and the fallout surrounding the U.S. raid on Osama bin Laden’s hideout in Abbottabad on May 2, 2011.

From October 2001 until December 2011, the U.S. leased Pakistan’s Shamsi airfield southwest of Quetta in Pakistan’s Baluchistan province and used it as a base from which to conduct surveillance and drone operations against terrorist targets in Pakistan’s tribal border areas. Pakistan ordered the U.S. to vacate the base shortly after NATO forces attacked Pakistani positions along the Afghan–Pakistani border, killing 24 Pakistani soldiers, on November 26, 2011.

Escalation of the U.S. drone strike campaign in Pakistan’s border areas from 2009–2012 led to the significant degradation of al-Qaeda’s ability to plot, plan, and train for terrorist attacks. The U.S. began to curtail drone strikes in 2013, largely as a result of Pakistan’s growing complaints that the drone campaign infringed on its sovereignty and criticism from international human rights organizations about the number of civilian casualties resulting from the attacks. All told, there have been over 400 drone strikes since January 2008, including the strike that killed Taliban leader Mullah Akhtar Mansour in Baluchistan province in May 2016.

The U.S. provides significant amounts of military aid to Pakistan and “reimbursements” in the form of coalition support funds (CSF) for Pakistan’s military deployments and operations along the border with Afghanistan. Pakistan has some 150,000 troops stationed in regions bordering Afghanistan and recently conducted a robust military
campaign against Pakistani militants in North Waziristan. Since FY 2002, the U.S. has provided almost $8 billion in security-related assistance and more than $14 billion in CSF funds to Pakistan.\textsuperscript{38} While $1 billion in CSF reimbursements was authorized for Pakistan in 2015, the U.S. withheld $300 million of this funding because of Pakistan’s failure to crack down on the Haqqani network. Reflecting a trend of growing congressional resistance to military assistance for Pakistan, in 2016, Congress blocked funds for the provision of eight F-16s to Pakistan.

**India.** During the Cold War, U.S.–Indian military cooperation was minimal, except for a brief period during the Sino–Indian border war in 1962 when the U.S. sided with India and supplied it with arms and ammunition. The rapprochement was short-lived, however, and mutual suspicion continued to mark the Indo–U.S. relationship due to India’s robust relationship with Russia and the U.S. provision of military aid to Pakistan, especially during the 1970s under the Nixon Administration. America’s ties with India hit a nadir during the 1971 Indo–Pakistani war when the U.S. deployed the aircraft carrier USS Enterprise toward the Bay of Bengal in a show of support for Pakistani forces.

Military ties between the U.S. and India have improved significantly over the past decade as the two sides have moved toward establishment of a strategic partnership based on their mutual concern over rising Chinese military and economic influence and converging interests in countering regional terrorism. The U.S. and India have completed contracts worth nearly $14 billion for the supply of U.S. military equipment to India, including C-130J and C-17 transport aircraft and P-8 maritime surveillance aircraft.

Defense ties between the two countries are poised to expand further as India moves forward with an ambitious military modernization program and following three successful summit-level meetings between President Obama and Indian Prime Minister Narendra Modi. During President Obama’s January 2015 visit to India, the two sides agreed to renew and upgrade their 10-year Defense Framework Agreement. Under the Defense Trade and Technology Initiative (DTTI) launched in 2012, the U.S. and India are cooperating on development of six very specific “pathfinder” technology projects.\textsuperscript{39} During Prime Minister Modi’s visit to the U.S. in June 2016, the two sides welcomed finalization of the text of a logistics-sharing agreement that would allow each country to access the other’s military supplies and refueling capabilities through ports and military bases. The signing of the logistics agreement, formally called the Logistics Exchange Memorandum of Agreement (LEMOA), marks a milestone in the Indo–U.S. defense partnership. New Delhi and Washington regularly hold joint exercises across all services, including an annual naval exercise in which Japan will now participate on an annual basis and in which Australia and Singapore have also participated in the past.

**Quality of Allied Armed Forces in Asia**

Because of the lack of an integrated, regional security architecture along the lines of NATO, the United States partners with most of the nations in the region on a bilateral basis. This means that there is no single standard to which all of the local militaries aspire; instead, there is a wide range of capabilities that are influenced by local threat perceptions, institutional interests, physical conditions, historical factors, and budgetary considerations. Moreover, the lack of recent major conflicts in the region makes assessing the quality of Asian armed forces difficult. Most Asian militaries have limited combat experience; some (e.g., Malaysia) have never fought an external war since gaining independence in the mid-20th century. The Indochina wars, the most recent high-intensity conflicts, are now 30 years in the past. It is therefore unclear how well Asian militaries have trained for future warfare and whether their doctrine will meet the exigencies of wartime realities. In particular, no Asian militaries have engaged
in high-intensity air or naval combat, so the quality of their personnel, training, or equipment is likewise unclear.

Based on examinations of equipment, however, it is assessed that several Asian allies and friends have substantial military capabilities supported by robust defense industries and significant defense spending. Japan’s, South Korea’s, and Australia’s defense budgets are estimated to be among the 15 largest in the world. Each of their military forces fields some of the world’s most advanced weapons, including F-15s in the Japan Air Self Defense Force and ROK Air Force; airborne early warning (AEW) platforms; AEGIS-capable surface combatants and modern diesel-electric

**MAP 3**

**The Tyranny of Distance**

Steam times are in parentheses.

submarines; and third-generation main battle tanks. All three nations are currently committed to purchasing F-35 fighters.

At this point, both the Japanese and Korean militaries are arguably more capable than most European militaries, at least in terms of conventional forces. Japan’s Self Defense Forces, for example, field more tanks, principal surface combatants, and fighter/ground attack aircraft (777, 47, and 340, respectively) than their British opposite numbers (227, 18, and 230, respectively). Similarly, South Korea fields a larger military of tanks, principal surface combatants, submarines, and fighter/ground attack aircraft (more than 1,000, 28, 23, and 468, respectively) than their German counterparts (322, 19, four, and 209, respectively).

Both the ROK and Japan are also increasingly interested in developing missile defense capabilities. Although South Korea and the United States agreed in 2016 (after much negotiation and indecision) to deploy America’s Terminal High-Altitude Area Defense (THAAD) missile defense system on the peninsula, South Korea also continues to pursue an indigenous missile defense capability.

Singapore’s small population and physical borders limit the size of its military and therefore its defense budget, but in terms of equipment and training, it nonetheless fields some of the highest-quality forces in the region. For example, Singapore’s ground forces can deploy third-generation Leopard II main battle tanks; its fleet includes five conventional submarines (including one with air-independent propulsion systems), six frigates, and six missile-armed corvettes; and the Singapore air force not only has F-15E Strike Eagles and F-16s, but also has one of Southeast Asia’s largest fleets of airborne early warning and control aircraft (six G550 aircraft) and a tanker fleet of KC-130s that can help extend range or time on station.

At the other extreme, the Armed Forces of the Philippines (AFP) are among the region’s weakest military forces. Having long focused on waging counterinsurgency campaigns while relying on the United States for its external security, the AFP has one of the lowest budgets in the region—and one of the most extensive coastlines to defend. With a defense budget of only $2.5 billion and confronted with a number of insurgencies, including the Islamist Abu Sayyaf and New People’s Army, Philippine defense resources have long been stretched thin. The last squadron of fighter aircraft (1960s-vintage F-5 fighters) was retired several years ago; the Philippine Air Force (PAF) has had to employ its S-211 trainers as fighters and ground attack aircraft. The most modern ships in the Philippine navy are two former U.S. Hamilton-class Coast Guard cutters; its other main combatant is a World War II destroyer escort, one of the world’s oldest serving warships.

**Current U.S. Presence in Asia**

The U.S. Pacific Command (PACOM) is the oldest and largest of American unified commands. Established on January 1, 1947, PACOM, “together with other U.S. government agencies, protects and defends the United States, its territories, allies, and interests.” To this end, the U.S. seeks to preserve a “geographically distributed, operationally resilient, and politically sustainable” regional force posture within the PACOM area of responsibility that can effectively deter any potential adversaries.

PACOM’s area of responsibility includes not only the expanses of the Pacific, but also Alaska and portions of the Arctic, South Asia, and the Indian Ocean. It includes 36 nations holding more than 50 percent of the world’s population, two of the three largest economies, and nine of the 10 smallest; the most populous nation (China); the largest democracy (India); the largest Muslim-majority nation (Indonesia); and the world’s smallest republic (Nauru). The region is a vital driver of the global economy and includes the world’s busiest international sea-lanes and nine of its 10 largest ports. By any meaningful measure, the Asia–Pacific is also the most militarized region in the world, with seven of its 10 largest...
standing militaries and five of its declared nuclear nations. Under PACOM are a number of component commands, including:

- **U.S. Army Pacific**. USARPAC is the Army’s component command in the Pacific. It is comprised of 80,000 soldiers and supplies Army forces as necessary for various global contingencies. Among others, it administers the 25th Infantry Division headquartered in Hawaii, the U.S. Army Japan, and U.S. Army Alaska.

- **U.S. Pacific Air Force**. PACAF is responsible for planning and conducting defensive and offensive air operations in the Asia-Pacific region. It has three numbered air forces under its command: 5th Air Force (in Japan); 7th Air Force (in Korea); and 11th Air Force (headquartered in Alaska). These field two squadrons of F-15s, two squadrons of F-22s, five squadrons of F-16s, and a single squadron of A-10 ground attack aircraft, as well as two squadrons of E-3 early-warning aircraft, tankers, and transports. Other forces that regularly come under PACAF command include B-52, B-1, and B-2 bombers.

- **U.S. Pacific Fleet**. PACFLT normally controls all U.S. naval forces committed to the Pacific, which usually represents 60 percent of the Navy’s fleet. It is organized into Seventh Fleet, headquartered in Japan, and Third Fleet, headquartered in California. Seventh Fleet comprises the forward-deployed element of PACFLT and includes the only American carrier strike group (CTF-70) and amphibious group (CTF-76) home-ported abroad, ported at Yokosuka and Sasebo, Japan, respectively. The Third Fleet’s area of responsibility (AOR) spans the West Coast of the United States to the International Date Line and includes the Alaskan coastline and parts of the Arctic. There is some discussion about whether to erase the western border of Third Fleet’s AOR to involve its five carrier strike groups more routinely in the Western Pacific.

Since the announcement of the “Asia pivot,” it has been reported that the United States will shift more Navy and Air Force assets to the Pacific. It is expected that eventually, some 60 percent of U.S. Navy assets will be deployed to the Pacific (although it remains unclear whether they will be permanently based there). That percentage, however, will be drawn from a fleet that is shrinking in overall size, so the net effect may actually be fewer forces deployed than before. Over the past year, the conduct of Freedom of Navigations Operations (FONOPS) that challenge excessive maritime claims, a part of the Navy’s mission since 1979, has assumed a very high profile as a result of three well-publicized operations in the South China Sea.

- **U.S. Marine Forces Pacific**. MARFORPAC controls elements of the U.S. Marine Corps operating in the Asia-Pacific region. Its headquarters are in Hawaii. Because of its extensive responsibilities and physical span, MARFORPAC controls two-thirds of Marine Corps forces: the I Marine Expeditionary Force (MEF), centered on the 1st Marine Division, 3rd Marine Air Wing, and 1st Marine Logistics Group, and the III Marine Expeditionary Force, centered on the 3rd Marine Division, 1st Marine Air Wing, and 3rd Marine Logistics Group. The I MEF is headquartered at Camp Pendleton, California, and the III MEF is headquartered on Okinawa, although each has various subordinate elements deployed at any time throughout the Pacific on exercises, maintaining presence, or engaged in other activities. MARFORPAC is responsible for supporting three different commands: It is the U.S. Marine Corps component to PACOM, provides the Fleet Marine Forces to PACFLT, and provides Marine forces for U.S. Forces Korea (USFK).
• **U.S. Special Operations Command Pacific.** SOCPAC has operational control of various special operations forces, including Navy SEALs; Naval Special Warfare units; Army Special Forces (Green Berets); and Special Operations Aviation units in the Pacific region, including elements in Japan and South Korea. It supports the Pacific Command’s Theater Security Cooperation Program as well as other plans and contingency responses. Until 2015, this included Joint Special Operations Task Force–Philippines (JSOTF-P), 500–600 soldiers assisting Manila in combating Islamist insurgencies in the southern Philippines such as Abu Sayyaf. SOCPAC forces also support various operations in the region other than warfighting, such as counterdrug operations, counterterrorism training, humanitarian assistance, and de-mining activities.

• **U.S. Forces Korea and U.S. Eighth Army.** Because of the unique situation on the Korean peninsula, two subcomponents of PACOM, U.S. Forces Korea (USFK) and U.S. Eighth Army, are based in Korea. USFK, a joint headquarters led by a four-star U.S. general, is in charge of the various U.S. military elements on the Korean peninsula. U.S. Eighth Army operates in conjunction with USFK as well as with the United Nations presence in the form of United Nations Command.

Other forces, including space capabilities, cyber capabilities, air and sealift assets, and additional combat forces, may be made available to PACOM depending on requirements and availability.

• **U.S. Central Command—Afghanistan.** Unlike the U.S. forces deployed in Japan and South Korea, there is not a permanent force structure committed to Afghanistan; instead, forces rotate through the theater under the direction of PACOM’s counterpart in that region of the world, U.S. Central Command (CENTCOM). As of May 2016, these forces included:

  • Resolute Support Mission, including U.S. Forces Afghanistan.

  • Special Operations Joint Task Force—Afghanistan. This includes a Special Forces battalion, based out of Bagram Airfield, and additional allied special operations forces at Kabul.

  • 9th Air and Space Expeditionary Task Force. This includes the 155th Air Expeditionary Wing, providing air support from Bagram airfield; the 451st Air Expeditionary Group and 455th Expeditionary Operations Group, operating from Kandahar and Bagram airfields, respectively, providing air support and surveillance operations over various parts of Afghanistan; and the 421st Expeditionary Fighter Squadron, providing close air support from Bagram airfield.

  • Combined Joint Task Force 10/10th Mountain Division, centered on Bagram airfield. This is the main U.S. national support element. It includes seven battalions of infantry, air defense artillery for counter-artillery missions, and explosive ordnance disposal across Afghanistan. It also includes three Army aviation battalions, a combat aviation brigade headquarters, and two additional joint task forces to provide nationwide surveillance support.

  • Five Train, Advise, Assist Commands in Afghanistan, each of which is a multinational force tasked with improving local capabilities to conduct operations.

**Key Infrastructure That Enables Expeditionary Warfighting Capabilities**

Any planning for operations in the Pacific will be dominated by the “tyranny of distance.” Because of the extensive distances that must be traversed in order to deploy forces, even Air Force units will take one or more days to deploy, while ships measure steaming time in
weeks. For instance, a ship sailing at 20 knots requires nearly five days to get from San Diego to Hawaii. From there, it takes a further seven days to get to Guam, seven days to Yokosuka, Japan, and eight days to Okinawa—if ships encounter no interference along the journey.54

China’s growing anti-access/area denial (A2/AD) capabilities, ranging from an expanding fleet of modern submarines to anti-ship ballistic and cruise missiles, increase the operational risk for deployment of U.S. forces in the event of conflict. China’s capabilities not only jeopardize American combat forces that would flow into the theater for initial combat, but also would continue to threaten the logistical support needed to sustain American combat power for the subsequent days, weeks, and months.

American basing structure in the Indo-Pacific region, including access to key allied facilities, is therefore both necessary and increasingly at risk.

**American Facilities**

Much as in the 20th century, Hawaii remains the linchpin of America’s ability to support its position in the Western Pacific. If the United States cannot preserve its facilities in Hawaii, then both combat power and sustainability become moot. The United States maintains air and naval bases, communications infrastructure, and logistical support on Oahu and elsewhere in the Hawaiian Islands. Hawaii is also a key site for undersea cables that carry much of the world’s communications and data, as well as satellite ground stations.

The American territory of Guam is located 4,600 miles farther west. Obtained from Spain as a result of the Spanish–American War, Guam became a key coaling station for U.S. Navy ships. Seized by Japan in World War II, it was liberated by U.S. forces in 1944 and after the war became an unincorporated, organized territory of the United States. Key U.S. military facilities on Guam include U.S. Naval Base Guam, which houses several attack submarines and may add an aircraft carrier berth, and Andersen Air Force Base, one of a handful of facilities that can house B-2 bombers. U.S. task forces, meanwhile, can stage out of Apra Harbor, drawing weapons from the Ordnance Annex in the island’s South Central Highlands. There is also a communications and data relay facility on the island.

Over the past 20 years, Guam’s facilities have steadily improved. B-2 bombers, for example, began operating from Andersen Air Force Base in 2005.55 These improvements have been accelerated and expanded even as China’s A2/AD capabilities have raised doubts about the ability to sustain operations in the Asian littoral. The concentration of air and naval assets as well as logistical infrastructure, however, makes the island an attractive potential target in the event of conflict.

The U.S. military has non-combatant maritime prepositioning ships (MPS), which contain large amounts of military equipment and supplies, in strategic locations from which they can reach areas of conflict relatively quickly as associated U.S. Army or Marine Corps units located elsewhere arrive in the areas. The U.S. Navy has units on Guam and in Saipan, Commonwealth of the Northern Mariana, which support prepositioning ships that can supply Army or Marine Corps units deployed for contingency operations in Asia.

**Allied and Friendly Facilities**

For the United States, access to bases in Asia has long been a prerequisite for supporting any American military operations in the region. Even with the extensive aerial refueling and underway replenishment skills of the U.S. Air Force and U.S. Navy, it is still essential for the United States to retain access to resupply and replenishment facilities, at least in peacetime. The ability of those facilities not only to survive, but also to function will directly influence the course of any conflict in the Western Pacific region. Moreover, a variety of support functions, including communications, intelligence, and space support, cannot be accomplished without facilities in the region.
At the present time, it would be extraordinarily difficult to maintain maritime domain awareness or space situational awareness without access to facilities in the Asia–Pacific region. The American alliance network, outlined previously, is therefore a matter both of political partnership and also of access to key facilities on allied soil.

**Japan.** In Japan, the United States has access to over 100 different facilities, including communications stations, military and dependent housing, fuel and ammunition depots, and weapons and training ranges. This access comes in addition to major bases such as air bases at Misawa, Yokota, and Kadena and naval facilities at Yokosuka, Atsugi, and Sasebo. The naval facilities support the USS *Ronald Reagan* carrier strike group (CSG), which is home-ported in Yokosuka, as well as a Marine Expeditionary Strike Group (ESG) centered on the USS *Bonhomme Richard*, home-ported at Sasebo. Additionally, the skilled work force at places like Yokosuka is an integral part of maintaining American forces and repairing equipment in time of conflict. Replacing them would take years. This combination of facilities and work force, in addition to physical location and political support, makes Japan an essential part of any American military response to contingencies in the Western Pacific. Japanese financial support for the American presence also makes these facilities some of the most cost-effective in the world.

The status of one critical U.S. base has been a matter of public debate in Japan for many years. The U.S. Marine Corps’ Third Marine Expeditionary Force, based on Okinawa, is the U.S.’s rapid reaction force in the Pacific. The Marine Air-Ground Task Force, comprised of air, ground, and logistics elements, enables quick and effective response to crisis or humanitarian disasters. In response to local protests, the Marines are reducing their footprint by relocating some units to Guam as well as to less-populated areas of Okinawa. The latter includes moving a helicopter unit from Futenma to a new facility in a more remote location in northeastern Okinawa. Because of local resistance, construction of the Futenma Replacement Facility at Camp Schwab will not be complete until 2025, but the U.S. and Japanese governments have affirmed their support for the project.

**South Korea.** The United States also maintains an array of facilities in South Korea, with a larger Army footprint than in Japan, as the United States and South Korea remain focused on deterring North Korean aggression and preparing for any possible North Korean contingencies. The Army maintains four major facilities (which in turn control a number of smaller sites) at Daegu, Yongsan in Seoul, and Camps Red Cloud/Casey and Humphreys. These facilities support the U.S. 2nd Infantry Division, which is based in South Korea. Other key facilities include air bases at Osan and Kunsan as well as a naval facility at Chinhae near Pusan.

**The Philippines.** In 1992, The United States ended nearly a century-long presence in the Philippines when it withdrew from its base in Subic Bay as its lease there ended. Clark Air Base had been closed earlier due to the eruption of Mount Pinatubo; the costs of repairing the facility were deemed too high to be worthwhile. In 2014, however, with the growing Chinese assertiveness in the South China Sea, including against Philippine claims such as Mischief Reef and Scarborough Shoal, the U.S. and the Philippines negotiated the EDCA, which will allow for the rotation of American forces through Philippine military bases.

In 2016, the two sides agreed on an initial list of five bases in the Philippines that will be involved. Geographically distributed across the country, they are Antonio Bautista Air Base (in Palawan closest to the Spratlys); Basa Air Base (on the main island of Luzon and closest to the hotly contested Scarborough Shoal); Fort Magsaysay (also on Luzon and the only facility on the list that is not an air base); Lumbia Air Base (in Mindanao where Manila remains in low-intensity combat with Islamist insurgents); and Mactan-Benito Ebuen Air Base (central Philippines).
It remains unclear precisely which forces would be rotated through the Philippines as a part of this agreement, which in turn affects the kinds of facilities that would be most needed. However, outside the context of the EDCA, the U.S. deployed E/A-18G Growler electronic attack, A-10 Warthog close air support aircraft, and Pavehawk helicopters to the Philippines in 2016.57 The base upgrades and deployments pursuant to the EDCA are part of a broader expansion of U.S.–Philippine defense ties, which most recently included the U.S. leaving behind men and matériel at Clark Air Base following annual exercises,58 as well as joint naval patrols and increased levels of assistance under the Maritime Security Initiative (MSI). The Philippines is receiving the bulk of assistance in the first year of this five-year $425 million program.

**Singapore.** The United States does not have bases in Singapore but is allowed access to several key facilities that are essential for supporting American forward presence. Since the closure of its facilities at Subic Bay, the United States has been allowed to operate the principal logistics command for the Seventh Fleet out of the Port of Singapore Authority’s (PSA) Sembawang Terminal. The U.S. Navy also has access to Changi Naval Base, one of the few docks in the world that can handle a 100,000-ton American aircraft carrier. In addition, a small U.S. Air Force contingent operates out of Paya Lebar Air Base to support U.S. Air Force combat units visiting Singapore and Southeast Asia, and Singapore hosts two new Littoral Combat Ships (LCS) (with the option of hosting two more) and a rotating squadron of F-16 fighter aircraft.59

**Australia.** A much-discussed element of the “Asia pivot” has been the 2011 agreement to deploy U.S. Marines to Darwin in northern Australia. While planned to amount to 2,500 Marines, the rotations fluctuate and have not yet reached that number. “In its mature state, the Marine Rotational Force–Darwin (MRF-D) will be a Marine Air-Ground Task Force...with a variety of aircraft, vehicles and equipment.”60 The Marines do not constitute a permanent presence in Australia, in keeping with Australian sensitivities about permanent American bases on Australian soil.61 Similarly, the United States jointly staffs the Joint Defence Facility Pine Gap and the Joint Geological and Geophysical Research Station at Alice Springs and has access to the Harold E. Holt Naval Communication Station in Western Australia, including the space surveillance radar system there.62

Finally, the United States is granted access to a number of facilities in Asian states on a contingency or crisis basis. Thus, U.S. Air Force units transited Thailand’s U-Tapao Air Base and Sattahip Naval Base during the first Gulf War and in the Iraq War, but they do not maintain a permanent presence there. Additionally, the U.S. Navy conducts hundreds of port calls throughout the region.

**Diego Garcia.** Essential to U.S. operations in the Indian Ocean and Afghanistan and providing essential support to both the Middle East and East Asia are the American facilities on the British territory of Diego Garcia. The island is home to the 12 ships of Maritime Prepositioning Squadron (MPS)-2, which can support a Marine brigade and associated Navy elements for 30 days. There are also several elements of the U.S. global space surveillance and communications infrastructure on the island, as well as basing facilities for the B-2 bomber.

**Conclusion**

The Asian strategic environment is extremely expansive, as it spans half the globe, with a variety of political relationships among states that have wildly varying capabilities. The region includes long-standing American allies with relationships dating back to the beginning of the Cold War as well as recently established states and some long-standing adversaries such as North Korea.

American conceptions of the region must therefore start from the physical limitations imposed by the tyranny of distance. Moving forces within the region, never mind to it, will take time and require extensive strategic
Scoring the Asia Operating Environment

As with the operating environments of Europe and the Middle East, we assessed the characteristics of Asia as they would pertain to supporting U.S. military operations. Various aspects of the region facilitate or inhibit America’s ability to conduct military operations to defend its vital national interests against threats. Our assessment of the operating environment utilized a five-point scale, ranging from “very poor” to “excellent” conditions and covering four regional characteristics of greatest relevance to the conduct of military operations:

1. **Very Poor.** Significant hurdles exist for military operations. Physical infrastructure is insufficient or nonexistent, and the region is politically unstable. The U.S. military is poorly placed or absent, and alliances are nonexistent or diffuse.

2. **Unfavorable.** A challenging operating environment for military operations is marked by inadequate infrastructure, weak alliances, and recurring political instability. The U.S. military is inadequately placed in the region.

3. **Moderate.** A neutral to moderately favorable operating environment is characterized by adequate infrastructure, a moderate alliance structure, and acceptable levels of regional political stability. The U.S. military is adequately placed.

4. **Favorable.** A favorable operating environment includes good infrastructure, strong alliances, and a stable political environment. The U.S. military is well placed in the region for future operations.

5. **Excellent.** An extremely favorable operating environment includes well-established and well-maintained infrastructure, strong capable allies, and a stable political environment. The U.S. military is exceptionally well placed to defend U.S. interests.

The key regional characteristics consisted of:

a. **Alliances.** Alliances are important for interoperability and collective defense as allies would be more likely to lend support to U.S. military operations. Various indicators provide insight into the strength or health of an alliance. These include whether the U.S. trains regularly with countries in the region, has good interoperability with the forces of an ally, and shares intelligence with nations in the region.

b. **Political Stability.** Political stability brings predictability for military planners when considering such things as transit, basing, and overflight rights for U.S. military operations. The overall degree of political stability indicates whether U.S. military actions would be hindered or enabled and considers, for example, whether transfers of power in the region are generally peaceful and whether there have been any recent instances of political instability in the region.
c. **U.S. Military Positioning.** Having military forces based or equipment and supplies staged in a region greatly facilitates the ability of the United States to respond to crises and, presumably, more quickly achieve successes in critical “first battles.” Being routinely present in a region also assists in maintaining familiarity with its characteristics and the various actors who might act to assist or thwart U.S. actions. With this in mind, we assessed whether or not the U.S. military was well-positioned in the region. Again, indicators included bases, troop presence, prepositioned equipment, and recent examples of military operations (including training and humanitarian) launched from the region.

d. **Infrastructure.** Modern, reliable, and suitable infrastructure is essential to military operations. Airfields, ports, rail lines, canals, and paved roads enable the U.S. to stage, launch operations from, and logistically sustain combat operations. We combined expert knowledge of regions with publicly available information on critical infrastructure to arrive at our overall assessment of this metric.63

For Asia, we arrived at these average scores:

- **Alliances:** 5—Excellent
- **Political Stability:** 4—Favorable
- **U.S. Military Positioning:** 4—Favorable
- **Infrastructure:** 4—Favorable

Aggregating to a regional score of: **Favorable**

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### Operating Environment: Asia

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Endnotes:
25. Ibid.
50. Ibid.
52. Ibid.
62. Smith, “Ministerial Statement on Full Knowledge and Concurrence.”
Conclusion: Scoring the Global Operating Environment

The U.S. is a global power. Its security interests are global, and threats to those interests could emerge from any region. Consequently, the U.S. military must be ready to operate in any region when called upon to do so, and it must account for the range of conditions it might encounter when planning for potential military operations. This informs its decisions on the type and amount of equipment it purchases (especially to transport and sustain the force); where it might operate from; and how easy (or not) it will be to project and sustain combat power when engaged with the enemy.

Aggregating the three regional scores provides a Global Operating Environment score. Global Operating Environment: 
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### Global Operating Environment

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The 2017 Index of U.S. Military Strength saw a slight decline in scoring the overall Global Security Environment. Though the aggregate score remained the same, it dropped lower in the range established for “favorable,” chiefly as a result of troubles in the Middle East.
The Middle East Operating Environment remained “moderate,” but just barely. As noted earlier in this chapter, the region is plagued by instability, substantial internal security challenges, and spreading, extremely violent transnational threats.

The Europe Operating Environment did not see categorical changes in any of its scores, remaining “favorable,” but its military posture increased slightly with the return of some U.S. forces to Europe, while political stability in the region experienced some setbacks resulting from challenges posed by mass migration from the Middle East, terrorist attacks, and the turmoil in Turkey generated by an attempted coup.

Similarly, the Asia Operating Environment saw few changes from last year’s assessment, remaining “favorable” for U.S. operations, although it remains to be seen how China’s increasingly aggressive behavior in the region affects the policies of long-standing allies of the U.S. with respect to working with and hosting U.S. military forces.
Threats to U.S. Vital Interests
Assessing Threats to U.S. Vital Interests

The United States is a global power with global interests. Scaling its military power to threats requires judgments with regard to the importance and priority of those interests, whether the use of force is the most appropriate and effective means of addressing the threats to those interests, and how much and what types of force are needed to defeat such threats.

This Index focuses on three fundamental, vital national interests:

- Defense of the homeland;

- Successful conclusion of a major war that has the potential to destabilize a region of critical interest to the U.S.; and

- Preservation of freedom of movement within the global commons: the sea, air, and outer space domains through which the world conducts business.

The geographical focus of the threats in these areas is further divided into three broad regions: Asia, Europe, and the Middle East.

This is not to say that these are America’s only interests. Among many others, the U.S. has an interest in the growth of economic freedom in trade and investment, the observance of internationally recognized human rights, and the alleviation of human suffering beyond our borders. None of these interests, however, can be addressed principally and effectively by the use of military force, nor would threats to these interests result in material damage to the foregoing vital national interests. These additional American interests, however important they may be, therefore will not be used in this assessment of the adequacy of current U.S. military power.

We reference two public sources throughout this Index as a mechanism to check our work against that of other recognized professional organizations in the field of threat analysis: the International Institute for Strategic Studies’ annual The Military Balance and the annual Worldwide Threat Assessment of the US Intelligence Community (WWTA). The latter serves as a reference point produced by the U.S. government against which each threat assessment in this Index was compared. We note any differences between assessments in this Index and the work of the two primary references in summary comments.

The juxtaposition of our detailed, reviewed analysis against both The Military Balance and the WWTA revealed two stark limitations in these external sources.

- First, The Military Balance is an excellent, widely consulted source, but it is only a count of military hardware without context in terms of equipment capability, maintenance and readiness, training, manpower, integration of services, doctrine, or the behavior of competitors (those that threaten the national interests) of the U.S. as defined in this Index.

- Second, the WWTA omits many threats and is bare in its analysis of those it does address. Moreover, it does not reference underlying strategic dynamics that are key to the evaluation of threats and that may
be more predictive of future threats than a simple extrapolation of current events.

We suspect this is a consequence of the U.S. intelligence community’s withholding its very sensitive assessments derived from classified sources from public view. While such a policy is understandable given the need to avoid compromising sources and methods of collection, it does mean that the WWTA’s views on threats are of limited value to policymakers, the public, and analysts working outside of the government. Surprisingly, The Heritage Foundation’s *Index of U.S. Military Strength* may actually serve as a useful correction to the systemic deficiencies we found in these open sources.

Measuring or categorizing a threat is problematic since there is no absolute reference that assists in assigning a quantitative score. There are two fundamental aspects of threats that are germane to this Index: the desire or intent of the threatening entity to achieve its objective and its physical ability to do so. Physical ability is the easier of the two to assess, while intent is quite hard. A useful surrogate for intent is observed behavior since this is where we see intent become manifest through action. Thus, a provocative, belligerent pattern of behavior that seriously threatens U.S. vital interests would be very worrisome. Similarly, a comprehensive ability to accomplish objectives even in the face of U.S. military power would cause serious concern for U.S. policymakers, while weak or very limited abilities would lessen U.S. concerns even if an entity behaved provocatively vis-à-vis U.S. interests. Each categorization used is meant to convey a word picture of how troubling a threat’s behavior and set of capabilities have been during the assessed year.

The five ascending categories for observed behavior are:

- Benign,
- Assertive,
- Testing,
- Aggressive, and
- Hostile.

The five ascending categories for physical capability are:

- Marginal,
- Aspirational,
- Capable,
- Gathering, and
- Formidable.

These characterizations—behavior and capability—form two halves of an overall assessment of the threats to U.S. vital interests.

As noted, the following assessments are arranged by region (Europe, Middle East, and Asia) to correspond with the flow of the chapter on operating environments and then by U.S. vital interest (threat posed by an actor to the U.S. homeland, potential for regional war, and freedom of global commons) within each region. Each actor is then discussed in terms of how and to what extent its behavior and physical capabilities have posed a challenge to U.S. interests in the assessed year.
Endnotes:


Europe

The transatlantic alliance—the North Atlantic Treaty Organization (NATO)—has been the linchpin of America’s security since the end of the Second World War. In many cases, the United States and its European allies have helped to create the conditions for prosperity and peace across large areas of the world.

However, despite the centrality of the transatlantic relationship, challenges on both sides of the Atlantic threaten to undermine its strength. Sluggish economic growth, terrorism, and millions of migrants seeking entry to the West are all issues that will need to be confronted. Defense cuts in the U.S. have stung, and the fact remains that many European NATO members no longer possess the military capability or political will to contribute to the alliance in a meaningful way.

At the same time, threats to the region have not disappeared and in many cases have grown. The resurgence of an aggressive, belligerent Russia has thrown conventional post–Cold War thinking into the waste bin. While policies pursued by the U.S. and our allies vis-à-vis Russia have given Russia space to expand its regional influence, Russian President Vladimir Putin’s decision to invade Ukraine and annex Crimea has changed post–Cold War norms. From the Arctic to the Baltics, Ukraine, and the South Caucasus, Russia has proven to be the source of much instability in Europe.

Threats to the Homeland

Russia is the only state adversary in the region that possesses the capability, with both conventional and non-conventional means, to threaten the U.S. homeland. Although there is no indication that Russia plans to use its capabilities against the United States absent a broader conflict involving America’s NATO allies, the plausible potential for such a scenario serves to sustain their strategic importance. Russia’s explicitly belligerent behavior during the past year further adds to the need for the U.S. to give due consideration to Russia’s ability to place the security of the U.S. at risk.

Russia’s National Security Strategy released in December 2015 describes NATO as a threat to the national security of the Russian Federation:

The buildup of the military potential of the North Atlantic Treaty Organization (NATO) and the endowment of it with global functions pursued in violation of the norms of international law, the galvanization of the bloc countries’ military activity, the further expansion of the alliance, and the location of its military infrastructure closer to Russian borders are creating a threat to national security.

The document also clearly states that Russia will use every means at its disposal to achieve its strategic goals: “Interrelated political, military, military-technical, diplomatic, economic, informational, and other measures are being developed and implemented in order to ensure strategic deterrence and the prevention of armed conflicts.”

In December 2014, Putin signed a new version of Russia’s military doctrine, emphasizing the claimed threat of NATO and global strike systems to Russia. Russia spent 5.4 percent of
GDP on defense in 2015, up 7.5 percent from 2014 but still less than intended. Russia’s defense budget is reported to have been cut by 5 percent in 2015, the largest cut since 2012 when Putin took power. The state armaments program, however, was shielded from these cuts; the 10-year, $680 billion program, announced in 2010, was intended “to increase the share of modern armaments held by the armed forces from 15 per cent in 2010 to 30 per cent in 2015 and 70 per cent in 2020.”

**Russian Strategic Nuclear Threat.** Russia possesses the largest arsenal of nuclear weapons among the nuclear powers (when short-range nuclear weapons are included). It is one of the few nations with the capability to destroy many targets in the U.S. homeland and in U.S.-allied nations and to threaten and prevent free access to the commons by other nations. Russia has both intercontinental-range and short-range ballistic missiles and a varied nuclear weapons arsenal that can be delivered by sea, land, and air. It also is investing significant resources in modernizing its arsenal and maintaining the skills of its workforce.

Russia is currently relying on its nuclear arsenal to ensure its invincibility against any enemy, intimidate European powers, and deter counters to its predatory behavior in its “near abroad,” primarily in Ukraine but also concerning the Baltic States. The arsenal provides Russia with a protective umbrella under which it can modernize its conventional forces at a deliberate pace. While its nuclear deterrent protects Russia from a large-scale attack, Russia also needs a modern and flexible military to fight local wars such as those against Georgia in 2008 and Ukraine in 2014. Under Russian military doctrine, the use of nuclear weapons in conventional local and regional wars is seen as de-escalatory because it would cause an enemy to concede defeat.

 Particularly worrisome are Moscow’s plans for rail-based nuclear-armed missiles that are very difficult to detect. Russia is planning to deploy 38 new strategic missiles, one strategic submarine, and seven modified strategic bombers in addition to seven air defense systems and three Yars missile regiments. The Defense Ministry states that the new structure of the armed forces is being created with the goal of increased flexibility, mobility, and readiness for combat in limited-scale conflicts. Strategic Rocket Forces are the first line of defense (and offense) against Russia’s great-power counterparts.

Russia has two strategies for nuclear deterrence. The first is based on a threat of massive launch-on-warning and retaliatory strikes to deter a nuclear attack; the second is based on the threat of limited demonstration and “de-escalation” nuclear strikes to deter or terminate a large-scale conventional war. Russia’s reliance on nuclear weapons is based partly on their small cost relative to conventional weapons (especially in terms of their effect) and on Russia’s inability to attract sufficient numbers of high-quality servicemen. Thus, Russia sees its nuclear weapons as a way to offset the lower quantity and quality of its conventional forces.

Moscow has repeatedly threatened U.S. allies in Europe with nuclear deployments and even pre-emptive nuclear strikes. The Russians justify their aggressive behavior by pointing to deployments of U.S. missile defense systems in Europe even though these systems are not scaled or postured to mitigate Russia’s advantage in ballistic missiles and nuclear weapons to any significant degree. In March 2015, Russia’s ambassador to Denmark threatened that Danish ships taking part in NATO’s missile defense have made themselves targets for a nuclear attack. Russia continues to violate the Intermediate-Range Nuclear Forces (INF) Treaty, which bans the testing, production, and possession of intermediate-range missiles. According to Keith Payne and Mark Schneider, “These Russian actions demonstrate the importance the Kremlin attaches to its new nuclear-strike capabilities. They also show how little importance the Putin regime attaches to complying with agreements that interfere with those capabilities.”

**WWTA:** The 2016 WWTA states that “Russia has developed a ground-launched cruise
The Heritage Foundation  |  heritage.org

missile that the United States has declared is in violation of the Intermediate-Range Nuclear Forces (INF) Treaty.\textsuperscript{14} 

Summary: The sizable Russian nuclear arsenal remains the only threat to the existence of the U.S. homeland emanating from Europe and Eurasia. While the potential for use of this arsenal remains low, the fact that Russia continues to threaten Europe with nuclear attack demonstrates that it will continue to play a central strategic role in shaping both Russia’s military and political thinking and its level of aggressive behavior beyond its borders.

Threat of Regional War

To many U.S. allies, Russia does pose a threat. At times, this threat is of a military nature. At other times, Russia uses less conventional tactics such as cyber attacks, utilization of energy resources, and propaganda. Norway’s Intelligence Service describes Russia’s actions as an “increased willingness and ability to use a wide range of instruments to achieve its political goals” and warns that “the modernization of its military powers enhances the ability to influence, also in the high north.”\textsuperscript{15}

Today as in Imperial times, Russia’s influence is exerted by both the pen and the sword. Organizations like the Collective Security Treaty Organization (CSTO) or Eurasia Economic Union attempt to bind regional capitals to Moscow through a series of agreements and treaties.

Espionage is another tool that Russia uses in ways that are damaging to U.S. interests. In 2015, non-NATO members Finland and Sweden noted increases in foreign intelligence activity. Also in 2015, Sweden’s Security Service Säpo described Russian espionage activities as “extensive,” claiming that “[a]bout every third Russian diplomat is an intelligence officer.”\textsuperscript{16} Russian spying is active on U.S. soil as well. In May 2016, a Russian spy was sentenced to prison for gathering intelligence for the Russian SVR intelligence agency while working as a banker in New York. The spy specifically transmitted intelligence on “potential U.S. sanctions against Russian banks and the United States’ efforts to develop alternative energy resources.”\textsuperscript{17} In May 2016, a senior intelligence official from Portugal working for the Portuguese Security Intelligence Service was arrested for passing secrets to the Russian Federation, especially classified NATO intelligence and material.

There are four areas of critical interest to the U.S. in the European region where Russia poses a direct threat: Central and Eastern Europe, the Arctic or High North, the Balkans, and the South Caucasus.

Russian Pressure on Central and Eastern Europe. Moscow poses a security challenge to members of NATO that border Russia. Although the likelihood of a conventional Russian attack against the Baltic States is low, primarily because it would trigger a NATO response, Russia has used non-conventional means to apply pressure to and sow discord among these states. The Baltic States continue to view Russia as a significant threat.

After World War I, the three Baltic nations of Estonia, Latvia, and Lithuania proclaimed their independence, and by 1923, the U.S. had granted full recognition to all three. In June 1940, as part of the Molotov–Ribbentrop Pact between Nazi Germany and Stalinist Russia, Soviet troops entered and occupied the three Baltic countries. A month later, acting U.S. Secretary of State Sumner Welles issued what was later to be known as the Welles Declaration, condemning Russia’s occupation and stating America’s refusal to recognize the legitimacy of Soviet control of these three states. The three states regained their independence with the end of the Cold War.

Due to decades of Russian domination, the Baltic States factor Russia into their military planning and foreign policy formulation in a way that is simply unimaginable in many Western European countries and North America. Estonia and Latvia have sizable ethnic Russian populations, and there is concern that Russia might exploit the situation as a pretext for aggression. This view is not without merit, considering Moscow’s irredentist
The U.S. maintains a permanent active-duty force of about 64,000 troops in Europe. Following its recent actions in Georgia, Syria, and Ukraine, Russia has about 61,000 troops outside its borders on NATO’s perimeter.
rhetoric and Russia’s use of this technique to annex Crimea.

Russia has also demonstrated a willingness to use military force to change the borders of modern Europe. When Kremlin-backed Ukrainian President Viktor Yanukovych failed to sign an Association Agreement with the European Union (EU) in 2013, months of street demonstrations led to his ouster early in 2014. Russia responded by violating Ukraine’s territorial integrity, sending troops, aided by pro-Russian local militia, to occupy the Crimean Peninsula under the pretext of “protecting Russian people.” This led to Russia’s eventual annexation of Crimea, the first such forcible annexation of territory in Europe since the Second World War.18

Russia’s annexation of Crimea has de facto halved Ukraine’s coastline, and Russia has claimed rights to underwater resources off the Crimean Peninsula.19 Russia currently can supply Crimea only by air and sea and is planning a $3.2 billion bridge project to connect the Crimean Peninsula with Russia by road and rail, though there are significant doubts about the project’s economic viability and timeline to completion.20 Russia has deployed 28,000 troops to Crimea21 and has embarked on a major program to build housing and restore airfields.22 In addition, control of Crimea has allowed Russia to use the Black Sea as a platform to launch and support naval operations in the Gulf of Aden and the Eastern Mediterranean.23 Russia has allocated $1 billion to modernize the Black Sea fleet by 202024 and has stationed additional warships there including two equipped with Caliber-NK long-range cruise missiles.25 Caliber cruise missiles have a range of at least 2,500km,26 placing cities from Rome to Vilnius within range of Black Sea–based cruise missiles.27

In eastern Ukraine, Russia has helped to foment and sustain a separatist movement. Backed, armed, and trained by Russia, separatist leaders in eastern Ukraine have declared the so-called Lugansk People’s Republic and Donetsk People’s Republic. Russia has backed separatist factions in the Donbas region of eastern Ukraine with advanced weapons, technical and financial assistance, and Russian conventional and special operations forces. September 2014 and February 2015 cease-fire agreements, known respectively as Minsk I and Minsk II, have routinely been violated by Russian-supplied separatists, leading U.S. General Philip Breedlove to describe Minsk II as “a cease-fire in name only.”28 Lamberto Zannier, Secretary-General of the Organization for Security and Cooperation in Europe (OSCE), which is charged with overseeing the cease-fire, has cited systematic cease-fire violations and poor access for OSCE monitors to areas held by Russian-backed separatists, with no access to the border between Ukraine and Russia where weapons and matériel enter the country, as serious problems.29

These cease-fire agreements have resulted in the de facto partition of Ukraine and have created the region’s newest frozen conflict—a conflict that remains both deadly and advantageous for Russia. “Describing the prolonged conflicts in states around the Russian periphery as ‘frozen,’” according to General Breedlove in EUCOM’s 2016 posture statement, “belies the fact that these are on-going and deadly affairs often manufactured by Russia to provide pretext for military intervention and ensures the Kremlin maintains levels of influence in the sovereign matters of other states.”30

Russia is also employing espionage and misinformation to derail Ukraine. In February 2015, for example, Germany’s BfV domestic intelligence agency noted “clear activities” by Russia with regard to influencing Western responses to Russia’s invasion of Ukraine.31 Moscow’s poor track record in implementing cease-fires should raise doubts among those who expected that Russia would not use its influence to control the separatists in eastern Ukraine.

Russia is still in violation of the 2008 peace agreement signed to end the war against Georgia. Russian troops are still based in
areas where they are not supposed to be, and Moscow continues to prevent international observers from crossing into South Ossetia and Abkhazia even though they patrol freely in the rest of Georgia.

In Moldova, Russia supports the breakaway enclave of Transnistria, where yet another frozen conflict fester to Moscow’s liking. According to EUCOM’s 2016 posture statement:

Russian forces have conducted “stability operations” since 1992 to contain what is described as a separatist conflict in Transnistria. Moldova remains disappointed with Russia’s continued political, economic, and informational support to the separatist regime. Most upsetting to Moldova is Russia’s military presence (1,500 troops) on Moldovan territory, which is aimed at maintaining the status quo in the region.32

Whether in Georgia, eastern Ukraine, or Moldova, it is in Russia’s interests to keep these conflicts frozen. Russia derives much of its regional influence from these conflicts. Bringing them to a peaceful conclusion would decrease Russia’s influence in the region.

The other countries in Central and Eastern Europe also see Russia as a threat, although to varying degrees. Most tend to rely almost completely on Russia for their energy resources, some have felt the sharp end of Russian aggression in the past, and all were once in the Warsaw Pact and fear being forced back into a similar situation. Such historical experiences inevitably have shaped Russia’s image throughout Central and Eastern Europe.

More recently, Russia has deployed advanced mobile air defense systems and mobile short-range ballistic missile systems that include Iskander missiles in the Kaliningrad Oblast enclave,33 and there have been reports that it has deployed tactical nuclear weapons in Kaliningrad.34 Russia also has outfitted a Missile Brigade in Luga, Russia, a mere 74 miles from the Estonian city of Narva, with Iskander missiles.35 In January, Commander in Chief of Russian Ground Forces General Oleg Salyukov announced that four new ground divisions would be formed in 2016, three of which would be based in the Western Military District, allegedly in response to “intensified exercises of NATO countries.”36

In addition, Russia has dedicated resources to major training exercises involving tens of thousands of troops that many in Eastern Europe fear are directed at them. In March 2015, without warning,37 Russia staged a five-day exercise involving 45,000 troops, 3,000 vehicles, 110 aircraft, 15 submarines, and 40 surface vessels.38 As part of the exercise, the Russian Northern Fleet was brought to full combat readiness.39 The scale of the snap exercise and the fact that it was held simultaneously with NATO’s long-planned, 5,000-troop Joint Viking exercise40 in northern Norway were meant as a signal of Russian strength. “Conducting this single exercise in the area stretching from Norway to the Baltics through Poland and into Crimea,” Stratfor has reported, “is clearly angled toward NATO and its Eastern European members.”41

In February 2016, Russia held a snap exercise involving 8,500 troops, dozens of ships, and aircraft in the Southern Military District in a region (Rostov) that borders the Lugansk and Donetsk regions of Ukraine.42 In March 2016, 30,000 troops and over 100 aircraft took part in “snap inspections” by Russian Airborne Forces.43 In April 2016, Russian and Belarusian troops exercised in Belarus near the border with Poland44 and, immediately before a meeting of the NATO–Russia Council, used the Black Sea Fleet and regional air power in an exercise on blocking the Black Sea straits.45 More worrisome still, Russian exercises at times have included a nuclear element, such as in 2009, when a Russian exercise scenario included a nuclear attack on Warsaw.46

WWTA: The WWTA states that Russia will use its position in Syria to promote its “Great Power status and end its international isolation.”47 Russia will continue its efforts to stymie Ukraine’s integration into Western institutions and will continue to pressure neighboring states to join the Eurasian Economic Union as a way to achieve greater
regional influence. By utilizing a growing relationship with China and multilateral forums, Russia also continues to work to dilute U.S. influence in Europe. Military modernization will continue to be prioritized despite Russia’s poor economic condition.

Summary: NATO members in Eastern and Central Europe view Russia as a threat, a fear that is not unfounded considering Russian aggression against Ukraine and Georgia. The threat of conventional attack against a NATO member by Russia remains low but cannot be entirely ruled out. Russia’s grasp and use of unconventional warfare against neighboring countries should remain a top issue for U.S. and NATO planners.

Militarization of the High North. The Arctic region is home to some of the roughest terrain and harshest weather found anywhere in the world. Increasingly, Arctic ice is melting during the summer months, causing new challenges for the U.S. in terms of Arctic security. Many of the shipping lanes currently used in the Arctic are a considerable distance from search and rescue (SAR) facilities, and natural resource exploration that would be considered routine in other locations is complex, costly, and dangerous in the Arctic.

The U.S. is one of five littoral Arctic powers and one of only eight countries with territory located above the Arctic Circle, the area just north of 66° north latitude that includes portions of Norway, Sweden, Finland, Russia, Canada, Greenland, Iceland, and the United States.

Arctic actors take different approaches to military activity in the region. Although the security challenges currently faced in the Arctic are not yet military in nature, there is still a requirement for military capability in the region that can support civilian authorities. For example, civilian SAR and response to natural disasters in such an unforgiving environment can be augmented by the military.

Russia has taken steps to militarize its presence in the region. The Northern Fleet, which is based in the Arctic, accounts for two-thirds of the Russian Navy. A new Arctic command was established in 2015 to coordinate all Russian military activities in the Arctic region. Over the next few years, two new Arctic brigades will be permanently based in the Arctic, and Russian Special Forces have been training in the region. Old Soviet-era facilities have been reopened; for example, the airfield on Kotelny Island has been put into use for the first time in almost 30 years. In fact, air power in the Arctic is increasingly important to Russia. By 2018, Russia is expected to have nine airfields operational in the region. The 45th Air Force and Air Defense Army of the Northern Fleet was formed in December 2015, and Russia reportedly has placed radar and S-300 missiles on the Arctic bases at Franz Joseph Land, New Siberian Islands, Novaya Zemlya, and Severnaya Zemlya. Russia’s ultimate goal is to have a combined Russian armed force deployed in the Arctic by 2020, and it appears that Moscow is on track to accomplish this. Russia is also developing equipment optimized for Arctic conditions like the Mi-38 helicopter, and in June, it unveiled the naval icebreaker the Ilya Muromets, which is slated to join the Northern Fleet in 2017.

Russia’s Maritime Doctrine of Russian Federation 2020, adopted in July 2015, lists the Arctic as one of two focal points along with the Atlantic, a point emphasized by Deputy Prime Minister Dmitry Rogozin. In April 2016, a Russian Severodvinsk submarine participated in Arctic exercises that involved 20 vessels and fired a Kalibr cruise missile that reportedly hit a target on land. In April 2016, Russian and Chechen paratroopers took part in separate military exercises in the Arctic. It was not the first time that these exercises have taken place. In 2014, 90 paratroopers landed on Barneo ice camp in the Arctic; in 2015, 100 paratroopers from Russia, Belarus, and Tajikistan took part in exercises on Barneo. In advance of the exercises in April, personnel and equipment were transferred through Longyearbyen airport on Svalbard, over which Norway has sovereignty. The use of the airport likely violated...
MAP 5

Russia’s Arctic Bases

North Pole
Bering Strait
Sea of Okhotsk
Kara Sea
Laptev Sea
Chukchi Sea
Sea of Japan
Greenland
Iceland
Norway
Sweden
Finland
Canada
Alaska
Svalbard (Norway)
Arctic Ocean
Atlantic Ocean
Northern Sea Route
Moscow

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the Svalbard Treaty, which demilitarized the islands.⁵⁹ According to EUCOM Commander General Philip Breedlove:

Russia’s behavior in the Arctic is increasingly troubling. Their increase in stationing military forces, building and reopening bases, and creating an Arctic military district—all to counter an imagined threat to their internationally undisputed territories—stands in stark contrast to the conduct of the seven other Arctic nations.

Russia’s improvements to Arctic settlements are ostensibly to support increased shipping traffic through the Northern Sea Route. However, many of these activities are purely military in nature and follow a recent pattern of increasingly aggressive global posturing....⁶⁰

Debate has continued with respect to what role, if any, NATO should play in the Arctic,⁶¹ although the organization itself has not yet raised the debate to any formal level. NATO once again missed an opportunity to address the Arctic at the 2016 Warsaw Summit. Both the declaration and the summit communiqué coming out of Warsaw fail to mention the word “Arctic” even once, as was the case for the 2014 Wales NATO Summit declaration.

WWTA: The WWTA states that “Russia will almost certainly continue to bolster its military presence along its northern coastline to improve its perimeter defense and control over its exclusive economic zone (EEZ)” and “might become more willing to disavow established international processes or organizations concerning Arctic governance and act unilaterally to protect these interests if Russian–Western relations deteriorate further.”⁶²

Summary: While NATO has been slow to turn its attention to the Arctic, Russia continues to develop and increase its military capabilities in the region. The likelihood of armed conflict remains low, but physical changes in the region mean that the posture

SOURCE: Heritage Foundation research.
of players in the Arctic will continue to evolve. It is clear that Russia intends to exert a dominant influence.

**Threat from Russian Propaganda.** Russia has consistently used propaganda to garner support for its foreign policies. The 2013 Concept of the Foreign Policy of the Russian Federation makes clear the Russian government’s aims in using mass media to further its foreign policy objectives:

In its public diplomacy, Russia will seek to ensure its objective perception in the world, develop its own effective means of information influence on public opinion abroad, strengthen the role of Russian mass media in the international information environment providing them with essential state support, as well as actively participate in international information cooperation, and take necessary measures to counteract information threats to its sovereignty and security. Possibilities offered by new information and communications technologies will be widely used in these activities. Russia will seek to develop a set of legal and ethical norms for the safe use of such technologies.\(^{63}\)

Russian media are hardly independent. In 2016, Russia ranked 148th out of 180 countries in Reporters Without Borders’ *World Press Freedom Index*, the same as its ranking in 2012, 2013, and 2014 and down from 152nd in 2015.\(^{64}\) Specifically:

What with draconian laws and website blocking, the pressure on independent media has grown steadily since Vladimir Putin’s return to the Kremlin in 2012. Leading independent news outlets have either been brought under control or throttled out of existence. While TV channels continue to inundate viewers with propaganda, the climate has become very oppressive for those who question the new patriotic and neo-conservative discourse or just try to maintain quality journalism. The leading human rights NGOs have been declared “foreign agents.”\(^{65}\)

While much of its propaganda is meant for a domestic Russian audience, Russia is working actively to influence audiences abroad as well. In 2015, RT, a Russian television news station that broadcasts in Arabic, English, French, German, Russian, and Spanish, received $400 million in state funding.\(^{66}\) Rossiya Segodnya, a radio and wire service crafted from RIA Novosti and the Voice of Russia, received $170 million in state funds for 2015.\(^{67}\) Russian propaganda efforts also include newspaper supplements\(^{68}\) and the hiring of Western public relations firms. In 2013, for instance, Ketchum, a U.S.-based public relations firm, helped to place an op-ed in *The New York Times* written by Vladimir Putin criticizing American exceptionalism.\(^{69}\)

Russia’s plans have met with some success abroad. In December 2014, RT claimed that its combined YouTube channels made it the first news channel to hit 2 billion views.\(^{70}\) In September 2014, “the Russian Duma passed a law restricting foreign ownership of media companies to 20 percent” that “effectively forces foreign owners to relinquish control over independent outlets, further consolidating the government’s control over the media.”\(^{71}\) Companies have until February 1, 2017, to come into compliance with the new law.\(^{72}\)

In EUCOM’s 2016 posture statement, General Breedlove describes how Russian propaganda works: “Russia overwhelms the information space with a barrage of lies that must be addressed by the United States more aggressively in both public and private sectors to effectively expose the false narratives pushed daily by Russian-owned media outlets and their proxies.”\(^{73}\) This approach was abundantly evident during the country’s invasion of Ukraine and subsequent annexation of Crimea and its continued stealth invasion of eastern Ukraine. General Breedlove has described the importance of propaganda in Russian military operations:

Russia has employed “hybrid warfare” (which includes regular, irregular, and cyber forms of war as well as political and economic intimidations) to illegally seize Crimea, foment separatist fever in several sovereign nations, and maintain frozen conflicts within its so-called “sphere of influence” or “near abroad.”
Undergirding all of these direct approaches is the pervasive presence of the Russia propaganda machine, which inserts itself into media outlets globally and attempts to exploit potential sympathetic or aggrieved populations.74

Russian media, for example, have promoted the false claims that Russia is simply defending ethnic Russians in Ukraine from far-right thugs, that the government in Kyiv is to blame for the violence that has enveloped parts of the country, and that the U.S. has instigated unrest in Ukraine.75 After a civilian airliner was shot down by Russian-backed separatists, Russian propaganda spun stories alleging that the plane was shot down by the Ukrainian government.76

Nor are Russian propaganda efforts limited to TV channels. There are widespread reports that the Russian government has paid people to post comments to Internet articles that parrot the government’s propaganda.77 People working in so-called troll factories with English-language skills are reported to be paid more.78 Twitter has been used in Ukraine to disseminate false or exaggerated Russian government claims. Russia is also widely suspected of funding political parties in Europe, and in January 2016, Congress asked U.S. Director of National Intelligence James Clapper to conduct a major review of such Russian clandestine funding over the past decade.79

Russian propaganda poses the greatest threat to NATO allies that have a significant ethnic Russian population: the Baltic States, especially Estonia and Latvia. Many ethnic Russians in these countries get their news through Russian-language media (especially TV channels) that parrot the official Russian state line, often interspersed with entertainment shows, making it more appealing to viewers. In 2014, Lithuania and Latvia temporarily banned certain Russian TV stations such as RTR Rossiya in light of Russian aggression in Ukraine,80 and in March 2016, Latvia banned the Russian “news agency” and propaganda website Sputnik from operating in the country.81

The inability to reach ethnic Russians in their vernacular remains a glaring vulnerability for planners when thinking about Baltic security. In an effort to provide an independent alternative Russian-language media outlet, Estonia, Latvia, and Lithuania are in various stages of planning and creating their own programming for Russian-language TV channels to counter Russian propaganda efforts.82 A similar effort was undertaken by Radio Free Europe/Radio Liberty with the daily news program “Current Time,” which began airing in 2014 in Russian to countries on Russia’s periphery.83

WWTA: The WWTA states that “Russia continues to take information warfare to a new level, working to fan anti-US and anti-Western sentiment both within Russia and globally,” and that “Moscow will continue to publish false and misleading information in an effort to discredit the West, confuse or distort events that threaten Russia’s image, undercut consensus on Russia, and defend Russia’s role as a responsible and indispensable global power.”84

**Summary:** Russia has used propaganda consistently and aggressively to advance its foreign policy aims. This is likely to remain an essential element of Russian aggression and planning. The potential for its use to stir up agitation in the Baltic States and to expose fissures between Western states makes Russian propaganda a continued threat to regional stability and a possible threat to the NATO alliance.

**Russian Destabilization in the South Caucasus.** The South Caucasus sits at a crucial geographical and cultural crossroads and has proven to be strategically important, both militarily and economically, for centuries. Although the countries in the region (Armenia, Georgia, and Azerbaijan) are not part of NATO and therefore do not receive a security guarantee from the U.S., they have participated to varying degrees in NATO and U.S.-led operations. This is especially true of Georgia, which has aspirations to join NATO.

Russia views the South Caucasus as part of its natural sphere of influence and stands
ready to exert its influence in the region by force if necessary. In August 2008, Russia invaded Georgia, coming as close as 15 miles to the capital city of Tbilisi. Seven years later, several thousand Russian troops occupied the two Georgian provinces of South Ossetia and Abkhazia.

In 2015, Russia signed so-called integration treaties with South Ossetia and Abkhazia. Among other things, these treaties call for a coordinated foreign policy, creation of a common security and defense space, and implementation of a streamlined process for Abkhazians and South Ossetians to receive Russian citizenship. The Georgian Foreign Ministry criticized the treaties as a step toward “annexation of Georgia’s occupied territories,” both of which are still internationally recognized as part of Georgia. In April 2016, the separatist leader of South Ossetia announced that the region would hold a constitutional referendum on joining the Russian Federation by the end of the year. This deadline was subsequently pushed back to 2017. Russia has based 4,500 soldiers in South Ossetia and is regularly expanding its “creeping occupation” in Georgia. In July 2015, Russian troops expanded the border of the occupied territories to include a piece of the Baku–Supsa pipeline, which carries oil from Azerbaijan to Supsa, Georgia, with a capacity of 100,000 barrels a day and is owned by British Petroleum.

Today, Moscow continues to take advantage of ethnic divisions and tensions in the South Caucasus to advance pro-Russian policies that are often at odds with America’s or NATO’s goals in the region. However, Russia’s influence is not restricted to soft power. In the South Caucasus, the coin of the realm is military might. It is a rough neighborhood surrounded by instability and insecurity reflected in terrorism, religious fanaticism, centuries-old sectarian divides, and competition for natural resources.

Russia maintains a sizable military presence in Armenia based on an agreement giving Moscow access to bases in that country for 49 years. The bulk of Russia’s forces, consisting of approximately 5,000 soldiers and dozens of fighter planes and attack helicopters, are based around the 102nd Military Base. In December 2015, Russia sent an additional two deployments of attack helicopters to its bases in Armenia. Also late last year, Russia and Armenia signed a Combined Regional Air Defense System agreement. In February 2016, Russia deployed an additional four MiG-29 jets, a MiG bomber, and transport helicopter to Erebuni airport, which is only 25 miles from the Armenian–Turkish border.

Russia has long had difficulty supplying these forces, especially since a transit right through Georgian airspace has been closed and Turkey refuses transit. This has left reliance on Iran, which for obvious reasons is not ideal for Russia. These policies breed animosity and form a perfect storm that could easily be exploited by Russia.

Another source of regional instability is the Nagorno–Karabakh conflict, which began in 1988 when Armenia made territorial claims to Azerbaijan’s Nagorno–Karabakh Autonomous Oblast. By 1992, Armenian forces and Armenian-backed militias occupied 20 percent of Azerbaijan, including the Nagorno–Karabakh region and seven surrounding districts. A cease-fire agreement was signed in 1994, and the conflict has been described as “frozen” since then. Since August 2014, violence has increased noticeably along the Line of Contact between Armenian and Azerbaijani forces. In early April 2016, four days of fighting claimed the lives of a combined 112 soldiers and civilians. In addition, Azerbaijani forces recaptured some of the territory lost to Armenia in the early 1990s, the first changes in the Line of Contact since 1994.

This conflict offers another opportunity for Russia to exert malign influence and consolidate power in the region. While its sympathies lie with Armenia, Russia is the largest supplier of weapons to both Armenia and Azerbaijan. As noted by the late Dr. Alexandros Petersen, a highly respected expert on Eurasian security, it is no secret “that
the Nagorno–Karabakh dispute is a Russian proxy conflict, maintained in simmering stasis by Russian arms sales to both sides so that Moscow can sustain leverage over Armenia, Azerbaijan and by its geographic proximity Georgia.99

Following the outbreak of fighting, Russia expanded its influence in the region by brokering a shaky cease-fire that has largely held. By the time the Organization for Security and Cooperation in Europe Minsk Group, created in 1995 to find a peaceful solution to the Nagorno–Karabakh conflict, met, the Russian-brokered cease-fire was already in place.100

The South Caucasus might seem distant to many American policymakers, but the spillover effect of ongoing conflict in the region can have a direct impact on both U.S. interests and the security of America’s partners, as well as on Turkey and other countries that are dependent on oil and gas transiting the region.

WWTA: The WWTA projects that tensions between Russia and Georgia will remain high, with continued pressure for Georgia to abandon further moves to integrate into NATO or the EU. Economic challenges combined with “increasingly effective Russian propaganda” complicate Georgia’s moves to integrate. The simmering conflict and occasional violence between Armenia and Azerbaijan continues, and a peaceful resolution is unlikely in the foreseeable future.101

Summary: Russia views the South Caucasus as a vital theater and uses a multitude of tools that include military aggression, economic pressure, and the stoking of ethnic tensions to exert influence and control, usually to promote outcomes that are at odds with U.S. interests.

Russia’s Actions in Syria. While Russia had a military presence in Syria for decades, in September 2015, it became the decisive actor in Syria’s ongoing civil war, having saved Bashar al-Assad from being overthrown and having strengthened his hand militarily, thus enabling government forces to retake territory lost during the war. Russia maintains a naval facility at Tartus, its only naval base on the Mediterranean, and the Hmeimim air base at Latakia; it deployed the S-400 anti-aircraft missile system to Hmeimim in late 2015.102 Despite Vladimir Putin’s announcement of a withdrawal of forces in March, Russia retains substantial forces in Syria. The drawdown was largely rhetorical; although some fixed-wing aircraft left Syria, they were replaced by new deployments of attack helicopters.103

Russia’s actions in Syria provide a useful propaganda tool. In May 2016, for example, one hundred journalists toured Palmyra, a city that Russia had helped Assad’s forces retake with air strikes and Special Forces troops.104 In addition, Russia is using Syria as a testing ground for new weapons systems while obtaining valuable combat experience for its troops.

Russia’s actions in Syria have allowed Assad to stay in power and have made achievement of a peaceful political settlement with rebel groups nearly impossible. They also have undermined American policy in the Middle East, including by frequently targeting forces backed by the U.S. On June 16, 2016, for example, two Russian air strikes targeting the al-Tanf base near the Syrian border with Jordan and Iraq killed members of the U.S.-backed New Syria Army. Al-Tanf is also used by U.S. and U.K. Special Forces, and 20 British Special Forces reportedly had left the base only 24 hours before the June 16 air strikes.105

The Putin regime will likely seek to link cooperation in Syria with a softening of U.S. policy in Europe, especially with regard to economic sanctions. General Breedlove warned of such a scenario in February: “We must not allow Russian actions in Syria to serve as a strategic distraction that leads the international community to give tacit acceptance to the situation in Ukraine as the ‘new normal.’”106

WWTA: The WWTA assesses that “Putin will continue to try to use the Syrian conflict and calls for cooperation against ISIL to promote Russia’s Great Power status and end its international isolation.”107

Summary: While not an existential threat to the U.S., Russia’s intervention in Syria
ensures that any future settlement will be run through Moscow and will include terms amenable to Russian strategic interests. Russia’s intervention in Syria has helped to keep Assad in power, has further entrenched Russia’s military position in the region, and has greatly degraded the impact of U.S. policy in Syria, often seeking to counteract U.S. actions and targeting U.S.-backed forces on the ground.

**The Balkans.** Although security has improved dramatically in the Balkans since the 1990s, violence based on religious and ethnic differences remains an ongoing possibility. These tensions are exacerbated by sluggish economies, high unemployment, and political corruption. In 2014, Bosnia and Herzegovina experienced some of the most violent antigovernment riots in 20 years.

On a positive note, Montenegro joined NATO at the 2015 Warsaw Summit, joining Albania and Croatia as NATO member states in the Balkans. Macedonia and Bosnia and Herzegovina are official aspirant countries. Macedonia has made great progress toward joining the alliance but has been blocked by Greece because of a name dispute. The situation in the region with Kosovo remains fragile, but an EU-led rapprochement between Kosovo and Serbia has shown signs of modest success.

There has been an increase in Russian activity in the region. Serbia in particular has long served as Russia’s foothold in the Balkans. Both Russia and Serbia are Orthodox countries, and Russia wields huge political influence in Serbia. Moscow backed Serbian opposition to Kosovo’s independence in 2008 and continues to use Kosovo’s independence to justify its own actions in Crimea, South Ossetia, and Abkhazia. Russian media are active in the country, broadcasting in Serbian.

Serbia and Russia have signed a strategic partnership agreement focused on economic issues. Russia’s inward investment is focused on the transport and energy sectors. Except for those in the Commonwealth of Independent States, Serbia is the only country in Europe that has a free trade deal with Russia. It therefore seemed odd when Russia decided to scrap the South Stream gas pipeline, which came as a huge blow to Serbia, likely costing Serbia billions of euros of inward investment and thousands of local jobs. Even with the negative impact of the South Stream cancellation, however, Serbia will likely continue to consider Russia its closest ally. As evidence of this, in July 2015, Russia vetoed a U.N. resolution opposed by Serbia that would have labeled the 1995 Srebrenica massacre a genocide. Serbian President Tomislav Nikolić said in a statement “that Russia had ‘prevented an attempt of smearing the entire Serbian nation as genocidal’ and proven itself as a true and honest friend.”

The Russian–Serbian military relationship is similarly close. Russia signed an agreement with Serbia to allow Russian soldiers to be based at Niš airport, which Serbia has used to meddle in northern Kosovo. Serbia has observer status in the Collective Security Treaty Organization, Russia’s answer to NATO, and has signed a 15-year military cooperation agreement with Russia that includes the sharing of intelligence, military officer exchanges, and joint military exercises. The situation in Ukraine has not changed Serbian attitudes regarding military cooperation with Russia. During a state visit in October 2014, Putin was honored with the largest Serbian military parade since the days of Yugoslavia. The two countries have also carried out military training exercises, and Serbia has inquired about obtaining Russia’s S-300 surface-to-air missile system.

However, pro-Russian political parties in Serbia suffered a poor showing in parliamentary elections in April. Like Russia, Serbia is a member of NATO’s Partnership for Peace program. Additionally, Serbia has been part of the U.S. National Guard’s State Partnership Program, partnering with the State of Ohio since 2006.

Russia is also active in Bosnia and Herzegovina—specifically, the ethnically Serb region, Republika Srpska, one of two sub-state entities inside Bosnia and Herzegovina that...
emerged from that country’s civil war in the 1990s.

Bosnia and Herzegovina is on the path to joining the transatlantic community but has a long way to go. It negotiated a Stabilization and Association Agreement with the EU, but the agreement is not in force because key economic and political reforms have not been implemented. In 2010, NATO offered Bosnia and Herzegovina a Membership Action Plan, but progress on full membership has been stalled because immovable defense properties are still not under the control of the Ministry of Defense. Moscow knows that exploiting internal ethnic and religious divisions among the Serb, Bosniak, and Croat populations is the easiest way to prevent Bosnia and Herzegovina from entering the transatlantic community.

Republika Srpska’s leader, Milorad Dodik, has long been an advocate of independence for the region and has enjoyed a very close relationship with the Kremlin. Recent events in Ukraine, especially the annexation of Crimea, have inspired more separatist rhetoric in Republika Srpska. In many ways, Russia’s relationship with Republika Srpska looks like a relationship with another sovereign state and not with a semi-autonomous region inside Bosnia and Herzegovina—akin to Russia’s direct relationship with Georgia’s South Ossetia and Abkhazia autonomous regions. When Putin visited Serbia in October 2014, Dodik was treated like a head of state and was invited to Belgrade to meet with him.

Russia has also thrown the future of the European-led peacekeeping operation in Bosnia and Herzegovina into doubt. Russia, which holds veto power in the U.N. Security Council, abstained in November 2015 during the annual vote extending the peacekeeping mission. This was the first time in 14 years that Russia failed to vote for this resolution. Russia also requested that a sentence mentioning “the Euro-Atlantic perspective of Bosnia-Herzegovina” be omitted from the annual Security Council resolution.

Montenegro is another focus of Moscow’s diplomacy. Russia and Montenegro have had close relations for three centuries; in 2014, for example, Russians accounted for 30 percent of overnight stays in Montenegro. However, Montenegro’s fine line between keeping its close ties with Russia and strengthening its ties to the West has become more complex, and its accession to NATO infuriated Russia. The head of the committee of defense and security in the upper house of the Russian Duma claimed that “Montenegro is becoming a potential participant in a threat to the security of our country.” Russia is also suspected helping to fuel anti-government protests in Montenegro, principally in October 2015 and January 2016.

After Russia annexed Crimea, the Montenegrin government backed European sanctions against Moscow and even implemented its own sanctions. Nevertheless, Russia has significant economic influence in Montenegro and is the country’s largest inward investor. Up to one-third of all enterprises are owned by Russian companies, and 7,000 Russians are registered as permanent residents in Montenegro.

Russia had made prior attempts to insert itself into the security sphere in Montenegro. In 2013, for example, Moscow requested access for the Russian navy to use Montenegrin ports for refueling and maintenance. This request was turned down because of concerns that such an agreement with Russia might negatively affect Montenegro’s prospects for NATO membership.

Another challenge for the region is the increasing presence of the Islamic State and the rise of extremism. Thankfully, the region has not yet suffered an attack from ISIS, but it has served as a fertile recruiting ground for the Islamic State. Several hundred fighters from the Balkans are in Iraq and Syria. Most of these foreign fighters, who have formed a so-called Balkans Battalion for Islamic State, have come from Kosovo, but others can be traced back to Albania, Bosnia, and the Republic of Macedonia.

The region is also important to ISIS for reasons beyond recruitment. The Balkans
are becoming an important transit route for ISIS fighters traveling between Western Europe and the Middle East. This is especially true for Greece and Croatia with their long coastlines.122 Some of the terrorists who perpetrated attacks in Paris in November 2015 and Brussels in 2016 are known to have transited through the Balkan Peninsula. U.S. Director of National Intelligence James Clapper testified in February 2016 that ISIS is “taking advantage of the torrent of migrants to insert operatives into that flow…. [T]hey also have available to them and are pretty skilled at phony passports so they can travel ostensibly as legitimate travelers as well.”123

The U.S. has invested heavily in the Balkans since the end of the Cold War. Tens of thousands of U.S. servicemembers have served in the Balkans, and billions of dollars in aid has been spent there, all in the hope of creating a secure and prosperous region that will someday be part of the transatlantic community.

**WWTA:** The WWTA notes the continued threats to stability in the region stemming from inefficient bureaucracy, unemployment and lack of economic growth, and lingering ethnic and religious tensions. It also notes the threat posed by radicalization of Muslims.124

**Summary:** The Balkans are being squeezed from three sides: by increased Russian involvement in internal affairs, ISIS using the region as a transit and recruiting ground, and the potential political and economic spill-over from Greece. The U.S. and NATO would be wise not to dismiss the region as “mission accomplished.”

**Threats to the Commons**

Other than cyberspace and (to some extent) airspace, the commons are relatively secure in the European region. Despite periodic Russian aggressive maneuvers near U.S. and NATO vessels, this remains largely true with respect to the security of and free passage through shipping lanes in the region. The maritime domain is heavily patrolled by the navies and coast guards of NATO and NATO partner countries; except in remote areas in the Arctic Sea, search and rescue capabilities are readily available; maritime-launched terrorism is not a significant problem; and piracy is virtually nonexistent in the European region. Nevertheless, recent events indicate that this relative security may be in jeopardy.

**Sea.** On April 11, 2015, two Russian SU-24 jets made numerous low-altitude passes over the American destroyer USS Donald Cook, which was training with Polish helicopters in the Baltic Sea, leading to a temporary suspension of landing drills. The next day, a Russian KA-27 helicopter made seven low-altitude circles around the Cook. Additionally, two SU-24 jets made 11 close-range low-altitude passes in a simulated attack profile,125 flying within 30 feet of the ship.126 A Russian frigate and auxiliary ship also trailed the Cook during the exercises.127 Based out of Rota, Spain, the USS Donald Cook is equipped with the Aegis radar system and SM-3 missiles128 and is an important component of the U.S. ballistic missile defense capability in Europe. Also in April 2015, a Russian SU-24 plane made a dozen passes over the Cook, which was operating at that time in the Black Sea.129

On May 30, 2015, two Russian Su-24 jets buzzed the destroyer USS Ross, which was operating in international waters in the Black Sea, coming within 500 meters of the Ross at an altitude of 200 feet.130 The USS Ross is an Arleigh Burke-class guided missile destroyer. In October 2015, two Russian Tu-142 Bear bombers flew within one nautical mile of the USS Ronald Reagan aircraft carrier, which was sailing in international waters off the coast of Korea during scheduled maneuvers with South Korean Navy vessels. The Ronald Reagan scrambled four F/A-18 Hornets to escort the Russian bombers, which had been flying as low as 500 feet, away from the aircraft carrier.131

In December 2015, a Russian destroyer, the Smetlivy, fired warning shots at a Turkish fishing boat near the Greek island of Lemnos in the Aegean Sea,132 claiming that the shots were needed to avoid a collision.133
Russian threats to the maritime theater are not limited to surface vessels. In October 2015, news reports of Russian vessels operating aggressively near undersea communications cables raised concerns that Russia might be laying the groundwork for severing the cables in the event of a future conflict. A senior European diplomat described the Russian activity as “comparable to what we saw in the Cold War.”

In the fall of 2015, NATO retasked naval assets away from exercises to track five Russian attack submarines that had been deployed in the North Atlantic. The Russian submarines are thought to have been a response to NATO’s Trident Juncture exercise in October and November of 2015. Canada’s Commander of Maritime Forces Atlantic, Rear Admiral John Newton, described the deployment as “historically significant.”

According to Vice Admiral Clive Johnstone, Commander of NATO’s Allied Maritime Command, Russian submarine activity, specifically in the North Atlantic, has reached levels not seen since the Cold War. Russian submarines today, however, are more capable than they were in Cold War times, thus making the increased activity all the more worrisome. Admiral Mark Ferguson, Commander, U.S. Naval Forces Europe, has said that “[t]he submarines that we’re seeing are much more stealthy.” In addition, the Russians “have more advanced weapons systems, missile systems that can attack land at long ranges, and...their operating proficiency is getting better as they range farther from home waters.”

Ferguson characterizes Russian submarines as an “existential threat to U.S. carrier groups.” Russia’s investments in its navy, including large frigates, denote a desire to reconstitute a true deep-ocean navy. Currently, only a quarter of Russia’s fleet is “blue water” capable.

**Airspace.** Russia has continued its provocative military flights near the airspace of the U.S. and Europe over the past year. On July 4, 2015, two Russian bombers flew within tens of miles of the U.S. coast off of California. In January 2016, a U.S. RU-135U reconnaissance plane flying in international airspace over the Black Sea was intercepted by a Russian Su-27 fighter jet in an “unsafe and unprofessional manner.” The Russian Su-27 flew within 20 feet of the U.S. RU-135U, drew close, and then turned away quickly so as to hit the U.S. reconnaissance flight with a destabilizing jet engine blast.

In the most serious incident in years, in November 2015, a Russian Su-24 bomber that violated Turkish airspace was shot down by two Turkish F-16s. The Russian jet was warned 10 times by Turkish pilots before being shot down. The airspace violation occurred over Turkey’s Hatay province, which has long been disputed by Syria. Russian flights near the border help to fuel tension between Turkey and Syria.

Overall, incidents of Russian military aircraft flying near the airspace of American allies in Europe have increased in recent years. NATO jets had to be scrambled over 400 times in 2015, a slight uptick from the 400 times NATO planes were scrambled in 2014. In 2015, NATO planes patrolling Baltic airspace as part of the air policing mission it has conducted since 2004 were scrambled 160 times, a 14 percent increase over 2014 when planes were scrambled 140 times. The Russian planes were neither transmitting recognized identification codes nor communicating with ground air traffic control. Estonian Minister of Defense Hannes Hanso described Russia’s behavior in Estonian airspace as “incredibly reckless.”

Starting in early 2014, NATO has doubled the number of aircraft patrolling the Baltic skies from four to eight as a reassurance measure for Baltic member states, but the number of air incursions by Russia has still been on the rise since Moscow’s annexation of Crimea. For example, in May 2016, Royal Air Force (RAF) Typhoons taking part in a Baltic Air Policing mission intercepted 17 Russian planes during one nine-day period.

That the provocative and hazardous behavior of the Russian armed forces or groups
sponsored by Russia poses a threat to civilian aircraft in Europe was demonstrated by the downing of Malaysia Airlines Flight MH17, killing all 283 passengers and 15 crew, over the skies of southeastern Ukraine. In addition, there have been several incidents of Russian military aircraft flying in Europe without using their transponders: In February 2015, for example, civilian aircraft in Ireland had to be diverted or were prevented from taking off when Russian bombers flying with their transponders turned off flew across civilian air lanes. Similarly, in March 2014, an SAS plane almost collided with a Russian signals intelligence (SIGINT) plane, the two coming within 90 meters of each other. In a December 2014 incident, a Cimber Airlines flight from Copenhagen to Poznan nearly collided with a Russian intelligence plane that was flying with its transponder turned off.

The RAF also responds regularly to Russian aircraft closer to home off the coast of Great Britain. In February 2016, British Typhoons and French Rafale and Mirage fighter jets were scrambled to escort two Russian TU-160 bombers flying near British and French airspace. In October and November of 2015, RAF aircraft were scrambled when Russian Tu-169 Blackjack bombers flew near U.K. airspace. From November 2014–November 2015, RAF planes were scrambled 20 times to intercept Russian planes. In July 2016, Bulgarian Defense Minister Nikolay Nenchev stated that Russian military planes had violated Bulgarian airspace four times in one month, all with their transponders switched off, while Russian passenger planes violated Bulgarian airspace six times during that period.

Non-NATO members have been the target of aggressive Russian aerial activity as well. In March 2013, two Russian bombers and four fighter jets took off from St. Petersburg and carried out a mock strike on targets in the Stockholm region. Swedish experts have assessed that this mock attack in fact simulated a nuclear strike against two targets in Sweden. The Swedish air force did not react, as it was on low alert during the Easter break. Instead, NATO scrambled two Danish jets from a base in Lithuania to intercept the Russian planes.

**WWTA:** The WWTA foresees continued geopolitical and security competition around the periphery of Russia, to include major sea lanes.

**Summary:** Russia’s aerial activity has increased the threat to civilian aircraft flying in European airspace. Russia’s violation of the sovereign airspace of NATO member states is a probing and antagonistic policy that is designed both to test the defense of the alliance and to practice for potential future conflicts.

**Space.** Admiral Cecil Haney, head of U.S. Strategic Command, said in March 2015 that “[t]he threat in space, I fundamentally believe, is a real one.” Russia’s space capabilities are robust, but Moscow “has not recently demonstrated intent to direct malicious and destabilizing actions toward U.S. space assets.” However, Admiral Haney also testified in March 2015 that “Russian leaders openly maintain that they possess anti-satellite weapons and conduct anti-satellite research.”

Air Force Lieutenant General John “Jay” Raymond, commander of the Joint Functional Component Command for Space, has testified that Russia’s anti-satellite capabilities have progressed such that “we are quickly approaching the point where every satellite in every orbit can be threatened.”

**WWTA:** According to the WWTA, Russia is improving its military and intelligence satellite capabilities and has used them in Syria. Russia’s “senior leadership probably views countering the US space advantage as a critical component of warfighting,” and “[i]ts 2014 Military Doctrine highlights at least three space-enabled capabilities—‘global strike,’ the ‘intention to station weapons in space,’ and ‘strategic non-nuclear precision weapons’—as main external military threats to the Russian Federation.” Additionally, “Russian defense officials acknowledge that they have deployed radar-imagery jammers and
are developing laser weapons designed to blind US intelligence and ballistic missile defense satellites.” Russian efforts to develop weapons to destroy satellites in orbit will be a growing threat.

**Summary:** Despite some interruption of cooperation in space as a result of Russia’s invasion of Ukraine, cooperation on the International Space Station and commercial transactions involving space-related technology have continued unabated. Russia also continues to build out its counterspace capabilities and has sought to deepen its space cooperation with China as a result.

**Cyber.** Perhaps the most contested domain in Europe is the cyber domain. Russian cyber capabilities are incredibly advanced. In his 2010 book *Cyberwar*, former White House cyber coordinator David Smith quoted a U.S. official as saying that “[t]he Russians are definitely better, almost as good as we are.” Such an assessment is not an outlier, as multiple other organizations and reports have noted, from cybersecurity firms such as FireEye to the Worldwide Threat Assessment of the U.S. Intelligence Community, which stated in 2016 that “Russia is assuming a more assertive cyber posture based on its willingness to target critical infrastructure systems and conduct espionage operations even when detected and under increased public scrutiny.” Russia engaged in high-profile cyber aggression in 2007 against Estonia and in 2008 against Georgia in coordination with its invasion of that country. Its more recent actions against Ukrainian and Swedish critical infrastructure further illustrate Moscow’s aggressive use of cyber attacks.

By December 2015, Russia’s skills were highly advanced. A sophisticated Russian cyber attack against Ukrainian power companies resulted in widespread power outages that affected 225,000 Ukrainians for several hours. Subsequent investigations by Ukrainian and U.S. cyber officials found that the attack was “synchronized and coordinated, probably following extensive reconnaissance,” and that efforts were taken to “attempt to interfere with expected restoration efforts.” While the U.S. government has not named the perpetrator, many experts see Russian government involvement due to the sophisticated, well-financed, and coordinated nature of the attack during a period of ongoing conflict between Ukraine and Russian-backed separatists.

It also appears that the attack continues Russia’s use of allied criminal organizations, so-called patriotic hackers, to help it engage in cyber aggression. Both the Georgian and Estonian attacks were conducted by these “patriotic hackers” and likely coordinated or sponsored by Russian security forces. Using these hackers gives the Russians greater resources and can help to shield their true capabilities. At the same time, Russia’s Federal Security Service is reportedly spending $250 million a year on offensive cyber capabilities.

The Ukrainian attack represents an escalation in cyber attacks, moving beyond crippling communications or mere infiltration of critical systems to taking down critical infrastructure with widespread physical effects. In early 2016, the U.S. Defense Intelligence Agency warned that Russian hackers using software from Russian-origin companies could gain access to industrial systems in the U.S., including electrical and water systems. Russia is also thought to be behind five days of cyber attacks against Sweden’s Air Traffic Control system in November 2015, which led to flight delays and groundings. Swedish authorities are reported to believe that the attack was the work of Russian military intelligence.

In February and March of 2016, Finland’s Ministry of Defense withstood cyber attacks that are suspected of emanating from inside Russia. The attack in March began just hours before Finland’s President was set to meet with Russian President Putin. In April 2016, Lithuania’s Parliament suffered a suspected Russian cyber attack while hosting a gathering of Crimean Tatars. Russia hackers are also suspected of being behind a cyber attack against Germany’s Bundestag in 2015, an attack that sought access to computers of Bundestag members and their staffs. Hans-Georg
Maassen, President of Germany’s domestic intelligence agency BfV, described Russia’s evolving cyber targets: “The campaigns that the BfV has observed in the past have generally been focused on obtaining information, in other words spying…but lately intelligence agencies have also shown a willingness to conduct sabotage.”  

WWTA: The U.S. intelligence community notes Russia’s increasing assertiveness and boldness in cyberspace. Russia will likely target various U.S. interests in order to “support several strategic objectives: intelligence gathering to support Russian decision-making in the Ukraine and Syrian crises, influence operations to support military and political objectives, and continuing preparation of the cyber environment for future contingencies.”  

Summary: Russia’s cyber capabilities are advanced. Russia shows a continued willingness to utilize cyber warfare, most recently and brazenly against the Ukrainian electric grid and Sweden’s Air Control Systems. Russia’s increasingly bold use of cyber capabilities, coupled with their sophistication, presents a challenge for the U.S. and its interests abroad.

Russian Military Capabilities. According to the International Institute for Strategic Studies’ The Military Balance 2016, among the key weapons in Russia’s inventory are 332 intercontinental ballistic missiles, 2,700 main battle tanks, more than 5,400 armored infantry fighting vehicles, over 6,000 armored personnel carriers, and over 4,180 pieces of artillery. The navy has one aircraft carrier; 63 submarines (including 13 ballistic missile submarines); six cruisers; 18 destroyers; 10 frigates; and 89 patrol and coastal combatants. The air force has 1,090 combat-capable aircraft. The IISS counts 230,000 members of the army. Russia also has a reserve force of 2,000,000 combined for all armed forces.  

Despite public embarrassments—such as when it was forced to ground its aging Tu-95 Bear bomber fleet in July 2015, “for a second time in barely a month,” after a Bear bomber skidded off the runway and caught fire—Russia maintains a formidable military.

Russia has been investing heavily in modernization of its armed forces, especially its nuclear arsenal. Russia announced research and development plans for a new ICBM, although The Military Balance states that “such ICBMs are a distant prospect, with analysts assessing little progress likely before 2020.” The first of the Borey-class SSBNs, the Yuri Dolgoruky, formally joined the fleet at the beginning of 2013 and is intended as part of a broader recapitalization of the country’s nuclear capability. The armed forces also continue to undergo process modernization begun by Defense Minister Anatoly Serdyukov in 2008. The success of some reform measures was put on display during the seizure of the Crimean Peninsula. The invasion showcased Russia’s use of a host of tools in effective combinations. However, most of the forces used were highly trained special forces, so Russian successes in Crimea may not reflect the impact of modernization on the larger army.

Russian forces continue to face problems from corruption and a long-term shortage of recruits due to declining birthrates, poor access to health care, and the reduction of conscription service to one year. These problems were on full display in 2008 in the Russian invasion of Georgia, particularly in the areas of communications and logistics. In comparison, “Russian forces in Crimea benefited from improvements in personal equipment, logistics, personnel discipline, electronic-warfare capability and junior-commander training.”

A report from the Swedish Defense Research Agency (FOI) on the 2011–2020 State Armament Program assigns the program at least partial credit for Russia’s ability to intervene in Syria: “It is difficult to conceive that Russia could have mounted the military action in Syria in autumn 2015 without the positive outcomes achieved in implementing GPV-2020.” The Russian Defense Ministry claims to have received 1,200 new or modernized aircraft over the past three years as part of the 2011–2020 State Armament Program.
However, the FOI report also states that declining budget revenues and Russia’s invasion of Ukraine have hurt the country’s ability to meet the program’s benchmarks. Western sanctions and Ukraine’s decision to end delivery of military products and components to Russia in 2014 have hurt the ability of Russia’s defense industries to access certain technology and components. Overall, Russia’s industrial capacity and capability remain problematic.

Conclusion

Overall, the threat to the U.S. homeland originating from Europe remains low, but the threat to American interests and allies in the region remains significant. Behind this threat lies Russia. Although Russia has the military capability to harm and (in the case of its nuclear arsenal) to pose an existential threat to the U.S., it has not demonstrated the intent to do so.

The situation is different when it comes to America’s allies in the region. Through NATO, the U.S. is obliged by treaty to come to the aid of the alliance’s European members. Russia continues to seek to undermine the NATO alliance and presents an existential threat to U.S. allies in Eastern Europe. NATO has been the cornerstone of European security and stability since its creation 67 years ago, and it is in America’s interest to ensure that it maintains the military capability and the political will to fulfill its treaty obligations.

While Russia is not the threat to U.S. global interests that the Soviet Union was during the Cold War, it does pose challenges to a range of American interests and those of its allies and friends closest to Russia’s borders. Russia possesses a full range of capabilities from ground forces to air, naval, space, and cyber. It still maintains the world’s largest nuclear arsenal, and although a strike on the U.S. is highly unlikely, the latent potential for such a strike still gives these weapons enough strategic value vis-à-vis America’s NATO allies and interests in Europe to keep them relevant.

Russian provocations far below any scenario involving a nuclear exchange pose the most serious challenge to American interests, particularly in Central and Eastern Europe, the Arctic, the Balkans, and the South Caucasus. It is in these contingencies that Russia’s military capabilities are most relevant.

Threat Scores by Country

Russia. Russia seeks to maximize its strategic position in the world at the expense of the United States. It also seeks to undermine U.S. influence and moral standing, harasses U.S. and NATO forces, and is working to sabotage U.S. and Western policy in Syria. Moscow’s continued aggression and willingness to utilize every tool at its disposal in pursuit of its aims leads this Index to assess the overall threat from Russia as “aggressive” and “formidable.”

Threats: Russia

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6. Ibid.


22. Ibid., p. 166.
23. Bugajski and Doran, “BLACK SEA RISING: Russia’s Strategy in Southeast Europe,” p. 3.
27. Jones and Hille, “Russia’s Military Ambitions Make Waves in the Black Sea.”
40. Ibid.
41. Stratfor, “Russia Targets NATO with Military Exercises.”
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51. Ibid.
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65. Ibid.
67. Ibid.
84. 2016 WWTA, p. 18.
95. In 1991, the Azerbaijan SSR Parliament dissolved the Nagorno–Karabakh Autonomous Oblast and divided the area among five rayons (administrative regions) in Azerbaijan.


99. Petersen, “Russia Shows Its Hand on Karabakh.”

100. Farchy, “Russia Senses Opportunity in Nagorno-Karabakh Conflict.”


116. “In the Balkans, NATO Has Outmuscled Russia.”


140. Ibid.


163. 2016 WWTA, p. 16.


169. Ibid., p. 10.


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182. 2016 WWTA, p. 3.
187. Ibid., p. 159.
188. Ibid.
189. Ibid., p. 163.
190. Ibid., p. 159.
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Middle East

Threats to the Homeland

Radical Islamist terrorism in its many forms remains the most immediate global threat to the safety and security of U.S. citizens at home and abroad, and most of the actors posing such a threat originate in the greater Middle East. More broadly, threats to the U.S. homeland and to Americans abroad include terrorist threats from non-state actors such as al-Qaeda that use the ungoverned areas of the Middle East as bases from which to plan, train, equip, and launch attacks; terrorist threats from state-supported groups such as Hezbollah; and the developing ballistic missile threat from Iran.

Terrorism Originating from al-Qaeda, Its Affiliates, and the Islamic State (IS).

Although al-Qaeda has been damaged by targeted strikes that have killed key leaders in Pakistan, including Osama bin Laden, the terrorist network has evolved in a decentralized fashion, and regional affiliates continue to pose potent threats to the U.S. homeland. The regional al-Qaeda groups share the same long-term goals as the parent organization, but some have developed different priorities related to their local conflict environments.

Al-Qaeda in the Arabian Peninsula (AQAP) has emerged as one of the leading terrorist threats to homeland security since the al-Qaeda high command was forced into hiding in Pakistan.

Yemen has long been a bastion of support for militant Islamism in general and al-Qaeda in particular. Many Yemenis who migrated to Saudi Arabia to find work during the 1970s oil boom were exposed to radicalization there. Yemenis made up a disproportionate number of the estimated 25,000 foreign Muslims who flocked to Afghanistan to join the war against the Soviet occupation in the 1980s. They also make up a large segment of al-Qaeda, which was founded by veterans of that war to expand the struggle into a global revolutionary campaign.

Al-Qaeda’s first terrorist attack against Americans occurred in Yemen in December 1992, when a bomb was detonated in a hotel used by U.S. military personnel involved in supporting the humanitarian food relief flights to Somalia. Al-Qaeda launched a much deadlier attack in Yemen in October 2000 when it attacked the USS Cole in the port of Aden with a boat filled with explosives, killing 17 American sailors.¹

Yemen was a site for the radicalization of American Muslims such as John Walker Lindh, who traveled there to study Islam before being recruited to fight in Afghanistan. Seven Yemeni Americans from Lackawanna, New York, were recruited by al-Qaeda before 9/11. Six were convicted of supporting terrorism and sent to prison, and the seventh became a fugitive who later surfaced in Yemen.

Yemen has become increasingly important as a base of operations for al-Qaeda in recent years after crackdowns in other countries. In September 2008, al-Qaeda launched a complex attack on the U.S. embassy in Yemen that killed 19 people, including an American woman. Yemen’s importance to al-Qaeda increased further in January 2009 when al-Qaeda members who had been pushed out of Saudi Arabia merged with the
Yemeni branch to form Al-Qaeda in the Arabian Peninsula.

AQAP’s Anwar al-Aulaqi, a charismatic American-born Yemeni cleric, reportedly incited several terrorist attacks on U.S. targets before being killed in a drone air strike in 2011. He inspired Major Nidal Hassan, who perpetrated the 2009 Fort Hood shootings that killed 13 soldiers, and Umar Farouk Abdulmutallab, the failed suicide bomber who sought to destroy an airliner bound for Detroit on Christmas Day 2009. Aulaqi is also suspected of playing a role in the November 2010 AQAP plot to dispatch parcel bombs to the U.S. in cargo planes.

AQAP, estimated to have had as many as 4,000 members in 2015, has greatly expanded in the chaos of Yemen's civil war, particularly since the overthrow of Yemen's government by Iran-backed Houthi rebels in 2015. AQAP has exploited alliances with powerful, well-armed Yemeni tribes (including the Aulaq tribe from which Osama bin Laden and the radical cleric Aulaqi claimed descent) to establish sanctuaries and training bases in Yemen's rugged mountains. This is similar to al-Qaeda's *modus operandi* in Afghanistan before 9/11 and in Pakistan today. In April 2015, AQAP seized the city of al Mukalla and expanded its control of rural areas in southern Yemen. After AQAP withdrew in April 2016, the city was recaptured by pro-government Yemeni troops and troops from the United Arab Emirates (UAE), a member of the Saudi-led coalition that intervened in March 2015 in support of the Yemeni government. AQAP remains a potent force in Yemen.

*The Islamic State (IS)*, formerly known as the Islamic State of Iraq and Syria (ISIS) or the Islamic State in Iraq and the Levant (ISIL), and before that as the Islamic State of Iraq and Al-Qaeda in Iraq, emerged as an al-Qaeda splinter group but has outstripped its parent organization in terms of the threats it poses to U.S. national interests. It seeks to overthrow the governments of Iraq, Syria, Lebanon, and Jordan and establish a nominal Islamic state governed by a harsh and brutal interpretation of Islamic law that is an existential threat to Christians, Shiite Muslims, Yazidis, and other religious minorities. Its long-term goals are to launch what it considers a jihad (holy war) to drive Western influence out of the Middle East; destroy Israel; diminish and discredit Shia Islam, which it considers apostasy; and become the nucleus of a global Sunni Islamic empire.

The Islamic State is composed of Sunni Muslims drawn to radical Islamist ideology. U.S. intelligence officials estimated in May 2016 that it commanded between 19,000 and 25,000 fighters in Iraq and Syria even after suffering extensive losses. Most of its members are Iraqi and Syrian Arabs, although it also has attracted more than 25,000 foreign fighters who have joined its ranks on a temporary or permanent basis, including at least 6,000 from Tunisia, 2,275 from Saudi Arabia, 2,000 from Jordan, 1,700 from Russia, 1,550 from France, 1,400 from Turkey, and 1,200 from Lebanon. Many of the foreign fighters have been killed or fled from Iraq and Syria as IS has been pushed back on several fronts.

The group was established as Al-Qaeda in Iraq (AQI) in 2004 by Abu Musab al-Zarqawi, a Palestinian Islamist extremist born in Jordan who fought in Afghanistan against the Soviet invasion. He was a close associate of Osama bin Laden, although he did not formally join al-Qaeda until 2004 when he was recognized as the leader of AQI. His organization has always taken a harder line against Shiites, whom it denigrates as apostates who deserve death, than has other franchises of the al-Qaeda network.

Zarqawi was killed in a U.S. air strike in 2006, and his organization was decimated by a U.S.-led counterterrorism campaign. The group made a comeback in Iraq after the withdrawal of U.S. troops in 2011 took the pressure off it and Iraqi Prime Minister Nouri al-Maliki’s Shia-dominated government alienated Sunni Iraqis, driving many of them to see ISIS as the lesser evil.

The IS began as a branch of al-Qaeda before it broke away from the core al-Qaeda
leadership in 2013 in a dispute over leadership of the jihad in Syria. The IS shares a common ideology with its al-Qaeda parent organization but differs with respect to how to apply that ideology. It now rejects the leadership of bin Laden’s successor, Ayman al-Zawahiri, who criticized its extreme brutality, which has alienated many Muslims. This is a dispute about tactics and strategies, not long-term goals. It may also be prompted by a personal rivalry between Zawahiri and IS leader Abu Bakr al-Baghdadi, who sees himself as bin Laden’s true successor and the leader of a new generation of jihadists. Baghdadi also declared the formation of a caliphate with himself as the leader in June 2014, a claim that al-Qaeda rejects as illegitimate.

In 2014, the IS greatly expanded its control of a wide swath of western Iraq and eastern Syria, territory that it can use as a launching pad for operations in the heart of the Arab world and beyond. By May 2016, the United States and its allies had reduced the territory controlled by the Islamic State at its zenith by 45 percent in Iraq and 20 percent in Syria. But the IS continued to expand elsewhere, particularly in Libya, Egypt, Yemen, Afghanistan, Bangladesh, and Pakistan. Boko Haram, the Nigeria-based Islamist terrorist group, also pledged allegiance to the IS in March 2015.

The Islamic State poses a primarily regional threat. It has launched terrorist attacks inside Egypt, Jordan, Kuwait, Lebanon, Libya, Saudi Arabia, Tunisia, and Turkey, among other countries. It also claimed responsibility for the October 31, 2015, downing of a Russian passenger jet over Egypt’s Sinai Peninsula that killed 224 people.

The Islamic State’s early success in attracting the support of foreign militants, including at least 4,500 from Western countries and at least 250 from the United States, has amplified its potential threat as these foreign supporters, many of whom received military training, return home. IS foreign fighters teamed with local Islamist militants to launch terrorist attacks that killed 130 people in Paris, France, in November 2015 and 32 people in Brussels, Belgium, in March 2016, as well as a string of smaller attacks.

IS leader al-Baghdadi threatened to strike “in the heart” of America in July 2012. The IS reportedly has tried to recruit Americans who have joined the fighting in Syria and would be in a position to carry out this threat after returning to the United States. It also has inspired several terrorist attacks by self-radicalized “stray dogs” or “lone wolves” who have acted in its name, such as the foiled May 3, 2015, attack by two Islamist extremists who were fatally shot by police before they could commit mass murder in Garland, Texas; the July 16, 2015, shootings that killed four Marines and a sailor in Chattanooga, Tennessee; the December 2, 2015, shootings that killed 14 people in San Bernardino, California; and the June 12, 2016, shootings at a nightclub in Orlando, Florida, that killed 49 people. Such terrorist attacks, incited but not directed by the IS, are likely to continue for the foreseeable future.

The al-Nusra Front, al-Qaeda’s official affiliate in Syria, has an estimated 5,000 to 10,000 members and has emerged as one of the top two or three rebel groups fighting Syria’s Assad dictatorship. It was established as an offshoot of Al-Qaeda in Iraq (now renamed the Islamic State) in late 2011 by Abu Muhammad al-Julani, a lieutenant of AQI leader Abu Bakr al-Baghdadi. It has adopted a more pragmatic course than its extremist parent organization and has cooperated with moderate Syrian rebel groups against the Assad regime, as well as against the Islamic State.

When Baghdadi unilaterally proclaimed the merger of his organization and al-Nusra in April 2013 to form the Islamic State of Iraq and Syria, Julani rejected the merger and renewed his pledge to al-Qaeda leader Ayman al-Zawahiri. The two groups have clashed repeatedly, causing an estimated 3,000 deaths by March 2014. Al-Nusra has focused its attention on overthrowing the Syrian regime and has not emphasized its hostility to the United States, but...
that could easily change if it consolidates power within Syria. It already poses a potential threat because of its recruitment of a growing number of foreign Islamist militants, including some from Europe and the United States. According to U.S. officials, al-Qaeda leader al-Zawahiri dispatched a cadre of experienced al-Qaeda operatives to Syria, where they were embedded with al-Nusra and charged with organizing terrorist attacks against Western targets. Many members of the group, estimated to number in the dozens, were veterans of al-Qaeda’s operations in Afghanistan and Pakistan (part of what was called Khorasan in ancient times) and were referred to as the “Khorasan group” by U.S. officials. An American Muslim recruited by al-Nusra, Moner Mohammad Abusalha, conducted a suicide truck bombing in northern Syria on May 25, 2014, the first reported suicide attack by an American in Syria. At least five men have been arrested inside the United States for providing material assistance to al-Nusra, including Abdirahman Sheik Mohamud, a naturalized U.S. citizen born in Somalia who was arrested in April 2015 after returning from training in Syria, possibly to launch a terrorist attack inside the United States. The Khorasan group was targeted by a series of U.S. air strikes in 2014–2015 that degraded its capacity to organize terrorist attacks in Western countries. By mid-2015, the FBI assessed that the Islamic State had eclipsed al-Nusra as a threat to the U.S. homeland. FBI Director James Comey has stated that tracking Americans who have returned from Syria is one of the FBI’s top counterterrorism priorities. Then-Attorney General Eric Holder urged his international counterparts to block the flow of thousands of foreign fighters to Syria, which he termed “a cradle of violent extremism.” Speaking at a conference in Norway in July 2014, Holder warned:

We have a mutual and compelling interest in developing shared strategies for confronting the influx of U.S.-born and European-born violent extremists into Syria. And because our citizens can freely travel, visa free, from the U.S. to Norway and other European states—and vice versa—the problem of fighters in Syria returning home to any of our countries is a problem for all of our countries.

Al-Qaeda in the Islamic Maghreb (AQIM), one of al-Qaeda’s weaker franchises before the Arab Spring uprisings began in 2011, has flourished in recent years in North Africa and is now one of al-Qaeda’s best-financed and most heavily armed elements. The 2011 overthrow of Libyan dictator Muammar Qadhafi pried open a Pandora’s box of problems that AQIM has exploited to bolster its presence in Algeria, Libya, Mali, Morocco, and Tunisia. AQIM accumulated large quantities of arms, including man-portable air defense systems (MANPADS), looted from Qadhafi’s huge arms depots.

The fall of Qadhafi also led hundreds of heavily armed Tuareg mercenaries formerly employed by his regime to cross into Mali, where they joined a Tuareg separatist insurgency against Mali’s weak central government. In November 2011, they formed the separatist National Movement for the Liberation of Azawad (MNLA) and sought to carve out an independent state. In cooperation with AQIM and the Islamist movement Ansar Dine, they gained control of northern Mali, a territory as big as Texas and the world’s largest terrorist sanctuary until the January 2013 French military intervention dealt a major setback to AQIM and its allies.

AQIM is estimated to have several hundred militants operating in Algeria, Libya, Mali, Niger, and Tunisia. Many AQIM cadres pushed out of Mali by the French intervention have regrouped in southwestern Libya and remain committed to advancing AQIM’s self-declared long-term goal of transforming the Sahel “into one vast, seething, chaotic Somalia.”

The September 11, 2012, attack on the U.S. diplomatic mission in Benghazi underscored the extent to which Islamist extremists have grown stronger in the region, particularly in eastern Libya, a longtime bastion of Islamic fervor. The radical Islamist group that launched the attack, Ansar al-Sharia, has
links to AQIM and shares its violent ideology. Ansar al-Sharia and scores of other Islamist militias have flourished in post-Qadhafi Libya because the weak central government has been unable to tame fractious militias, curb tribal and political clashes, or dampen rising tensions between Arabs and Berbers in the West and between Arabs and the Toubou tribe in the South.

AQIM does not pose as much of a threat to the U.S. homeland as other al-Qaeda offshoots pose, but it does threaten regional stability and U.S. allies in North Africa and Europe, where it has gained supporters and operates extensive networks for the smuggling of arms, drugs, and people.

WWTA: The WWTA reports that “Sunni violent extremism has been on an upward trajectory since the 1970s and has more groups, members, and safe havens than at any other point in history” and characterizes the Islamic State as “the preeminent terrorist threat because of its self-described caliphate in Syria and Iraq, its branches and emerging branches in other countries, and its increasing ability to direct and inspire attacks against a wide range of targets around the world.” The WWTA further assesses that al-Qaeda’s affiliates “are positioned to make gains in 2016, despite counterterrorism pressure that has largely degraded the network’s leadership in Afghanistan and Pakistan,” and that “US-based HVEs [homegrown violent extremists] will probably continue to pose the most significant Sunni terrorist threat to the US homeland in 2016.”

Summary: Al-Qaeda offshoots based in the Middle East pose a growing threat to the U.S. homeland as a result of the recruitment of Muslim militants from Western countries, including the United States, and their efforts to inspire terrorist attacks by homegrown Islamist extremists.

Hezbollah Terrorism. Hezbollah (Party of God), the radical Lebanon-based Shiite revolutionary movement, poses a clear terrorist threat to international security. Hezbollah terrorists have murdered Americans, Israelis, Lebanese, Europeans, and citizens of many other nations. Originally founded in 1982, this Lebanese group has evolved from a local menace into a global terrorist network that is strongly backed by regimes in Iran and Syria, assisted by a political wing that has dominated Lebanese politics and funded by Iran and a web of charitable organizations, criminal activities, and front companies.

Hezbollah regards terrorism not only as a useful tool for advancing its revolutionary agenda, but also as a religious duty as part of a “global jihad.” It helped to introduce and popularize the tactic of suicide bombings in Lebanon in the 1980s, developed a strong guerrilla force and a political apparatus in the 1990s, provoked a war with Israel in 2006, intervened in the Syrian civil war after 2011 at Iran’s direction, and has become a major destabilizing influence in the ongoing Arab–Israeli conflict.

Hezbollah murdered more Americans than any other terrorist group before September 11, 2001. Despite al-Qaeda’s increased visibility since then, Hezbollah remains a bigger, better equipped, better organized, and potentially more dangerous terrorist organization, in part because it enjoys the support of the two chief state sponsors of terrorism in the world today: Iran and Syria. Hezbollah’s demonstrated capabilities led former Deputy Secretary of State Richard Armitage to dub it “the A-Team of Terrorists.”

Hezbollah has expanded its operations from Lebanon to regional targets in the Middle East and then far beyond. It now is a global terrorist threat that draws financial and logistical support from its Iranian patrons as well as from the Lebanese Shiite diaspora in the Middle East, Europe, Africa, Southeast Asia, North America, and South America. Hezbollah fundraising and equipment procurement cells have been detected and broken up in the United States and Canada. Europe is believed to contain many more of these cells.

Hezbollah has been implicated in numerous terrorist attacks against Americans, including:
• The April 18, 1983, bombing of the U.S. embassy in Beirut, which killed 63 people, including 17 Americans;

• The October 23, 1983, suicide truck bombing of the Marine barracks at Beirut Airport, which killed 241 Marines and other personnel deployed as part of the multinational peacekeeping force in Lebanon;

• The September 20, 1984, bombing of the U.S. embassy annex in Lebanon; and

• The 1996 Khobar Towers bombing, which killed 19 American servicemen stationed in Saudi Arabia.

Hezbollah also was involved in the kidnapping of several dozen Westerners, including 14 Americans, who were held as hostages in Lebanon in the 1980s. The American hostages eventually became pawns that Iran used as leverage in the secret negotiations that led to the Iran–Contra affair in the mid-1980s.

Hezbollah has launched numerous attacks outside of the Middle East. It perpetrated the two deadliest terrorist attacks in the history of South America: the March 1992 bombing of the Israeli embassy in Buenos Aires, Argentina, which killed 29 people, and the July 1994 bombing of a Jewish community center in Buenos Aires that killed 96 people. The trial of those who were implicated in the 1994 bombing revealed an extensive Hezbollah presence in Argentina and other countries in South America.

Hezbollah has escalated its terrorist attacks against Israeli targets in recent years as part of Iran’s intensifying shadow war against Israel. In 2012, Hezbollah killed five Israeli tourists and a Bulgarian bus driver in a suicide bombing near Burgas, Bulgaria. Hezbollah terrorist plots against Israelis were foiled in Thailand and Cyprus during that same year.

In 2013, Hezbollah admitted that it had deployed several thousand militia members to fight in Syria on behalf of the Assad regime. By 2015, Hezbollah forces had become crucial in propping up the Assad regime after the Syrian army was hamstrung by casualties, defections, and low morale. Hezbollah also deployed personnel to Iraq after the 2003 U.S. intervention to assist pro-Iranian Iraqi Shia militias that were battling the U.S.-led coalition.

Although Hezbollah operates mostly in the Middle East, it has a global reach and has established a presence inside the United States. Hezbollah cells in the United States generally are focused on fundraising, including criminal activities such as those perpetrated by over 70 used-car dealerships identified as part of a scheme to launder hundreds of millions of dollars of cocaine-generated revenue that flowed back to Hezbollah.24

Covert Hezbollah cells could morph into other forms and launch terrorist operations inside the United States. Given Hezbollah’s close ties to Iran and its past record of executing terrorist attacks on Iran’s behalf, there is a real danger that Hezbollah terrorist cells could be activated inside the United States in the event of a conflict between Iran and the U.S. or Israel.

WWTA: The WWTA concludes that “Iran and Hizballah remain a continuing terrorist threat to U.S. interests and partners worldwide.”25

Summary: Hezbollah operates mostly in the Middle East, but it has established cells inside the United States that could be activated, particularly in the event of a military conflict with Iran, Hezbollah’s creator and chief backer.

Palestinian Terrorist Threats. A wide spectrum of Palestinian terrorist groups threaten Israel, including Fatah (al-Aqsa Martyrs Brigade); Hamas; Palestinian Islamic Jihad; the Popular Front for the Liberation of Palestine (PFLP); the Popular Front for the Liberation of Palestine–General Command (PFLP–GC); the Palestine Liberation Front; and the Army of Islam. Most of these groups are also hostile to the United States, which they denounce as Israel’s primary source of foreign support.
Although they are focused more on Israel and regional targets, these groups also pose a limited potential threat to the U.S. homeland, particularly should the Israeli–Palestinian peace process break down completely and the Palestinian Authority be dissolved. In the event of a military confrontation with Iran, Tehran also might seek to use Palestinian Islamic Jihad, the PFLP–GC, or Hamas as surrogates to strike the United States. Jihadist groups based in Gaza, such as the Army of Islam, also could threaten the U.S. homeland even if a terrorist attack there would set back Palestinian national interests. In general, however, Palestinian groups present a much bigger threat to Israel, Jordan, Egypt, and other regional targets than they do to the United States.

**WWTA:** The WWTA does not reference the potential threat of Palestinian terrorist attacks on the U.S. homeland.

**Summary:** Palestinian terrorist groups are focused primarily on Israeli targets and potentially on Egypt and Jordan, which are perceived as collaborating with Israel. They also, however, pose a limited potential threat to the U.S. homeland because of the possibility that, if the Israeli–Palestinian peace process broke down completely or Iran became involved in a military conflict with the U.S., Palestinian surrogates could be used to target the U.S. homeland.

**Iran’s Ballistic Missile Threat.** Iran has an extensive missile development program that has received key assistance from North Korea and more limited support from Russia and China before sanctions were imposed by the U.N. Security Council. The National Air and Space Intelligence Center noted in 2013 that:

> Iran could develop and test an ICBM capable of reaching the United States by 2015. Since 2008, Iran has conducted multiple successful launches of the two-stage Safir space launch vehicle and has also revealed the larger two-stage Simorgh space launch vehicle, which could serve as a test bed for developing ICBM technologies.26

Although Tehran’s missile arsenal primarily threatens U.S. bases and allies in the region, Iran eventually could expand the range of its missiles to include the continental United States. In its January 2014 report on Iran’s military power, the Pentagon assessed that “Iran continues to develop technological capabilities that could be applicable to nuclear weapons and long-range missiles, which could be adapted to deliver nuclear weapons, should Iran’s leadership decide to do so.”27

**WWTA:** The WWTA assesses that “Iran’s ballistic missiles are inherently capable of delivering WMD, and Tehran already has the largest inventory of ballistic missiles in the Middle East.” In addition, “Iran’s progress on space launch vehicles—along with its desire to deter the United States and its allies—provides Tehran with the means and motivation to develop longer-range missiles, including ICBMs.”28

**Summary:** Iran’s ballistic missile force poses a regional threat to the U.S. and its allies, but Tehran eventually could expand the range of its missiles to threaten the continental United States.

**Threat of Regional War**

The Middle East region is one of the most complex and volatile threat environments faced by the United States and its allies. Iran, various al-Qaeda offshoots, Hezbollah, Arab–Israeli clashes, and a growing number of radical Islamist militias and revolutionary groups in Egypt, Iraq, Libya, Syria, and Yemen pose actual or potential threats to the U.S. and its allies.

**Iranian Threats in the Middle East.** Iran is an anti-Western revolutionary state that seeks to tilt the regional balance of power in its favor by driving out the Western presence, undermining and overthrowing opposing governments, and establishing its hegemony over the oil-rich Persian Gulf region. It also seeks to radicalize Shiite communities and advance their interests against Sunni rivals. Iran has a long record of sponsoring terrorist attacks against American allies and...
Shahab–2 (500km)
Ghadr (1,600 km)
Sajjil–2 (2,000 km)
Sajjil–3 (3,700 km)

Iran’s Ballistic Missile Ranges

MAP 6

other interests in the region. With regard to conventional threats, Iran's ground forces dwarf the relatively small armies of the other Gulf states, and its formidable ballistic missile forces pose significant threats to its neighbors.

The July 14, 2015, Iran nuclear agreement, which lifted nuclear-related sanctions on Iran in January 2016, gave Tehran access to about $100 billion in restricted assets and allowed it to expand its oil and gas exports, its chief source of state revenues. This sanctions relief will boost Iran's economy and enable Iran to enhance its strategic position, military capabilities, and support for surrogate networks and terrorist groups. Tehran announced in May 2016 that it was increasing its military budget for 2016–2017 to $19 billion, a 90 percent increase over the previous year.29

The lifting of sanctions also has allowed Tehran to emerge from diplomatic isolation and strengthen strategic ties with Russia that will allow it to purchase advanced arms and modernize its military forces. Russian President Vladimir Putin traveled to Iran in November 2015 to meet with Ayatollah Khamenei, Iran's Supreme Leader, and other officials. Both regimes called for enhanced military cooperation.

This growing strategic relationship could result in Iran's largest arms imports since the 1979 revolution. Tehran announced in April 2016 that Russia had started deliveries of up to five S-300 Favorit long-range surface-to-air missile systems, which can track up to 100 aircraft and engage six of them simultaneously at a range of 200 kilometers.30 Moscow also began negotiations to sell Iran T-90 tanks and advanced Sukhoi Su-30 Flanker fighter jets.31 The warplanes will significantly improve Iran's air defense and long-range strike capabilities.

After the nuclear agreement, Iran and Russia escalated their strategic cooperation in propping up Syria's embattled Assad regime. Iran's growing military intervention in Syria was partly eclipsed by Russia's military intervention and launching of an air campaign against Assad's enemies in September 2015, but Iran's Islamic Revolutionary Guard Corps (IRGC) and surrogate groups have played the leading role in spearheading the ground offensives that clawed back territory from Syrian rebel groups and tilted the military balance in favor of the Assad regime. By October 2015, Iran had deployed an estimated 7,000 IRGC troops and paramilitary forces in Syria, along with an estimated 20,000 foreign fighters from Iran-backed Shiite militias from Lebanon, Iraq, Afghanistan, and Pakistan.32

**Terrorist Attacks.** Iran has adopted a political warfare strategy that emphasizes irregular warfare, asymmetric tactics, and the extensive use of proxy forces. The Islamic Revolutionary Guard Corps has trained, armed, supported, and collaborated with a wide variety of radical Shia and Sunni militant groups, as well as Arab, Palestinian, Kurdish, and Afghan groups that do not share its radical Islamist ideology. The IRGC’s elite Quds (Jerusalem) Force has cultivated, trained, armed, and supported numerous proxies, particularly the Lebanon-based Hezbollah; Iraqi Shia militant groups; Palestinian groups such as Hamas and Palestine Islamic Jihad; and groups that have fought against the governments of Afghanistan, Bahrain, Egypt, Israel, Iraq, Jordan, Kuwait, Saudi Arabia, Turkey, and Yemen.

Iran is the world's foremost state sponsor of terrorism and has made extensive efforts to export its radical Shia brand of Islamist revolution. It has found success in establishing a network of powerful Shia revolutionary groups in Lebanon and Iraq; has cultivated links with Afghan Shia and Taliban militants; and has stirred Shia unrest in Bahrain, Iraq, Libya, Saudi Arabia, and Yemen. In recent years, Iranian arms shipments have been intercepted regularly by naval forces off the coasts of Bahrain and Yemen, and Israel has repeatedly intercepted arms shipments, including long-range rockets, bound for Palestinian militants in Gaza.

**Mounting Missile Threat.** Iran possesses the largest number of deployed missiles in the Middle East.33 The backbone of the Iranian
ballistic missile force is formed by the Shahab series of road-mobile surface-to-surface missiles, which are based on Soviet-designed Scud missiles. The Shahab missiles are potentially capable of carrying nuclear, chemical, or biological warheads in addition to conventional high-explosive warheads. Their relative inaccuracy (compared to NATO ballistic missiles) limits their effectiveness unless they are employed against large, soft targets such as cities.

Iran's heavy investment in such weapons has fueled speculation that the Iranians intend eventually to replace the conventional warheads in their longer-range missiles with nuclear warheads. The Nuclear Threat Initiative has concluded that “regardless of the veracity of these assertions, Tehran indisputably possesses a formidable weapons delivery capability, and its ongoing missile program poses serious challenges to regional stability.”

Iran is not a member of the Missile Technology Control Regime, and it has sought aggressively to acquire, develop, and deploy a wide spectrum of ballistic missile, cruise missile, and space launch capabilities. During the 1980–1988 Iran–Iraq war, Iran acquired Soviet-made Scud-B missiles from Libya and later acquired North Korean–designed Scud-C and No-dong missiles, which it renamed the Shahab-2 (with an estimated range of 500 kilometers or 310 miles) and Shahab-3 (with an estimated range of 900 kilometers or 560 miles). It now can produce its own variants of these missiles as well as longer-range Ghadr-1 and Qiam missiles.

Iran’s Shahab-3 and Ghadr-1, which is a modified version of the Shahab-3 with a smaller warhead but greater range (about 1,600 kilometers or 1,000 miles), are considered more reliable and advanced than the North Korean No-dong missile from which they are derived. The then-Director of the Defense Intelligence Agency, Lieutenant General Michael T. Flynn, warned in 2014 that:

Iran can strike targets throughout the region and into Eastern Europe. In addition to its growing missile and rocket inventories, Iran is seeking to enhance lethality and effectiveness of existing systems with improvements in accuracy and warhead designs. Iran is developing the Khalij Fars, an anti-ship ballistic missile which could threaten maritime activity throughout the Persian Gulf and Strait of Hormuz.

Iran’s ballistic missiles pose a major threat to U.S. bases and allies from Turkey, Israel, and Egypt in the west to Saudi Arabia and the other Gulf states to the south and Afghanistan and Pakistan to the east. However, it is Israel, which has fought a shadow war with Iran and its terrorist proxies, that is most at risk from an Iranian attack. In case the Israeli government had any doubt about Iran’s implacable hostility, the Revolutionary Guards displayed a message written in Hebrew on the side of one of the Iranian missiles tested in March 2016: “Israel must be wiped off the earth.”

The development of nuclear warheads for Iran’s ballistic missiles would seriously degrade Israel’s ability to deter attacks, an ability that the existing (but not officially acknowledged) Israeli monopoly on nuclear weapons in the Middle East currently provides.

For Iran’s radical regime, hostility to Israel, to which Iran sometimes refers as the “little Satan,” is second only to hostility to the United States, which the leader of Iran’s 1979 revolution, Ayatollah Khomeini, dubbed the “great Satan.” But Iran poses a greater immediate threat to Israel than it does to the United States, since Israel is a smaller country with fewer military capabilities and located much closer to Iran. It already is within range of Iran’s Shahab-3 missiles. Moreover, all of Israel can be hit with the thousands of shorter-range rockets that Iran has provided to Hezbollah in Lebanon and to Hamas and Palestine Islamic Jihad in Gaza.

Weapons of Mass Destruction. Tehran has invested tens of billions of dollars since the 1980s in a nuclear weapons program that was masked within its civilian nuclear power program. It built clandestine underground facilities to enrich uranium, which were subsequently discovered near Natanz and Fordow,
and is building a heavy-water reactor near Arak that will give it a second potential route to nuclear weapons.\textsuperscript{37}

As of June 2015, Iran had accumulated enough low-enriched uranium to build eight nuclear bombs if enriched to weapons-grade levels, and it could enrich enough uranium to arm one bomb in less than two months.\textsuperscript{38} Clearly, the development of an Iranian nuclear bomb would greatly amplify the threat posed by Iran. Even if Iran did not use a nuclear weapon or pass it on to one of its terrorist surrogates to use, the regime in Tehran could become emboldened to expand its support for terrorism, subversion, and intimidation, assuming that its nuclear arsenal would protect it from retaliation as has been the case with North Korea.

On July 14, 2015, President Barack Obama announced that the United States and Iran, with China, France, Germany, Russia, the United Kingdom, and the European Union High Representative for Foreign Affairs and Security Policy, had reached a “comprehensive, long-term deal with Iran that will prevent it from obtaining a nuclear weapon.”\textsuperscript{39} The agreement, however, did a much better job of dismantling sanctions against Iran than it did of dismantling Iran’s nuclear infrastructure.

In fact, the agreement did not require that any of the illicit facilities that Iran covertly built be dismantled. Tehran was allowed to continue use of its uranium enrichment facilities at Natanz and Fordow, although the latter facility is to be repurposed at least temporarily as a research site. The heavy-water reactor at Arak was also retained with modifications that will reduce its yield of plutonium. All of these facilities, built covertly and housing operations prohibited by multiple U.N. Security Council Resolutions (UNSCRs), have been legitimized by the agreement.

Under the agreement, Tehran not only gets to keep all of its illicit nuclear facilities, but also merely has to mothball—not destroy—centrifuges used to enrich uranium. This means that Iran can quickly expand its enrichment activities and rapidly shorten its nuclear breakout timeline when restrictions on the number of centrifuges and uranium enrichment levels expire in 10 to 15 years.

Iran can quickly reverse all of its concessions if it decides to renege on the deal in the future. Sanctions on Iran, however, especially at the U.N., will not “snap back” into place, but will take considerable time to re-impose and take effect—assuming that they can be reimposed at all. If the Russians or Chinese were to object, it would further delay the inherent time lag before sanctions could have any significant effect and might even derail U.N. sanctions completely.

The Iran nuclear agreement marked a risky departure from more than five decades of U.S. nonproliferation efforts under which Washington opposed the spread of sensitive nuclear technologies, such as uranium enrichment, even for allies. Iran got a better deal on uranium enrichment under the agreement than such U.S. allies as the United Arab Emirates, South Korea, and Taiwan have received from Washington in the past. In fact, the Obama Administration gave Iran better terms on uranium enrichment than the Ford Administration gave to the Shah of Iran, a close U.S. ally before the 1979 revolution.

Although Washington has downplayed the risks inherent in the nuclear agreement, worried governments in the region are bound to take out insurance policies against a nuclear Iran in the form of their own nuclear programs. This could spur a cascade of nuclear proliferation from threatened states such as Saudi Arabia, Egypt, Turkey, and the UAE. Saudi officials already have announced plans for building up to 16 nuclear power plants by 2040. The Saudi government signed agreements with Rosatom, Russia’s state-run nuclear company, in June 2015 and with China in January 2016 that will significantly advance the Saudi nuclear program.\textsuperscript{40} And Egypt signed a November 2015 agreement with Russia to build four nuclear reactors. Although these are civilian nuclear programs, they could be used to mask a push for nuclear weapons, as happened in Iran.
Iran is a declared chemical weapons power that claims to have destroyed all of its chemical weapons stockpiles. U.S. intelligence agencies assess that Iran maintains the capability to produce chemical warfare (CW) agents and “probably” has the capability to produce some biological warfare agents for offensive purposes if it should decide to do so. Iran also has threatened to disrupt the flow of Persian Gulf oil exports by closing the Strait of Hormuz in the event of a conflict with the U.S. or its allies.

WWTA: The WWTA assesses that Iran “presents an enduring threat to US national interests because of its support to regional terrorist and militant groups and the Asad regime, as well as its development of advanced military capabilities.” Its “intent is to thwart US, Saudi, and Israeli influence, bolster its allies, and fight ISIL’s expansion. Tehran might even use American citizens detained when entering Iranian territories as bargaining pieces to achieve financial or political concessions in line with their strategic intentions.”

With respect to the nuclear issue, the WWTA assesses that “Iran probably views the Joint Comprehensive Plan of Action (JCPOA) as a means to remove sanctions” and “to eventually expand its nuclear infrastructure.” In addition, “Iran’s overarching strategic goals... have led it to pursue capabilities to meet its nuclear energy and technology goals and give it the ability to build missile-deliverable nuclear weapons...”

Summary: Iran poses a major potential threat to U.S. bases, interests, and allies in the Middle East by virtue of its ballistic missile capabilities, continued nuclear ambitions, longstanding support for terrorism, and extensive support for Islamist revolutionary groups.

Arab Attack on Israel. In addition to threats from Iran, Israel faces the constant threat of attack from Palestinian, Lebanese, Egyptian, Syrian, and other Arab terrorist groups. The threat posed by Arab states, which lost four wars against Israel in 1948, 1956, 1967, and 1973 (Syria and the PLO lost a fifth war in 1982 in Lebanon), has gradually declined. Egypt and Jordan have signed peace treaties with Israel. Iraq, Libya, and Syria have disintegrated in increasingly brutal civil wars. Although the conventional military threat to Israel from Arab states has declined, the unconventional military and terrorist threats, especially from an expanding number of sub-state actors, have risen substantially.

Iran has systematically bolstered many of these groups, even if it did not necessarily share their ideology. Today, Iran’s surrogates, Hezbollah and Palestinian Islamic Jihad, along with Hamas, a more distant ally, pose the chief immediate threats to Israel. After Israel’s May 2000 withdrawal from southern Lebanon and the September 2000 outbreak of fighting between Israelis and Palestinians, Hezbollah stepped up its support for such Palestinian extremist groups as Hamas, Palestinian Islamic Jihad, the al-Aqsa Martyrs’ Brigades, and the Popular Front for the Liberation of Palestine. It also expanded its own operations in the West Bank and Gaza and provided funding for specific attacks launched by other groups.

In July 2006, Hezbollah forces crossed the Lebanese border in an effort to kidnap Israeli soldiers inside Israel, igniting a military clash that claimed hundreds of lives and severely damaged the economies on both sides of the border. Hezbollah has since rebuilt its depleted arsenal with help from Iran and Syria. Israeli officials estimate that Hezbollah has amassed around 150,000 rockets, including a number of long-range Iranian-made missiles capable of striking cities throughout Israel.

Since Israel’s withdrawal from the Gaza Strip in 2005, Hamas, Palestinian Islamic Jihad, and other terrorist groups have fired more than 11,000 rockets into Israel, sparking wars in 2008–2009, 2012, and 2014. Over 5 million Israelis out of a total population of 8.1 million live within range of rocket attacks from Gaza, although the successful operation of the Iron Dome anti-missile system greatly mitigated this threat during the Gaza conflict in 2014. In that war, Hamas also unveiled a sophisticated tunnel network that it used to
infiltrate Israel to launch attacks on Israeli civilians and military personnel.

Israel also faces a growing threat of terrorist attacks from Syria. Islamist extremist groups fighting the Syrian government, including the al-Qaeda-affiliated al-Nusra Front, have attacked Israeli positions in the Golan Heights, which Israel captured in the 1967 Arab–Israeli war.

WWTA: The WWTA does not reference Arab threats to Israel.

Summary: The threat posed to Israel by Arab states has declined in recent years as a result of the overthrow or weakening of hostile Arab regimes in Iraq and Syria. However, there is a growing threat from sub-state actors such as Hamas, Hezbollah, the Islamic State, and other terrorist groups in Egypt, Gaza, Lebanon, and Syria. Given the region’s inherent volatility, the general destabilization that has occurred as a consequence of Syria’s civil war, the growth of the Islamic State as a major threat actor, and the United States’ long-standing support for Israel, any concerted attack on Israel would be a major concern for the U.S.

Terrorist Threats from Hezbollah. Hezbollah is a close ally of, frequent surrogate for, and terrorist subcontractor for Iran’s revolutionary Islamist regime. Iran played a crucial role in creating Hezbollah in 1982 as a vehicle for exporting its revolution, mobilizing Lebanese Shia, and developing a terrorist surrogate for attacks on its enemies.

Tehran provides the bulk of Hezbollah’s foreign support: arms, training, logistical support, and money. Iran provides at least $100 million in annual financial support for Hezbollah, and some experts estimate that this could run as high as $200 million annually.46 Tehran has lavishly stocked Hezbollah’s expensive and extensive arsenal of rockets, sophisticated land mines, small arms, ammunition, explosives, anti-ship missiles, anti-aircraft missiles, and even unmanned aerial vehicles (UAVs) that Hezbollah can use for aerial surveillance or remotely piloted terrorist attacks. Iranian Revolutionary Guards have trained Hezbollah terrorists in Lebanon’s Bekaa Valley and in Iran.

Iran has used Hezbollah as a club to hit not only Israel and Tehran’s Western enemies, but also many Arab countries. Iran’s revolutionary ideology has fueled its hostility to other Middle Eastern states, many of which it seeks to overthrow and replace with radical allies. During the Iran–Iraq war, Iran used Hezbollah to launch terrorist attacks against Iraqi targets and against Arab states that sided with Iraq. Hezbollah launched numerous terrorist attacks against Saudi Arabia and Kuwait, which extended strong financial support to Iraq’s war effort, and participated in several other terrorist operations in Bahrain and the United Arab Emirates.

Iranian Revolutionary Guards conspired with the branch of Hezbollah in Saudi Arabia to conduct the 1996 Khobar Towers bombing in Saudi Arabia. Hezbollah collaborated with the IRGC’s Quds Force to destabilize Iraq after the 2003 U.S. occupation. It also helped to train and advise the Mahdi Army, the radical anti-Western Shiite militia led by militant cleric Moqtada al-Sadr.

Hezbollah threatens the security and stability of the Middle East and Western interests in the Middle East on a number of fronts. In addition to its murderous actions against Israel, Hezbollah has used violence to impose its radical Islamist agenda and subvert democracy in Lebanon. Although some experts believed that Hezbollah’s participation in the 1992 Lebanese elections and subsequent inclusion in Lebanon’s parliament and coalition governments would moderate its behavior, its political inclusion did not lead it to renounce terrorism.

Hezbollah also poses a potential threat in Europe to America’s NATO allies. Hezbollah established a presence inside European countries in the 1980s amid the influx of Lebanese citizens seeking to escape Lebanon’s civil war. It took root among Lebanese Shiite immigrant communities throughout Europe. German intelligence officials estimate that roughly 900 Hezbollah members live in Germany alone.
Hezbollah also has developed an extensive web of fundraising and logistical support cells throughout Europe.\(^47\)

France and Britain have been the principal European targets of Hezbollah terrorism, in part because both countries opposed Hezbollah’s agenda in Lebanon and were perceived as enemies of Iran, Hezbollah’s chief patron. Hezbollah has been involved in many terrorist attacks against Europeans, including:

- The October 1983 bombing of the French contingent of the multinational peacekeeping force in Lebanon (on the same day as the U.S. Marine barracks bombing), which killed 58 French soldiers;

- The December 1983 bombing of the French embassy in Kuwait;

- The April 1985 bombing of a restaurant near a U.S. base in Madrid, Spain, which killed 18 Spanish citizens;

- A campaign of 13 bombings in France in 1986 that targeted shopping centers and railroad facilities, killing 13 people and wounding more than 250; and

- A March 1989 attempt to assassinate British novelist Salman Rushdie that failed when a bomb exploded prematurely, killing a terrorist in London.

Hezbollah attacks in Europe trailed off in the 1990s after Hezbollah’s Iranian sponsors accepted a truce in their bloody 1980–1988 war with Iraq and no longer needed a surrogate to punish states that Tehran perceived as supporting Iraq. Significantly, the participation of European troops in Lebanese peacekeeping operations, which became a lightning rod for Hezbollah terrorist attacks in the 1980s, could become an issue again if Hezbollah attempts to revive its aggressive operations in southern Lebanon. Troops from European Union member states may someday find themselves attacked by Hezbollah with weapons financed by Hezbollah supporters in their home countries.

As of 2015, Hezbollah operatives were deployed in countries throughout Europe, including Belgium, Bulgaria, Cyprus, France, Germany, and Greece.\(^48\)

**WWTA:** The WWTA assesses that “Iran and Hizballah remain a continuing terrorist threat to U.S. interests and partners worldwide.”\(^49\)

**Summary:** Hezbollah poses a major potential terrorist threat to the U.S. and its allies in the Middle East and Europe.

**Al-Qaeda: A Continuing Regional Threat.** The Arab Spring uprisings that began in 2011 have created power vacuums that al-Qaeda, the Islamic State, and other Islamist extremist groups have exploited to advance their hostile agendas. The al-Qaeda network has taken advantage of failed or failing states in Iraq, Libya, Mali, Syria, and Yemen. The fall of autocratic Arab regimes and the subsequent factional infighting within the ad hoc coalitions that ousted them created anarchic conditions that have enabled al-Qaeda franchises to expand the territories that they control. Rising sectarian tensions resulting from conflicts in Iraq, Syria, and Yemen also have presented al-Qaeda and other Sunni extremist groups with major opportunities to expand their activities.

Jonathan Evans, Director General of the British Security Service (MI5), has warned that “parts of the Arab world have once more become a permissive environment for al-Qaeda.”\(^50\) In Egypt, Libya, Syria, Tunisia, and Yemen, the collapse or purge of intelligence and counterterrorism organizations removed important constraints on the growth of al-Qaeda and similar Islamist terrorist groups. Many dangerous terrorists were released or escaped from prison. Al-Qaeda and other revolutionary groups were handed new opportunities to recruit, organize, attract funding for, train, and arm a new wave of followers and to consolidate safe havens from which to mount future attacks.

The Arab Spring uprisings were a golden opportunity for al-Qaeda, coming at a time...
when its sanctuaries in Pakistan had become increasingly threatened by U.S. drone strikes. Given al-Qaeda’s Arab roots, the Middle East and North Africa provide much better access to potential Arab recruits than is provided by the more distant and remote regions along the Afghanistan–Pakistan border, where many al-Qaeda cadres fled after the fall of the Taliban regime in Afghanistan in 2001. The countries destabilized by the Arab uprisings also could provide easier access to al-Qaeda’s Europe-based recruits, who pose dangerous threats to the U.S. homeland by virtue of their European passports and greater ability to blend into Western societies.

WWTA: The WWTA assesses that affiliates of al Qaeda “are positioned to make gains in 2016, despite counterterrorism pressure that has largely degraded the network’s leadership in Afghanistan and Pakistan,” and “will continue to pose a threat to local, regional, and even possibly global interests…. Other Sunni terrorist groups retain the ability to attract recruits and resources.”

Summary: The al-Qaeda network and the Islamic State have exploited the political turbulence of the Arab Spring to expand their strength and control of territory in the Middle East. They pose growing regional threats to the U.S. and its allies.

Growing Threats to Jordan. Jordan, a key U.S. ally, faces external threats from Syria’s Assad regime and from Islamist extremists, including the Islamic State, who have carved out sanctuaries in Syria and Iraq. Jordan’s cooperation with the United States, Saudi Arabia, and other countries in the 2014–2015 air campaign against the IS in Syria and in supporting moderate elements of the Syrian opposition has angered both the Assad regime and Islamist extremist rebels. Damascus could retaliate for Jordanian support for Syrian rebels with cross-border attacks, air strikes, ballistic missile strikes, or the use of terrorist attacks by such surrogates as Hezbollah or the PFLP–GC.

The Islamic State is committed to overthrowing the government of Jordan and replacing it with an Islamist dictatorship. In its previous incarnation as al-Qaeda in Iraq, the IS mounted attacks against targets in Jordan that included the November 2005 suicide bombings at three hotels in Amman that killed 57 people. The IS also burned to death a Jordanian Air Force pilot captured in Syria after his plane crashed and released a video of his grisly murder in February 2015. Jordan also faces threats from Hamas and from Jordanian Islamist extremists, particularly some based in the southern city of Maan who organized pro-IS demonstrations in 2014. Although Jordanian security forces have successfully foiled several IS terrorist plots, six Jordanian border guards were killed by a car bomb on June 21, 2016, prompting Jordan to close the border.

WWTA: The WWTA does not reference threats to Jordan.

Summary: Jordan faces rising security threats from the Islamic State, which has expanded its control of territory in neighboring Syria and Iraq. Because Jordan is one of the very few Arab states that maintain a peaceful relationship with Israel and has been a key regional partner in fighting Islamist terrorism, its destabilization would be a troubling development.

Terrorist Attacks on and Possible Destabilization of Egypt. The 2011 ouster of President Hosni Mubarak’s regime undermined the authority of Egypt’s central government and allowed disgruntled Bedouin tribes, Islamist militants, and smuggling networks to grow stronger and bolder in Egypt’s Sinai Peninsula. President Mohamed Morsi’s Muslim Brotherhood–backed government, elected to power in 2012, took a relaxed attitude toward Hamas and other Gaza-based Islamist extremists, enabling Islamist militants in the Sinai to grow even stronger with support from Gaza. They carved out a staging area in the remote mountains of the Sinai that they have used as a springboard for attacks on Israel, Egyptian security forces, tourists, the Suez Canal, and a pipeline carrying Egyptian natural gas to Israel and Jordan.
The July 2013 coup against Morsi resulted in a military government that took a much harder line against the Sinai militants, but it also raised the ire of more moderate Islamists, who could turn to terrorism to avenge Morsi’s fall. Terrorist attacks, which had been limited to the Sinai, expanded in lethality and intensity to include bomb attacks in Cairo and other cities by early 2014. In November 2014, the Sinai-based terrorist group Ansar Bayt al-Maqdis (Supporters of Jerusalem) declared its allegiance to the Islamic State and renamed itself the Sinai Province of the Islamic State. It has launched a growing terrorist campaign against the Egyptian army, police, and other government institutions. It also claimed responsibility for the October 31, 2015, bombing of a Russian passenger plane flying to Saint Petersburg from Sharm-el-Sheikh that killed 224 people.

Egypt also faces potential threats from Islamist militants and al-Qaeda affiliates based in Libya. The Egyptian air force bombed Islamic State targets in Libya on February 16, 2015, the day after the terrorist organization released a video showing the decapitation of 21 Egyptian Christians who had been working in Libya. Egypt has stepped up security operations along the border with Libya to block the smuggling of arms and militants into Egypt. Cairo also has supported Libyans fighting Islamist extremists in eastern Libya.

During the 2014 conflict between Hamas and Israel, Egypt closed tunnels along the Gaza–Sinai border that have been used to smuggle goods, supplies, and weapons into Gaza. It has continued to uncover and destroy tunnels to disrupt an important source of external support for Sinai Province terrorists. Egypt has continued to uphold its peace treaty with Israel and remains an important ally against Islamist terrorist groups.

**WWTA:** The WWTA assesses that “Egypt faces a persistent threat of terrorist and militant activity directed primarily at state security forces in both the Sinai Peninsula and in mainland Egypt. The security services have initiated a counterterrorism campaign to disrupt and detain Sinai-based militants; however, terrorist groups still retain the ability to conduct attacks.” The ongoing terrorist threat “places further strain on Egypt’s economy by harming Egypt’s tourism industry, a key source of revenue. The country is also grappling with high poverty and unemployment rates.”

**Summary:** Egypt is threatened by Islamist extremist groups that have established bases in the Sinai Peninsula, Gaza, and Libya. Left unchecked, these groups could foment greater instability not only in Egypt, but also in neighboring countries.

**Threats to Saudi Arabia and Other Members of the Gulf Cooperation Council.** Saudi Arabia and the five other Arab Gulf states—Bahrain, Kuwait, Oman, Qatar, and the United Arab Emirates—formed the Gulf Cooperation Council (GCC) in 1981 to deter and defend against Iranian aggression. Iran remains the primary external threat to their security. Tehran has supported groups that launched terrorist attacks against Bahrain, Kuwait, Saudi Arabia, and Yemen. It sponsored the Islamic Front for the Liberation of Bahrain, a surrogate group that plotted a failed 1981 coup against Bahrain’s ruling Al Khalifa family, the Sunni rulers of the predominantly Shia country. Iran also has long backed Bahraini branches of Hezbollah and the Dawa Party.

When Bahrain was engulfed in a wave of Arab Spring protests in 2011, its government charged that Iran again exploited the protests to back the efforts of Shia radicals to overthrow the royal family. Saudi Arabia, fearing that a Shia revolution in Bahrain would incite its own restive Shia minority, led a March 2011 GCC intervention that backed Bahrain’s government with about 1,000 Saudi troops and 500 police from the United Arab Emirates.

Bahrain has intercepted several shipments of Iranian arms, including sophisticated bombs employing explosively formed penetrators (EFPs). The government withdrew its ambassador to Tehran when two Bahrainis with ties to the IRGC were arrested after their arms
shipment was intercepted off Bahrain’s coast in July 2015. Iranian hardliners have steadily escalated pressure on Bahrain. In March 2016, a former IRGC general who is a close adviser to Ayatollah Khamenei stated that “Bahrain is a province of Iran that should be annexed to the Islamic Republic of Iran.” After Bahrain stripped the citizenship of a senior Shiite cleric, Sheikh Isa Qassim, General Qassim Suleimani, the commander of the IRGC’s Quds Force, threatened to make Bahrain’s royal family “pay the price and disappear.”

Saudi Arabia also has criticized Iran for its support for radical Saudi Shiites, its intervention in Syria, and its support for Shiite Islamists in Lebanon, Iraq, and Yemen. In January 2016, Saudi Arabia executed a Shiite cleric charged with sparking anti-government protests and cut diplomatic ties with Iran after Iranian mobs enraged by the execution attacked and set fire to the Saudi embassy in Tehran.

Saudi Arabia also faces threats from Islamist extremists, including Al-Qaeda offshoots in Iraq and Yemen that have attracted many Saudi recruits. Al-Qaeda launched a series of bombings and terrorist attacks inside the kingdom in 2003 and a major attack on the vital Saudi oil facility in Abqaiq in 2006, but a security crackdown drove many of its members out of the country by the end of the decade. Many of them joined Al-Qaeda in the Arabian Peninsula in neighboring Yemen. AQAP has flourished, aided by the instability fostered by Arab Spring protests and the ouster of the Yemeni government by Iran-backed Houthi rebels in early 2015.

In addition to terrorist threats and possible rebellions by Shia or other disaffected internal groups, Saudi Arabia and the other GCC states face possible military threats from Iran. Tehran is unlikely to launch direct military attacks against these countries because of their close security ties with the United States, but it has backed Shiite terrorist groups within GCC states such as Saudi Hezbollah and has supported the Shiite Houthi rebels in Yemen. In March 2015, Saudi Arabia led a 10-country coalition that launched an air campaign against Houthi forces and provided support for ousted Yemeni President Abdu Rabu Mansour Hadi, who took refuge in Saudi Arabia. The Saudi Navy also established a blockade of Yemeni ports to prevent Iran from aiding the rebels.

WWTA: The WWTA assesses that “Tehran views itself as leading the ‘axis of resistance’—which includes the Asad regime and subnational groups aligned with Iran, especially Lebanese Hizballah and Iraqi Shia militants. Their intent is to thwart US, Saudi, and Israeli influence, bolster its allies, and fight ISIL’s expansion.”

Summary: Saudi Arabia and other members of the Gulf Cooperation Council face continued threats from Iran as well as rising threats from Islamist extremist groups such as al-Qaeda, the Islamic State, and Houthi militias in Yemen. Though Saudi citizens and Islamic charities have supported Islamist extremist groups and the Saudi government promulgates the religious views of the fundamentalist Wahhabi sect of Sunni Islam, the Saudi government also serves to check radical Islamist groups like the Islamic State and is a regional counterbalance to Iran.

Threats to the Commons

The United States has critical interests at stake in the Middle Eastern commons: sea, air, space, and cyber. The U.S. has long provided the security backbone in these areas, which in turn has supported the region’s economic development and political stability.

Maritime. Maintaining the security of the sea lines of communication in the Persian Gulf, Arabian Sea, Red Sea, and Mediterranean Sea is a high priority for strategic, economic, and energy security purposes. The Persian Gulf region contains approximately 50 percent of the world’s oil reserves and is a crucial source of oil and gas for energy-importing states, particularly China, India, Japan, South Korea, and many European countries. The flow of that oil could be interrupted by interstate conflict or terrorist attacks.
Bottlenecks such as the Strait of Hormuz, the Suez Canal, and the Bab el-Mandeb Strait are potential choke points for restricting the flow of oil, international trade, and the deployment of U.S. Navy warships. The chief potential threat to the free passage of ships through the Strait of Hormuz, one of the world’s most important maritime choke points, is Iran. Approximately 17 million barrels of oil a day—roughly 30 percent of the seaborne oil traded worldwide—flowed through the strait in 2013.57

Iran has trumpeted the threat it could pose to the free flow of oil exports from the Gulf if...
it is attacked or threatened with a cutoff of its own oil exports. Iran's leaders have threatened to close the Strait of Hormuz, the jugular vein through which most Gulf oil exports flow to Asia and Europe. Although the United States has greatly reduced its dependence on oil exports from the Gulf, it still would sustain economic damage in the event of a spike in world oil prices, and many of its European and Asian allies and trading partners import a substantial portion of their oil needs from the region. Iran's Supreme Leader, Ayatollah Ali Khamenei, has repeatedly played up Iran's threat to international energy security, proclaiming in 2006 that “[i]f the Americans make a wrong move toward Iran, the shipment of energy will definitely face danger, and the Americans would not be able to protect energy supply in the region.”

Iran has established a precedent for attacking oil shipments in the Gulf. During the Iran–Iraq war, each side targeted the other's oil facilities, ports, and oil exports. Iran escalated attacks to include neutral Kuwaiti oil tankers and terminals and clandestinely laid mines in Persian Gulf shipping lanes while its ally Libya clandestinely laid mines in the Red Sea. The United States defeated Iran's tactics by reflagging Kuwaiti oil tankers, clearing the mines, and escorting ships through the Persian Gulf, but a large number of commercial vessels were damaged during the “Tanker War” from 1984 to 1987.

Iran's demonstrated willingness to disrupt oil traffic through the Persian Gulf in the past to place economic pressure on Iraq is a red flag to U.S. military planners. During the 1980s Tanker War, Iran's ability to strike at Gulf shipping was limited by its aging and outdated weapons systems and the U.S. arms embargo imposed after the 1979 revolution. However, since the 1990s, Iran has been upgrading its military with new weapons from North Korea, China, and Russia, as well as with weapons manufactured domestically.

Today, Iran boasts an arsenal of Iranian-built missiles based on Russian and Chinese designs that pose significant threats to oil tankers as well as warships. Iran is well stocked with Chinese-designed anti-ship cruise missiles, including the older HY-2 Seersucker and the more modern CSS-N-4 Sardine and CSS-N-8 Saccade models. Iran also has reverse engineered Chinese missiles to produce its own anti-ship cruise missiles, the Ra'ad and Noor. Shore-based missiles deployed along Iran's coast would be augmented by aircraft-delivered laser-guided bombs and missiles, as well as by television-guided bombs.

Iran has a large supply of anti-ship mines, including modern mines that are far superior to the simple World War I–style contact mines that Iran used in the 1980s. They include the Chinese-designed EM-52 “rocket” mine, which remains stationary on the sea floor and fires a homing rocket when a ship passes overhead. In addition, Iran can deploy mines or torpedoes from its three Kilo-class submarines, which would be effectively immune to detection for brief periods when running silent and remaining stationary on a shallow bottom just outside the Strait of Hormuz, and also could deploy mines by mini-submarines, helicopters, or small boats disguised as fishing vessels.

Iran's Revolutionary Guard naval forces have developed swarming tactics using fast attack boats and also could deploy naval commandos trained to attack using small boats, mini-submarines, and even jet skis. The Revolutionary Guards also have underwater demolition teams that could attack offshore oil platforms and other facilities.

On April 28, 2015, the Revolutionary Guard naval force seized the Maersk Tigris, a container ship registered in the Marshall Islands, near the Strait of Hormuz. Tehran claimed that it seized the ship because of a previous court ruling ordering the Maersk Line, which charters the ship, to make a payment to settle a dispute with a private Iranian company. The ship was later released after being held for more than a week. An oil tanker flagged in Singapore, the Alpine Eternity, was surrounded and attacked by Revolutionary Guard gunboats in the strait on May 14,
2015, when it refused to be boarded. Iranian authorities alleged that it had damaged an Iranian oil platform in March, although the ship’s owners maintained that it had hit an uncharted submerged structure. The Revolutionary Guard’s aggressive tactics in using commercial disputes as pretexts for the illegal seizures of transiting vessels prompted the U.S. Navy to escort American and British-flagged ships through the Strait of Hormuz for several weeks in May before tensions eased.

The July 2015 nuclear agreement has not altered the confrontational tactics of the Revolutionary Guards in the gulf. IRGC naval forces challenged U.S. naval forces in a series of incidents in 2015 and 2016. IRGC missile boats launched rockets within 1,500 yards of the carrier Harry S. Truman near the Strait of Hormuz in late December 2015, flew drones over U.S. warships, and detained and humiliated 10 American sailors in a provocative January 12, 2016, incident. Despite the fact that the two U.S. Navy boats carrying the sailors had drifted inadvertently into Iranian territorial waters, the vessels had the right of innocent passage, and their crews should not have been subjected to being disarmed, forced onto their knees, filmed, and exploited in propaganda videos.

Finally, Tehran could use its extensive terrorist network in the region to sabotage oil pipelines and other infrastructure or to strike oil tankers in port or at sea.

Terrorists pose a potential threat to oil tankers and other ships. Al-Qaeda strategist Abu Mus'ab al-Suri identified four strategic choke points that should be targeted for disruption: the Strait of Hormuz, the Suez Canal, the Bab el-Mandeb Strait, and the Strait of Gibraltar. In 2002, al-Qaeda terrorists attacked and damaged the French oil tanker Limbourg off the coast of Yemen. Al-Qaeda also almost sank the USS Cole, a guided-missile destroyer, in the port of Aden, killing 17 American sailors with a suicide boat bomb in 2000. An Egyptian patrol boat was attacked in November 2014 by the crews of small boats suspected of smuggling arms to Islamist terrorists in Gaza. In July 2015, the Islamic State–Sinai Province claimed responsibility for a missile attack on an Egyptian coastguard vessel.

Terrorists also have targeted the Suez Canal. In two incidents on July 29 and August 31, 2013, ships in the waterway were attacked with rocket-propelled grenades. The attacks were claimed by a shadowy Islamist extremist group called the Furqan Brigades, which operated in Egypt’s Sinai Peninsula. The vessels reportedly escaped major damage. More important, the canal was not forced to close, which would have disrupted global shipping operations, ratcheted up oil prices, and complicated the deployment of U.S. and NATO naval vessels responding to potential crises in the Middle East, Persian Gulf, and Horn of Africa.

Over the past decade, piracy off the coast of Somalia has threatened shipping near the Bab el-Mandeb Strait and the Gulf of Aden. Recently, however, the frequency of pirate attacks in the region has dropped. In 2013, according to the U.S. Navy, hijackings of major shipments off the coast of Somalia plummeted to zero. By early 2015, it appeared that piracy off the coast of Somalia had abated, at least temporarily, due to security precautions such as the deployment of armed guards on board cargo ships. Pirate activity, however, continues to threaten international trade and the safety of the international commons, particularly off the coasts of West Africa and Southeast Asia. A resurgence in the waters around the Middle East cannot be discounted.

Summary: The WWTA does not reference maritime threats in the Middle East region.

Summary: Iran poses the chief potential threat to shipping in the Strait of Hormuz, while various terrorist groups pose the chief threats to shipping in the Suez Canal and the Bab el-Mandeb Strait. Although pirate attacks off the coast of Somalia have declined steeply in recent years, the potential for their return remains.

Airspace. The Middle East is particularly vulnerable to attacks on civilian aircraft.
Large quantities of arms, including man-portable air defense systems (MANPADS), were looted from Libyan arms depots after the fall of Muammar Qadhafi’s regime in 2011. Although Libya is estimated to have had up to 20,000 MANPADS, mostly old Soviet models, only about 10,000 have been accounted for, and an unknown number may have been smuggled out of Libya, which is a hotbed of Islamist radicalism.68

U.S. intelligence sources estimated that at least 800 MANPADS fell into the hands of foreign insurgent groups after being moved out of Libya.69 Libyan MANPADS have turned up in the hands of AQIM, the Nigerian Boko Haram terrorist group, and Hamas in Gaza. At some point, one or more could be used in a terrorist attack against a civilian airliner. Insurgents or terrorists also could use anti-aircraft missile systems captured from regime forces in Iraq and Syria. In January 2015, a commercial airliner landing at Baghdad International Airport was hit by gunfire that injured a passenger and prompted a temporary suspension of flights to Baghdad.

Al-Qaeda also has used MANPADS in several terrorist attacks. In 2002, it launched two SA-7 MANPADS in a failed attempt to bring down an Israeli civilian aircraft in Kenya. In 2007, the al-Qaeda affiliate al-Shabaab shot down a Belarusian cargo plane in Somalia, killing 11 people.70 Al-Qaeda’s al-Nusra Front and the Islamic State have acquired substantial numbers of MANPADS from government arms depots in Iraq and Syria. Although such weapons may pose only a limited threat to modern warplanes equipped with countermeasures, they pose a growing threat to civilian aircraft in the Middle East and could be smuggled into the United States and Europe to threaten aircraft there.

The Islamic State–Sinai Province claimed responsibility for a bomb that destroyed Metrojet Flight 9268, a Russian passenger jet en route from Sharm el-Sheikh, Egypt, to Saint Petersburg, Russia, on October 31, 2015. The incident claimed the lives of 224 people on the plane, one of the biggest death tolls in a terrorist attack in recent years. The May 19, 2016, crash of EgyptAir flight MS804, which killed 66 people flying from Paris, France, to Cairo, Egypt, has been attributed to a fire, but the cause of that onboard fire has not yet been determined.

WWTA: The WWTA makes no mention of the terrorist threat to airspace in the Middle East.

Summary: Al-Qaeda, the Islamic State, and other terrorists have seized substantial numbers of anti-aircraft missiles from military bases in Iraq, Libya, and Syria that pose potential threats to safe transit of airspace in the Middle East, North Africa, and elsewhere.

Space. Iran has launched satellites into orbit, but there is no evidence that it has an offensive space capability. Tehran successfully launched three satellites in February 2009, June 2011, and February 2012 using the Safir space launch vehicle, which uses a modified Ghadr-1 missile for its first stage and has a second stage that is based on an obsolete Soviet submarine-launched ballistic missile, the R-27.71 The technology probably was transferred by North Korea, which built its BM-25 missiles using the R-27 as a model.72 Safir technology could be used as a basis to develop long-range ballistic missiles.

Iran claimed to have launched a monkey into space and returned it safely to Earth twice in 2013.73 Tehran also announced in June 2013 that it had established its first space tracking center to monitor objects in “very remote space” and to help manage the “activities of satellites.”74

WWTA: The WWTA does not reference Iranian space capabilities.

Summary: Though Iran has launched satellites into orbit successfully, there is no evidence that it has developed an offensive space capability that could deny others the use of space or exploit space as a base for offensive weaponry.

Cyber Threats. Iranian cyber capabilities present a significant threat to the U.S. and its allies. Iran has developed offensive cyber capabilities as a tool of espionage and sabotage.
Tehran claims to have the world’s fourth largest cyber force, “a broad network of quasi-official elements, as well as regime-aligned ‘hacktivists,’ who engage in cyber activities broadly consistent with the Islamic Republic’s interests and views.”

The creation of the “Iranian Cyber Army” in 2009 marked the beginning of a cyber offensive against those whom the Iranian government regards as enemies. A hacking group dubbed the Ajax Security Team, believed to be operating out of Iran, has used malware-based attacks to target U.S. defense organizations and has successfully breached the Navy Marine Corps Intranet. In addition, the group has have targeted dissidents within Iran, seeding versions of anti-censorship tools with malware and gathering information about users of those programs. Iran has invested heavily in cyber capabilities, with an annual budget reported to be almost $1 billion in 2012.

Hostile Iranian cyber activity has increased significantly since the beginning of 2014 and could threaten U.S. critical infrastructure, according to an April 2015 report released by the American Enterprise Institute. The Islamic Revolutionary Guard Corps and Sharif University of Technology are two Iranian institutions that investigators have linked to efforts to infiltrate U.S. computer networks, according to the report.

Iran allegedly has used cyber weapons to engage in economic warfare, most notably the sophisticated and debilitating denial-of-service attacks against a number of U.S. financial institutions, including the Bank of America, JPMorgan Chase, and Citigroup. In February 2014, Iran launched a crippling cyber attack against the Sands Casino in Las Vegas, owned by Sheldon Adelson, a leading supporter of Israel who is known to be critical of the Iranian regime. In 2012, Tehran was suspected of launching the “Shamoon” virus attack on Saudi Aramco, the national oil company that produces approximately 10 percent of the world’s oil, which destroyed around 30,000 computers, as well as an attack on Qatari natural gas company Rasgas’s computer networks.

U.S. officials warned of a surge of sophisticated computer espionage by Iran in the fall of 2015 that included a series of cyber attacks against State Department officials. In March 2016, the Justice Department indicted seven Iranian hackers for penetrating the computer system that controlled a dam in the State of New York.

The sophistication of these and other Iranian cyber attacks, together with Iran’s willingness to use these weapons, has led various experts to name Iran as one of America’s most cyber-capable opponents. Iranian cyber forces have even gone so far as to create fake online personas in order to extract information from U.S. officials through accounts such as LinkedIn, YouTube, Facebook, and Twitter.

WWTA: The 2015 WWTA assessed that “Iran very likely values its cyber program as one of many tools for carrying out asymmetric but proportional retaliation against political foes, as well as a sophisticated means of collecting intelligence.” In addition, “Iranian actors have been implicated in the 2012–13 DDOS attacks against US financial institutions and in the February 2014 cyber attack on the Las Vegas Sands casino company.”

Summary: Iranian cyber capabilities present significant espionage and sabotage threats to the U.S. and its allies, and Tehran has shown willingness and skill in using them.

Threat Scores

Iran. Iran represents by far the most significant security challenge to the United States, its allies, and its interests in the greater Middle East. Its open hostility to the United States and Israel, sponsorship of terrorist groups like Hezbollah, and history of threatening the commons underscore the problem it could pose. Today, Iran’s provocations are mostly a concern for the region and America’s allies, friends, and assets there. Iran relies heavily on irregular (to include political) warfare against others in the region and fields...
more ballistic missiles than any of its neighbors. The development of its ballistic missiles and potential nuclear capability also mean that it poses a long-term threat to the security of the U.S. homeland.

According to the International Institute for Strategic Studies’ *Military Balance 2016*, among the key weapons in Iran’s inventory are 22-plus MRBMs, 18-plus SRBMs, 1,663 main battle tanks, 21 tactical submarines, seven corvettes, 13 amphibious landing ships, and 334 combat-capable aircraft. There are 523,000 personnel in the armed forces, including 350,000 in the Army, 125,000 in the Islamic Revolutionary Guard Corps, and 18,000 in the Navy. With regard to these capabilities, the IISS assesses that:

![Image](image-url)

Iran continues to rely on a mix of ageing combat equipment, reasonably well-trained regular and Islamic Revolutionary Guard Corps (IRGC) forces, and its ballistic-missile inventory to underpin the security of the state. The IRGC, including senior military leaders, has been increasingly involved in the civil war in Syria, supporting President Bashar al-Assad’s regular and irregular forces; it was first deployed to Syria in an “advisory” role in 2012.

The military continues to struggle with an ageing inventory of primary combat equipment that ingenuity and asymmetric warfare techniques can only partially offset.

The nuclear agreement with the P5+1 and the European Union also begins to open the way for Iran to revamp its equipment inventory, with China and Russia potentially major suppliers, though sales of conventional systems remain embargoed for five years.

This *Index* assesses the overall threat from Iran, considering the range of contingencies, as “aggressive” and “gathering.” Iran’s capability score has increased over the 2016 Index due to a combination of Tehran’s continued weapons developments and ability to develop its nuclear program.

### Threats: Iran

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### Greater Middle East–Based Terrorism

Collectively, the varied non-state actors in the Middle East that are vocally and actively opposed to the United States are the closest to being rated “hostile” with regard to the degree of provocation they exhibit. These groups, from the Islamic State to al-Qaeda and its affiliates, Hezbollah, and the range of Palestinian terrorist organizations in the region, are primarily a threat to America’s allies, friends, and interests in the Middle East. Their impact on the American homeland is mostly a concern for American domestic security agencies. However, they pose a challenge to the stability of the region that could result in the emergence of more dangerous threats to the United States.

The IISS *Military Balance* addresses only the military capabilities of states. Consequently, it does not provide any accounting of such entities as Hezbollah, Hamas, al-Qaeda, or the Islamic State.

This *Index* assesses the overall threat from greater Middle East–based terrorism,
considering the range of contingencies, as “hostile” and “capable.” Both of these scores represent a more threatening assessment by one level than the 2016 Index, indicating the breadth of advances made across the globe by ISIS and the terrorist group’s ability to spread its message and gain followers worldwide.

## Threats: Middle East Terrorism

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Endnotes:


34. Ibid.


43. Ibid., p. 8.


51. 2016 WWTA, p. 4.


53. 2016 WWTA, p. 25.


87. This Index scores threat capability as it relates to the vital national interests of the U.S. and the role and utility of U.S. military forces. Terrorist groups clearly have the ability to conduct attacks using improvised explosives, firearms, and even hijacked airplanes. The bombing of the Boston Marathon in April 2013, an attempted car bomb attack in New York City’s Times Square in May 2010, and al-Qaeda’s attacks on September 11, 2001, are stark examples. Often, the U.S. has handled terrorism as a law enforcement and intelligence collection matter, especially within the United States and when it presents a threat to particular U.S. interests in other countries. Compared to the types of threats posed by states such as China or Russia, terrorism is a lesser sort of threat to the security and viability of the U.S. as a global power. This Index does not dismiss the deaths, injuries, and damage that terrorists can inflict on Americans at home and abroad; it places the threat posed by terrorism in context with substantial threats to the U.S. homeland, the potential for major regional conflict, and the potential to deny U.S. access to the global commons. With this in mind, terrorist groups seldom have the physical ability either to accomplish the extreme objectives they state or to present a physical threat that rises to a level that threatens U.S. vital security interests. Of course, terrorist organizations can commit acts of war on a continuing basis, as reflected in their conduct in the war against al-Qaeda and its associates in which the United States has been engaged for more than a decade.
Asia

Threats to the Homeland

Threats to the homeland include both terrorist threats from non-state actors resident in ungoverned areas of South Asia and an active, developing ballistic missile threat from North Korea and credible Chinese nuclear missile capability to support other elements of China's national power.

Terrorism Originating from Afghanistan and Pakistan (AfPak). Terrorist groups operating from Pakistan and Afghanistan continue to pose a direct threat to the U.S. homeland. Pakistan is home to a host of terrorist groups that keep the region unstable and contribute to the spread of global terrorism. The killing of Osama bin Laden at his hideout in Abbottabad, Pakistan, in May 2011 and an intensive drone campaign in Pakistan’s tribal areas bordering Afghanistan from 2010–2012 have helped to degrade the al-Qaeda threat. However, the presence of a major al-Qaeda training camp in southern Afghanistan that the U.S. and Afghan forces destroyed last October demonstrates that the international terrorist organization has the ability to regenerate, particularly in areas where the Taliban is influential. A joint U.S.–Afghan military operation involving 200 U.S. Special Operations Forces destroyed the al-Qaeda camp located in Kandahar province, killing 160 terrorists.1

In addition to al-Qaeda, several other like-minded terrorist groups still thrive along the Afghanistan–Pakistan border, carry out regular attacks in Pakistan and Afghanistan, and target U.S. interests in the region and beyond. The Afghan Taliban and its allies, headquartered in Pakistan, have stepped up attacks against the Afghan National Security Forces (ANSF) over the past year and are making a push to regain territory in Afghanistan as international forces depart. As of April 2016, around 13,200 U.S. and NATO troops were in Afghanistan as part of Operation Resolute Support to train and advise the Afghan forces.

The Afghan Taliban control more territory now than at any other time in the past 14 years, and the group was able to capture the northern city of Kunduz temporarily last October. A Taliban resurgence in Afghanistan could allow al-Qaeda to regain ground in the region and pave the way for terrorist groups of all stripes to reestablish bases there.2 Shortly after the fall of Kunduz, President Barack Obama reversed his earlier pledge to withdraw nearly all troops by the end of his term and said that the U.S. instead would keep a force level of 5,500 U.S. troops in the country when he departs office in January 2017. He later revised this further to say that he would keep 8,400 troops in place, with any further reductions up to his successor.3

ISIS also is seeking to make inroads into Pakistan and Afghanistan, but its efforts so far have met with only limited success. This is most likely due to al-Qaeda's well-established roots in the region, ability to maintain the loyalty of the various South Asian terrorist groups, and careful nurturing of its relationship with the Afghan Taliban. The Afghan Taliban view ISIS as a direct competitor, vying for financial resources, recruits, and ideological influence. This competition was evident in a letter sent by the Taliban to ISIS leader al-Baghdadi in June of 2015, urging the group
not to take actions that could lead to “division of the Mujahideen’s command.” There also have been reports of clashes between ISIS militants and the Taliban in eastern and southern Afghanistan.

A spokesman for the U.S.-led coalition in Afghanistan said in April 2016 that ISIS has the potential to be an “enormous” threat in Afghanistan, but its presence has declined since the beginning of 2016. According to the U.S. official, the U.S. carried out between 70 and 80 air strikes against ISIS targets in Afghanistan from January–March 2016. He also attributed ISIS’s waning footprint to Taliban attacks, local uprisings, and Afghan security force operations.

Pakistan’s continued support for terrorist groups that have links to al-Qaeda undermines U.S. counterterrorism goals in the region. Pakistan’s military and intelligence leaders maintain a short-term tactical approach of fighting some terrorist groups that are deemed to be a threat to the state while supporting others that are aligned with Pakistan’s goal of extending its influence and curbing India’s.

A terrorist attack on a school in Peshawar on December 16, 2014, that killed over 150 people, mostly children, shocked the Pakistani public and prompted the government led by Prime Minister Nawaz Sharif to introduce a National Action Plan (NAP) to reinvigorate the country’s fight against terrorism. The action plan includes steps like lifting the moratorium on the death penalty for terrorists, establishing special military courts to try terrorists, curbing the spread of extremist literature and propaganda on social media, freezing the assets of terrorist organizations, and forming special committees, comprised of army and political leaders, in the provinces to implement the NAP.

Implementation of the NAP and the Pakistani military’s operations against TTP hideouts in North Waziristan have helped to reduce Pakistan’s internal terrorist threat to some degree. A Pakistani think tank reported earlier this year that terrorist attacks were down by 48 percent in 2015 from the previous year. Nevertheless, the first few months of 2016 have seen major attacks in Pakistan. On January 20, militants stormed a university in the city of Charsadda in the northwest part of the country, killing at least 20 students and teachers. On March 27, Jamaat-ul-Ahrar, a splinter faction of the Pakistani Taliban, carried a suicide attack at a popular park in Lahore. The attack was targeted at Christian families celebrating the Easter holiday, but most of the victims were Muslim, and about half of the 72 killed were children.

There are few signs that Pakistan’s crackdown on terrorism extends to groups that target India, such as the Lashkar-e-Taiba (LeT), which was responsible for the 2008 Mumbai attacks, and the Jaish-e-Mohammed (JeM), which carried out an attack on the Indian airbase at Pathankot on January 2, 2016. In early April 2015, Pakistan released on bail the mastermind of the Mumbai attacks, Zakiur Rehman Lakhvi, who had been in Pakistani custody since 2009. The day before Lakhvi’s release, the U.S. Department of State had announced approval of nearly $1 billion in U.S. military sales to Pakistan.

In April 2012, the U.S. issued a $10 million reward for information leading to the arrest or conviction of LeT founder Hafez Muhammad Saeed. The LeT has engaged in recruitment and fundraising activities in the U.S. In September 2011, for instance, U.S. authorities arrested Jubair Ahmad, an American permanent resident born in Pakistan, for providing material support to the LeT by producing LeT propaganda and uploading it to the Internet. Ahmad reportedly attended an LeT training camp in Pakistan before moving to the U.S. in 2007.

The U.S. trial of Pakistani American David Coleman Headley, who was arrested in Chicago in 2009 for his involvement in the 2008 Mumbai attacks, led to striking revelations about the LeT’s international reach and close connections to Pakistani intelligence. Headley had traveled frequently to Pakistan, where he received terrorist training from the LeT,
and to India, where he scouted the sites of the Mumbai attacks. In four days of testimony and cross-examination, Headley provided details about his meetings with a Pakistani intelligence officer, a former army major, and a navy frogman who were among the key players in orchestrating the Mumbai assault.

The possibility that terrorists could gain effective access to Pakistani nuclear weapons is contingent on a complex chain of circumstances. In terms of consequence, however, it is the most dangerous regional threat scenario. Concern about the safety and security of Pakistan’s nuclear weapons increases when Indo–Pakistani tensions increase. For example, during the 1999 Kargil crisis, U.S. intelligence indicated that Pakistan had made “nuclear preparations,” which spurred greater U.S. diplomatic involvement in defusing the crisis.

If Pakistan were to move around its nuclear assets or, worse, take steps to mate weapons with delivery systems, the chances for terrorist theft or infiltration would increase. Increased reliance on tactical nuclear weapons (TNWs) is of particular concern because launch authorities for TNWs are typically delegated to lower-tier field commanders far from the central authority in Islamabad. Another concern is the possibility for miscalculations leading to regional nuclear war if top Indian leaders were to lose confidence that nuclear weapons in Pakistan are under government control or, conversely, assume they were under Pakistani government control after they ceased to be.

There is concern that Islamist extremist groups with links to the Pakistan security establishment could exploit those links to gain access to nuclear weapons technology, facilities, and/or materials. The realization that Osama bin Laden stayed for six years within a half-mile of Pakistan’s premier defense academy has fueled concern that al-Qaeda can operate relatively freely in parts of Pakistan and might eventually gain access to Pakistan’s nuclear arsenal. A Harvard University Belfer Center for Science and International Affairs study noted in 2010 that Pakistan’s stockpile “faces a greater threat from Islamic extremists seeking nuclear weapons than any other stockpile on earth.”

There is the additional, though less likely, scenario of extremists gaining access through a collapse of the state. While Pakistan remains unstable because of its weak economy, regular terrorist attacks, sectarian violence, civil–military tensions, and the growing influence of religious extremist groups, it is unlikely that the Pakistani state will collapse altogether. The country’s most powerful institution, the 550,000–strong army, which has ruled Pakistan for almost half of its existence, would almost certainly intervene and take charge once again if the political situation began to unravel. The potential breakup of the Pakistani state would have to be preceded by the disintegration of the army, which currently is not plausible.

WWTA: Although the WWTA assesses that “fighting in 2016 will be more intense than 2015” and will “continue to threaten US personnel, our Allies, and international partners—including Afghans—particularly in Kabul and other urban population centers,” it does not reference any threat to the homeland from AfPak-based terrorism. It does note, however, that despite the degradation of al-Qaeda’s leadership in Afghanistan and Pakistan, al-Qaeda “nodes” there are “dedicating resources to planning attacks.” It also says that the Khorasan branch of ISIS in South Asia “will probably remain a low-level threat to Afghan stability as well as to US and Western interests in the region in 2016.”

Summary: The threat to the American homeland emanating from Afghanistan and Pakistan is diverse, complex, and mostly indirect and largely involves non-state actors. The intentions of non-state terrorist groups like the TTP, al-Qaeda, and ISIS toward the U.S. are demonstrably hostile. Despite the broad and deep U.S. relationships with Pakistan’s governing elites and military, however, it is likely that the political–military interplay in Pakistan and instability in Afghanistan will
North Korea’s Ballistic Missiles

**MAP 8**

1. Scud Short-range 500 km
2. No Dong 1 Medium-range 1,300 km
3. Musudan 4 Intermediate-range 4,000 km
4. KN–08 Intercontinental 9,000 km
5. Taepo Dong 2 Intercontinental 10,000 km

continue to result in an active threat to the American homeland.

**Missile Threat: North Korea and China.**
The two sources of the ballistic missile threat to the U.S. are very different in terms of their sophistication and integration into broader strategies for achieving national goals. The threats from North Korea and China are therefore very different in nature.

*North Korea.* In December 2012 and February 2016, North Korea successfully put a satellite into orbit. The same technology that launches satellites can be used to build intercontinental ballistic missiles (ICBMs). North Korea conducted its third and fourth nuclear tests in 2013 and 2016. These events clearly signaled that new leader Kim Jong-un had no intention either of resuming North Korea’s Six-Party Talks pledge to denuclearize or of abiding by U.N. resolutions that require a cessation of Pyongyang’s nuclear and missile programs. Instead, Kim Jong-un would continue North Korea’s decades-long quest to develop nuclear weapons and the means to deliver them.

North Korea has declared that it already has a full nuclear strike capability, even altering its constitution to enshrine itself as a nuclear-armed state. Among North Korea’s many direct verbal threats to the U.S., the regime warned in March 2016 that it would “reduce all bases and strongholds of the U.S. and south Korean warmongers for provocation and aggression into ashes in a moment, without giving them any breathing spell.”

The United States and South Korea have revised their estimates and now see a more dire North Korean threat. After recovering components of the ICBM launched by North Korea in December 2012, South Korea assessed that it had “a range of more than 10,000 kilometers.” U.S. Vice Chairman of the Joint Chiefs of Staff Admiral James A. Winnefeld, Jr., attested to the North Korean missile threat in March 2013 when he stated, “We believe the KN-08 [North Korean long-range missile] probably does have the range to reach the United States.”

In April 2015, General Curtis Scaparrotti, commander of U.S. Forces Korea, testified that he believes the North Koreans “have had time and capability to miniaturize a nuclear warhead. They have stated that they had had intercontinental missiles and they had a nuclear capability, and they paraded it. As a commander, I think, we must assume that they have that capability.” Admiral Bill Gortney, commander of the North American Aerospace Defense Command, similarly told reporters that the KN-08 road-mobile ICBM “is operational today. Our assessment is that they have the ability to put a nuclear weapon on a KN-08 and shoot it at the [U.S.] homeland.” North Korea has also had some very limited success with tests of submarine-launched ballistic missiles (SLBMs), of which there have been at least five since May 2015, including successful ejection and, most recently, sending a missile 30 kilometers down range.

According to press reports, U.S. experts concluded that the recovered North Korean missile provided “tangible proof that North Korea was building the missile’s cone at dimensions for a nuclear warhead, durable enough to be placed on a long-range missile that could re-enter the earth’s atmosphere from space.”

*China.* Chinese nuclear forces are the responsibility of the People’s Liberation Army (PLA) Rocket Forces (PLARF), one of the three new services created on December 31, 2015. China’s nuclear ballistic missile forces include land-based missiles with a range of 13,000 kilometers that can reach the U.S. (CSS-4) and submarine-based missiles that can reach the U.S. when the submarine is deployed within missile range.

The PRC became a nuclear power in 1964 when it exploded its first atomic bomb as part of its “two bombs, one satellite” effort. In quick succession, China then exploded its first thermonuclear bomb in 1967 and orbited its first satellite in 1970, demonstrating the capability to build a delivery system that can reach the ends of the Earth. China chose to
rly primarily on a land-based nuclear deterrent rather than developing two or three different basing systems as the United States did.

Furthermore, unlike the United States or the Soviet Union, China chose to pursue only a minimal nuclear deterrent. The PRC fielded only a small number of nuclear weapons, with estimates of about 100–150 weapons on medium-range ballistic missiles and about 60 ICBMs. Its only ballistic missile submarine (SSBN) conducted relatively few deterrence patrols (perhaps none), and its first-generation SLBM, the JL-1, had limited reach. The JL-1’s 1,700-kilometer range makes it comparable to the first-generation Polaris A1 missile the U.S. fielded in the 1960s.

While China’s nuclear force remained stable for several decades, it has been part of the modernization effort of the past 20 years. The result has been modernization and some expansion of the Chinese nuclear deterrent. The core of China’s ICBM force is the DF-31 series, a solid-fueled, road-mobile system, along with a growing number of longer-range DF-41 missiles (also rail mobile) that may be in the PLA operational inventory. The DF-41 may be deployed with multiple independently targetable reentry vehicles (MIRVs). China’s medium-range nuclear forces have similarly shifted to mobile, solid-rocket systems so that they are both more survivable and more easily maintained.

Notably, the Chinese are expanding their ballistic missile submarine fleet. Replacing the one Type 092 Xia-class SSBN are several Type 094 Jin-class SSBNs, four of which are already operational. These are expected to be equipped with the new, longer-range JL-2 SLBM. Such a system would provide the PRC with a “secure second-strike” capability, substantially enhancing China’s nuclear deterrent. There is also some possibility that the Chinese nuclear arsenal now contains land-attack cruise missiles. The CJ-20, a long-range, air-launched cruise missile carried on China’s H-6 bomber, may be nuclear tipped, although there is not much evidence that China has pursued such a capability at this time. China is also believed to be working on a cruise missile submarine, which, if equipped with nuclear cruise missiles, would further expand the range of nuclear attack options.

As a result of its modernization efforts, China’s nuclear forces appear to be shifting from a minimal deterrent posture (one suited only to responding to an attack, and even then with only limited numbers) to a more robust but still limited deterrent posture. While the PRC will still likely field fewer nuclear weapons than either the United States or Russia, it will field a more modern and diverse set of capabilities than India or Pakistan (or North Korea), its nuclear-armed neighbors. If there are corresponding changes in doctrine, modernization will enable China to engage in limited nuclear options in the event of a conflict.

WWTA: The WWTA assesses that China “continues to modernize its nuclear missile force by adding more survivable road-mobile systems and enhancing its silo-based systems. This new generation of missiles is intended to ensure the viability of China’s strategic deterrent by providing a second-strike capability.” The 2015 WWTA noted that China was likely to begin seaborne nuclear deterrence patrols in the near future but offered no judgment on the degree of threat that it poses to the U.S. The 2016 edition does not make this observation.

The WWTA classifies North Korea’s nuclear weapons and missile programs as a “serious threat to US interests and to the security environment in East Asia.” It also reports that North Korea is “committed to developing a long-range, nuclear-armed missile that is capable of posing a direct threat to the United States” and has “publicly displayed its KN08 road-mobile ICBM on multiple occasions. We assess that North Korea has already taken initial steps toward fielding this system, although the system has not been flight-tested.” The WWTA further states the Director of National Intelligence’s long-held assessment that North Korea’s “nuclear capabilities are
The U.S., South Korea, and Japan have military bases that are aligned on similar trajectories and therefore could be threatened by a single missile from North Korea. In South Korea, Seoul is the headquarters of U.S. Forces–Korea, and Osan is headquarters to the U.S. 7th Air Force.

**Guam hosts two major U.S. bases**

**Kadena Air Base is a hub of U.S. air power in the Pacific.**

**U.S. Marine Corps Air Station Futenma**

**U.S. Fleet Activities Sasebo**

**The Heritage Foundation research.**
intended for deterrence, international prestige, and coercive diplomacy.\textsuperscript{24}

Summary: The respective missile threats to the American homeland from North Korea and China are very different. China has many more nuclear weapons, multiple demonstrated and tested means of delivery, and more mature systems, but it is a more stable actor with a variety of interests, including relations with the United States and the international system. North Korea has fewer weapons and questionable means of delivery, but it is less stable and less predictable, with a vastly lower stake in the international system. There is also a widely acknowledged difference in intentions: China seeks a stable second-strike capability and, unlike North Korea, is not actively and directly threatening the United States.

Threat of Regional War

America's forward-deployed military at bases throughout the Western Pacific, five treaty allies, security partners in Taiwan and Singapore, and growing security partnership with India are keys to the U.S. strategic footprint in Asia. One of its critical allies, South Korea, is under active threat of invasion from the North. Taiwan is under a long-standing, well-equipped, and purposely positioned military threat from China. Japan and the Philippines, by virtue of maritime territorial disputes, are under growing paramilitary, military, and political pressure from China.

In South Asia, India is geographically positioned between two major security threats: Pakistan to its west and China to its northeast. From Pakistan, India faces the additional threat of terrorism, whether state-enabled or carried out without state knowledge or control.

North Korean Attack on American Bases/Allies. North Korea's conventional and nuclear missile forces threaten U.S. bases in South Korea, Japan, and Guam.

Beyond its nuclear weapons programs, North Korea poses additional risks to its neighbors. North Korea has an extensive ballistic missile force. Pyongyang has deployed approximately 800 Scud short-range tactical ballistic missiles, 300 No-dong medium-range missiles, and 50 Musudan intermediate-range ballistic missiles. The Scud missiles threaten South Korea, the No-dong can target all of Japan and South Korea, and the Musudan can hit U.S. bases on Okinawa and Guam. Pyongyang continues its development of the Taepo-dong series of ICBMs and the KN-08, which have a range sufficient to hit the continental U.S.\textsuperscript{25}

North Korea has approximately 1 million people in its military, with reserves numbering several million more. Pyongyang has forward-deployed 70 percent of its ground forces within 90 miles of the Demilitarized Zone (DMZ), making it possible to attack with little or no warning, which is of particular concern because South Korea’s capital, Seoul, is only 30 miles south of the DMZ.\textsuperscript{26} In addition to three conventional corps alongside the DMZ, Pyongyang has deployed two mechanized corps, an armor corps, and an artillery corps.\textsuperscript{27}

South Korea remains North Korea’s principal target. In 2005, South Korea initiated a comprehensive defense reform strategy to transform its military into a smaller but more capable force to deal with the North Korean threat. Overall, South Korean military manpower would be reduced approximately 25 percent, from 681,000 to 500,000. The army would face the largest cuts, disbanding four corps and 23 divisions and cutting troops from 560,000 in 2004 to 370,000 in 2020. Seoul planned to compensate for decreased troop levels by procuring advanced fighter and surveillance aircraft, naval platforms, and ground combat vehicles.\textsuperscript{28}

That North Korea’s conventional forces are a very real threat to South Korea was clearly demonstrated by two deadly attacks on South Korea in 2010. In March, a North Korean submarine sank the South Korean naval corvette Cheonan in South Korean waters, killing 46 sailors. In November, North Korean artillery shelled Yeonpyeong Island, killing four South Koreans.
NOTE: Although not shown, China also has the ability to strike targets within the continental United States with its inventory of intercontinental ballistic missiles (ICBMs) equipped with nuclear warheads. The CSS–3/DF–4, with a range of 5,400 km, can reach Alaska, while the DF–31A (11,000 km) and DF–5 (13,000 km) ICBMs can reach the entire U.S.

Since the North Korean military is predominantly equipped with older ground force equipment, Pyongyang has prioritized deployment of strong asymmetric capabilities, including special operations forces, long-range artillery, and missiles. As noted, North Korea has deployed hundreds of Scud short-range ballistic missiles that can target all of South Korea with explosive, chemical, and biological warheads. The land and sea borders between North and South Korea remain unsettled, heavily armed, and actively subject to occasional, limited armed conflict.

Many experts have assessed that North Korea has developed several nuclear devices but does not yet have the ability to miniaturize a warhead or deliver it by missile. More recently, however, several studies have concluded that the North Korean nuclear threat is much greater than previously thought. For example, Dr. Siegfried Hecker, former director of the Los Alamos Nuclear Laboratory, concluded that North Korea could have 20 nuclear weapons by 2016. A study published by the Korea Institute at Johns Hopkins University’s Nitze School of Advanced International Studies predicted a worst-case scenario of Pyongyang’s having 100 nuclear weapons by 2020.

In any event, enough information is available to conclude that North Korea has likely already achieved the ability to deliver nuclear weapons by means of its No-dong medium-range missile. Factors for such an assessment include the decades-long duration of North Korea’s nuclear and missile programs; the technology, expertise, and components acquired from collaborative involvement with Pakistan, the A. Q. Khan network, and Iran; repeated instances of experts underestimating North Korean nuclear and missile capabilities; North Korea’s declarations of its ability to hit the U.S. and its allies with nuclear weapons; and U.S. and South Korean government assessments of North Korean breakthroughs.

Press reports indicate that the CIA assessed that Pyongyang received a nuclear package from Pakistan, including detailed, step-by-step instructions to produce a Chinese-designed nuclear warhead that could be delivered by North Korea’s No-dong missile. Pakistani nuclear scientist A. Q. Khan reportedly stated that North Korea’s nuclear weapons were “the perfect nuclear weapons, technologically more advanced than ours.” Khan described how, in return for Pakistani assistance to Pyongyang’s centrifuge program, “North Korea would help Pakistan in fitting the nuclear warhead into the Ghauri missile.”

In March 2016, the National Defense Commission declared that it has a “military operation plan…to liberate south Korea and strike the U.S. mainland” and that “offensive means have been deployed to put major strike targets in the operation theaters of south Korea within the firing range and the powerful nuclear strike targeting the U.S. imperialist aggressor forces bases in the Asia-Pacific region and the U.S. mainland….” In April 2013, U.S. officials told reporters that North Korea “can put a nuclear weapon on a missile, that they have missile-deliverable nuclear weapons, but not ones that can go more than 1,000 miles [1,609 kilometers].”

WWTA: The WWTA calls North Korea’s nuclear weapons and missile programs “a serious threat to...the security environment in East Asia.” It also references North Korea’s export of ballistic missiles and associated materials to several countries and assistance to Syria’s construction of a nuclear reactor as illustrating “its willingness to proliferate dangerous technologies.” The WWTA warns that “despite efforts at diplomatic outreach, Kim continues to challenge the international community with provocative and threatening behavior in pursuit of his goals....”

Summary: North Korean forces arrayed against American allies in South Korea and Japan are substantial, and North Korea’s history of provocation is a consistent indicator of its intent to achieve its political objectives by threat of force.

Chinese Threat to Taiwan. China’s long-standing threat to end de facto independence
FIGURE 1
The World’s Nuclear Arsenals
Figures are approximate numbers of nuclear warheads.

RUSSIA
Active arsenal is an estimated 1,582 actively deployed strategic warheads and several thousand more short-range nuclear weapons. Russia considers NATO a principal adversary and is willing to use its nuclear weapons to counter conventional threats.

UNITED STATES
Maintains 1,597 actively deployed strategic warheads and about 200 short-range nuclear warheads in Europe. This arsenal protects 1.09 billion people living in 30 countries.

FRANCE
Began nuclear program in late-1950s. Nuclear arsenal is primarily sub-based.

CHINA
Delivery systems include long-range missiles, bombers, and submarines.

UNITED KINGDOM

PAKISTAN

INDIA

ISRAEL

NORTH KOREA

Nations Protected by the U.S. Nuclear Arsenal, with Populations in Millions

<table>
<thead>
<tr>
<th>Country</th>
<th>Population in Millions</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>316.4</td>
</tr>
<tr>
<td>Japan</td>
<td>127.3</td>
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<tr>
<td>Germany</td>
<td>80.8</td>
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<tr>
<td>Turkey</td>
<td>76.5</td>
</tr>
<tr>
<td>U.K.</td>
<td>64.1</td>
</tr>
<tr>
<td>France</td>
<td>63.7</td>
</tr>
<tr>
<td>Italy</td>
<td>59.7</td>
</tr>
<tr>
<td>South Korea</td>
<td>50.2</td>
</tr>
<tr>
<td>Spain</td>
<td>46.6</td>
</tr>
<tr>
<td>Poland</td>
<td>38.5</td>
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<tr>
<td>Canada</td>
<td>35.1</td>
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<tr>
<td>Romania</td>
<td>21.3</td>
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<tr>
<td>Ned.</td>
<td>16.8</td>
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<td>Belgium</td>
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<tr>
<td>Greece</td>
<td>11.1</td>
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<td>Portugal</td>
<td>10.6</td>
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<tr>
<td>Czech Republic</td>
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<tr>
<td>Hungary</td>
<td>9.9</td>
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<tr>
<td>Bulgaria</td>
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<tr>
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<td>Slovakia</td>
<td>5.4</td>
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<tr>
<td>Norway</td>
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<tr>
<td>Croatia</td>
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<td>Lithuania</td>
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<td>Albania</td>
<td>2.8</td>
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<tr>
<td>Slovenia</td>
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</tr>
<tr>
<td>Latvia</td>
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</tr>
<tr>
<td>Estonia</td>
<td>1.3</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>0.5</td>
</tr>
<tr>
<td>Iceland</td>
<td>0.3</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1,089.9</strong></td>
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of Taiwan and ultimately to bring it under the authority of Beijing—if necessary, by force—is both a threat to a major American security partner and a threat to the American interest in peace and stability in the Western Pacific.

Tensions across the Taiwan Strait have cooled significantly over the past eight years. Regardless of the state of the relationship at any given time, however, Chinese leaders from Deng Xiaoping and Mao Zedong to Xi Jinping have consistently emphasized the importance of ultimately reclaiming Taiwan. The island—along with Tibet—is the clearest example of a geographical “core interest” in Chinese policy. China has never renounced the use of force, and it continues to employ political warfare against Taiwan’s political and military leadership. The 2016 election of Tsai Ing-wen of the pro-independence Democratic Progressive Party (DPP) is likely to mark a revival in cross-Strait tensions.

For the Chinese leadership, the failure to effect unification, whether peacefully or through the use of force, would reflect fundamental political weakness in the PRC. For this reason, there is no realistic means by which any Chinese leadership can back away from the stance of having to unify the island with the mainland. As a result, the island remains an essential part of the PLA’s “new historic missions,” shaping PLA acquisitions and military planning.

Two decades of double-digit increases in China’s announced defense budget have produced a significantly more modern PLA, much of which remains focused on a Taiwan contingency. This modernized force includes more than 1,000 ballistic missiles, a modernized air force, and growing numbers of modern surface combatants and diesel-electric submarines capable of mounting a blockade. As the 1995–1996 Taiwan Strait crisis demonstrated, Beijing is prepared to use at least open displays of force—and might have been willing to go further in the absence of a strong American presence.

It is widely posited that China’s anti-access/area-denial (A2/AD) strategy—the deployment of an array of overlapping capabilities, including anti-ship ballistic missiles (ASBMs), submarines, and long-range cruise missiles, satellites, and cyber weapons—is aimed largely at forestalling American intervention in support of friends and allies in the Western Pacific, including Taiwan. By holding at risk key American platforms and systems (e.g., aircraft carriers), the Chinese seek to delay or even deter American intervention in support of key friends and allies, allowing the PRC to achieve a fait accompli. The growth of China’s military capabilities is specifically oriented toward countering America’s ability to assist in the defense of Taiwan.

Chinese efforts to reclaim Taiwan are not limited to overt military means. The “three warfares” highlight Chinese political warfare methods, including legal warfare/lawfare, public opinion warfare, and psychological warfare. The PRC employs such approaches to undermine both Taiwan’s will to resist and America’s willingness to support Taiwan. The Chinese goal would be to “win without fighting,” to take Taiwan without firing a shot or with only minimal resistance before the United States could organize an effective response.

**WWTA:** The WWTA does not reference the threat that China poses to Taiwan.

**Summary:** The Chinese threat to Taiwan is long-standing. Although recently obscured by positive political relations, the military threat is ever present and can be expected to resurface with any increase in tensions across the Strait that may be occasioned by the change in governments in Taipei. China’s ability to execute a military action against Taiwan, albeit at high economic and political cost, is improving. Its intent to unify Taiwan with the mainland under the full authority of the PRC central government and to end the island’s de facto independence has been consistent over time.

**Major Pakistan-backed Terrorist Attack on India Leading to Open Warfare Between India and Pakistan.** An Indo–Pakistan conflict would jeopardize multiple U.S. interests in the region and increase the threat.
of global terrorism. Pakistan would rely on militant non-state actors to help it fight India and thus create a more permissive environment in which various terrorist groups could operate freely. The threat of conflict going nuclear would force U.S. businesses to exit the region and disrupt investment and trade flows, mainly between the U.S. and India, whose bilateral trade currently totals around $100 billion. An actual nuclear exchange would be devastating, both in human lives lost and in long-term economic damage.

India and Pakistan are engaged in a nuclear arms race that threatens stability throughout the Subcontinent. Both countries tested nuclear weapons in 1998, establishing themselves as overtly nuclear weapons states. Both countries also are developing naval nuclear weapons and already possess ballistic missile and aircraft-delivery platforms. Pakistan has the fastest-growing nuclear weapons arsenal in the world today. Islamabad currently has an estimated 100 nuclear weapons and is developing war plans that include the use of tactical nuclear weapons in the event of conflict with India. Pakistan’s development of a mobile dual-use battlefield ballistic missile with a range of only 60 kilometers is of particular concern, especially given such weapons’ impact on India’s nuclear use threshold.

The broader military and strategic dynamic between India and Pakistan is essentially unstable. As noted, Pakistan continues to harbor terrorist groups like Lashkar-e-Taiba and Jaish-e-Mohammed, which carried out the recent attack on the Indian airbase at Pathankot. JeM had been less visible for several years, but JeM leader Masood Azhar resurfaced in 2014 in Pakistan to address a large public rally where he called on suicide attackers to resume jihad against India. Media reports indicate that some JeM leaders were detained in Pakistan following the January 2 Pathankot attack, but no charges have been filed.

Hafez Muhammed Saeed, LeT’s founder and leader of its front organization, JuD, also continues to operate freely in Pakistan, often holding press conferences and inciting violence against India during large-scale public rallies. In December 2014, Saeed held a two-day conclave in Lahore that received support from the Pakistani government, including security from 4,000 police officers and government assistance in transporting attendees to the gathering of more than 400,000. India condemned the Pakistani government’s support for the gathering as “blatant disregard” of global norms against terrorism.

The possibility of armed conflict between India and Pakistan seemed to heighten slightly following the May 2014 election of Bharatiya Janata Party (BJP) leader Narendra Modi as India’s Prime Minister. While Modi initially sought to reach out to Pakistan by inviting Pakistani Prime Minister Nawaz Sharif to his swearing-in ceremony, he subsequently called off foreign secretary-level talks that were scheduled for August 2014 to express anger over a Pakistani official’s meeting with Kashmiri separatist leaders. Modi’s cancellation of the talks signaled that his government is likely to take a harder line toward Islamabad than the one taken by his predecessor, Manmohan Singh, and tie progress in dialogue to Pakistani steps to crack down on anti-India terrorists. Before it took power last year, the BJP often criticized Singh for being too soft on Pakistan. Another obstacle to improved Indo–Pakistani ties is the political weakness of Pakistani Prime Minister Sharif, whose government barely survived month-long street protests led by the opposition in August 2014.

Adding to the tension has been an increase in cross-border firing between the Indian and Pakistani militaries, raising questions about whether a cease-fire that has been in place since 2003 may be breaking down. In August 2014, the two sides engaged in intense firing and shelling along their international border (called the working boundary) and across the Line of Control (LoC) that divides Kashmir. India’s Border Security Force Director noted that the firing across the international
border was the worst it had been since India and Pakistan fought a war in 1971. Tensions were defused following a phone call between the Directors General of Military Operations in which they mutually agreed to stop the firing. A similar escalation in border tensions occurred again in December 2014 when a series of firing incidents over a one-week period resulted in the deaths of at least five Pakistani soldiers and one Indian soldier.

On December 25, 2015, Prime Minister Modi made an impromptu visit to Lahore to meet with Nawaz Sharif. The visit created enormous good will between the two countries and raised hope that official dialogue would soon resume. However, six days later, JeM militants attacked the Indian airbase at Pathankot, killing seven Indian security personnel. India has provided information on the attackers to Pakistan and demanded action against JeM. Official Indo–Pakistani dialogue thus remains deadlocked, even though the two sides are reportedly communicating quietly through their foreign secretaries and national security advisors.

There is some concern about the impact on Indo–Pakistani relations of the international troop drawdown in Afghanistan. The vacuum created by the departing international forces will allow the Taliban and other extremists to strengthen their grip in the region, potentially reinvigorating the insurgency in Kashmir and raising the chances of a major terrorist attack against India. Afghan security forces successfully thwarted an attack on the Indian consulate in Herat, Afghanistan, in May 2014. A successful future attack on Indian interests in Afghanistan along the lines of the bombing of the Indian embassy in Kabul in 2008 would sharpen tensions between New Delhi and Islamabad.

With terrorist groups operating relatively freely in Pakistan and maintaining links to the country’s military and intelligence services, there is a moderate risk of the two countries climbing the military escalation ladder and eventually engaging in all-out conflict. Pakistan’s nuclear weapons capability appears to have acted as a deterrent against Indian military escalation both during the 2001–2002 military crisis and following the 2008 Mumbai attacks, but the Indian government would be under great pressure to react strongly in the face of a terrorist provocation. Pakistan’s recent focus on incorporating tactical nuclear weapons into its war-fighting doctrine has also raised concern that if conflict does break out, there is now a higher risk of nuclear exchange.

WWTA: The WWTA does not reference the threat to American interests from a Pakistani attack on India and potential escalation. Unlike the 2015 assessment, however, it does specifically reference tense relations between the two countries. It also references “Islamabad’s willingness to take action against those in Pakistan linked to the [Pathankot] attack” as key to resuming engagement.

Summary: Indian military retaliation against a Pakistan-backed terrorist strike against India could include targeted air strikes on terrorist training camps inside Pakistan. This would likely lead to broader military conflict with some prospect of escalating to a nuclear exchange. Neither side desires another general war. Both countries have limited objectives and have demonstrated their intent to avoid escalation, but this is a delicate calculation.

Major Chinese Border Incursion into India. The possibility of armed conflict between India and China, while currently remote, poses an indirect threat to U.S. interests because it could disrupt the territorial status quo and raise nuclear tensions in the region. A border conflict between India and China could also prompt Pakistan to try to take advantage of the situation, further contributing to regional instability.

Long-standing border disputes that led to a Sino–Indian War in 1962 have been heating up again in recent years. In April 2013, the most serious border incident between India and China in over two decades occurred when Chinese troops settled for three weeks several miles inside northern Indian territory on the Depsang Plains in Ladakh. A visit to India by
Chinese President Xi Jinping in September 2014 was overshadowed by another flare-up in border tensions when hundreds of Chinese PLA forces reportedly set up camps in the mountainous regions of Ladakh, prompting Indian forces to deploy to forward positions in the region. The border standoff lasted three weeks and was defused when both sides agreed to pull back their troops to previous positions. India claims that China occupies more than 14,000 square miles of Indian territory in the Aksai Chin along its northern border in Kashmir, and China lays claim to more than 34,000 square miles of India’s northeastern state of Arunachal Pradesh. The issue is also closely related to China’s concern for its control of Tibet and the presence in India of the Tibetan government in exile and Tibet’s spiritual leader, the Dalai Lama.

The Chinese are building up military infrastructure and expanding a network of road, rail, and air links in the border areas. To meet these challenges, the BJP government has also committed to expanding infrastructure development along India’s disputed border with China, especially in the Indian states of Arunachal Pradesh and Sikkim. While China currently holds a decisive military edge over India, New Delhi is engaged in an ambitious military modernization program.

The Border Defense and Cooperation Agreement (BDCA) signed during then-Prime
Minister Singh’s visit to China in October 2013 is unlikely to reduce border tensions significantly or lead to a broader settlement in the near future. The accord is aimed at putting into place institutional mechanisms for maintaining peace along the border, but several Indian analysts worry that it is part of China’s effort to keep in place the status quo, which favors the Chinese. Some have even contended that the Chinese intend to buy time on their border disputes with India through the BDCA while focusing on other territorial claims in the Asia–Pacific.45

The BDCA affirms that neither side will use its military capability against the other and proposes opening a hotline between the two countries’ military headquarters, instituting meetings between border personnel in all sectors, and ensuring that neither side tails the other’s patrols along the Line of Actual Control (LAC). The agreement also includes language stipulating that in the event the two sides come face-to-face, they “shall exercise maximum self-restraint, refrain from any provocative actions, not use force or threaten to use force against the other side, treat each


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other with courtesy, and prevent exchange of armed conflict."47

WWTA: Unlike its 2015 assessment, which referenced both the likely pursuit of better economic relations and tensions along the border,48 the 2016 WWTA is silent on India–China relations.

Summary: American interest in India’s security is substantial and expanding. The threat to this interest from China is active, albeit part of a broader, multifaceted bilateral relationship that includes many cooperative dimensions. Both India and China apparently want to avoid allowing minor incidents to escalate into a more general war. The Chinese seem to use border tensions for limited diplomatic and political gain vis-à-vis India, and India responds in ways intended to contain minor incursions and maximize reputational damage to China. Despite limited aims, however, the unsettled situation and gamesmanship along the border could result in miscalculation, accidents, or overreaction.

Threats to the Commons

The U.S. has critical direct interests at stake in the East and South Asia commons that include sea, air, space, and cyber interests. These interests include an economic interest in the free flow of commerce and the military use of the commons to safeguard America’s own security and contribute to the security of its allies and partners.

Washington has long provided the security backbone in these areas, which in turn has supported the region’s remarkable economic development. However, China is taking increasingly assertive steps to secure its own interests in these areas independent of U.S. efforts to maintain freedom of the commons for all in the region. It cannot be assumed that China shares a common conception of international space with the United States or interest in perpetuating American predominance in securing the commons.

Maritime and Airspace Commons. The aggressiveness of the Chinese navy, maritime law enforcement forces, and air forces in and over the waters of the East and South China Sea, coupled with ambiguous, extralegal territorial claims and assertion of control there, poses an incipient threat to American and overlapping allied interests. Chinese military writings emphasize the importance of establishing dominance of the air and maritime domains in any future conflict.

East China Sea. Since 2010, China has intensified its efforts to assert claims of sovereignty over the Senkaku Islands of Japan in the East China Sea. Beijing asserts not only exclusive economic rights within the disputed waters, but also recognition of “historic” rights to dominate and control those areas as part of its territory.

Chinese and Japanese maritime law enforcement and coast guard vessels regularly operate in waters surrounding the Senkakus that are administered by Japan, raising the potential for miscalculation and escalation into a military clash. In the summer of 2016, China began to deploy naval units into the area, justifying its action as “freedom of navigation” operations.

In November 2013, China declared an air defense identification zone (ADIZ) in the East China Sea that largely aligned with its claimed maritime exclusive economic zone (EEZ). The People’s Liberation Army declared that it would “take defense emergency measures to respond to aircraft that do not cooperate in identification or refuse to follow orders.”49 The announcement was a provocative act and another Chinese attempt to change the status quo unilaterally. The ADIZ declaration is part of a broader Chinese pattern of using intimidation and coercion to assert expansive extralegal claims of sovereignty and/or control incrementally. In June 2016, a Chinese fighter made an “unsafe” pass near a U.S. RC-135 reconnaissance aircraft in the East China Sea area.

South China Sea. Roughly half of global trade in goods, a third of trade in oil, and over half of global liquefied natural gas shipments pass through the South China Sea, which also accounts for approximately 10 percent
of global fish catch and may contain massive potential reserves of oil and natural gas. It is hotly contested by six countries, including Taiwan and the Philippines, an American security treaty ally.

Incidents between Chinese law enforcement vessels and other claimants’ fishing boats occur on a regular basis in the South China Sea, as do other Chinese assertions of administrative authority. The U.S. presence also has become an object of Chinese attention, from confrontations with the ocean surveillance ship USNS *Impeccable* and the destroyer USS *John McCain* in 2009 to the confrontation with the guided-missile cruiser USS *Cowpens* in December 2013 and a dangerous intercept of a U.S. Navy P-8 aircraft in August 2014.

The most serious inter-regional incidents in the South China Sea have occurred between China and the Republic of the Philippines. In 2012, a Philippine naval ship operating on behalf of the country’s coast guard challenged private Chinese poachers in waters around Scarborough Shoal. The resulting escalation left Chinese government ships in control of the shoal. In 2016, there have been reports that the Chinese intend to consolidate their gains in the area by reclaiming the sea around the shoal. Chinese government ships also have occasionally attempted to prevent the rotation of troops on and replenishment of Philippines-held Second Thomas Shoal.

The most significant development in the South China Sea over the past two years has been Chinese reclamation and militarization of seven artificial islands or outposts. In July 2016, an award issued by an arbitral panel constituted under the United Nations Convention on the Law of the Sea (UNCLOS) invalidated China’s sweeping claims to waters in the South China Sea and found its “island” reclamation to be in violation of Beijing’s commitments under UNCLOS. Speculation now centers on how Beijing will respond to this ruling. There is the possibility that it will declare an ADIZ above the South China Sea. There are also concerns that it will take action against vulnerable targets like Philippines-occupied Second Thomas Shoal, which the panel determined are part of the Philippines EEZ and continental shelf, or proceed with the reclamation at Scarborough. The latter development in particular would facilitate the physical assertion of its claims and enforcement of an ADIZ, regardless of the UNCLOS award.

**Airpower.** Although China is not yet in a position to enforce an ADIZ consistently in either area, the steady two-decade improvement of the PLA Air Force (PLAAF) and naval aviation will one day provide the necessary capabilities. Chinese observations of recent conflicts, including wars in the Persian Gulf, the Balkans, and Afghanistan, have emphasized the growing role of airpower and missiles in conducting “non-contact, non-linear, non-symmetrical” warfare.

China also seems to have made a point of publicizing its air force modernization, unveiling new aircraft prototypes, including two new stealthy fighters, on the eve of visits by American Secretaries of Defense. (Secretary Chuck Hagel’s visit in 2014 was preceded by the unveiling of the J-15 naval fighter.) Those aircraft have been flown much more aggressively, with Chinese fighters flying very close to Japanese aircraft in China’s East China Sea ADIZ and conducting armed combat air patrols in the skies over Tibet.

The PLA has shed most of its 1960s-era aircraft, replacing them with much more modern systems. Today’s PLAAF is dominated by fourth- and 4.5th- generation fighter aircraft. These include the domestically designed and produced J-10, as well as the Su-27/Su-30/J-11 system, comparable to the F-15 or F-18, that dominates both the fighter and strike missions. Older airframes such as the J-7 are being steadily retired from the fighter inventory. China is also believed to be preparing to field two stealthy fifth-generation fighter designs. The J-20 is the larger aircraft, resembling the American F-22 fighter. The J-31 appears to resemble the F-35 but with two engines rather than one. The production of advanced combat
aircraft engines remains one of the greatest challenges to Chinese fighter design.

China fields some long-range strike aircraft, largely the H-6 bomber based on the Soviet-era Tu-16 Badger. While this aircraft has little prospect of penetrating advanced air defenses, it is suitable as a cruise missile carrier. China also has used the H-6 as the basis for initial efforts to develop an aerial tanker fleet and seems to be examining other options as well. As China deploys more tankers, this will extend the range and loiter time of its fighter aircraft. China will then be better equipped to enforce its newly declared East China Sea Air Defense Identification Zone and any possible future South China Sea ADIZ.

A variety of modern support aircraft have also entered the PLAAF inventory, including airborne early warning (AEW), command and control (C2), and electronic warfare (EW) aircraft. At the Zhuhai Air Show, Chinese companies have displayed a variety of unmanned aerial vehicles (UAVs), reflecting substantial investments and research and development efforts. The surveillance and armed UAV systems include the Xianglong (Soaring Dragon) and Sky Saber systems. The 2014 DOD report on Chinese capabilities also reports that China has tested a stealthy flying-wing UAV, the Lijian.53

China’s air defenses, which are under the control of the PLAAF, have also been steadily modernizing. China has acquired the advanced S-300 surface-to-air missile (SAM) system (SA-10B/SA-20), which is roughly analogous to the American Patriot SAM system, and is developing its own advanced SAM (the HQ-9), which is deployed both on land and at sea. In early 2014, Russia announced that it would sell China the S-400 SAM system. This would mark a substantial improvement in PLAAF air defense capabilities, as the S-400 has anti-aircraft and anti-missile capabilities.54 China has deployed these SAM systems in a dense, overlapping belt along its coast, protecting the nation’s economic center of gravity. Key industrial and military centers such as Beijing are also heavily defended by SAM systems. Some of these systems have reportedly been deployed to the Paracel islands in the South China Sea.

A third component of the PLAAF is China’s airborne forces. The 15th Airborne Army is part of the PLAAF, with three divisions of 10,000–15,000 personnel each. These are not believed to be assigned to any of the Chinese military regions but are instead a strategic reserve as well as a rapid reaction force. In 2009, in the military review associated with the 60th anniversary of the founding of the PRC, Chinese airborne units paraded through Tiananmen Square with ZBD-03 mechanized airborne combat vehicles. These vehicles provide Chinese airborne forces with tactical mobility as well as some degree of protected fire support from their 30mm autocannon and HJ-73 anti-tank missile (a domestic version of the AT-3 Sagger)—something American airborne forces continue to lack.

One shortcoming of the Chinese airborne forces is the lack of military transport aircraft, although the PLAAF can undoubtedly call upon China’s substantial civilian fleet of airliners in time of crisis or war.

Sea power. As the world’s foremost trading state, China depends on the seas for its economic well-being. China’s factories are increasingly powered by imported oil, and Chinese diets contain a growing percentage of imported food. Chinese products rely on the seas to be moved to markets. At the same time, because China’s economic center of gravity is now in the coastal region, it has had to emphasize maritime power to defend key assets and areas. Consequently, China has steadily expanded its maritime power, including its merchant marine and maritime law enforcement capabilities, but especially the People’s Liberation Army Navy (PLAN).

The PLAN is no longer an unsophisticated coastal defense force. Instead, since the end of the Cold War, China’s navy has moved away from a reliance on mass toward incorporating advanced platforms and weapons. Most notably, the Chinese navy is the first in East Asia to deploy its own aircraft carrier since
World War II. The Liaoning carries a mixed air group of J-15 fighters (based on the navalized Su-27) and helicopters and is believed to be fully operational.

Meanwhile, many obsolete vessels have been decommissioned, including scores of older, missile-armed, fast attack craft. In their place, China has produced a range of more capable combatants and is building each class in significant numbers. These range from the Type 022 Houbei missile-armed catamaran, armed with sea-skimming supersonic anti-ship cruise missiles, to the Type-052C Luyang-II destroyer, equipped with a phased-array radar for its HQ-9 SAM system. The HQ-9 is believed to be comparable to early model Patriot missiles, with its ability to combat most air-breathing systems and a limited anti-ballistic missile capability. Although these new ships are not replacing older Chinese surface combatants on a one-for-one basis, the overall capability of the PLAN surface force is steadily improving.

Similarly, the PLAN has been modernizing its submarine force. Since 2000, the PLAN has consistently fielded between 50 and 60 diesel-electric submarines, but the age and capability of the force has been improving as older boats, especially 1950s-vintage Romeo-class boats, are replaced with newer designs. These include a dozen Kilo-class submarines purchased from Russia and domestically designed and manufactured Song and Yuan classes. All of these are believed to be capable of firing not only torpedoes, but also anti-ship cruise missiles. The Chinese have also developed variants of the Yuan, with an air-independent propulsion (AIP) system that reduces the boats’ vulnerability by removing the need to use noisy diesel engines to recharge batteries.

The PLAN also has been augmenting its aerial maritime strike capability. In addition to more modern versions of the H-6 twin-engine bombers (a version of the Soviet/Russian Tu-16 Badger), the PLAN’s Naval Aviation force has introduced a range of other strike aircraft into the inventory. These include the JH-7/FBC-1 Flying Leopard, which can carry between two and four YJ-82 anti-ship cruise missiles, and the Su-30 strike fighter. Within Chinese littoral waters, the PLAN Air Force can bring a significant amount of firepower to bear.

The PLAN also has been working to improve its “fleet train.” The 2010 PRC defense white paper notes the accelerated construction of “large support vessels.” It also specifically notes that the navy is exploring “new methods of logistics support for sustaining long-time maritime missions.”

As with other aspects of PLA modernization, even as the PLAN is upgrading its weapons, it is also improving its doctrine and training, including increased emphasis on joint operations and the incorporation of electronic warfare into its training regimen. Such improvements suggest that PLA Air Force assets, space and cyber operations, and even PLA Rocket Force units might support naval aviation strikes. The new anti-ship ballistic missile forces, centered on the DF-21D anti-ship ballistic missile (now reportedly at initial operational capability), should be seen as part of joint Chinese efforts to control the seas, complementing PLAAF and PLAN air, surface, and sub-surface forces.

WWTA: The WWTA does not address threats to the maritime and airspace commons. It does, however, say that China “seek[s] greater influence over” the region and “wants the United States to refrain from actions [it] perceive[s] as interfering with [its] interests—which will perpetuate the ongoing geopolitical and security competition around the periphery of…China, to include the major sea lanes.” It further notes that the Chinese “will almost certainly eschew direct military conflict with the United States in favor of contests at lower levels of competition...that intentionally blur the distinction between peace and wartime operations.”

Summary: In the absence of U.S. forces, China is increasingly capable of dominating the airspace across the East Asian littoral. Neither Taiwan nor any Southeast Asian
nation can match the PLAAF’s number of high-performance aircraft. China’s military and party leaders appear to be intent on establishing a dominant position in regional air and maritime commons. There is a very similar dynamic in the maritime domain. In both domains, China is ever more capable of challenging American dominance, especially along its littoral.

**Escalation of Territorial Disputes or Accidental Incidents at Sea.** Because the PRC and other countries in the region see active disputes over the East and South China Seas not as differences regarding the administration of the commons, but rather as matters of territorial sovereignty, there exists the threat of armed conflict between China and American allies that are also claimants, particularly Japan and the Philippines.

Beijing prefers to accomplish its objectives quietly and through non-military means. In both the East and South China Seas, China has sought successfully to exploit “gray zones,” gaining control incrementally and deterring others without resort to lethal use of force. It uses military and economic threats, bombastic language, and enforcement through military bullying. Chinese paramilitary-implemented, military-backed encroachment in support of expansive extralegal claims could lead to an unplanned armed clash.

Rising nationalism is exacerbating tensions, making geostrategic relations in Asia increasingly complex and volatile. In the face of persistent economic challenges, nationalist themes are becoming an increasingly strong undercurrent, affecting policymaking. Although the nationalist phenomenon is not new, it is gaining force and complicating efforts to maintain regional stability.

Governments may choose to exploit nationalism for domestic political purposes, but they also run the risk of being unable to control the genie that they have released. Nationalist rhetoric is mutually reinforcing, which makes countries less likely to back down than in the past. The increasing power that the Internet and social media provide to the populace, largely outside of government control, adds an element of unpredictability to future clashes.

In case of armed conflict between China and the Philippines or between China and Japan, either by intention or as a result of an accidental incident at sea, the U.S. could be required to exercise its treaty commitments. Escalation of a direct U.S.–China incident is itself not unthinkable. Even keeping an inadvertent incident from escalating into a broader military confrontation would be difficult. This is particularly true in the East and South China Seas, where naval as well as civilian law enforcement vessels from both China and the U.S. operate in what the U.S. considers to be international waters.

**WWTA:** The WWTA states that “China will continue to pursue an active foreign policy” in the region, “highlighted by [among other things] a firm stance on competing territorial claims in the East and South China Seas.” It also predicts continuing regional tensions “as China pursues construction at its expanded outposts in the South China Sea.” It offers no judgment either on the threat that this poses to American interests or on the prospect for large-scale conventional conflict in the region.

**Summary:** The Chinese have a growing capacity to disrupt the freedom of the commons that benefits the entire region. Both territorial disputes related to what the U.S. considers the commons and accidental incidents could draw the U.S. into conflict. China likely does not intend to engage in armed conflict with its neighbors, particularly American treaty allies, or the U.S. itself. However, it will continue to press its territorial claims at sea in ways that, even if inadvertently, cause incidents that could escalate into more belligerent action.

**Space.** One of the key force multipliers for the United States is its extensive array of space-based assets. Through its various satellite constellations, the U.S. military can track opponents, coordinate friendly forces, engage in precision strikes against enemy forces, and conduct battle-damage assessments so that its munitions are expended efficiently.
The U.S. has repeatedly declared that because they fall under Japanese administrative jurisdiction, the Senkakus fall within the scope of the U.S.–Japan security treaty.

Known as “Dokdo” in South Korea and “Takeshima” in Japan, the two disputed islands—better measured in acres than in square kilometers—evoke considerable emotion.

South Korea’s claim constitutes the Northern Limit Line, which serves as an operational maritime border between North and South. However, sovereignty over the area is in dispute.

The Republic of China on Taiwan claims sovereignty. The People’s Republic of China disputes this.

The U.S. has repeatedly declared that because they fall under Japanese administrative jurisdiction, the Senkakus fall within the scope of the U.S.–Japan security treaty.

The American military is more reliant than many others on space-based systems because it is also an expeditionary military (i.e., its wars are conducted far distant from the homeland). Consequently, it requires global rather than regional reconnaissance, communications and data transmission, and meteorological information and support. At this point, only space-based systems can provide this sort of information on a real-time basis. The U.S. can leverage space in ways that no other country can, and this is a major advantage, but this heavy reliance on space systems is also a key American vulnerability.

China fields an array of space capabilities, including its own navigation and timing satellites, the Beidou/Compass system, and has claimed a capacity to refuel satellites. It has three satellite launch centers, and a fourth is under construction. China’s interest in space dominance includes not only accessing space, but also denying opponents the ability to do the same. As one Chinese assessment notes, space capabilities provided 70 percent of...
battlefield communications, over 80 percent of battlefield reconnaissance and surveillance, and 100 percent of meteorological information for American operations in Kosovo. Moreover, 98 percent of precision munitions relied on space for guidance information. In fact, “It may be said that America’s victory in the Kosovo War could not be achieved without fully exploiting space.”

To this end, the PLA has been developing a range of anti-satellite capabilities. These include both hard-kill and soft-kill systems. The former include direct-ascent kinetic-kill vehicles (DA-KKV), such as the system tested in 2007, but also more advanced systems that are believed capable of reaching targets in mid-Earth orbit and even geosynchronous orbit. The latter include anti-satellite lasers for either dazzling or blinding purposes. This is consistent with PLA doctrinal writings, which emphasize the need to control space in future conflicts. “Securing space dominance has already become the prerequisite for establishing information, air, and maritime dominance,” says one Chinese teaching manual, “and will directly affect the course and outcome of wars.”

Soft-kill attacks need not come only from dedicated weapons, however. The case of Galaxy-15, a communications satellite owned by Intelsat Corporation, showed how a satellite could effectively disrupt communications simply by being in “switched on” mode all of the time. Before it was finally brought under control, it had drifted through a portion of the geosynchronous belt, forcing other satellite owners to move their assets and juggle frequencies. A deliberate such attempt by China (or any other country) could prove far harder to handle, especially if conducted in conjunction with attacks by kinetic systems or directed-energy weapons.

China has now created a single service, the PLA Strategic Support Force (PLASSF), with authority over China’s space, electronic warfare, and network warfare capabilities. In essence, this is a service that is focused on fighting in the information domain, striving to secure what the PLA terms “information dominance” for themselves while denying it to others. This service will probably combine electronic warfare, cyber warfare, and physical attacks against adversary space and information systems in order to deny them the ability to gather, transmit, and exploit information.

WWTA: The WWTA references an increase in threats to American “use of military, civil, and commercial space systems...as...China progress[es] in developing counterspace weapon systems to deny, degrade, or disrupt US space systems.” It further states that “China continue[s] to pursue weapons systems capable of destroying satellites on orbit, placing US satellites at greater risk in the next few years,” and cites probable Chinese “progress on the antisatellite missile system that it tested in July 2014.”

Summary: The PRC poses a challenge to the United States that is qualitatively different from the challenge posed by any other potential adversary in the post–Cold War environment. It is the first nation to be capable of accessing space on its own while also jeopardizing America’s ability to do the same. This appears to be its intent.

Cyber. Threats in this area derive primarily from China and North Korea, and both are serious.

China. In 2013, the Verizon Risk Center identified China as the “top external actor from which [computer] breaches emanated, representing 30 percent of cases where country-of-origin could be determined.” Given the difficulties of attribution, country of origin should not necessarily be conflated with the perpetrator, but forensic efforts have identified at least one Chinese military unit with cyber intrusions. Similarly, the Verizon report concluded that China was the source of 95 percent of state-sponsored cyber-espionage attacks. Since the 2015 Xi–Obama summit where the two sides reached an understanding to reduce cyber economic espionage, Chinese cyber actions have shifted. While the overall level of activity appears to
be unabated, the Chinese do appear to have moved toward more focused attacks mounted from new sites.

China’s cyber-espionage efforts are often aimed at economic targets, reflecting the much more holistic Chinese view of both security and information. Rather than creating an artificial dividing line between military security and civilian security, much less information, the PLA plays a role in supporting both aspects and seeks to obtain economic intellectual property as well as military electronic information.

This is not to suggest, however, that the PLA has not emphasized the military importance of cyber warfare. Chinese military writings since the 1990s have emphasized a fundamental transformation in global military affairs (shijie junshi gaige). Future wars will be conducted through joint operations involving multiple services rather than through combined operations focused on multiple branches within a single service. These future wars will span not only the traditional land, sea, and air domains, but also outer space and cyberspace. The latter two arenas will be of special importance, because warfare has shifted from an effort to establish material dominance (characteristic of Industrial Age warfare) to establishing information dominance (zhi xinxi quan). This is due to the rise of the Information Age and the resulting introduction of information technology into all areas of military operations.

Consequently, according to PLA analysis, future wars will most likely be “local wars under informationized conditions.” That is, they will be wars in which information and information technology not only will be widely applied, but also will be a key basis of victory. The ability to gather, transmit, analyze, manage, and exploit information will be central to winning such wars: The side that is able to do these things more accurately and more quickly will be the side that wins. This means that future conflicts will no longer be determined by platform-versus-platform performance and not even by system against system (xitong). Rather, conflicts are now clashes between rival arrays of systems of systems (tixi).68

Chinese military writings suggest that a great deal of attention has been focused on developing an integrated computer network and electronic warfare (INEW) capability. This would allow the PLA to reconnoiter a potential adversary’s computer systems in peacetime, influence opponent decision-makers by threatening those same systems in times of crisis, and disrupt or destroy information networks and systems by cyber and electronic warfare means in the event of conflict. INEW capabilities would complement psychological warfare and physical attack efforts to secure “information dominance,” which Chinese military writings emphasize as essential for fighting and winning future wars.

Attacks on computer networks in particular have the potential to be extremely disruptive. The recent indictment of five serving PLA officers on the grounds of cyber espionage highlights how active the Chinese military is in this realm.69

It is essential to recognize, however, that the PLA views computer network operations as part of information operations (xinxi zuozhan), or information combat. Information operations are specific operational activities that are associated with striving to establish information dominance. They are conducted in both peacetime and wartime, with the peacetime focus on collecting information, improving its flow and application, influencing opposing decision-making, and effecting information deterrence.

Information operations involve four mission areas:

- **Command and Control Missions.** An essential part of information operations is the ability of commanders to exercise control over joint operations by disparate forces. Thus, command, control, communications, computers, intelligence, surveillance, and reconnaissance structures are a key part of information operations, providing the means for collecting, transmitting, and managing information.
• **Offensive Information Missions.** These are intended to disrupt the enemy’s battlefield command and control systems and communications networks, as well as to strike the enemy’s psychological defenses.

• **Defensive Information Missions.** Such missions are aimed at ensuring the survival and continued operation of information systems. They include deterring an opponent from attacking one’s own information systems, concealing information, and combating attacks when they do occur.

• **Information Support and Information-Safeguarding Missions.** The ability to provide the myriad types of information necessary to support extensive joint operations and to do so on a continuous basis is essential to their success.70

Computer network operations are integral to all four of these overall mission areas. They can include both strategic and battlefield network operations and can incorporate both offensive and defensive measures. They also include protection not only of data, but also of information hardware and operating software.

Computer network operations will not stand alone, however, but will be integrated with electronic warfare operations, as reflected in the phrase “network and electronics unified [wangdian yiti].” Electronic warfare operations are aimed at weakening or destroying enemy electronic facilities and systems while defending one’s own.71 The combination of electronic and computer network attacks will produce synergies that affect everything from finding and assessing the adversary to locating one’s own forces to weapons guidance to logistical support and command and control. The creation of the PLASSF is intended to integrate these forces and make them more complementary and effective in future “local wars under informationized conditions.”

**North Korea.** In 2014, North Korea conducted a cyber attack on Sony Pictures in retaliation for the studio’s release of a satirical film depicting the assassination of Kim Jong-un. The cyber attack was accompanied by physical threats against U.S. theaters and citizens. Contrary to the perception of North Korea as a technologically backward nation, the regime has an active cyber warfare capability. In 2009, North Korea declared that it was “fully ready for any form of high-tech war.”72 According to South Korea’s National Intelligence Service, North Korean leader Kim Jong-un declared that cyber warfare was “a magic weapon” that empowered Pyongyang to launch “ruthless strikes” against South Korea.73

The Reconnaissance General Bureau, North Korea’s intelligence agency, oversees Unit 121 with almost 6,000 “cyber-warriors” dedicated to attacking Pyongyang’s enemies, up from 3,000 just two years ago. Defectors from the unit have told South Korean intelligence officials that hackers are sent to other countries for training as well as to conduct undercover operations. The unit’s hackers never operate primarily within North Korea because the country’s limited computer network would make it too easy to identify the source of the attack.74

Seoul concluded that North Korea was behind cyber attacks using viruses or distributed denial-of-service tactics against South Korean government agencies, businesses, banks, and media organizations in 2009, 2011, 2012, and 2013. The most devastating attack in 2013 against South Korean banks and media outlets deleted the essential Master Boot Record from 48,000 computers.75 North Korea also jammed GPS signals in 2012, posing a risk to hundreds of airplanes transiting Seoul’s Incheon airport. Lieutenant General Bae Deag-sig, head of South Korea’s Defense Security Command, stated that “North Korea is attempting to use hackers to infiltrate our military’s information system to steal military secrets and to incapacitate the defense information system.”76 In 2016, the threat to banks, in particular, became global with an attack on the SWIFT banking system.77
WWTA: The WWTA cites China’s continued “success in cyber espionage against the US Government, our allies, and US companies.” It also references Beijing’s selective use of cyberattacks against “targets it believes threaten Chinese domestic stability or regime legitimacy.” With regard to North Korea, the WWTA cites its probable responsibility for an attack on a South Korean nuclear plant and says that “North Korea probably remains capable and willing to launch disruptive or destructive cyberattacks to support its political objectives.”

Summary: With obvious implications for the U.S., the PLA emphasizes the need to suppress and destroy an enemy’s information systems while preserving one’s own, as well as the importance of computer and electronic warfare in both the offensive and defensive roles. Methods to secure information dominance would include establishing an information blockade; deception (including through electronic means); information contamination; and information paralysis. China sees cyber as part of an integrated capability for achieving strategic dominance in the Western Pacific region. For North Korea, cybersecurity is an area in which even its limited resources can directly support discrete political objectives.

Threat Scores

AfPak-Based Terrorism. There is a great deal of uncertainty surrounding the threat from AfPak. For the U.S., Pakistan is both a security partner and a security challenge. Pakistan provides a home and support to terrorist groups that are hostile to the U.S., other U.S. partners in South Asia like India, and the fledgling government of Afghanistan. Afghanistan is particularly vulnerable to destabilization efforts. Both Pakistan and Afghanistan are already among the world’s most unstable states. The instability of the former, given its nuclear arsenal, has a direct bearing on U.S. security.

The IISS Military Balance largely addresses the military capabilities of states. Its limited references to capabilities of non-state actors do not include those in the AfPak region. The 2016 edition contains no reference to the possibility of Pakistani nuclear weapons falling into hands that would threaten the American homeland or interests more broadly. The 2014 edition stated that Pakistan’s “nuclear weapons are currently believed to be well-secured against terrorist attack.” Pakistan’s Army Strategic Forces Command has 30 medium-range ballistic missiles, 30 short-range ballistic missiles, and land-attack cruise missiles. Previous editions of the Military Balance have also cited development of “likely nuclear capable” artillery. Pakistan also has “1–2 squadrons of F-16A/B or Mirage 5 attack aircraft that may be assigned a nuclear strike role.”

This Index assesses the overall threat from AfPak-based terrorists, considering the range of contingencies, as “testing” for level of provocation of behavior and “gathering” for level of capability. This is notable because the 2016 Index assessed the level of provocative behavior emanating from this threat as “aggressive,” one level higher on the scale used.
China. China presents the United States with the most comprehensive security challenge in the region. It poses various threat contingencies across all three areas of vital American national interests: homeland; regional war (extending from attacks on overseas U.S. bases or against allies and friends); and the global commons. China’s provocative behavior is well documented. It is challenging the U.S. and its allies, like Japan, at sea and in cyberspace. It has raised concerns on its border with India and is a standing threat to Taiwan. While there may be a lack of official transparency, publicly available sources shed considerable light on its fast-growing military capabilities.

According to the IISS Military Balance, among the key weapons in China’s inventory are 62 Chinese ICBMs; 405 shorter-range ballistic missiles; 84 four SSBNs; 77 satellites; 6,540 main battle tanks (300 fewer than 2014); 57 tactical submarines; 74 principal surface combatants (including one aircraft carrier and 19 destroyers); and 2,306 combat-capable aircraft in its air force. There are 1,600,000 members of the People’s Liberation Army.

With regard to these capabilities, the 2014 Military Balance stated that “a lack of war-fighting experience, questions over training and morale, and key capability weaknesses in areas such as C4ISTAR and ASW, mean that [the PLA] remains qualitatively inferior, in some respects, to more technologically advanced armed forces in the region—such as South Korea and Japan—and it lags far behind the U.S.” The IISS also points out that China’s aircraft carrier has “yet to demonstrate the capabilities that would enable carrier battle group operations” and limitations with regard to its capacity for “sustained conflict within the region” and deployment beyond the region. Neither the 2016 nor the 2015 edition of the Military Balance contains either of these caveats. The 2016 edition, however, does state that “without evidence from active operations...the actual extent of improvements...remain difficult to assess.”

This Index assesses the overall threat from China, considering the range of contingencies, as “aggressive” for level of provocation of behavior and “gathering” for level of capability. These are the same levels as the 2016 Index.

### Threats: China

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North Korea. In the first instance, North Korea poses the most acute security challenge for American allies and bases in South Korea. However, it is also a significant challenge to U.S. allies in Japan and American bases there and in Guam.

North Korean authorities are very actively and vocally provocative toward the United States. While North Korea has used its missile and nuclear tests to enhance its prestige and importance—domestically, regionally, and globally—and to extract various concessions from the United States in negotiations over its nuclear program and various aid packages, such developments also improve North Korea’s military posture. North Korea likely
has already achieved warhead miniaturization, the ability to place nuclear weapons on its medium-range missiles, and an ability to reach the continental United States with a missile.

According to the IISS *Military Balance*, key weapons in North Korea’s inventory include 3,500-plus main battle tanks, 560-plus light tanks, and 21,100 pieces of artillery. The navy has 73 tactical submarines, three frigates, and 383 patrol and coastal combatants.89 The air force has 545 combat-capable aircraft (58 fewer than 2014), including 80 H-5 bombers. The IISS counts 1,020,000 members of the North Korean army. Regarding the missile threat in particular, the 2016 *Military Balance* states that “U.S. officials now view the so-far-untested Hwasong-13 (KN-08) road-mobile ICBM as operational”90 and cites “the lack of a full flight test of the SLBM prototype.” More generally, the 2014 *Military Balance* carries a caveat that military “[e]quipment is mainly in a poor state, and training, morale and operational readiness all remain questionable.”

This Index assesses the overall threat from North Korea, considering the range of contingencies, as “aggressive” for level of provocation of behavior and “gathering” for level of capability. It is noted that the provocation score for North Korea has dropped from “hostile” in the 2016 Index, but only because this score fell just below the numerical level assigned to that score and remains just short of “aggressive” and “hostile.” If the nation engages in further provocative actions toward U.S. interests, the level of provocation could return to the highest threat level.

## Threats: North Korea

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38. Ibid., p. 17.


44. 2016 WWTA, p. 27.


56. 2016 WWTA, p. 16.

57. While it has long been a matter of U.S. policy that Philippine territorial claims in the South China Sea lie outside the scope of American treaty commitments, the treaty does apply in the event of an attack on Philippine “armed forces, public vessels or aircraft in the Pacific.” Mutual Defense Treaty Between the United States and the Republic of the Philippines, August 30, 1951, Article V, http://avalon.law.yale.edu/20th_century/phil001.asp (accessed August 5, 2016). In any event, Article IV of the Treaty obligates the U.S. in case of such an attack to “meet the common dangers in accordance with its constitutional processes.” Regardless of formal treaty obligations, however, enduring U.S. interests in the region and perceptions of U.S. effectiveness and reliability as a check on growing Chinese ambitions would likely spur the U.S. to become involved.

58. 2016 WWTA, p. 16.


78. 2016 WWTA, p. 3.

79. Ibid.


87. Ibid.
90. Ibid., p. 264–246.
Conclusion: Global Threat Level

America and its interests face challenges around the world from countries and organizations that have:

• Interests that conflict with those of the U.S.;

• Sometimes hostile intentions toward the U.S.; and

• In some cases, growing military capabilities.

The government of the United States faces the constant challenge of employing the right mix of U.S. diplomatic, economic, public information, intelligence, and military capabilities, sometimes alone but more often with allies, to protect and advance U.S. interests.

In Europe, Russia remains the primary threat to American interests. The 2017 Index assessed the threat emanating from Russia as a behavior score of “aggressive” and a capability score of “formidable,” the highest category on the scale. Russia has increased its support to separatist movements in Ukraine; has engaged in massive pro-Russia propaganda campaigns internal to Ukraine and in other Eastern European countries; and over the past year has performed a series of provocative military exercises and training missions that are viewed as warning signals to neighboring countries, particularly the Baltics. It also has increased its investment in modernizing its military and has gained significant combat experience while supporting the government of Bashar al-Assad in Syria.

In the Middle East, Iran continues to be the state actor most hostile to American interests. The 2017 Index assessed Iran’s behavior as “aggressive,” and its capability has increased to “gathering.” Since publication of the 2015 Index, Iran has methodically moved closer to becoming a nuclear power, successfully maneuvering to stabilize its program via the nuclear agreement negotiated with the U.S.; has continued to back Houthi rebels in Yemen in what some consider a proxy war between Iran and its Sunni Arab neighbors; has continued to exert influence in the region through its backing of the Assad regime and Hezbollah; and has further deepened its involvement in the instability of Iraq by providing direct support to Shia militias.

Also in the Middle East, a broad array of terrorist groups, most notably ISIS and the Iran-sponsored Hezbollah, are the most hostile of any of the global threats to America examined in the Index. They also, however, are evaluated as among the least capable. In 2016, the threat posed by ISIS increased dramatically through a combination of highly publicized acts of brutality, territorial gains in Iraq and Syria, and aggressive campaigns both for recruiting and for inciting “lone wolf” attacks around the globe. Terrorism in the region reached new “lows” in atrocities as ISIS and other terrorist groups redoubled their efforts to solidify and expand their control of sub-regions.

In Asia, China remained “aggressive” in its provocative behavior. China moved to militarize the islands that it built on reefs in international waters, continuing to claim them. It
also has continued to field new equipment, most notably in naval power, perceived to be most important in its efforts to shape the maritime domain of the western Pacific in line with its interests.

North Korea’s level of behavior dropped back to “aggressive” from the “hostile” level noted in the 2016 Index. The 2017 Index assesses North Korea’s capability level as remaining at “gathering” as Pyongyang continues to develop and refine its missile technology, especially in the area of submarine-launched ballistic missiles.

The terrorist threats emanating from the Afghanistan–Pakistan region subsided somewhat to “testing,” a notch down from the 2016 Index’s level of “aggressive.” The capability score for the region’s terrorist threat remained at “gathering.”

Just as there are American interests that are not covered by this Index, there may be additional threats to American interests that are not identified here. The Index focuses on the more apparent sources of risk and those in which the risk is greater.

Compiling the assessments of these threat sources, the 2017 Index rates the overall global threat environment as “aggressive” and “gathering” in the areas of threat actor behavior and material ability to harm U.S. security interests, respectively, leading to an aggregated threat score of “high.” This score is a full category worse than the 2016 Index assessment of “elevated,” driven by increases in the capability of Russia, Iran, and terrorist actors in the Middle East to harm U.S. national security interests.

### Behavior of Threats

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### Capability of Threats

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Our combined score for threats to U.S. vital interests can be summarized thus:

### Threats to U.S. Vital Interests

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U.S. Military Power
An Assessment of U.S. Military Power

America is a global power with global interests. Its military is meant first and foremost to defend America from attack. Beyond that, it is meant to protect Americans abroad, allies, and the freedom to use international sea, air, and space while retaining the ability to engage in more than one major contingency at a time. America must be able not only to defend itself and its interests, but also to deter enemies and opportunists from taking action that would challenge U.S. interests, a capability that includes preventing the destabilization of a region and guarding against threats to the peace and security of America’s friends.

As noted in the two preceding editions of the Index, however, the U.S. does not have the right force to meet a two–major regional contingency (two-MRC) requirement and is not ready to carry out its duties effectively. Consequently, as was seen during 2016, the U.S. risks seeing its interests increasingly challenged and the world order it has led since World War II undone.

How to Think About Sizing Military Power

Military power begins with the people and equipment used to conduct war: the weapons, tanks, ships, airplanes, and supporting tools such as communications systems that make it possible either for one group to impose its will on another or to prevent such an outcome from happening.

However, simply counting the number of people, tanks, or combat aircraft that the U.S. possesses would be irrelevant because it would lack context. For example, the U.S. Army might have 100 tanks, but to accomplish a specific military task, 1,000 or more tanks might be needed or none at all. It might be that the terrain on which a battle is fought is especially ill-suited to tanks or that the tanks one has are inferior to the enemy’s. The enemy could be quite adept at using tanks, or his tank operations might be integrated into a larger employment concept that leverages the supporting fires of infantry and airpower, whereas one’s own tanks are poorly maintained, the crews are ill-prepared, or one’s doctrine is irrelevant.

Success in war is partly a function of matching the tools of warfare to a specific task and employing those tools effectively in the conditions of the battle. Get these wrong—tools, objective, competency, or context—and you lose.

Another key element is the military’s capacity to conduct operations: how many of the right tools—people, tanks, planes, or ships—it has. One might have the right tools and know how to use them effectively but not have enough to win. Given that one cannot know with certainty beforehand just when, where, against whom, and for what reason a battle might be fought, determining how much capability is needed is an exercise of informed, but not certain, judgment.

Further, two different combatants can use the same set of tools in radically different ways to quite different effects. The concept of employment matters. Concepts are developed to account for numbers, capabilities, material readiness, and all sorts of other factors that enable or constrain one’s actions, such as whether one fights alone or alongside allies, on familiar or strange terrain, or with a
large, well-equipped force or a small, poorly equipped force.

All of these factors and a multitude of others bear upon the outcome of any military contest. Military planners attempt to account for them when devising requirements, developing training and exercise plans, formulating war plans, and providing advice to the President in his role as Commander in Chief of U.S. military forces.

Measuring hard combat power in terms of its adequacy in capability, capacity, and readiness to defend U.S. vital interests is hard, especially in such a limited space as this Index, but it is not impossible. Regardless of the difficulty of determining the adequacy of one’s military forces, the Secretary of Defense and the military services have to make decisions every year when the annual defense budget request is submitted to Congress.

The adequacy of hard power is affected most directly by the resources the nation is willing to invest. While that investment decision is informed to a significant degree by an appreciation of threats to U.S. interests and the ability of a given defense portfolio to protect U.S. interests against such threats, it is not informed solely by such considerations; hence the importance of clarity and honesty in determining just what is needed in hard power and the status of such power from year to year.

Administrations take various approaches in determining the type and amount of military power needed and, by extension, the amount of money and other resources to commit to it. After defining the national interests to be protected, the Department of Defense can use worst-case scenarios to determine the maximum challenges the U.S. military might have to overcome. Another way is to redefine what constitutes a threat. By taking a different view of whether major actors pose a meaningful threat and of the extent to which friends and allies have the ability to assist the U.S. in meeting security objectives, one can arrive at different conclusions about necessary military strength.

For example, one Administration might view China as a rising, belligerent power bent on dominating the Asia–Pacific. Another Administration might view China as an inherently peaceful, rising economic power, with the expansion of its military capabilities a natural occurrence commensurate with its strengthening status. The difference between these views can have a dramatic impact on how one thinks about U.S. defense requirements. So, too, can policymakers amplify or downplay risk to justify defense budget decisions.

There can also be strongly differing views on requirements for operational capacity.

- Does the country need enough for two major combat operations (MCOs) at roughly the same time or just enough for a single major operation plus some number of lesser cases?
- To what extent should “presence” tasks—the use of forces for routine engagement with partner countries or simply to be on hand in a region for crisis response—be additive to or a subset of a military force sized to handle two major regional conflicts?
- How much value should be assigned to advanced technologies as they are incorporated into the force?

Where to Start

There are references that one can use to help sort through the variables and arrive at a starting point for assessing the adequacy of today’s military posture: government studies and historical experience. The government occasionally conducts formal reviews meant to inform decisions on capabilities and capacities across the Joint Force relative to the threat environment (current and projected) and evolutions in operating conditions, the advancement of technologies, and aspects of U.S. interests that may call for one type of military response over another.

The 1993 Bottom-Up Review (BUR), conducted by then-Secretary of Defense Les
Aspin, is one such frequently cited example. Secretary Aspin recognized that “the dramatic changes that [had] occurred in the world as a result of the end of the Cold War and the dissolution of the Soviet Union” had “fundamentally altered America’s security needs” and were driving an imperative “to reassess all of our defense concepts, plans, and programs from the ground up.”

The BUR formally established the requirement that U.S. forces should be able “to achieve decisive victory in two nearly simultaneous major regional conflicts [MRCs] and to conduct combat operations characterized by rapid response and a high probability of success, while minimizing the risk of significant American casualties.” Thus was formalized the two-MRC standard.

Dr. Daniel Gouré, in his 2015 Index essay “Building the Right Military for a New Era: The Need for an Enduring Analytic Framework,” noted that various Administrations have redefined force requirements based on their perceptions of what was necessary to protect U.S. interests. In an attempt to formalize the process, and perhaps to have a mechanism by which to exert influence on the executive branch in such matters, Congress mandated that each incoming Administration must conduct a comprehensive strategic review of the global security environment, articulate a relevant strategy suited to protecting and promoting U.S. security interests, and recommend an associated military force posture.

The Quadrennial Defense Reviews (QDRs) have been conducted since 1997, accompanied in 1997, 2010, and 2014 by independent National Defense Panel (NDP) reports that have reviewed and commented on them. Both sets of documents purport to serve as key assessments, but analysts have come to minimize their value, regarding them as justifications for executive branch policy preferences (the QDR reports) or overly broad, generalized commentaries (the NDP reports) that lack substantive discussion about threats to U.S. interests, a credible strategy for dealing with them, and the actual ability of the U.S. military to meet national security requirements.

**Correlation of Forces as a Factor in Force Sizing**

During the Cold War, the U.S. used the Soviet threat as its primary reference in determining its hard-power needs. At that time, the correlation of forces—a comparison of one force against another to determine strengths and weaknesses—was highly symmetrical. U.S. planners compared tanks, aircraft, and ships against their direct counterparts in the opposing force. These comparative assessments drove the sizing, characteristics, and capabilities of fleets, armies, and air forces.

The evolution of guided, precision munitions and the rapid technological advancements in surveillance and targeting systems, however, have made comparing combat power more difficult. What was largely a platform v. platform model has shifted somewhat to a munitions v. target model.

The proliferation of precise weaponry increasingly means that each round, bomb, rocket, missile, and even individual bullet (in some instances) can hit its intended target, thus decreasing the number of munitions needed to prosecute an operation. It also means that the lethality of an operating environment increases significantly for the people and platforms involved. We are now at the point where one must consider how many “smart munitions” the enemy has when thinking about how many platforms and people are needed to win a combat engagement instead of focusing primarily on how many ships or airplanes the enemy can bring to bear against one’s own force.

In one sense, increased precision and the technological advances now being incorporated into U.S. weapons, platforms, and operating concepts make it possible to do far more with fewer assets than ever before. Platform signature reduction (stealth) makes it harder for the enemy to find and target them, while the increased precision of weapons makes it possible for fewer platforms to hit many more
targets. Additionally, the ability of the U.S. Joint Force to harness computers, modern telecommunications, space-based platforms—such as for surveillance, communications, positioning-navigation-timing (PNT) support from GPS satellites—and networked operations potentially means that smaller forces can have far greater effect in battle than at any other time in history. But these same advances also enable enemy forces, and certain military functions—such as seizing, holding, and occupying territory—may require a certain number of soldiers no matter how state-of-the-art their equipment may be.

With smaller forces, each individual element of the force represents a greater percentage of its combat power. Each casualty or equipment loss takes a larger toll on the ability of the force to sustain high-tempo, high-intensity combat operations over time, especially if the force is dispersed across a wide theater or across multiple theaters of operation.

As advanced technology has become more affordable, it has become more accessible for nearly any actor, whether state or non-state. Consequently, it may be that the outcomes of future wars will depend to a much greater degree on the skill of the forces and their capacity to sustain operations over time than they will on some great disparity in technology. If so, readiness and capacity will take on greater importance than absolute advances in capability.

All of this illustrates the difficulties of and need for exercising judgment in assessing the adequacy of America’s military power. Yet without such an assessment, all that we are left with are the quadrennial strategic reviews, which are subject to filtering and manipulation to suit policy interests; annual budget submissions, which typically favor desired military programs at presumed levels of affordability and are therefore necessarily budget-constrained; and leadership posture statements, which often simply align with executive branch policy priorities.

The U.S. Joint Force and the Art of War

This section of the *Index*, on military capabilities, assesses the adequacy of the United States’ defense posture as it pertains to a conventional understanding of “hard power,” defined as the ability of American military forces to engage and defeat an enemy’s forces in battle at a scale commensurate with the vital national interests of the U.S. While some hard truths in military affairs are appropriately addressed by math and science, others are not. Speed, range, probability of detection, and radar cross-section are examples of quantifiable characteristics that can be measured. Specific future instances in which U.S. military power will be needed, the competency of the enemy, the political will to sustain operations in the face of mounting deaths and destruction, and the absolute amount of strength needed to win are matters of judgment and experience, but they nevertheless affect how large and capable a force one might need.

In conducting the assessment, we accounted for both quantitative and qualitative aspects of military forces, informed by an experience-based understanding of military operations and the expertise of external reviewers.

Military effectiveness is as much an art as it is a science. Specific military capabilities represented in weapons, platforms, and military units can be used individually to some effect. Practitioners of war, however, have learned that combining the tools of war in various ways and orchestrating their tactical employment in series or simultaneously can dramatically amplify the effectiveness of the force committed to battle.

Employment concepts are exceedingly hard to measure in any quantitative way, but their value as critical contributors in the conduct of war is undeniable. How they are utilized is very much an art-of-war matter, learned through experience over time.

What Is Not Being Assessed

In assessing the current status of the military forces, this *Index* uses the primary
references used by the military services themselves when they discuss their ability to employ hard combat power. The Army’s unit of measure is the brigade combat team (BCT), while the Marine Corps structures itself by battalions. For the Navy, it is the number of ships in its combat fleet, and the most consistent reference for the Air Force is total number of aircraft, sometimes broken down into the two primary sub-types of fighters and bombers.

Obviously, this is not the totality of service capabilities, and it certainly is not everything needed for war, but these measures can be viewed as surrogate measures that subsume or represent the vast number of other things that make these “units of measure” possible and effective in battle. There is an element of proportionality or ratio related to these measures that drives other aspects of force sizing. For example:

• When planning air operations, the Air Force looks at the targets to be serviced and the nature of the general operation to be supported and then accounts for aircraft and munitions needed (type and quantity) and the availability and characteristics of airfields relevant to the operation. From this, they calculate sorties, distances, flight hours, fuel consumption, number of aircraft in a given piece of airspace, and a host of other pieces of information to determine how many aerial refueling tankers will be needed.

• Joint Force detailed planning for operations determines how much equipment, manpower, and supplies need to be moved from one point to another and how much more will be needed to sustain operations: Logistics is a very quantitative business.

• U.S. Transportation Command (TRANSCOM) calculates the amount of lift required in cargo planes, sealift shipping, long-haul road movements, and trains.

• The Marine Corps thinks operationally in terms of Marine Air-Ground Task Forces (MAGTFs) that are composed of command, ground, air, and logistics elements. The size of a MAGTF varies depending on the mission to be accomplished, but the nucleus is normally (though not always) the ground combat element that typically ranges from a battalion to a division. The amount of airpower, logistics support, and transportation (amphibious, sealift, and airlift) required to execute the operation extends from there.

• The Navy thinks in terms of the number of surface combatants, the nature of operations, and proximity to ports to drive planning for all of the combat logistics force vessels that are needed to make it happen.

• The Army provides a host of “common user support” capabilities to the overall force that can include operating ports, theater-wide trucking and rail operations, large-scale fuel and ammunition storage and distribution, engineering and construction services, and general supply support.

• Institutional elements like recruiting are necessary to generate the force in the first place, as well as the multitude of installations at which units are based, training facilities, acquisition workforce, and the military’s medical infrastructure.

The point is that the military spear has a great deal of shaft that makes it possible for the tip to locate, close with, and destroy its target, and there is a rough proportionality between shaft and spear tip. Thus, in assessing the basic units of measure for combat power, one can get a sense of what is likely needed in the combat support, combat service support, and supporting establishment echelons. The scope of this Index does not extend to analysis of everything that makes hard power possible; it focuses on the status of the hard power itself.
This assessment also does not account for the Reserve and Guard components of the services; it focuses only on the Active component. Again, the element of proportion or ratio figures prominently. Each service determines the balance among its Active, Reserve, and National Guard elements (only the Army and Air Force have Guard elements; the Navy and Marine Corps do not) based on factors that include cost of the respective elements, availability for operational employment, time needed to respond to an emergent crisis, the allocation of roles between the elements, and political considerations. This assessment looks at the baseline requirement for a given amount of combat power that is readily available for use in a major combat operation—something that is usually associated with the Active components of each service.

**The Defense Budget and Strategic Guidance**

As for the defense budget, ample discussion of budget issues is scattered throughout (mainly as they pertain to acquisition programs), but the budget itself—whether for the military services individually, the Joint Force as a whole, or the totality of the defense establishment—is actually a reflection of the importance that the U.S. places on the modernity, capacity, and readiness of the force rather than a measure of the capability of the force itself. In other words, the budget itself does not tell us much about the posture of the U.S. military.

The baseline budget for defense in fiscal year (FY) 2016 was $548 billion, which paid for the forces (manpower, equipment, training); enabling capabilities (things like transportation, satellites, defense intelligence, and research and development); and institutional support (bases and stations, facilities, recruiting, and the like). The baseline budget does not pay for the cost of major ongoing overseas operations, which is captured in supplemental funding known as OCO (overseas contingency operations).

It is true that absent a significant threat to the survival of the country, the U.S. will always balance expenditures on defense with spending in all of the other areas of government activity that it thinks are necessary or desirable. Some have argued that a defense budget indexed to a percent of gross domestic product (GDP) is a reasonable reference, but a fixed percentage of GDP does not accurately reflect national security requirements per se any more than the size of the budget alone correlates to levels of capability. It is possible that a larger defense budget could be associated with less military capability if the money were allocated inappropriately or spent wastefully, and the fact that the economy changes over time does not necessarily mean that defense spending should increase or decrease in lockstep by default.

Ideally, defense requirements are determined by identifying national interests that might need to be protected with military power; assessing the nature of threats to those interests and what would be needed to defeat those threats (and how much that would cost); and then determining what the country can afford (or is willing) to spend. Any difference between assessed requirements and affordable levels of spending on defense would constitute risk to U.S. security interests.

This Index enthusiastically adopts this latter approach: interests, threats, requirements, resulting force, and associated budget. Spending less than the amount needed to maintain a two-MRC force results in policy debates about where to accept risk: force modernization, the capacity to conduct large-scale or multiple simultaneous operations, or force readiness.

The decision to fund national defense commensurate with interests and prevailing threats is a policy decision that reflects national priorities and acceptance of risk. This Index assesses the ability of the nation’s military forces to protect vital national security interests within the world as it is so that the debate about the level of funding for hard power is better informed.

In FY 2016, the debate about how much funding to allocate to defense was affected once again by a larger political debate that
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pitted those who wanted to see an overall reduction in federal spending against those who pushed for higher levels of spending for defense and those who wanted to see any increase in defense spending matched by commensurate increases in domestic spending. In spite of each camp’s firmly held views, Congress as a whole, acknowledging problems in military readiness and the growing need to replace aging equipment, voted to modify the spending caps set by the Budget Control Act (BCA) by enacting the Bipartisan Budget Act of 2015 (BBA). The BBA increased the spending cap on the defense budget by $25 billion for FY 2016 and by $15 billion for FY 2017. It also provided an additional $8 billion for the base defense budget through the OCO account, which is not subject to spending caps as the normal defense budget is.

The combined base budget and OCO-for-base budget for FY 2016 was $556 billion. Adjusted for inflation, this was a 5 percent increase over FY 2015 levels but still below the President’s FY 2016 budget request of $561 billion. For comparison, President Barack Obama’s 2012 defense budget, the last under
former Secretary of Defense Robert Gates, proposed spending $638 billion on defense in FY 2016. A bipartisan consensus, as seen in the National Defense Panel report in 2014, has identified the so-called Gates budget as the minimum the United States should be spending on national defense. As seen in Chart 3, both the FY 2016 enacted budget and the FY 2017 budget proposal are well below this minimum.

The restrictions placed on defense spending by the BCA continue to be a major concern of the military service chiefs, who have consistently testified about the damage these restrictions are causing to readiness, modernization, and capacity for operations. As FY 2016 ended, the budget debates about FY 2017 had not been resolved, but it appears unlikely that any resolution will bring the national defense budget close to even the minimum levels proposed by the Gates budget.

Purpose as a Driver in Force Sizing

The Joint Force is used for a wide range of purposes, only one of which is major combat operations. Fortunately, such events have been rare, averaging roughly 15–20 years between occurrences. In between (and even during) such occurrences, the military is used in support of regional engagement, crisis response, strategic deterrence, and humanitarian assistance, as well as to provide support to civil authorities and U.S. diplomacy.

The U.S. Unified Combatant Commands, or COCOMs (EUCOM, CENTCOM, PACOM, SOUTHCOM, and AFRICOM), all have annual and long-term plans through which they engage with countries in their assigned regions. These engagements range from very small unit training events with the forces of a single partner country to larger bilateral and sometimes multilateral military exercises. In 2015, these engagements included training and assisting Iraqi military forces and participating in joint training exercises with NATO members. Such events help to establish working relationships with other countries, acquire a more detailed understanding of regional political–military dynamics and on-the-ground conditions in areas of interest, and signal U.S. security interests to friends and competitors.

To support such COCOM efforts, the services provide forces that are based permanently in respective regions or that operate in them temporarily on a rotational basis. To make these regional rotations possible, the services must maintain a base force that is sufficiently large to train, deploy, support, receive back, and make ready again a stream of units ideally numerous enough to meet validated COCOM demand.

The ratio between time spent at home and time spent away on deployment for any given unit is known as OPTEMPO (operational tempo), and each service attempts to maintain a ratio that both gives units enough time to educate, train, and prepare their forces and allows the individuals in a unit to maintain some semblance of a healthy home and family life. This ensures that units are fully prepared for the next deployment cycle and that servicemembers do not become “burned out” or suffer adverse consequences in their personal lives because of excessive deployment time.

Experience has shown that a ratio of at least 3:1 is sustainable, meaning three periods of time at home for every period deployed. (If a unit is to be out for six months, it will be home for 18 months before deploying again.) Obviously, a service needs a sufficient number of people, units, ships, and planes to support such a ratio. If peacetime engagement were the primary focus for the Joint Force, the services could size their forces to support these forward-based and forward-deployed demands.

Thus, the size of the total force must necessarily be much larger than any sampling of its use at any point in time.

In contrast, sizing a force for major combat operations is an exercise informed by history—how much force was needed in previous wars—and then shaped and refined by analysis of current threats, a range of plausible scenarios, and expectations about what the
U.S. can do given training, equipment, employment concept, and other factors. The defense establishment must then balance “force sizing” between COCOM requirements for presence and engagement with the amount of military power (typically measured in terms of combat units and major combat platforms, which informs total end strength) thought necessary to win in likely war scenarios.

Inevitably, compromises are made that account for how much military the country is willing to buy. Generally speaking:

- The Army sizes to major warfighting requirements.
- The Marine Corps focuses on crisis response demands and the ability to contribute to one major war.
- The Air Force attempts to strike a balance that accounts for historically based demand across the spectrum because air assets are shifted fairly easily from one theater of operations to another (“easily” being a relative term when compared to the challenge of shifting large land forces), and any peacetime engagement typically requires some level of air support.
- The Navy is driven by global presence requirements. To meet COCOM requirements for a continuous fleet presence at sea, the Navy must have three to four ships in order to have one on station. To illustrate with a simplistic example, a commander who wants one U.S. warship stationed off the coast of a hostile country needs the use of four ships from the fleet: one on station, one that left station and is traveling home, one that just left home and is traveling to station, and one that fills in for one of the other ships when it needs maintenance or training time.

This report focuses on the forces required to win two major wars as the baseline force-sizing metric. The military’s effectiveness, both as a deterrent against opportunistic competitor states and as a valued training partner in the eyes of other countries, derives from its effectiveness (proven or presumed) in winning wars.

**Our Approach**

With this in mind, we assessed the state of military affairs for U.S. forces as it pertains to their ability to deliver hard power against an enemy in three areas:

- Capability,
- Capacity, and
- Readiness.

**Capability.** Examining the capability of a military force requires consideration of:

- The proper tools (material and conceptual) of sufficient design, performance characteristics, technological advancement, and suitability needed for it to perform its function against an enemy force successfully.
- The sufficiency of armored vehicles, ships, airplanes, and other equipment and weapons to win against the enemy.
- The appropriate variety of options to preclude strategic vulnerabilities in the force and give flexibilities to battlefield commanders.
- The degree to which elements of the force reinforce each other in covering potential vulnerabilities, maximizing strengths, and gaining greater effectiveness through synergies that are not possible in narrowly stovepiped, linear approaches to war.

The capability of the U.S. Joint Force was on ample display in its decisive conventional war victory over Iraq in liberating Kuwait in 1991 and later in the conventional military
operation to liberate Iraq in 2003. Aspects of its capability have also been seen in numerous other operations undertaken since the end of the Cold War. While the conventional combat aspect at the “pointy end of the spear” of power projection has been more moderate in places like Yugoslavia, Somalia, Bosnia and Serbia, and Kosovo, and even against the Taliban in Afghanistan in 2001, the fact that the U.S. military was able to conduct highly complex operations thousands of miles away in austere, hostile environments and sustain those operations as long as required is testament to the ability of U.S. forces to do things that the armed forces of few if any other countries can do.

A modern-day “major combat operation” along the lines of those upon which Pentagon planners base their requirements would feature a major opponent possessing modern integrated air defenses; naval power (surface and subsurface); advanced combat aircraft (to include bombers); a substantial inventory of short-range, medium-range, and long-range missiles; current-generation ground forces (tanks, armored vehicles, artillery, rockets, and anti-armor weaponry); cruise missiles; and (in some cases) nuclear weapons. Such a situation involving an actor capable of threatening vital national interests would present a challenge that is comprehensively different from the challenges that the U.S. Joint Force has faced in past decades.

2016 saw a continued shift in debate within military circles about the extent to which the U.S. military is ready for major conventional warfare, given its focus on counterinsurgency, stability, and advise-and-assist operations over the past decade. The Army in particular has noted the need to reengage in training and exercises that feature larger-scale combined arms maneuver operations, especially to ensure that its higher headquarters elements are up to the task. For example, Secretary of the Army Eric Fanning remarked in 2016 that “we’ve been fighting a certain way for 15 years” but “are [now] focused in the Army on getting back to full-spectrum training....” This Index ascertains the relevance and health of military service capabilities by looking at such factors as average age of equipment, generation of equipment relative to the current state of competitor efforts as reported by the services, and the status of replacement programs meant to introduce more updated systems as older equipment reaches the end of its programmed service life. While some of the information is quite quantitative, other factors could be considered judgment calls made by acknowledged experts in the relevant areas of interest or as addressed by senior service officials when providing testimony to Congress or addressing specific areas in other official statements.

It must be determined whether the services possess capabilities that are relevant to the modern combat environment.

**Capacity.** The U.S. military must have a sufficient quantity of the right capability or capabilities. There is a troubling but fairly consistent trend that characterizes the path from requirement to fielded capability within U.S. military acquisition. Along the way to acquiring the capability, several linked things happen that result in far less of a presumed “critical capability” than supposedly was required.

- The manufacturing sector attempts to satisfy the requirements articulated by the military.
- “Unexpected” technological hurdles arise that take longer and much more money to solve than anyone envisioned.
- Programs are lengthened, and cost overruns are addressed (usually with more money).
- Then the realization sets in that the country either cannot afford or is unwilling to pay the cost of acquiring the total number of platforms originally advocated. The acquisition goal is adjusted downward (if not canceled), and the military finally fields
fewer platforms (at higher unit cost) than it originally said it needed to be successful in combat.

As deliberations proceed toward a decision on whether to reduce planned procurement, they rarely focus on and quantify the increase in risk that accompanies the decrease in procurement.

Something similar happens with force structure size: the number of units and total number of personnel the services say they need to meet the objectives established by the Commander in Chief and the Secretary of Defense in their strategic guidance. The Marine Corps has stated that it needs 27 infantry battalions to fully satisfy the validated requirements of the regional Combatant Commanders, yet current funding for defense has the Corps at 23 on a path to 21. The Army was on a build toward 48 brigade combat teams, but funding reductions now have the number at 31—less than two-thirds the number that the Army originally thought necessary—if sequestration remains law.

Older equipment can be updated with new components to keep it relevant, and commanders can employ fewer units more expertly for longer periods of time in an operational theater to accomplish an objective. At some point, however, sheer numbers of updated, modern equipment and trained, fully manned units are likely necessary to win in battle against a credible opponent when the crisis is profound enough to threaten a vital interest.

Capacity (numbers) can be viewed in at least three ways: compared to a stated objective for each category by each service, compared to amounts required to complete various types of operations across a wide range of potential missions as measured against a potential adversary, and as measured against a set benchmark for total national capability. This Index employs the two-MRC metric as a benchmark.

The two-MRC benchmark for force sizing is the minimum standard for U.S. hard-power capacity because one will never be able to employ 100 percent of the force at the same time. Some percentage of the force will always be unavailable because of long-term maintenance overhaul (for Navy ships in particular); unit training cycles; employment in myriad engagement and small-crisis response tasks that continue even during major conflicts; and the need to keep some portion of the force uncommitted to serve as a strategic reserve.

The historical record shows that the U.S. Army commits 21 BCTs on average to a major conflict; thus, a two-MRC standard would require 42 BCTs available for actual use. But an Army built to field only 42 BCTs would also be an Army that could find itself entirely committed to war, leaving nothing back as a strategic reserve, to replace combat losses, or to handle other U.S. security interests. Again, this Index assesses only the Active component of the services, though with full awareness that the Army also has Reserve and National Guard components that together account for half of the total Army. The additional capacity needed to meet these “above two-MRC requirements” could be handled by these other components or mobilized to supplement Active-component commitments. In fact, this is how the Army thinks about meeting operational demands and is at the heart of the current debate within the total Army about the roles and contributions of the various Army components. A similar situation exists with the Air Force and Marine Corps.

The balance among Active, Reserve, and Guard elements is beyond the scope of this study. Our focus here is on establishing a minimum benchmark for the capacity needed to handle a two-MRC requirement.

We conducted a review of the major defense studies (1993 BUR, QDR reports, and independent panel critiques) that are publicly available, as well as modern historical instances of major wars (Korea, Vietnam, Gulf War, Operation Iraqi Freedom), to see whether there was any consistent trend in U.S. force allocation. The results of our review are presented in Table 6. To this we added 20
### Historical U.S. Force Allocation

Troop figures are in thousands.

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* Figures for engagements are numbers deployed; figures for documents are totals.
** Figures for Air Force bombers for Korean War, Vietnam War, Persian Gulf War, and Iraq are bomber squadrons. All other figures are bombers.
*** 2014 QDR prescribed nine heavy bomber squadrons, equaling 96 aircraft.
percent, both to account for forces and platforms likely to be unavailable and to provide a strategic reserve to guard against unforeseen demands. Summarizing the totals, this Index concluded that a Joint Force capable of dealing with two MRCs simultaneously or nearly simultaneously would consist of:

- Army: 50 BCTs.
- Navy: 346 ships and 624 strike aircraft.
- Air Force: 1,200 fighter/attack aircraft.
- Marine Corps: 36 battalions.

America’s security interests require the services to have the capacity to handle two major regional conflicts successfully.

**Readiness.** The consequences of the sharp reductions in funding mandated by sequestration have caused military service officials, senior DOD officials, and even Members of Congress to warn of the dangers of recreating the “hollow force” of the 1970s when units existed on paper but were staffed at reduced levels, minimally trained, and woefully ill-equipped. To avoid this, the services have traded quantity/capacity and modernization to ensure that what they do have is “ready” for employment.

As was the case in 2015, the service chiefs have stated that current and projected levels of funding continue to take a toll on the ability of units to maintain sufficient levels of readiness across the force. Some units have reduced manning. Though progress has been made in some areas due to funding provided by Congress in 2014 and 2015, the return of further cuts under the Budget Control Act of 2011 threaten to undo these gains. For example:

- General Mark Milley, Chief of Staff of the Army, and Acting Secretary of the Army Patrick J. Murphy testified in April 2016 that the Army can maintain only one-third of its force at acceptable levels of readiness to meet full-spectrum operations. They discussed the challenges posed by this crisis in stark terms: “The risk of deploying unready forces into combat is higher U.S. casualty rates and increased risk to mission success.”
- Air Force Chief of Staff General Mark A. Welsh and Secretary of the Air Force Deborah Lee James echoed the challenges expressed by General Milley and Acting Secretary Murphy, arguing that “the size of our force and state of our full-spectrum readiness are at or near all-time lows.”
- While the Navy has fared better in rebuilding its readiness over the past year, Admiral Michelle J. Howard, Vice Chief of Naval Operations, has testified that “[w]e are still paying down the readiness debt we accrued over the last decade but more slowly than we would prefer.” She further warned that “[w]e will only maintain our status as the world’s greatest navy with constant vigilance, dedication to restoring our readiness and a commitment to sustained forces around the globe.” The Navy has preserved readiness over the past year through fastidious management of its resources and a resistance to overtaxing the fleet, but as demand for America’s global naval presence continues to remain high, this will stretch thin until the fleet grows to a healthy level.

It is one thing to have the right capabilities to defeat the enemy in battle. It is another thing to have a sufficient amount of those capabilities to sustain operations over time and many battles against an enemy, especially when attrition or dispersed operations are significant factors. But sufficient numbers of the right capabilities are rather meaningless if the force is unready to engage in the task.

**Scoring.** In our final assessments, we tried very hard not to convey a higher level of precision than we think is achievable using unclassified, open-source, publicly available documents; not to reach conclusions that could
be viewed as based solely on assertions or opinion; and not to rely solely on data and information that can be highly quantified, since simple numbers do not tell the whole story.

We believe the logic underlying our methodology is sound. This Index drew from a wealth of public testimony from senior government officials, from the work of recognized experts in the defense and national security analytic community, and from historical instances of conflict that seemed most appropriate to this project. This Index considered several questions, including:

- How does one place a value on the combat effectiveness of such concepts as Air-Sea Battle, Network-centric Operations, Global Strike, or Joint Operational Access?

- Is it entirely possible to assess accurately (1) how well a small number of newest-generation ships or aircraft will fare against a much larger number of currently modern counterparts when (2) U.S. forces are operating thousands of miles from home, (3) orchestrated with a particular operational concept, and (4) the enemy is leveraging a “home field advantage” that includes strategic depth and much shorter and perhaps better protected lines of communication and (5) might be pursuing much dearer national objectives than the U.S. such that the political will to conduct sustained operations in the face of mounting losses might differ dramatically?

- How does one neatly quantify the element of combat experience, the erosion of experience as combat operation events recede in time and those who participated in them leave the force, the health of a supporting workforce, the value of “presence and engagement operations,” and the related force structures and deployment/employment patterns that presumably deter war or mitigate its effects if it does occur?

This Index focused on the primary purpose of military power—to defeat an enemy in combat—and the historical record of major U.S. engagements for evidence of what the U.S. defense establishment has thought was necessary to execute a major conventional war successfully. To this we added the two-MRC benchmark, on-the-record assessments of what the services themselves are saying about their status relative to validated requirements, and the analysis and opinions of various experts in and out of government who have covered these issues for many years.

Taking it all together, we rejected scales that would imply extraordinary precision and settled on a scale that conveys broader characterizations of status that range from very weak to very strong. Ultimately, any such assessment is a judgment call informed by quantifiable data, qualitative assessments, thoughtful deliberation, and experience. We trust that our approach makes sense, is defensible, and is repeatable.

### U.S. Military Power

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Endnotes:


2. Ibid., p. 8.


5. The United States has not had to contend in combat with any credible air force since the Vietnam War, but U.S. Air Force planners are increasingly concerned about an enemy’s ground-based, anti-air missile capability. For naval planners, ship-based, air-based, and shore-based anti-ship cruise missiles are of much greater concern than is the number of conventional surface combatants armed with large-caliber guns that an enemy navy has. Likewise, ground force planners have to consider the numbers and types of guided anti-armor weapons that an enemy possesses and whether an opposing force has guided artillery, mortar, or rocket capabilities. Guided/precision weapons are less expensive (by orders of magnitude) than the platforms they target, which means that countries can produce far more guided munitions than primary weapons platforms. Some examples: Harpoon ASCM ($2 million)/DDG-51 Arleigh Burke-Class destroyer ($2 billion); AT4 anti-armor weapon ($1,500)/M1A1 Abrams main battle tank ($9 million); 120mm guided mortar round ($10,000) or 155mm guided artillery round ($100,000)/M198 155mm howitzer ($500,000); S-300 anti-air missile ($1 million)/F/A-18 Hornet ($60 million) or F-35A Lightning II ($180 million).

6. One example of balancing the forces is the Army’s Aviation Restructure Initiative, in which the active-duty force seeks to redistribute certain rotorcraft platforms among the active-duty Army and the National Guard, a plan that the Guard has contended will reduce the capabilities it has gained during recent combat engagements, such as its pilots’ proficiency flying Apache helicopters. For more on this issue, see U.S. Government Accountability Office, *Force Structure: Army’s Analyses of Aviation Alternatives*, GAO–15–430R, February 26, 2015 (updated April 27, 2015), http://www.gao.gov/assets/670/669857.pdf (accessed September 7, 2015).


8. Ibid.


11. Defense references to war have varied over the past few decades from “major combat operations” (MCO) and “major theater war” (MTW) to the current “major regional contingency” (MRC). Arguably, there is a supporting argument for such shifts as planners attempt to find the best words to describe the scope and scale of significant military efforts, but the terms are basically interchangeable.

13. The Department of Defense, through the Joint Staff and Geographic Combatant Commanders, manages a relatively small set of real-world operational plans (OPLANS) focused on specific situations where the U.S. feels it is most likely to go to war. These plans are reviewed and updated regularly to account for changes in the Joint Force or with the presumed enemy. They are highly detailed and account not only for the amount of force the U.S. expects it will need to defeat the enemy, but also for which specific units would deploy; how the force would actually flow into the theater (the sequencing of units); what ports and airfields it would use; how much ammunition, fuel, and other supplies it would need at the start; how much transportation or “lift” would be needed to get the force there (by air, sea, trucks, or rail); and the basic plan of attack. The Pentagon also routinely develops, explores, and refines various notional planning scenarios in order to better understand the implications of different sorts of contingencies, which approaches might be more effective, how much of what type of force might be needed, and the regional issue or issues for which there would have to be an accounting. These types of planning events inform service efforts to develop, equip, train, and field military forces that are up to the task of defending national security interests. All of these efforts and their products are classified national security information and therefore not available to the public.


The U.S. Army

The U.S. Army is America’s primary land warfare component. Although it addresses all types of operations across the range of ground force employment, its chief value to the nation is its ability to defeat and destroy enemy land forces in battle.

As is the case with the other services, the U.S. Army has sought ways to absorb the budget cuts driven by the Budget Control Act (BCA) of 2011 while still meeting the missions outlined in the 2012 Defense Strategic Guidance (DSG). Fiscal challenges have strained the Army’s ability to meet the national security requirements outlined in the DSG even as it has worked to find a proper balance among readiness, modernization, and end strength. The Army has continued to reduce its end strength and accept greater risk to its modernization programs to preserve readiness levels—an even more challenging problem given that its proposed budget for fiscal year (FY) 2017 is $1.4 billion lower than FY 2016 enacted levels.

From a height of 566,000 in FY 2011, the Army’s active duty end strength has shrunk to nearly 475,000 in FY 2016 on a path to 460,000 by the end of FY 2017. These cuts are in line with the Army’s accelerated troop reduction plan to arrive at an end strength of 450,000 in FY 2018—the minimum outlined in the DSG. Although the Bipartisan Budget Act of 2015 provided a brief period of stability for the Department of Defense (DOD), funding levels continue to force the Army “to prioritize near-term operational requirements and readiness at the expense of end strength, sustainment and modernization.”

If BCA-mandated budget caps return in FY 2018, reduced funding levels and continued unpredictability wrought by short-term funding fixes such as continuing resolutions will result in further reductions in end strength and delays in modernization, threatening both capacity and capability.

Operationally, the Army has approximately 190,000 soldiers forward stationed across 140 countries. This is a significant increase from the previous year’s level of 143,000 soldiers, a noteworthy contrast to the continued reduction in end strength signifying a smaller Army shouldering an increased workload. This includes authorization for up to 9,800 troops that will be stationed in Afghanistan through 2016. Despite past pledges to reduce troop levels in Afghanistan to 5,500 by the end of 2016, President Barack Obama recently announced that the U.S. will maintain 8,400 troops in Afghanistan into 2017. Of the total number of U.S. forces deployed globally, “[t]he Army currently provides 40% of planned forces committed to global operations and over 60% of forces for emerging demands from Combatant Commanders.”

Capacity

In FY 2016, total Army end strength was 1,030,000 soldiers: 483,000 Active soldiers, 200,000 in the Army Reserve, and 348,000 in the Army National Guard. In FY 2016, a portion of these personnel costs was paid through the Overseas Contingency Operations (OCO) budget function. This is unlike FY 2015, when all soldiers in the Active Component were paid for in the base budget.
The Army also refers to its size in terms of brigade combat teams (BCTs). BCTs are the basic “building blocks” for employment of Army combat forces. They are normally employed within a larger framework of U.S. land operations but are sufficiently equipped and organized so that they can conduct independent operations as circumstances demand. A BCT averages 4,500 soldiers in strength depending on its variant: Stryker, Armored, or Infantry. A Stryker BCT is a mechanized infantry force organized around the Stryker ground combat vehicle (GCV). Armored BCTs are the Army’s principal armored units and employ the Abrams main battle tank and the M2 Bradley fighting vehicle. An Infantry BCT is a highly maneuverable motorized unit.

The Army also has a separate air component organized into combat aviation brigades (CABs), which also can operate independently. CABs are made up of Army rotorcraft, such as the AH-64 Apache, and perform various roles including attack, reconnaissance, and lift.

CABs and Stryker, Infantry, and Armored BCTs make up the Army’s main combat force, but they do not make up the entirety of the Army. About 90,000 troops form the Institutional Army and provide support, such as preparing and training troops for deployments and overseeing military schools and Army educational institutions. The troops constituting the Institutional Army cannot be reduced at the same ratio as BCTs or CABs, and the Army plans to insulate these soldiers from drawdown and restructuring proposals in order to “retain a slightly more senior force in the Active Army to allow growth if needed.” According to Army assessments a minimum of 87,400 active component soldiers in these forces is necessary to maintain the proposed 980,000 end strength for the total force. In addition to the Institutional Army, a great number of functional or multi-functional support brigades (amounting to approximately 13 percent of the active component force based on historical averages) provide air defense, engineering, explosive ordnance disposal (EOD), military police, military intelligence, and medical support among other types of battlefield support for BCTs.

While end strength is a valuable metric in understanding Army capacity, counting BCTs is a more telling measure of actual hard-power capacity. In concert with the end strength reduction to approximately 475,000 soldiers, the Active Army underwent brigade restructuring that decreased the number of BCTs from 38 to 31 in April 2016. As a part of this reorganization, the Army also added a third maneuver battalion to its infantry and armored BCTs in FY 2015. Additionally, all BCTs received additional engineer and fire support capabilities (additional 105mm and/or 155mm howitzers). The FY 2017 budget will support the conversion of one Stryker BCT into an Infantry BCT.

The Department of the Army’s FY 2016 budget requests supported a drawdown to 30 BCTs by the end of the fiscal year. However, in February 2016, Army Chief of Staff General Mark Milley recommended delaying deactivation of the 4th Infantry BCT stationed in Alaska for at least one year in order to continue to provide rapid deployment capabilities and Arctic security.

The Army’s aviation units also face near-term reductions. In May 2015, the Active Army deactivated the first of three combat aviation brigades and converted the 12th CAB into a headquarters element, leaving only 11 CABs remaining in the active component. In the conversion process, the 12th CAB shed five of its seven battalions, intending to augment the remaining battalions with rotational units. The 3rd CAB is slated to be deactivated in FY 2019, which would leave only 10 in the Active Army.

It should be noted that the National Commission on the Future of the Army suggested in its 2016 report to Congress that maintaining an 11th CAB would leave the Army “better postured to retain a forward stationed aviation brigade in Korea” and would provide an advantage over rotational forces in maintaining aviation capability.
The reduction in end strength in the past year has continued to have a disproportionate effect on BCTs. The Active Army has been downsized from 45 BCTs (552,100 soldiers) in FY 2013 to 31 BCTs (475,000 soldiers) in FY 2016. Thus, a 14 percent reduction in troop numbers resulted in a 31 percent reduction in BCTs. The proposed elimination of the 4th BCT in Alaska by the end of FY 2016 would have resulted in a 33 percent reduction in Active Army BCTs even as “demand for Army forces across Combatant Commands has increased by 23 percent during the same period.” General Milley warned the Senate Armed Services Committee in March 2016 that at current end strength, “the Army risks consuming readiness as fast as we build it.”

**Capability**

The Army’s main combat platforms are ground vehicles and rotorcraft. The upgraded M1A2 Abrams and M2/M3 Bradley vehicles are primarily used in active component Armored BCTs, while reserve component ABCTs still rely on the earlier M1A1 variant. Stryker BCTs, as one would expect, are equipped with Stryker vehicles. Infantry BCTs rely on the inventory of M113 armored personnel carriers (APCs). CABs are made up of Army helicopters including AH-64 Apaches, UH-60 Black Hawks, and CH-47 Chinooks.

Overall, the Army’s equipment inventory is relatively healthy. While some equipment has been worn down by usage in Afghanistan and Iraq, the Army has undertaken a “reset” initiative that is discussed below in the readiness section. The bulk of Army vehicles are young because of recent remanufacture programs for the Abrams and Bradley that have extended the service life of both vehicles beyond FY 2028.

The Army has been methodically replacing the oldest variants of its rotorcraft and upgrading others that still have plenty of airframe service life. Today, the UH-60M, which is a newer version of the UH-60A, makes up approximately two-thirds of the total UH-60 inventory. Similarly, the CH-47F Chinook, a rebuilt variant of the Army’s CH-47D heavy lift helicopter, is expected to extend the platform’s service life at least through 2038. However, the current budget request for aircraft procurement stands at $2.3 billion less than FY 2016 enacted levels. The proposed budget will decelerate fleet modernization, potentially resulting in 24 fewer Black Hawks and nine fewer Apaches than previously planned for FY 2017.

In addition to the viability of today’s equipment, the military must ensure the health of future programs. While future modernizing programs are not current hard-power capabilities that can be applied against an enemy force, they are a significant indicator of a service’s overall fitness for sustained combat operations: The service may be able to engage an enemy but be forced to do so with aging equipment and no program in place to maintain viability or endurance in sustained operations.

The U.S. military services are continually assessing how best to stay a step ahead of competitors: whether to modernize the force today with currently available technology or wait to see what their investments in research and development produce years down the road. Technologies mature and proliferate, becoming more accessible to a wider array of actors over time. U.S. forces will be challenged by state and non-state competitors that will leverage the latest developments in matériel, computing, platform sciences, and designs.

The Army is currently undertaking several modernization programs to replace or improve its ground combat vehicles and current rotorcraft fleet. However, budget reductions levied in previous years have significantly affected modernization, with Research and Development, Acquisition, and Procurement accounts all experiencing 35 percent funding cuts between 2011 and 2015. In fact, “[s]ince 2011 the Army has ended 20 programs, delayed 125 and restructured 124.”

The Army’s most high-profile joint service Major Defense Acquisition Program (MDAP) is the Joint Light Tactical Vehicle (JLTV), a program shared with the Marine Corps.
Intended to combine the protection offered by Mine Resistant Ambush Protected Vehicles (MRAPs) with the mobility of the original unarmored High Mobility Multipurpose Wheeled Vehicle (HMMWV), the JLTV is a follow-on to the HMMWV (also known as the Humvee) and features design improvements that will increase its survivability against anti-armor weapons and improvised explosive device (IED) threats.

The Army plans to procure a total of 49,100 vehicles over the life of the program, replacing only a portion of the current HMMWV fleet. The program is heavily focused on vehicle survivability and is not intended as a one-for-one replacement of the HMMWV. In fact, the JLTV is intended to take on high-risk missions traditionally tasked to the HMMWV, to include scouting and troop transport in adverse environments, guerrilla ambushes, and artillery bombardment. Several issues, including changed requirements and some technical obstacles in the early development phases, delayed the program from its originally intended schedule by about one year. In August 2015, the Army awarded Oshkosh a low-rate initial production (LRIP) contract for the JLTV, with initial deliveries scheduled to begin in June 2016. For the final year of LRIP in FY 2017, the Army plans to procure 1,828 JLTVs, which would bring the Army’s JLTV order to a total of 2,690. A full-rate production decision is expected in FY 2018.

Other Army MDAPs of note in FY 2017 include the M1A2 Abrams, M2 Bradley, M109A6 Paladin 155mm Howitzers, and Stryker. These platforms will undergo various structural modifications and upgrades that are needed to keep them ready to meet future contingencies.

The M1A2 is currently being enhanced with Vehicle Health Management and Power Train Improvement & Integration Optimization in order to upgrade the tank’s reliability, durability, and fuel efficiency so that it can provide ground forces with superior battlefield firepower. Similarly, the M109A6 is being outfitted with the Paladin Integrated Management (PIM) program, which consists of a new drivetrain and suspension components, in order to sustain the platform’s utility in combat through 2050. Planned upgrades for the Stryker include improved survivability and lethality, and a major Engineering Change Proposal (ECP) aimed at improving mechanical and electrical power, an enhanced chassis, and electronics network.

The Army’s rotorcraft modernization programs do not include any new platform designs. Instead, the Army is upgrading current rotorcraft to account for more advanced systems.

The Army’s main modernization programs are not encumbered by any major problems, but there is concern about the future direction of Army capability. Fifteen years of sustained combat operations and limited resources has “limited the Army’s ability to modernize for future fights.” For example, cancellation of the Ground Combat Vehicle program raises the question of replacing the M2 Bradley. The Army awarded contracts to BAE Systems and General Dynamics Land Systems in May 2015 to begin work on design concepts for a Future Fighting Vehicle, a possible successor to the GCV. Contract work is due to be completed in November 2016 and will help to inform the Army’s decision to upgrade or entirely replace the Bradley. However, “[t]here are currently no ground combat vehicle developmental programs.” At current funding levels, this could mean that “the Bradley and Abrams will be in the Army inventory for 50–70 years.” Updating the capability that the Bradley Infantry Fighting Vehicle provides remains a priority, and the Army is currently “refining concepts, requirements, and key technologies” as part of a series of engineering change proposals, which will include suspension, engine, transmission, and lethality upgrades.

The Army is also continuing development efforts for the Armored Multi-Purpose Vehicle (AMPV) to replace its 1960s-vintage M113 Armored Personnel Carrier. The AMPV will...
have five mission modules, including General Purpose, Medical Treatment, Medical Evacuation, Mortar Carrier, and Mission Command.66 Because it is still in development67 and is not expected to enter LRIP until FY 2020,68 the AMPV is not yet an MDAP and is not included in this year’s scoring.

Readiness

As a result of sequestration in FY 2013, the Army experienced a shortage in readiness funding that resulted in “significantly and rapidly degraded Army readiness,” which the Secretary of the Army and the Army Chief of Staff testified would “translate directly into FY 14 and beyond.”69 Although a higher level of funding in FY 2015 and FY 2016 provided two years of stability and modest budget relief, funding levels have not kept pace with the growing threat environment, including an FY 2017 base budget request that is $1.4 billion less than FY 2016 enacted levels.70 As a result, the Army has chosen to “protect current readiness at the expense of future modernization and end strength.”71 Army Vice Chief of Staff General Daniel Allyn explained that:

To build readiness...the Army reduced key installation services, individual training programs, and modernization to a level that impacts future readiness and quality of life. In addition to the effects on Soldier quality of life, these cuts force Commanders to divert Soldiers from training to perform life-support tasks.72

Recognizing the risk that degraded readiness introduces into its ability to respond to an emergent threat, the Army continues to prioritize operational readiness over other expenditures for FY 2017.73 A return to “full spectrum combat readiness” will require sustained investment for a number of years. As a result of years of high operational tempos and sustained budget cuts, the Army is not expected to return to sufficient readiness levels until FY 2020.74

This tiered readiness model employed by the Army has resulted in approximately one-third of the 31 Active BCTs being ready for contingency operations in FY 2016.75 This is an improvement from early in 2014 when 80 percent of the Army was considered to be “at a lower readiness level.”76 As stated, the Army had prioritized funding in readiness over capacity and modernization, allowing it to regain some of the readiness lost as a result of sequestration the prior year.

The Army uses Combat Training Centers (CTCs) to train its forces to desired levels of proficiency. Specifically, the mission of the CTC Program is to “provide realistic Joint and combined arms training” to approximate actual combat and increase “unit readiness for deployment and warfighting.”77 The Army financed 19 CTC rotations in FY 2016 and is expected to maintain the same number of rotations in FY 2017.78 Although utilizing CTCs continues to be a priority for the Army,79 resource constraints have limited investment in readiness.

The Army may already be experiencing the effect of reduced training hours. Army Aviation reported five major accidents in the first two quarters of FY 2016 that it determined to be a result of human error.80 While human error cannot be entirely eliminated, the Army has found that “[t]he most effective means of reducing human error is aggressive and realistic training that increases repetition and grows confidence and competence in the individual and collective team.”81

Aviation maintenance personnel are similarly starving for opportunities “to gain experience or maintain proficiency in their Military Occupational Specialty.”82 In order to stay within presidentially authorized end strengths in Afghanistan while at the same time maximizing combat capability, most maintenance personnel have been left behind as aircrew and aircraft have deployed. Instead, deployed forces have relied primarily on contractors to meet maintenance requirements, leaving Army maintenance personnel to perform only minor tasks.83
In FY 2015, the Army supported the Army Contingency Force (ACF) initiative that is developing “a contingency response force which provides Combatant Commanders an initial response capability that can achieve early objectives for most contingency plans.” Under the ACF model, the Army maintains readiness for only 20 of the 60 total BCTs maintained by the Active, National Guard, and Reserve Components. Of those 20 that are considered ready, 11 are committed to ongoing missions, “leaving only nine to provide strategic flexibility for unforeseen contingencies.” The other 40 BCTs maintained by the Total Army are limited to “minimum Individual/Crew/Squad resourcing levels through sufficient Training Support Systems.” The aforementioned numbers can be misleading, as the Active Component maintains a total of only 31 BCTs and realistically maintains only about 30 percent of them at acceptable levels of combat readiness.

Another key factor in readiness is sustainment of equipment. At the most basic level, a unit’s equipment must work when the unit is deployed. As a result of extensive combat usage in Afghanistan and the lingering effects of nearly a decade of combat operations in Iraq, the Army has continued with its reset program to restore used equipment to desired capability or to replace worn-out equipment for use in future engagements. The Army estimates that it will require three years of reset funding “after the last piece of equipment has been retrograded from the combatant command theater of operations.” It also anticipates that the timeline for reset requirements will continue into FY 2020 for equipment retrograded from Afghanistan.

Reduced funding throughout FY 2013, a consequence of sequestration, forced the Army to postpone the reset of several pieces of equipment. Operations and maintenance funding for FY 2017 supports the repair and restoration of “30,000 battle damaged items including aircraft, aviation support equipment, artillery and missile, communication equipment, individual and crew served weapons, tactical wheeled vehicles, and general support equipment.” If the necessary funding is again reduced by the BCA, the Army’s efforts to recover from recent operations and prepare for the future will be further stymied.

Scoring the U.S. Army

Capacity Score: Weak

Historical evidence shows that, on average, the Army needs 21 brigade combat teams to fight one major regional conflict. Based on a conversion of roughly 3.5 BCTs per division, the Army deployed 21 BCTs in Korea, 25 in Vietnam, 14 in the Persian Gulf War, and around four in Operation Iraqi Freedom—an average of 16 BCTs (or 21 if the much smaller Operation Iraqi Freedom initial invasion operation is excluded). In the 2010 Quadrennial Defense Review, the Obama Administration recommended a force capable of deploying 45 active BCTs. Previous government force-sizing documents discuss Army force structure in terms of divisions; they consistently advocate for 10–11 divisions, which equates to roughly 37 active BCTs.

Considering the varying recommendations of 35–45 BCTs and the actual experience of nearly 21 BCTs deployed per major engagement, 42 BCTs would be needed to fight two MRCs. Taking into account the need for a strategic reserve, the Active Army force should also include an additional 20 percent of the 42 BCTs.

- **Two-MRC Benchmark:** 50 brigade combat teams.
- **Actual 2016 Level:** 31 brigade combat teams.

The Army’s current Active Component BCT capacity meets 64 percent of the two-MRC benchmark and thus is scored as “weak.”
Capability Score: Marginal

The Army’s aggregate capability score remains “marginal.” While the Army will continue to pursue a model of tiered readiness with the aim of improving, if only slightly, troop readiness levels in FY 2015 over the previous year, the service’s overall capability score remains static due to continued reductions in end strength that degrade capability. Additionally, in spite of progress with the JLTV and AMPV, budget reductions and continuing resolutions have led to inadequate and short-sighted funding for the development of future modernization programs, negatively affecting platform innovation and modernization. These subsequent reductions have set back the Army’s development of future capabilities needed to remain dominant in any operational environment.

This aggregate score is a result of “marginal” scores for “Age of Equipment,” “Size of Modernization Programs,” and “Health of Modernization Programs.” The Army scored “weak” for “Capability of Equipment.”

Readiness Score: Weak

Just over a third of Active BCTs were ready for action according to official Army testimony by the Chief of Staff in April 2016. The Army had 32 BCTs; therefore, roughly 11 of the Active Army BCTs were considered ready for combat. For that reason, this Index assesses Army readiness as “weak.” However, it should be noted that the Vice Chief of Staff also reported in March that of the BCTs fully trained for “decisive action operations,” the readiness of nine had been consumed in support of ongoing operations, which means that only three were uncommitted and ready for use. With this in mind, actual readiness is therefore likely dangerously close to nearing a state of “very weak.”

Overall U.S. Army Score: Weak

The Army’s overall score is calculated based on an unweighted average of its capacity, capability, and readiness scores. The average score was 2.3; thus, the overall Army score is “weak.” This was derived from the aggregate score for capacity (“weak”); capability (“marginal”); and readiness (“weak”). This score is the same as the score in the 2016 Index and indicates continued concerns for the Army, particularly when it comes to capacity in light of increased demand on the service around the globe.

U.S. Military Power: Army

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2. Ibid.


10. Ibid., p. 1.


18. Ibid.


20. Ibid.

22. Ibid. The 13 percent estimate is based on a review of historical figures as referenced in the GAO report.


25. Ibid.


27. Horlander, Army FY 2017 Budget Overview, p. 10.


37. Ibid.


45. Ibid.


52. U.S. Army, “JLTV Enters Low Rate Production.”


54. Ibid., p. 3-5.

55. Ibid., p. 3-6.


60. Ibid.


62. Ibid.


66. Ibid.


68. Ibid.


73. Horlander, Army FY 2017 Budget Overview, p. 20.
81. Ibid.
82. Ibid.
83. Ibid.
87. Tan, “Big BCT Changes Mapped out for 2015.”
89. Ibid., p. 100.
91. Note that the first figures derive from an average BCT size of 4,500 and average division size of 15,000. The second set of numbers derives from the current average of around 3.5 BCTs per division and analysis of the structure of each Army division.
92. Congressional Quarterly transcript of Senate Armed Services Committee hearing, April 7, 2016.
Chief of Naval Operations (CNO) Admiral John M. Richardson, in the 2016 document *A Design for Maintaining Maritime Superiority*, describes the U.S. Navy’s mission as follows:

The United States Navy will be ready to conduct prompt and sustained combat incident to operations at sea. Our Navy will protect America from attack and preserve America’s strategic influence in key regions of the world. U.S. naval forces and operations—from the sea floor to space, from deep water to the littorals, and in the information domain—will deter aggression and enable peaceful resolution of crises on terms acceptable to the United States and our allies and partners. If deterrence fails, the Navy will conduct decisive combat operations to defeat any enemy.1

As the military’s primary maritime arm, the Navy enables the United States to project military power in the maritime and air domains, a critical capability in war, crisis response, and peacetime engagement missions. Unlike land forces (or even, to a large extent, air forces), which are tethered to a set of fixed, larger-scale support bases, the Navy is able to shift its presence wherever needed so long as the world’s oceans and seas permit. In addition to the ability to project combat power rapidly anywhere in the world, the Navy’s peacetime forward presence supports missions that include securing sea lines of communication (SLOC) for the free flow of goods and services, assuring U.S. allies and friends, deterring adversaries, and providing a timely response to crises short of war.

A few key documents inform the Navy as to the level of its day-to-day fleet requirements: the 2012 Defense Strategic Guidance (DSG);2 the Global Force Management Allocation Plan (GFMAP);3 the 2015 update to “A Cooperative Strategy for 21st Century Seapower”;4 and the *Design for Maintaining Maritime Superiority*. The 2012 DSG issued by the Secretary of Defense describes 10 primary missions for the Navy and the other branches of the U.S. military. In addition, the U.S. Navy must meet forward presence requirements laid out in the fiscal year (FY) 2016 GFMAP, which states the force presence needed around the world as determined by the combatant commanders (COCOMs) and the Secretary of Defense.5

While Admiral Richardson acknowledged in his March 2016 posture statement that the 2015 Bipartisan Budget Act provided some relief from funding shortfalls, he argued that recent years’ cuts and unstable budgets have caused the Navy to “modify our behaviors with a host of inefficient practices” and that “budget constraints are forcing choices that limit our naval capability in the face of growing and rising threats.”6

**Capacity**

For the Navy, capacity is measured by the number of ships rather than the number of sailors, and not all ships are counted equally. The Navy focuses mainly on the size of its “battle force,” which is composed of ships considered to be directly related to its combat missions.7

In 2015, the Navy increased its battle force requirement to 308 ships, two more than the...
The additional two ships in the fleet requirement are an LPD-17 amphibious ship and a Mobile Landing Platform vessel.\(^8\) Congress added funding for the amphibious ship in FY 2013 and FY 2015; it had not been requested by the Navy. While this may seem excessive since the Navy did not officially request a 12th LPD-17 ship, the Navy’s amphibious fleet is currently well below the Navy and Marine Corps program of record requirement (34 hulls) as well as this Index’s assessment (50); therefore, the addition of an unrequested LPD-17 contributes to the Navy’s broader amphibious vessel and overall fleet needs.\(^9\)

In both FY 2016 and FY 2017 budget materials, the Navy maintained its force structure goal of 308 ships.\(^10\) A new Force Structure Assessment (FSA) released by the Navy on July 12, 2016, also “supports a battle force requirement of 308 ships, but notes the force structure assessment under way for the fiscal 2018 budget submission will determine a new force level that will affect the shipbuilding plan.”\(^11\)

The Navy currently sails 274 vessels as part of its battle force fleet, up from 271 the previous year but still well below both the Navy’s fleet goal as well as a level sufficient to uphold a two-MRC (major regional contingency) construct. The Navy requested seven ships to be procured in FY 2017.\(^12\) This figure is below the number that the Congressional Budget Office (CBO) finds is necessary, on average annually, for the Navy to reach its fleet goal of 308 ships.\(^13\)

The largest proportional shortfall in the Navy fleet assessed in the 2017 Index is the same as in the past two editions: small surface combatants.\(^14\) This includes Littoral Combat Ships and Mine Countermeasure Ships and

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**CHART 3**

**Navy Requirements and Current Inventory**

This chart compares the Navy’s stated fleet requirement from its January 2015 report to Congress with their battle force ship capacity in 2016 as reported in the Naval Vessel Register.

<table>
<thead>
<tr>
<th>Ship Type</th>
<th>FY 2015 Inventory</th>
<th>FY 2015 Requirement</th>
<th>FY 2016 Inventory</th>
<th>2016 Difference: Inventory Minus Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aircraft Carriers</td>
<td>10</td>
<td>11</td>
<td>10</td>
<td>-1</td>
</tr>
<tr>
<td>Large Surface Combatant</td>
<td>84</td>
<td>88</td>
<td>84</td>
<td>-4</td>
</tr>
<tr>
<td>Small Surface Combatant</td>
<td>17</td>
<td>52</td>
<td>17</td>
<td>-35</td>
</tr>
<tr>
<td>Attack Submarines</td>
<td>54</td>
<td>48</td>
<td>52</td>
<td>4</td>
</tr>
<tr>
<td>Cruise Missile Submarines</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Ballistic Missile Submarine</td>
<td>14</td>
<td>12</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>Amphibious Warfare Ships</td>
<td>30</td>
<td>34</td>
<td>31</td>
<td>-3</td>
</tr>
<tr>
<td>Combat Logistics Force</td>
<td>30</td>
<td>29</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>Support Ships</td>
<td>28</td>
<td>34</td>
<td>30</td>
<td>-4</td>
</tr>
<tr>
<td>Total</td>
<td>271</td>
<td>308</td>
<td>272</td>
<td>-36</td>
</tr>
</tbody>
</table>


\(^{(1)}\) heritage.org
previously included Frigates. All Oliver Hazard Perry-class frigates were decommissioned by the end of 2015.\textsuperscript{15} There are currently 11 mine countermeasure (MCM) vessels and six LCS vessels for a total of 17 small surface combatants in the fleet, far below the objective requirements established by the Navy (52).

The aircraft carrier fleet currently suffers a capacity shortfall of three hulls: 10 are currently in the fleet, while the two-MRC construct requires 13. This also falls below a legal minimum of 11 carriers in the fleet, which is currently waived.\textsuperscript{16} The carrier gap resulted from the delayed delivery of the first-of-its-kind Ford-class carrier, which was supposed to enter the fleet as the USS Enterprise was decommissioned in 2012. The Congressional Research Service reported in May 2016 that “The Gerald R. Ford (CVN-78), the lead ship in the CVN-78 class, is scheduled to be delivered to the Navy in late August or early September 2016” and “will likely be commissioned some months after that, returning the Navy’s carrier force to a total of 11 ships.”\textsuperscript{17} These and other shortfalls are partly due to underinvestment in the Shipbuilding and Conversion, Navy (SCN) budget to procure new hulls quickly enough to increase the size of the Navy.\textsuperscript{18}

In October 2015, the CBO calculated that the Navy’s 308-ship fleet goal would cost $20.2 billion in shipbuilding funds annually, well above the historical average of $15.7 billion per year.\textsuperscript{19} The Navy’s SCN request for FY 2017 totaled over $18 billion, much closer to the figure the CBO has assessed is necessary to reach fleet goals.\textsuperscript{20} However, as noted, this only includes funding for seven battle force ships to be procured in this fiscal year, which will make it difficult to increase the fleet size. The mismatch between higher funding but not more hulls is due in part to the fact that a large portion of this funding is dedicated to advanced procurement of the next-generation ballistic missile submarine program (SSBN(X) Columbia-class) as well as non-battle force requirements such as a training ship.\textsuperscript{21}

Without significant funding increases in procuring more vessels across ship types each year, it appears unlikely that the Navy will reach its own capacity goals for the foreseeable future.\textsuperscript{22} Due to expected funding shortfalls relative to fleet goals:

[T]he Navy projects that the fleet would experience a shortfall in large surface combatants (i.e., cruisers and destroyers) from FY2034 through FY2037, and from FY2041 through at least FY2046; a shortfall in small surface combatants (i.e., LCSs and frigates) for the entire 30-year period; a shortfall in attack submarines from FY2025 through FY2036; and a shortfall in amphibious ships from FY2017 through FY2021, in FY2040, and from FY2042 through at least FY2046.\textsuperscript{23}

By the publication of the 2016 Index, small surface combatants were projected to experience a shortfall solely between FY 2016 and FY 2027; but according to the 2016 Force Structure Assessment for FY 2017, the Secretary of Defense’s 2015 decision to reduce the LCS/Frigate program from 52 ships to 40 ships has upped the small surface combatant shortfall projection to a 30-year duration.\textsuperscript{24}

As important as the total fleet size is, the Navy must also consider the number of ships that are forward deployed to meet operational demands. Not all ships in the battle force are at sea at the same time. The majority of ships are based in the continental U.S. (CONUS) to undergo routine maintenance and training, as well as to limit deployment time for sailors. However, given the COCOMs’ requirements for naval power presence in each of their regions, there is an impetus to have as many ships forward deployed as possible. Striking a balance between deploying ships to meet operational demands and keeping them in port to perform needed maintenance and provide relief to sailors is a constant challenge.

Today, the Navy has 94 ships deployed globally—35 percent of the total available fleet and roughly on par with the 2016 level of 95 ships.\textsuperscript{25} While the Navy remains committed to deploying roughly a third of its fleet at all times, it should be noted that this is nevertheless an insufficient global presence because
the total fleet falls well below necessary levels both for the Navy’s stated presence needs and for a fleet capable of projecting power at the two-MRC level. The Navy has tried to increase forward presence by emphasizing non-rotational deployments: having a ship “home-ported” overseas or keeping the ship forward stationed:

- **Home-ported:** The ships, crew, and their families are stationed at the port or based abroad.

- **Forward Stationed:** Only the ships will be based abroad while crews are rotated out to the ship.

Both of these non-rotational deployment options require cooperation from friends and allies to permit the Navy’s use of their facilities as well as investment in additional facilities abroad. However, these options allow one ship to provide a greater level of presence than four ships based in CONUS and in rotational deployment since they offset the time necessary to deploy ships to distant theaters. A key example of the use of this practice is the Navy’s constant home porting of an aircraft carrier at the U.S. naval base in Yokosuka, Japan. In May 2015, the USS George Washington (CVN-73) departed this base with the USS Ronald Reagan sailing there to replace it. The George Washington, stationed at Yokosuka since 2008, left to undergo its midlife refueling and complex overhaul (RCOH).

The Navy maintains that it currently will be able to meet GFMAP requirements and the 10 missions outlined in the DSG. However, as noted, Admiral Richardson has indicated that the fleet will continue to be stretched to meet demand.

**Capability**

Scoring the U.S. Navy’s overall ability to protect U.S. interests globally is not just a matter of counting the fleet. The quality of the battle force is also important in determining the strength of the Navy.

A comprehensive measure of platform capability would involve a comparison of each ship and its weapons systems relative to the military capabilities of other nations. For example, a complete measure of naval capabilities would have to assess not only how U.S. platforms would match up against an enemy’s weapons, but also whether operational concepts like the often discussed Air-Sea Battle would be effective in a conflict. This assessment would then have to be replicated for each potential conflict. While this is a necessary exercise and one in which the military currently engages, it is beyond the scope of this *Index* because such details and analysis are routinely classified.

Capability can be usefully assessed based on the age of ships, the modernity of the platform, and whether or not modernization programs will maintain the fighting edge of the fleet. The Navy has several classes of ships that are nearing the end of their lifespan, and this will precipitate a consolidation of ship classes in the battle force.

As noted, the Navy retired its entire fleet of Oliver Hazard Perry-class guided missile frigates by the end of 2015. The Perry-class is being replaced by the Littoral Combat Ship (LCS), but some naval analysts have suggested that the LCS lacks the firepower of the frigate. In 2015, the Navy modified its LCS program to add more firepower to future hulls, and it will be referring to these upgunned LCSs as frigates beginning in FY 2019. This modification resulted from a restructuring of the LCS program initiated in 2014 by Secretary of Defense Chuck Hagel. The upgrades that the Navy says will give this future block of LCS/frigates capabilities closer to those of the Perry-class frigates include “over-the-horizon surface to surface missile and additional weapon systems and combat system upgrades” and “increased survivability through incorporating additional self-defense capabilities and increased hardening of vital systems and vital spaces.”

The FY 2017 Future Years Defense Program (FYDP) includes funding for the
construction of seven Littoral Combat Ships through FY 2021. Currently, the Navy projects that 10 LCSs will be in the deployable force by the end of FY 2016—double the five commissioned in FY 2015—and 14 by the end of FY 2017 if the funding requested for the construction of four additional LCSs is approved this summer. However, this is still well below the fleet size of small surface combatants necessary to fulfill the Navy’s global responsibilities (52) even when combined with the remaining mine countermeasure vessels in the fleet (11). Noting the age of these legacy vessels and LCS delays, the U.S. Congress mandated in the FY 2016 National Defense Authorization Act (NDAA) that the Department of Defense (DOD) produce a “Mine countermeasures master plan and report” that would assess the “capabilities, capacities, and readiness levels of the defensive capabilities of the Navy for MCM” and “ensure[e] the operational effectiveness of the MCM vessels, including the decommissioned MCM-1 and MCM-2 ships and the potential of such ships for reserve operational status.” This report is due in winter 2016.

The Navy is attempting to put the remaining Ticonderoga-class cruiser fleet into temporary layup status in order to extend this class’s fleet service time into the 2030s, even though these ships are younger than their expected service lives. The Navy’s FY 2017 budget request renewed its cruiser phased modernization plan as an alternative to a continuation of the 2-4-6 directive passed by Congress in 2015. This meant that “two cruisers would enter in a modernization cycle each year, [and] no cruisers will remain in layup for more than four years with no more than six cruisers out of service at one time,” according to Rear Admiral William Lescher, Deputy Assistant Secretary of the Navy for Budget. Driven by budget shortfalls, this plan (like the previous year’s) is an attempt to keep 11 of the 22 commissioned cruisers in service at all times through 2034.

In early 2016, Rear Admiral Lescher advocated for an alternative to the current 2-4-6, which has already put the USS Cowpens (CG-63) and the USS Gettysburg (CG-64) into modernization periods in FY 2015 with two to follow in the summer of 2016. The alternative phased modernization plan in the FY 2017 budget request asks Congress to allow the Navy to put the remaining seven unmodernized cruisers into maintenance in FY 2017, arguing that it saves $3 billion in operating costs over the FYDP. There is currently no program to replace the Ticonderoga-class cruisers; a program initiated in FY 2001, called CG(X), was to yield a replacement cruiser vessel, but it was canceled in FY 2011 after it was deemed too expensive.

The Navy’s two current dock landing ships (LSD), the Whidbey Island-class and Harpers Ferry-class amphibious vessels, are reaching the end of their service lives in the 2025 timeframe and are to be replaced by the next-generation LX(R) program. The Navy requested $6.4 million for this program, dedicated to research and development, in FY 2017 following FY 2016 funding of $325.5 million (of which $250 million was advanced procurement funding) added by Congress. LX(R) was initially to begin procurement in FY 2017 but has since been delayed until FY 2020.

Many of the other ships that the Navy sails are also legacy platforms. Of the 18 classes of ships in the Navy, only seven are currently in production. For example, 72 percent of the Navy’s attack submarines are Los Angeles-class submarines, an older platform that is being replaced with a more modern and capable Virginia-class. This will shift as the Navy continues to purchase more ships.

The procurement of ships is critical to meeting Navy capacity requirements, maintaining ship capabilities, and maintaining the industrial capacity to build any warships. The Navy plans to procure 38 ships between FY 2017 and FY 2021, including seven battle force ships in FY 2017 alone. Compared to the FY 2016 plan to procure 48 new ships between FY 2016 and FY 2020, the FY 2017–FY 2021 plan projects a 10-ship reduction to 38 ships to account for the reduced annual
procurement rate for the Littoral Combat Ship (LCS)/Frigate program (52 ships to 40 ships) initiated by the Secretary of Defense in December 2015. This plan also directs the Navy to reduce planned annual procurement quantities of LCSs during the FY 2017–FY 2021 shipbuilding plan and downselect to one variant of the ship class.42

Modernization programs supplement procurement plans and are intended to replace current platforms as they reach the end of their planned service lives, build up forces to meet capacity requirements, and introduce new technologies to the operating forces. Ship modernization programs as they currently stand are problematic because they do not “keep pace to deal with high-end adversary weapons systems by 2020.”43 The CBO has reported both in 2014 and most recently in October 2015 that to reach its procurement goals for the FY 2016 NDAA, the Navy would need to increase spending on shipbuilding by one-third over what it has spent per year during the past 30 years.44 It is worth noting that this assessment was for the Navy’s goal of a 308-ship Navy, maintaining the FY 2015 aim of 308 through FY 2016 and now in FY 2017 but still well below this Index’s prescribed fleet size of 346 ships.

Because ships take such a long time to build and only a few shipyards are capable of building them, and because shipbuilding programs require carefully orchestrated, long-lead-time planning to account for sequencing in the shipyards, supply chain and workforce management, and multi-year funding, the Navy publishes a 30-year plan as its top-level document that captures objectives by class and sequencing of replacements as older ships reach the end of their service lives.45 According to the current 30-year plan, the Navy will reach its 308-ship requirement by FY 2021.46

However, the 30-year shipbuilding plan is not limited to programs of record and assumes procurement programs that have yet to materialize. For that reason, it is often considered overly optimistic. For example, the goal of 308 ships stated in the Navy’s most recent 30-year plan includes an objective for 12 SSBN(X) Columbia-class submarines to replace the legacy Ohio-class, which will require a significant portion of the SCN account when it goes into production if the overall budget is not increased. The Navy’s FY 2013 budget deferred the procurement of the lead boat from FY 2019 to FY 2021, projecting a shortfall of 11 or 10 SSBN boats for the period FY 2029 to FY 2041.47 This is something that the Navy will continue to have difficulty maintaining as it struggles to sustain, overhaul, modernize, and eventually retire the remainder of its legacy SSBN fleet. The Navy allocated over $773 million in its FY 2017 request, or 4 percent of its total shipbuilding budget, to advanced procurement funding for the Columbia-class.48

The service is planning to acquire the first Columbia-class SSBN(X) in FY 2021.49 In March 2016, the Government Accountability Office (GAO) reported that total program acquisition costs will be about $97 billion, including $12 billion for research and development and $85.1 billion for procurement.50 According to the Congressional Research Service, “The Navy in January 2015 estimated the average procurement cost of boats 2 through 12 in the Ohio replacement program at about $5.2 billion each in FY2010 dollars.”51 Based on the historical average, the Navy will have to spend more than a third of its shipbuilding budget on one Columbia hull each year that it procures one.52 This Index therefore relies on budget and programmatic data from programs of record to determine the state of Navy modernization.

The most glaring problem with the Navy’s current modernization program has to do with how many ships it plans to purchase. While the Navy has stated its intent to purchase additional attack submarines, the current Virginia-class program of record is slated to produce a total of 30 submarines. Under the Navy’s FY 2017 30-year plan, the SSN force would reach a minimum of 41 boats in FY 2029 and stay below 48 boats through FY 2036. The Navy has stated that it will attempt to lengthen deployments
and possibly perform service life extensions on some of the existing attack submarines to account for this shortfall. Similarly, the Navy plans to replace the 14 aging Ohio-class SSBNs with 12 Columbia-class hulls.

All remaining Oliver Hazard Perry-class frigates were retired in 2015, so the Littoral Combat Ship will increasingly assume the entire small surface combatant fleet requirement. As noted, the LCS and its follow-on, which will be called a frigate, are intended to make up this shortfall with a procurement of 52 total projected LCS/frigates. Timing for the small surface combatants will be another issue. While the LCS/frigate procurement has been scheduled, ship delivery will not be rapid enough to fill all small surface combatant requirements. The 2015 plan and the 2016 plan therefore do not expect to reach a count of 52 small surface combatants until the year 2028—again, a rosier projection than that determined by the CBO’s shipbuilding budget analysis.

Of the seven classes of ships the Navy is building, some have been relatively successful, whereas others are more problematic. Both the Virginia-class submarines and Arleigh Burke-class destroyers have a steady production rate and are being considered for upgrades to improve their respective capabilities. The newer Arleigh Burke-class Flight III design will be able to support a new and larger Air and Missile Defense Radar (AMDR). The Navy also intends to build some Virginia-class hulls with extended lengths through the Virginia Payload Module starting in FY 2019 to provide space for additional missiles or torpedoes and has requested continued research and development funding in FY 2017 for this program. The San Antonio-class LPD-17 program procured its 12th ship in FY 2016 but is not likely to continue procurement beyond this. As noted, the LX(R) is to replace these vessels, but its initial procurement year has been delayed a number of times. On the other hand, the Ford-class aircraft carrier, America-class amphibious ship, Zumwalt-class (DDG-1000) destroyer, and LCS have experienced varying degrees of difficulty in cost overruns and reductions in intended fleet size. The Zumwalt class was essentially relegated to an experimental order, having been reduced from a projected fleet of 32 hulls to just three. Despite obstacles in experimentation and funding, however, the lead Zumwalt-class guided missile destroyer DDG-1000, the USS Zumwalt, was commissioned on May 20, 2016, and will enable the Navy to test new and developing capabilities such as smaller crewing, an electric-drive propulsion system, and even possibly rail gun weapon technology.

The delivery of CVN-78, the first of the new Gerald R. Ford class of aircraft carriers, was significantly delayed, causing a shortfall in the number of aircraft carriers (down to 10) in the U.S. fleet. The Navy is currently confident that it will commission the USS Ford in Fall 2016 as 97 percent of the ship is completed. Both the America-class amphibious ship and the LCS also face delays and adjustments of requirements. The America class will produce only two ships of the current design, and the survivability and strike requirements for the LCS continue to be questioned. All four programs have experienced cost growth, with the Zumwalt-class, Ford-class, and America-class ships incurring cost breaches under the Nunn–McCurdy Act. In December 2015, Secretary of Defense Ashton Carter directed the Navy to reduce the number of LCS hulls that it will procure from 52 to 40. However, the Navy has somewhat defiantly maintained its program of record for a requirement of 52 small surface combatants (though not necessarily all of them LCSs). Despite these difficulties, the Navy regards its fleet as capable of handling today’s threats, albeit with increased risk.

The Navy’s long-range strike capability derives from its ability to launch various missiles and combat aircraft. Of the two, naval aircraft are much more expensive and difficult to modernize as a class. Not long ago, the Navy operated several models of strike aircraft that included the F-14 Tomcat, A-6 Intruder, A-4 Skyhawk, and F/A-18 Hornet. Over the past 20 years, this variety has been winnowed to a single model: the F/A-18. While the F/A-18
A–D variants were first introduced in 1983 and already have undergone service life extensions, the Navy flies a significant number of F/A-18 E/F Super Hornets that are not only newer, but also considered to be extremely capable. The Navy is implementing efforts to extend the life of some of the older variants but plans to have a mix of the F-35C and F/A-18 E/F Super Hornets.

The F-35C is the Navy’s largest aviation modernization program. It is a fifth-generation fighter (all F/A-18 variants are considered fourth-generation) that will have greater stealth capabilities and state-of-the-art electronic systems, allowing it to communicate with multiple other platforms. The Navy plans to purchase 260 F-35Cs (along with 80 F-35Bs for the Marine Corps, discussed in the section on that service) to replace a current inventory of 457 F/A-18 A–Ds and EA-18G Growler electronic attack aircraft. The F-35 is supposed to be a more capable aircraft relative to the F/A-18, but at 260 aircraft, it will not be enough to make up for the Hornets that the Navy will need to replace.

In addition, like the other F-35 variants, the F-35C has faced development problems. The system has been grounded because of engine problems, and software development issues have threatened further delay. The aircraft also has grown more expensive through the development process. The Navy’s FY 2017 budget request indicates that it plans to buy four additional F-35Cs in 2017 and 64 between FY 2017 and FY 2021.

The F-35C is expected to reach initial operating capability (IOC) by August 2018. This is later than the previous expectation of IOC by FY 2015. Moreover, Deputy CNO for Warfare Systems Rear Admiral Michael C. Manazir conceded during congressional questioning that “there is some risk to that date.” Former CNO Admiral Jonathan Greenert stated in 2015 that this delay, combined with unforeseen higher operational tempo (OPTEMPO) on the existing fighter fleet caused by strikes against ISIS, is leading to a possible fighter shortfall of 36 aircraft. At least six years behind schedule as of 2016, the Navy is looking at a possible shortfall of as many as 138 aircraft by the 2020s. This shortfall and delayed development have led the Navy to extend the service lives of its legacy F/A-18 C/D Hornet aircraft. The Navy requested two additional F/A-18E/Fs in FY 2017 through OCO funding and intends to procure an additional 14 in FY 2018.

The Navy’s other aircraft programs, EA-18G Growler and E-2D Advanced Hawkeye, have been relatively successful. The EA-18G program, which had completed its previously planned procurement of 135 aircraft in FY 2014, added 15 aircraft in FY 2015 and 10 aircraft in FY 2016 that it had sought through that fiscal year’s “unfunded priorities” list. The Navy included 12 F/A-18F Super Hornets in its FY 2016 list of unfunded priorities that the service explained could be “built...to be converted to EA-18G Growler electronic attack aircraft if necessary.” DOD has also established an Electronic Warfare (EW) Executive Committee that is currently assessing, among other issues, the potential necessity of additional Growlers in the future. However, the FY 2017 Navy budget request did not seek additional Growlers. The E-2D program is on a steady procurement schedule, with the Navy having successfully procured its requested level of five aircraft each in FY 2015 and FY 2016. The Navy requested an additional six in FY 2017 and intends to procure 23 over the FY 2017 FYDP.

In FY 2017, the Navy requested the authority to eliminate a carrier air wing, which would bring the total to nine. This decision was driven partly by the fact that the Navy has consistently fielded only 10 aircraft carriers for a number of years, with the service’s practice being one carrier air wing less than the number of carriers in the fleet based on the assumption that one carrier at any time will be effectively out of commission for its RCOH. This deactivation of one air wing is scheduled to take place in the fall of 2016.

This Index rejects this assumption and assumes that there should be an equal number.
of air wings and aircraft carriers. The number of air wings is also well below the capacity required to field a two-MRC force by either count, as such a force requires 13 carriers. Therefore, if the Navy were to continue its one-less-air wing assumption, 12 would actually be necessary today. This Index assesses that 13 are actually necessary to provide enough aviation assets for every carrier at any given time.

It should be noted that this divestment of one carrier air wing (the aircraft and associated assets are being diverted to other wings) was driven largely by a mismatch between demand for naval aviation assets and the supply of ready air wings. As the Navy has experienced a higher-than-expected OPTEMPO in recent years, each air wing has been strained for available aircraft while performing necessary maintenance work, so the decision to draw down one wing was made to supplant the demand of those that were active in U.S. engagements.80

Readiness

Although the Navy states that it can still deploy forces in accordance with GFMAP requirements, various factors indicate a continued decline in readiness over the past year. Admiral Michelle Howard, Vice Chief of Naval Operations, has reported that:

We have not yet recovered from the readiness impacts resulting from a decade of combat operations. The cumulative effect of budget reductions, complicated by four consecutive years of continuing resolutions, continues to impact maintenance, afloat and ashore. The secondary effects of these challenges impact material readiness of the force, and the quality of life of our Sailors and their families.81

As a result of the inconsistent and insufficient funding experienced by the Navy in recent years:

Full recovery of the material readiness of the Fleet is likely to extend beyond 2020. Stable funding, improvement in on-time execution of ship and aviation depot maintenance, and steady state operations are required to meet our Fleet readiness goals. To mitigate impacts ashore, Navy has made difficult decisions and focused on shore items directly tied to our primary missions.82

Like the other services, the Navy has had to dedicate readiness funding to its immediate needs of various engagements around the globe, which means that maintenance and training for those ships and sailors not deployed has not been prioritized.

The Navy’s undersized fleet has contributed greatly to the readiness challenges it faces. For example, carrier strike groups (CSGs) have experienced the following problems in recent years, according to the GAO:

- [C]arrier strike group deployment lengths have increased from an average of 6.4 months between 2008–2011 and 8.2 months between 2012–2014, to 9 months for three carrier strike groups in 2015.

- Increased deployment lengths have resulted in declining ship conditions and materiel readiness, and in a maintenance backlog that has not been fully identified or resourced, according to Navy officials.

- The declining condition of ships has increased the duration of time that ships spend undergoing maintenance in the shipyards, which in turn compresses the time available in the schedule for training and operations.83

According to Congressman J. Randy Forbes, chairman of the Subcommittee on Seapower and Projection Forces of the House Committee on Armed Services:

[W]e have received data showing that [at current funding levels], next year, around the world, we will only be able to fulfill:

- 56% of our commanders’ requests for carriers,
• 54% of the requests for amphibious groups,
• 42% of the requests for submarines, and
• 39% of the requests for cruisers and destroyers.84

To support fleet readiness, the Navy has synchronized maintenance and modernization with the fleet training required to achieve GFMAP objectives utilizing the Optimized Fleet Response Plan (O-FRP).85 This plan was implemented only because of years of a shrinking fleet and deferred maintenance. According to the Navy, O-FRP’s “aim is to produce a more comprehensively manned and completely trained Naval force that is ready to deploy on a more predictable schedule” given suboptimal capacity or readiness funding.86

A GAO analysis of O-FRP’s performance since its implementation in 2014 compared to naval readiness of the recent past yielded mixed results. The GAO found that in the period from 2011 to the implementation of O-FRP, the Navy’s deployment and maintenance schedules were in poor condition. However, the three aircraft carriers that have implemented O-FRP “have not completed maintenance tasks on time, a benchmark that is crucial to meeting the Navy’s employability goals. Further, of the 83 cruisers and destroyers, only 15 have completed a maintenance availability under OFRP.87 The GAO found that these rates were better than before O-FRP was implemented, but only slightly.

Admiral Philip S. Davidson, Commander of U.S. Fleet Forces Command, testified on behalf of a group of commanding officers of ships and aircraft squadrons in May 2016, detailing a number of ways that budget shortfalls would strain naval readiness. The impacts of these shortfalls included restricting flying hours for a carrier air wing and deferring ship maintenance across the fleet.88 Admiral Davidson further testified that “the $848 [million] shortfall will have no impact to our forces currently deployed, but deferring depot and continuous maintenance availability would likely delay a number of deployments,” echoing the readiness challenges of the other services experiencing higher-than-expected OPTEMPO.89

The Navy’s aviation readiness is also suffering as a result of years of deferred maintenance work and cuts in training budgets. Admiral Manazir testified in July 2016 that:

Navy aviation readiness is in a precarious position today as we continue to meet deployed readiness requirements, albeit at the expense of non-deployed force training.... [W]e continue to face challenges associated with increased costs and effort in sustaining legacy aircraft [that are] being demanded more than anticipated and retained longer than planned, while some of their intended replacements have not yet arrived. Furthermore, fiscal constraints force difficult trades in capacity and readiness for capability improvements. Simply, the Navy is challenged to modernize our fleet while also sustaining an aging force.90

While Admiral Manazir’s assessment of Navy aviation readiness was more positive over the past year than the assessments of his counterparts in the other services, he warned that the continued high OPTEMPO could strain his service’s readiness if not paired with additional funding to maintain aircraft and train pilots that are not deployed. Commenting on the extension of the USS Harry Truman’s deployment by a month, Admiral Manazir said, “The particular impact is more readiness dollars to keep the carrier strike group out there for an additional month...that caused some impacts to training—the forces in training down the road.”91

According to Admiral Manazir, the delays in IOC for the F-35C also have caused a number of readiness challenges, as the Navy has had to retain older F/A-18A–D aircraft longer than expected:

[W]e didn’t plan to do that maintenance and when we opened those airplanes up they had significant corrosion that we did not plan for.... [T]he second effect it had was we were over flying our F-18s, Super Hornets, Es and Fs. We
didn’t plan to fly them this much nor this early in their life. So it’s accelerating the life used on the F-18 Es and Fs.92

Admiral Manazir added that the CNO’s primary priority that was not covered by the President’s FY 2017 budget request is the funding to bridge the gap between the older F/A-18s and the F-35C.93

The Navy also has stated its readiness challenges in terms of maintenance work being performed. According to Admiral Howard:

Resetting our surface ships and aircraft carriers after more than a decade of war led to significant growth in public and private shipyard workload. The Navy baseline [FY 2017] request funds 70% of the ship maintenance requirements across the force. OCO funding provides the remaining 30%. The Aviation Depot Maintenance program is funded to 76% in baseline and 85% with OCO for new work to be inducted in FY17.94

Admiral Howard, however, rated facilities sustainment poorly as in the past few years, stating that:

[O]ur FY17 facilities sustainment account is resourced at 70%...which falls short of DOD’s goal of 90% for the sixth year in a row. Navy’s FY17 request for restoration and modernization funding is roughly half of FY16 levels. This is only enough to address the most critical deficiencies for the naval shipyards.... By deferring less-critical repairs, we are increasing risk of greater requirements in the outyears and acknowledge that our overall facilities maintenance backlog will increase.95

It is worth noting again that the Navy’s own readiness assessments are based on the ability to execute a strategy that assumes a force sizing construct that is smaller than the one prescribed by this Index.

Scoring the U.S. Navy

Capacity Score: Marginal

The Navy is unusual relative to the other services in that its capacity requirements must meet two separate objectives. First, during peacetime, the Navy must maintain a global forward presence. This ongoing peacetime requirement to be present around the world is the driving force behind ship count requirements: a set total number to ensure that the required number of ships is actually available to provide the necessary global presence.

On the other hand, the Navy also must be able to fight and win wars. In this case, the expectation is to be able to fight and win two simultaneous or nearly simultaneous MRCs. When thinking about naval combat power in this way, the defining metric is not necessarily a total ship count, but rather the carrier strike groups, amphibious ships, and submarines deemed necessary to win both the naval component of a war and the larger war effort by means of strike missions inland or cutting off the enemy’s maritime access to sources of supply.

An accurate assessment of Navy capacity takes into account both sets of requirements and scores to the larger requirement.

It should be noted that the scoring in this Index includes the Navy’s fleet of ballistic-missile and fast attack submarines to the extent that they contribute to the overall size of the battle fleet and with general comment on the status of their respective modernization programs. Because of their unique characteristics and the missions they perform, their detailed readiness rates and actual use in peacetime and planned use in war are classified. Nevertheless, the various references consulted are fairly consistent, both with respect to the numbers recommended for the overall fleet and with respect to the Navy’s shipbuilding plan.

The role of SSBNs (fleet ballistic missile submarines) as one leg of America’s nuclear triad capability is well known; perhaps less well known are the day-to-day tasks undertaken by the SSN force, which can include
collection, surveillance, and support to the special operations community and whose operations often take place apart from the operations of the surface Navy.

**Two-MRC Requirement.** The primary elements of naval combat power during a major regional contingency operation derive from carrier strike groups (which include squadrons of strike aircraft and support ships) and amphibious assault capacity. Since the Navy is constantly deployed around the globe during peacetime, many of its fleet requirements are beyond the scope of the two-MRC construct. However, it is important to observe the historical context of naval deployments during a major theater war.

### 13 Deployable Carrier Strike Groups

The average number of aircraft carriers deployed in the Korean War, Vietnam War, Persian Gulf War, and Operation Iraqi Freedom was between five and six. This correlates with the figures recommended in the 1993 Bottom-Up Review (BUR) and subsequent government force-sizing documents, each of which recommended at least 11 aircraft carriers. Assuming that 11 aircraft carriers are needed to engage simultaneously in two MRCs, and assuming that the Navy ideally should have a 20 percent strategic reserve in order to avoid having to commit 100 percent of its carrier groups and account for scheduled maintenance, the Navy should have 13 CSGs.

The aircraft carrier is the centerpiece of a CSG, composed of one guided missile cruiser, two guided missile destroyers, one attack submarine, and a supply ship in addition to the carrier itself. Therefore, based on the requirement for 13 aircraft carriers, the following numbers of ships are necessary for 13 deployable CSGs:

- 13 aircraft carriers,
- 13 cruisers,
- 26 destroyers, and
- 13 attack submarines.

### 13 Carrier Air Wings

Each carrier deployed for combat operations was equipped with a carrier air wing, meaning that five to six air wings were necessary for each of those four major contingencies listed. The strategic documents differ slightly in this regard because each document suggests one less carrier air wing than the number of aircraft carriers.

A carrier air wing usually includes four strike fighter squadrons. Twelve aircraft typically comprise one Navy strike fighter squadron, so at least 48 strike fighter craft are required for each carrier air wing. To support 13 carrier air wings, the Navy therefore needs a minimum of 624 strike fighter aircraft.

### 50 Amphibious Ships

The 1993 BUR recommended a fleet of 45 large amphibious vessels to support the operations of 2.5 Marine Expeditionary Brigades (MEBs). Since then, the Marine Corps has expressed a need to be able to perform two MEB-level operations simultaneously, with a resulting fleet of 38 amphibious vessels required. The 1996 and 2001 QDRs each recommended 12 “amphibious ready groups” (ARGs). One ARG typically includes one amphibious assault ship (LHA/LHD); one amphibious transport dock ship (LPD); and one dock landing ship (LSD). Therefore, the 12-ARG recommendation equates to 36 amphibious vessels.

The number of amphibious vessels required in combat operations has declined since the Korean War, in which 34 amphibious vessels were used; 26 were deployed in Vietnam, 21 in the Persian Gulf War, and only seven in Operation Iraqi Freedom (which did not require as large a sea-based expeditionary force). The Persian Gulf War is the most pertinent example for today because similar vessels were used, and modern requirements for an MEB most closely resemble this engagement.

While the Marine Corps has consistently advocated a fleet of 38 amphibious vessels to execute its two-MEB strategy, it is more prudent to field a fleet of at least 42 such vessels based on the Persian Gulf engagement. Similarly, if the USMC is to have a strategic reserve of 20 percent, the ideal number of amphibious ships would be 50.
The bulk of the Navy’s battle force ships are not directly tied
to a carrier strike group. Some surface vessels
and attack submarines are deployed independently, which is often why their requirements
exceed those of a CSG. The same can be said
of the ballistic missile submarine (nuclear
missiles) and guided missile submarine (con-
ventional cruise missiles), which operate in-
dependently of an aircraft carrier.

This Index uses the benchmark set by pre-
vious government reports, mainly the 1993
BUR, which was one of the most comprehensive reviews of military requirements. Similar
Navy fleet size requirements have been echoed in follow-on reports.

The numerical values used in the score
column refer to the five-grade scale explained
earlier in this section, where 1 is “very weak”
and 5 is “very strong.” Taking the full Navy re-
quirement of 346 ships as the benchmark, the
Navy’s current battle forces fleet capacity of
274 ships retains a score of “marginal,” as was
the case in the 2016 Index. Given the CBO’s
assessment that the Navy will continue to
underfund its shipbuilding programs, and in
view of the impending need for a ballistic mis-
sile submarine replacement that could cost
nearly half of the current shipbuilding budget
per hull, the Navy’s capacity score could fall to
“weak” in the near future.

**Capability Score: Weak**

The overall capability score for the Navy is “weak.” This was consistent across all four
components of the capability score: “Age of Equipment,” “Capability of Equipment,” “Size
of Modernization Program,” and “Health of

### Current Navy Capacity—Scoring

<table>
<thead>
<tr>
<th>Ship Type</th>
<th>Two-Major Regional Contingencies Requirement (plus 20% strategic reserve)</th>
<th>Full Navy Requirement (per 1993 Bottom-Up Review)</th>
<th>FY 2016 Capacity</th>
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<td>Air Wings</td>
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<td>n/a</td>
<td>10</td>
<td>3</td>
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</table>

*Bottom-Up Review stated a requirement of 18 ballistic missile submarines based on strategic guidance, but the subsequent 1994
Nuclear Posture Review reduced this strategic requirement to 14 boats. For more information on fleet requirement adjustments,
see Ronald O’Rourke, “Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress,” Congressional
Modernization Programs.” Given the number of programs, ship classes, and types of aircraft involved, the details that informed the capability assessment are more easily presented in a tabular format as shown in the Appendix.

This Index does not include an assessment of future programs such as the Columbia-Class SSBN(X); unmanned carrier-launched aircraft; and LX(R) because these are not yet categorized by the government as MDAPs.

Readiness Score: Strong

The Navy’s readiness score has returned to the original edition’s assessment of “strong,” up from the 2016 Index’s score of “marginal.” This assessment combines two major elements of naval readiness: the ability to consistently provide the required levels of presence around the globe and surge capacity. As elaborated below, the Navy’s ability to maintain required presence in key regions is “strong,” but its ability to surge to meet combat requirements ranges from “weak” to “very weak” depending on how one defines the requirement. In both cases—presence and surge—the Navy is sacrificing long-term readiness to meet current demand.

The Navy has reported that it continues to meet GFMAP goals but at the cost of future readiness. The GAO reported in May 2016 that “[t]o meet heavy operational demands over the past decade, the Navy has increased ship deployment lengths and has reduced or deferred ship maintenance.”104 The GAO has further found that as the Navy seeks to provide the same amount of forward presence with an undersized fleet, this “resulted in declining ship conditions across the fleet” and has “increased the amount of time that ships require to complete maintenance in the shipyards.”105

Though the Navy has been able to maintain a third of its fleet globally deployed, and although the O-FRP has preserved readiness for individual hulls by restricting deployment increases, demand still exceeds the supply of ready ships to meet requirements sustainably. As Admiral Howard testified in March 2016:

We generate forces that are fully prepared to do the full spectrum of operations. And so for us, it’s as if we have this team of assets, but like every good team, we have a bench. And that bench are the assets that are the next ready to go or the assets we have if we ever have to get into a war fight. We refer to that bench as our surge capability. So we invest to make sure that as people are required to do their daily operations, they’re ready. Where we’ve made choices, our ability to surge, that bench has become smaller. We have lowered the readiness of those assets and, in some cases, the readiness was lowered because we consumed that readiness.106

The Navy’s readiness as it pertains to providing global presence is rated as “strong.” The level of COCOM demand for naval presence and the fleet’s ability to meet that demand is similar to that of 2015. The Navy maintains its ability to forward deploy a third of its fleet and has been able to stave off immediate readiness challenges through the O-FRP. However, without further recapitalization and without more hulls entering the fleet, this level of readiness will likely not be sustainable.

Another element of naval readiness is the ability to surge forces to respond to a major contingency. The Navy’s goal is the ability to surge three CSGs and three ARGs for a contingency operation, but at current ship-count levels, it falls short of meeting this goal. Responding to questions about this issue, Admiral Manazir stated that the Navy is “currently...resourced to deploy two amphibious readiness groups and two carrier strike groups. It will take us to about the end of this future year defense plan, 2020 to 2022, to be able to resource a third deployed amphibious readiness group.”107 It should be noted that this was reported only during questioning in a congressional hearing, a departure from previous years when this information was provided in prepared testimony by naval officials. This is consistent with this Index’s analysis of the other armed services, where elements of readiness typically reported each year were either omitted or altered in prepared statements.
Nevertheless, Navy readiness in 2016 is an improvement over the past few years, where the Navy could only generate a surge capacity of one ARG and one CSG. This yields a surge capacity score of “marginal,” up from “weak” in the 2016 Index.

Since the Index of U.S. Military Strength uses the two-MRC construct as its benchmark level of necessary military force, the Navy would actually need to be able to surge forces to a level higher than three CSGs and three ARGs. However, doubling the Navy’s surge capacity requirement to account for this is an oversimplification, as not enough public information exists to assess how much surge capacity the Navy would require to engage in a second contingency. Therefore, this Index notes that the Navy must be able to surge remaining forces if the U.S. finds itself responding to a second MRC but does not attempt to determine or count this additional level in its scoring.

**Overall U.S. Navy Score: Marginal**

The Navy’s overall score for the 2017 Index is “marginal,” the same as for the previous year. This was derived by aggregating the scores for capacity (“marginal”); capability (“weak”); and readiness (“strong”). However, given the continued upward trends in OPTEMPO that have not been matched by similar increases in capacity or readiness funding, the Navy’s overall score could degrade in the near future if the service does not more robustly recapitalize and maintain the health of its fleet.

### U.S. Military Power: Navy

<table>
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<tr>
<th></th>
<th>VERY WEAK</th>
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<tr>
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<td><strong>OVERALL</strong></td>
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Endnotes:


9. Ibid.


17. Ibid.


19. Ibid.


21. Ibid.

22. Eleven cruisers will also be placed in “Reduced Operating Status” but will be included in the ship count as they are not being retired.

24. Ibid., p. 12.
26. Rotational deployments involve a ship sailing to a location for a set amount of time and returning to the United States.
28. On average, rotational deployments require four ships for one ship being forward deployed. This is because one ship is sailing out to location, one is at location, one is sailing back to the CONUS, and one is in the CONUS for maintenance.
32. Ibid., p. 16.
37. Ibid.
40. This is based on a calculation of the total number of attack submarines (which includes three different classes), which was 54 as of publication, and the number of Los Angeles-class submarines, which was 39 as of publication.
42. O’Rourke, “Navy Littoral Combat Ship (LCS)/Frigate Program.”
43. Ibid.
44. Congressional Budget Office, *An Analysis of the Navy’s Fiscal Year 2016 Shipbuilding Plan,*, p. 3.
45. There are four shipbuilders and seven shipyard locations that build major naval vessels. The four shipbuilders are General Dynamics, Huntington Ingalls, Austal USA, and Marinette Marine Corporation. General Dynamics has three shipyards, Huntington Ingalls has two, and the remaining two shipbuilders have one each.
49. O’Rourke, “Navy Columbia Class (Ohio Replacement) Ballistic Missile Submarine (SSBN[X]) Program.”
51. O’Rourke, “Navy Columbia Class (Ohio Replacement) Ballistic Missile Submarine (SSBN[X]) Program,” Summary.
52. This is based on a Congressional Budget Office analysis of historical shipbuilding funding, which the CBO calculates as $13.9 billion annually. See Congressional Budget Office, An Analysis of the Navy’s Fiscal Year 2016 Shipbuilding Plan, p. 3.
55. Congressional Budget Office, An Analysis of the Navy’s Fiscal Year 2016 Shipbuilding Plan, p. 11.
64. Ibid.
65. Staff writer, “Navy Aircraft,” Military Factory, last updated March 5, 2014, http://www.militaryfactory.com/aircraft/navy-carrieraircraft.asp (accessed August 26, 2014). The last of each of these aircraft were retired in 1997 (A-6); 2003 (A-4); and 2006 (F-14).


77. Ibid.

78. “A carrier air wing consists of one fully staffed headquarters, four strike fighter squadrons (VFA or VMFA; 44 F/A-18A/C/E/F aircraft), one airborne early warning squadron (VAW; four E-2C or five E-2D aircraft), one electronic warfare squadron (VAQ; five or six EA-18G aircraft), one helicopter sea combat squadron (HSC; eight MH-60S aircraft), one helicopter maritime strike squadron (HSM; 11 MH-60R aircraft), one carrier onboard delivery detachment (VRC; two C-2A aircraft).” O’Rourke, “Navy Ford (CVN-78) Class Aircraft Carrier Program,” p. 13.


80. Ibid.


82. Ibid., p. 2.


86. Ibid.


89. Ibid., p. 5.


92. Ibid.
93. Ibid.
94. Statement of Howard, Cullom, and Aquilino, pp. 5–6.
95. Ibid., p. 7.
96. This requirement is derived from the BUR’s requirement for four–five carrier strike groups per MRC; however, this Index finds that number low by historical accounts and recommends one additional carrier per MRC.
99. The full array of aircraft actually embarked on a carrier is more than just the strike aircraft counted here and includes E-2 Hawkeye early warning, C-2 Greyhound cargo, and various helicopter aircraft, among others, that are fielded in a ratio that is roughly proportional to the number of aircraft carriers in the fleet.
101. The size and capability of amphibious ships also have grown over time, with smaller amphibs like the old LST replaced by the much larger LSD and LPD classes. Consequently, fewer ships are needed to lift the same or an even larger amphibious force.
105. Ibid., p. 8.
U.S. Air Force

The U.S. Air Force (USAF) provides military dominance in the domains of air and space, enabling the Joint Force to project power quickly anywhere in the world at any time. Successful Operation Plan (OPLAN) execution relies on this service being able to rapidly respond to contingencies across the world, to guarantee the global freedom of movement and access that Americans have to expect, and to project our nation’s power, influence, and reach.1

To support and defend America’s global interests along with the Joint Force, the Air Force focuses on five main missions:

- Air and space superiority;
- Intelligence, surveillance, and reconnaissance (ISR);
- Mobility and lift;
- Global strike; and
- Command and control (C2).

The Air Force has used the 2012 Defense Strategic Guidance (DSG) as its framework for determining investment priorities and posture. As a result of the DSG and fiscal constraints, the Air Force has “traded size for quality” by aiming to be a “smaller, but superb, force that maintains the agility, flexibility, and readiness to engage a full range of contingencies and threats.”2 In light of recent budget cuts, the Air Force has characterized this as a key year for the future of the service’s readiness and capabilities:

The FY 2017 budget request represents a “pivot point” for the Air Force to continue the recovery to “balance the force” for today’s readiness and the readiness needed 10 to 20 years from now. However FY 2017 could simply represent a pause to the devastating effects of sequestration level funding that will return in FY 2018.3

But while the Air Force’s fleet has been cut intentionally to maintain capability, continued cuts in capacity will result in a loss of that capability:

Americans have invested in airpower for well over 60 years to ensure the fight is never fair. But today—after many years of continual operations and a few fiscal upheavals—the Nation is at a crossroads, with a fundamental disconnect between its airpower expectations and its airpower capability.

There was a time when the Air Force could trade some capacity in order to retain capability. But we have reached the point where the two are inextricable; lose any more capacity, and the capability will cease to exist.4

Capacity

Due to the constrained fiscal environment of the past few years, the Air Force continues to prioritize capability over capacity. Air Force leadership has also made it clear that near-term reductions will be made in lift, command and control, and fourth-generation fighter aircraft to ensure that its top three modernization programs—the F-35A, Long-Range Strike Bomber (LRS-B), and KC-46A—are preserved.5 The USAF is now the oldest
and smallest in its history, and as the demand for air power continues to increase, the problem of capacity limiting capability will continue to grow. Unlike some of the other services, the Air Force did not grow during the post-9/11 buildup. Rather, it got smaller as older aircraft were retired and replacement programs, such as the F-35, experienced successive delays in bringing new aircraft into the fleet.

The Air Force’s capacity in terms of number of aircraft has been on a constant downward slope since 1952. As Air Force officials testified in 2016:

[P]rior to 1992, the Air Force procured an average of 200 fighter aircraft per year. In the two and a half decades since, curtailed modernization has resulted in the procurement of less than an average of 25 fighters yearly. In short, the technology and capability gaps between America and our adversaries are closing dangerously fast.

This reduction in capacity is expected to continue because of ongoing budgetary pressure. Under BCA-mandated spending caps, the Air Force would shrink to 39 total active duty fighter squadrons, of which only 26 would be combat-coded. This is a far cry from the 70 active duty fighter squadrons within the Air Force during Operation Desert Storm (1991).

This Index assesses the Air Force’s fleet of tactical aircraft based on a 2011 Air Force assessment that a force of 1,200 fighter aircraft was required to execute a two-MRC strategy. More recently, the service acknowledged that it could reduce the requirement by 100 fighters by assuming more risk. Of the 5,456 manned and unmanned aircraft in the USAF’s inventory, 1,303 are fighters, 1,159 of which are combat-coded aircraft (not associated with operational testing, evaluation, or training of replacement pilots). The continuation of constrained funding levels will deepen the shortage of fighters and readiness levels, degrading vital air operations as well as operational testing and training expertise.

**Capability**

Reductions in funding brought about by the Budget Control Act of 2011 and other budget constraints have forced the Air Force to prioritize future capability over capacity. This strategy centers on the idea of developing and maintaining a capable force that can win against advanced fighters and surface-to-air missile systems that are being developed by top-tier potential adversaries like China and Russia. The only way the Air Force can sustain that technological edge in the current budget environment is by reducing its fleet of aircraft that are moving toward obsolescence.

The state of aircraft capability includes not only the incorporation of advanced technologies, but also the overall health of the inventory. Most aircraft have programmed life spans of 20 to 30 years, based on a programmed level of annual flying hours. The bending and flexing of airframes over time in the air generates predictable levels of stress and metal fatigue. The average age of Air Force aircraft is 27 years, and some fleets, such as the B-52 bomber, are much older. Although service life extension programs can lengthen the useful life of airframes, their dated systems become increasingly expensive to maintain. That added expense consumes available funding and reduces the amount available to invest in modernization, which is critical to ensuring future capability.

The average age of the F-15C fleet is over 32 years, leaving less than 10 percent of its useful service life remaining. That same fleet comprises 42 percent of USAF air superiority platforms. The fleet of F-16Cs are, on average, 25 years old, and the service has used up nearly 80 percent of its expected life span. KC-135s comprise 87 percent of the Air Force’s tankers and are over 54 years old on average.

The Air Force’s ISR and lift capabilities face similar problems in specific areas that affect both capability and capacity. The bulk of the Air Force’s ISR aircraft (339 of 482) are now unmanned aerial vehicles (UAVs), which are relatively young and less expensive
to procure, operate, and maintain. The RQ-4 Global Hawk is certainly one of the more reliable of those platforms, but gross weight restrictions limit the number of sensors that it can carry, and the warfighter still needs the capability of the U-2, which is now (on average) 33 years old. The E-8 Joint Surveillance Target Attack Radar System (Joint-STARS) and the RC-135 Rivet Joint are critical ISR platforms, and each was built on the Boeing 707 platform, the last one of which was constructed in 1979. The reliability of the Air Force fleet is at risk because of the challenges linked to aircraft age and flight hours, and the fleet needs to be modernized.

A service’s investment in modernization ensures that future capability remains healthy. Investment programs aim not only to procure enough to fill current capacity requirements, but also to advance future capabilities with advanced technology. In fiscal year (FY) 2016, the Air Force structured its budget to preserve funding for its three top acquisition priorities: the F-35A Joint Strike Fighter, the KC-46A Pegasus refueling aircraft, and the Long Range Strike-Bomber.

The Air Force’s number one priority remains the F-35A. It is the next-generation fighter scheduled to replace all legacy A-10, F-15, and F-16 aircraft. The Air Force’s program of record is for 1,763 aircraft, replacing all F-16, all A-10, and possibly all F-15 aircraft currently in the inventory. The Air Force has not explicitly stated the rationale for purchasing 1,763 F-35s to replace 1,303 fighters currently in its inventory, and this has led to speculation that they may partially offset the Defense Department’s reduction of the Air Force’s original plan to purchase 750 F-22As to a final program of record of just 187.

The Active Air Force currently has 268 F-15Cs, and there are concerns about what platform will fill this gap when the F-15C is eventually retired. Even with their superior technology, 159 combat-coded F-22As would be hard-pressed to fulfill the wartime requirement for air superiority fighters for a single major regional contingency (MRC). The F-22A is world’s most dominant air-to-air fighter and was designed to shoulder the air superiority mission for the Air Force, but with only 187 of a planned 750, this becomes a challenging burden for the F-22 community to carry on its own. The F-35A’s multirole design favors the air-to-ground mission, but its fifth-generation faculties extend well into the air-to-air role, which will allow it to augment the F-22A in many scenarios.

Fulfilling the operational need for fighters will be further strained in the near term because the F-22 retrofit—a mix of structural alterations to 162 aircraft needed for the airframe to reach its promised service life—has been forecasted to run through 2021, a year later than previously predicted. As a result of the retrofit, only 62 percent (99 of 169) of the mission fleet of F-22As are currently available.

Like the F-35B and F-35C (the Marine Corps and Navy variants, respectively), the F-35A has experienced a host of problems including technological and production delays, cost overruns, and purchase reductions caused by budget cuts. As a result, the initial operating capability (IOC) date was pushed from 2013 to 2016. This system of systems relies heavily on software, and the currently fielded version 3I (IOC software) offers approximately 89 percent of the code required to deliver full warfighting capability. It is expected that 3F, the software that will enable full operating capability (FOC), will be fielded in mid-2017, half a year later than planned. Given the age of the aircraft that the F-35A will be replacing, every slip in the Lightning II’s program will necessarily affect the warfighting capability of the United States.

A second top priority for the USAF is the KC-46A air refueling tanker aircraft. The Air Force has stated that replacing the KC-135 (now over 50 years old) “remains one of the Air Force’s top three acquisition priorities.” Though the KC-46 has experienced a series of delays, it reached a milestone in August 2016...
that enabled low-rate initial production.\textsuperscript{37} The Air Force awarded the contract for 19 initial aircraft in August 2016\textsuperscript{38} toward Pegasus’s program of record for 179 aircraft. As it stands now, this system will replace less than half of the current tanker inventory of 391 aircraft. The current program calls for the delivery of 70 aircraft by FY 2020.\textsuperscript{39}

The third major priority for the USAF from an acquisition perspective is the B-21 bomber, formerly called the Long-Range Strike Bomber. The USAF awarded Northrop Grumman the B-21 contract to build the Engineering and Manufacturing Development (EMD) phase, which includes associated training and support systems and initial production lots. The B-21 is the service’s next-generation deep-strike platform, intended to begin replacing a total of 119 B-52 Stratofortresses and B-1B Lancers by the mid-2020s.\textsuperscript{40} The Air Force has 20 B-2s that apparently will remain in the fleet with an average age of 21 years. The B-21, still in the development phase, will constitute the Air Force’s capability to penetrate highly contested environments defended by the most advanced air defense systems.\textsuperscript{41}

The current plan for procurement includes the acquisition of 100 new bombers at an average cost of $564 million per plane.\textsuperscript{42} One potential future concern for this program is that with a 100-airframe B-21 purchase, the Air Force’s bomber fleet will fall from 159 aircraft to 120 aircraft.\textsuperscript{43}

The Air Force’s strategy of capability over capacity is encumbered by the requirement to sustain ongoing combat operations in Afghanistan, Iraq, and Syria. In a budget-constrained environment, the need to sustain those ongoing efforts while modernizing an outdated fleet of aircraft for operations in contested environments means that funding has to be pulled from other areas, adversely affecting readiness.

Readiness

Air Force Director of Current Operations Major General Scott West testified to the House Armed Services Committee in July 2016 on his force’s aviation readiness,

\textit{The Air Force must be ready to conduct full spectrum operations. That includes the continued conduct of nuclear deterrence operations, continued support of counter terror operations (CT), and readiness for potential conflict with a near-peer competitor…. While we are able to conduct nuclear deterrence operations and support CT operations, operations against a near-peer competitor would require a significant amount of training…. In sum, our readiness is imbalanced at a time when the Air Force is small, old, and heavily tasked.}\textsuperscript{44}

Air Force readiness relies on weapon systems availability (sustainment); training; wartime readiness materials (WRM); facilities; and installations.\textsuperscript{45} While each of the four is important, weapon systems sustainment and WRM are the most critical. Reduced levels of funding, coupled with more than 13 years of continual air campaigns in the Middle East, have taken a significant toll on aircraft, pilot, and maintenance personnel availability.

Munitions are being used faster than they can be replaced. Air-to-surface weapons that offer stand-off, direct attack, and penetrators are short of current inventory objectives,\textsuperscript{46} and the concurrent shortage of air-to-air weapons could lead to an increase in the time needed to gain and maintain air superiority in future environments,\textsuperscript{47} particularly highly contested ones.

According to the Air Force, readiness has been declining since 2003. In FY 2013, flying hours were reduced by 18 percent, and 18 of 36 active duty, combat-coded squadrons (50 percent) were temporarily stood down.\textsuperscript{38} In FY 2014, the Air Force prioritized funding for readiness, but not at a rate to make up completely for cuts in FY 2013, and the shortfalls in readiness have persisted into FY 2016.

Parts inventory shortfalls and a shortage of aircraft maintenance personnel (maintainers)\textsuperscript{49} have reduced flying hours to the point where fighter pilots who once averaged over 200 hours a year struggled to get
120 hours in 2014. In 2015, the average rose to 150 hours through combat deployments, in which the vast majority of a fighter pilot’s time is spent patrolling or loitering (holding), over Iraq, Afghanistan, and Syria, where few sorties actually call for employment and no training is allowed. When they return home, those same pilots often average less than one sortie a week.

To put this into context, in the 1980s and 1990s, the demands on a “full spectrum capable” Air Force fighter pilot required, on average, 200 hours per year, or roughly four hours (or sorties) a week. All of that time was spent in the cockpit conducting combat-relevant missions (something other than flying in circles waiting for a call to action). This amount of flying enabled pilots not only to gain proficiency in a broad range of critical air-to-surface and air-to-air engagements, including low-altitude maneuvering, but also to improve those skills over time. At three hours per week (150 hours per year), a pilot might be able to sustain minimal levels of proficiency, but the Air Force typically would consider an inexperienced pilot (one having less than 500 hours of flying time) with that level of proficiency non-deployable for combat operations. At two hours (or two sorties) or less per week (100 hours per year), a pilot’s skills drop precipitously. With most pilots now receiving 150 hours or less a year, it is hard to fathom which 50 percent of the fighter force is ready for full-spectrum combat.

In 2015, enlisted airmen were deployed for an average of 132 days, and officers were deployed for an average of 128 days, but that average is skewed by the fact that only a small number of Air Force personnel actually deploy. The fact that 13.3 percent (64,655 of 485,000) of total Air Force personnel were deployed to contingency operations and exercises in 2015 means that a small percentage of the force is shouldering most of the burden of deploying for combat operations. Thirteen continual years of deployment have taken a toll. The Air Force now has a shortfall of 4,000 maintenance personnel and 700 pilots. While the service may be able to devise a plan to fill maintenance and pilot billets, it will take years to regain the experience lost through this flight of talent.

During his confirmation hearing for the position of Chief of Staff of the Air Force, General David Goldfein stated that at current readiness levels, the Air Force cannot muster a surge capacity for major OPLAN contingencies and meet all of the global demand with ready combat forces. In order to meet those contingencies, the Air Force must have 80 percent or more of its combat forces at full-spectrum readiness. Less than 50 percent of combat units are at that level, and while the Air Force could surge forces to meet combatant commander requirements, their lack of readiness would affect its ability to conduct all assigned mission-essential tasks. It would also put those pilots at risk.

The Air Force has stated that it lacks the capacity to absorb additional cuts in manpower without also reducing capability. If requirements continue to increase, the Air Force “will have to make difficult decisions on mission priorities and dilute coverage across the board.” Even with sufficient funding, recovering from its current status would take no small amount of time. For example, standing down a unit for 60 days results in a degraded (unfit for combat) unit. To return the unit to desired levels of proficiency takes six months to a year. As General Goldfein explained, “Bottom line—when an Air Force does not fly, readiness atrophies across the enterprise with impacts that cannot be reversed in the time it took to lose it.” The Air Force’s FY 2017 budget submission seeks to strike a balance among capability, capacity, and readiness with the goal of achieving full-spectrum readiness by 2023.
Scoring the U.S. Air Force

**Capacity Score: Strong**

One of the key elements of combat power in the U.S. Air Force is its fleet of fighter aircraft. In responding to major combat engagements since World War II, the Air Force has deployed an average of 28 fighter squadrons, based on an average of 18 aircraft per fighter squadron. That equates to a requirement of 500 active component fighter aircraft to execute one MRC. Based on government force-sizing documents that count fighter aircraft, squadrons, or wings, an average of 55 squadrons (990 aircraft) is required to field a two-MRC–capable force (rounded up to 1,000 fighter aircraft to simplify the numbers). This Index looks for 1,200 active fighter aircraft to account for the 20 percent reserve necessary when considering availability for deployment and the risk of employing 100 percent of fighters at any one time.

- **Two-MRC Level:** 1,200 fighter aircraft.
- **Actual 2016 Level:** 1,159 fighter aircraft.  

Based on a pure count of combat-coded fighter/attack platforms that have at least IOC, the USAF currently is only slightly below the two-MRC benchmark. However, this figure should be taken with a few caveats. The F-35 will become a highly advanced and capable multirole platform, but the 75 aircraft that have entered the USAF inventory to date are only nearing IOC and do not yet field many of the capabilities that would constitute full-spectrum readiness.

While the 1,159 figure would normally yield a capacity level of “very strong,” aircraft require pilots to fly them and maintainers to launch, recover, and fix them. With a fighter pilot shortage of 700 and a maintenance shortfall of 4,000 personnel, the ability of the Air Force to meet the wartime manning requirements for fighter cockpits or sufficient maintenance personnel to continually repair, refuel, and rearm aircraft rapidly to meet wartime sortie requirements has been significantly reduced. Those factors, coupled with the lack of funding for a sufficient supply of spare parts, has reduced the capacity for employment from “very strong” in the 2016 Index to a 2017 Index assessment of “strong.”

**Capability Score: Marginal**

The Air Force’s capability score is “marginal,” a result of being scored “strong” in “Size of Modernization Program,” “marginal” for “Age of Equipment” and “Health of Modernization Programs,” but “weak” for “Capability of Equipment.” These scores have not changed from the 2016 Index’s assessment. However, continued concern with the F-35 program’s progress toward effective replacement of legacy aircraft could cause the USAF’s capability score to decline in future years.

**Readiness Score: Marginal**

The Air Force scores “marginal” in readiness in the 2017 Index, the same as it scored in the 2016 Index. This is based primarily on the Air Force’s reporting that 50 percent of its combat air forces met full-spectrum readiness requirements in 2016. The Air Force should be prepared to respond quickly to an emergent crisis and retain full readiness of its combat airpower, but it has been suffering from degraded readiness since 2003, and implementation of BCA-imposed budget cuts in FY 2013 has only exacerbated the problem. Similar to the other services, the Air Force was able to make up some of its readiness shortfalls under the FY 2015 budget, but given its poor readiness assessment, much more improvement is required.

The Air Force’s current deficits in both pilot and maintainer manpower are also very troubling indicators for readiness. They will strain the service in the immediate term and, if not reversed, could lead to broader readiness challenges in the future.
Overall U.S. Air Force Score: Marginal

The Air Force is scored as “marginal” overall. This is an unweighted average of its capacity score of “strong,” capability score of “marginal,” and readiness score of “marginal.” While the overall score remains the same as the previous year’s, the accumulating shortage of pilots and maintainers has begun to affect the ability of the Air Force to generate the amount of combat air power that would be needed to meet wartime requirements.

### U.S. Military Power: Air Force

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Endnotes:


5. Ibid., p. 18.


14. Ibid.

16. Ibid., pp. 8–9.


18. Ibid., p. 7.


22. Ibid.

23. International Institute for Strategic Studies, *The Military Balance 2016*, p. 47. This reference is missing 31 MC-12s (see “The Air Force in Facts and Figures,” May 2016, p. 37) that were added to reach a total of 482.


34. Ibid.


47. Ibid., p. 17.


52. Ibid.


60. This number represents total active component fighters. This *Index* considers requirements, such as aircraft, that are needed to perform Operation Noble Eagle (ONE), an ongoing mission to defend American airspace. Details regarding ONE are limited and largely unavailable to the public. Because the exact number of active component fighter aircraft participating in ONE is unknown, those fighters that may be tasked with the ONE mission are not counted in this total.

U.S. Marine Corps

The U.S. Marine Corps (USMC) is the nation’s expeditionary armed force, positioned and ready to respond to crises around the world. Marine units assigned aboard ships (“soldiers of the sea”) or at bases abroad stand ready to project U.S. power into crisis areas. Marines also serve in a range of unique missions, from combat defense of U.S. embassies abroad under attack to operating the President’s helicopter fleet.

Although Marines have a wide variety of individual assignments, the focus of every Marine is on combat: Every Marine is first a rifleman. The USMC has positioned itself for crisis response and has evolved its concepts to leverage its equipment more effectively to support operations in a heavily contested maritime environment such as the one found in the Western Pacific. Worldwide, over 35,000 Marines are forward deployed and engaged. Despite the drawdown of forces, in 2015, “Marines executed approximately 100 operations, 20 of them amphibious, 140 security cooperation activities with our partners and allies, and 160 major exercises” in addition to providing embassy security and short-term reinforcement of posts.

Pursuant to the Defense Strategic Guidance (DSG), maintaining the Corps’ crisis response capability is critical. Thus, given the fiscal constraints imposed, the Marines have prioritized “near-term readiness” at the expense of other areas, such as capacity, capability, modernization, home station readiness, and infrastructure. This trade-off is a short-term fix to meet immediate needs: Over the longer term, the degradation of investment in equipment will lead to lowered readiness.

Capacity

The Marine Corps has managed the reduction in funding by cutting capacity. The Corps’ measures of capacity are similar to the Army’s: end strength and units (battalions for the Marines and brigades for the Army). End strength has been decreased from a force of 202,100 Active personnel in fiscal year (FY) 2012 to roughly 184,000 in FY 2016. In FY 2016, the Marine Corps requested a pause in capacity cuts (to remain at an end strength of 184,000) in order to reduce the “impact on deployment to dwell ratios” and “assess the impact of its four[-]year drawdown.” The drawdown will resume in FY 2017, to reach an “enduring” end strength of 182,000 Active personnel funded entirely from the base budget. Although the Bipartisan Budget Act gave the military partial, temporary relief from budget cuts, according to Secretary of Defense Ashton Carter, a return to BCA spending caps in FY 2018 remains the “greatest risk to the Department of Defense.” The DOD estimated in 2014 that if sequestration-level cuts occurred in FY 2016, Marine Corps end strength would be cut further to 175,000 by FY 2017. With a force of that size, the USMC would be unable to meet the requirements of the DSG and according to General Joseph Dunford, recently Commandant of the Marine Corps, a new strategy would need to be developed.

The Marine Corps organizes itself in infantry battalions, which are its basic combat unit. A battalion has about 900 Marines and
includes three rifle companies, a weapons company, and a headquarters and service company. The Marine Corps maintained 23 Active infantry battalions in FY 2016, down from 25 in FY 2014 and 27 in FY 2012. Funding at the requested levels for FY 2017 supports an increase to 24 Active infantry battalions after a one-year delay from the FY 2016 force structure plan. However, under full sequestration, USMC end strength would be able to support only 21 infantry battalions, which, according to General Dunford, would leave the Corps “with fewer active duty battalions and squadrons than would be required for a single major contingency.” It should be noted that the service was able to field only 23 battalions in 2016, although funding was to have been sufficient for 24.

Marine Aviation units have been particularly stressed by insufficient funding. Although operational requirements have not decreased, fewer Marine aircraft are available for tasking or training. For example, the number of active component squadrons (including both fixed-wing and rotary wing aircraft) decreased from 58 in 2003 to 55 in 2015. Another way to look at this decline is through tactical air squadrons, which include the strike fighter and close air support aircraft in the USMC inventory. In July 2016, USMC Deputy Commandant for Aviation Lieutenant General Jon M. Davis explained, “right now, we’re at 20 [tactical] air squadrons and we, like the Air Force, came down after Desert Storm.” General Davis added that the USMC had around 28 tactical air squadrons during that military engagement.

The number of available aircraft continues to decline as procurement of the F-35B and MV-22 struggles to keep pace with the decommissioning of aging aircraft squadrons, high operational temps, and maintenance backlogs that have limited the number of Ready Basic Aircraft (RBA) for training and operational requirements. The MV-22 has not yet been delivered in sufficient quantities to offset the retirement of the CH-46, resulting in a temporary reduction in vertical lift capacity. Two additional MV-22 squadrons are planned for procurement in FY 2017. Moreover, “shortages in aircraft availability due to increased wear on aging aircraft and modernization delays” have led the Marine Corps to reduce the requirement of aircraft per squadron for the F/A-18, CH-53E, and AV-8B temporarily in order to provide additional aircraft for home station training. Approximately 80 percent of Marine Corps aviation units are experiencing shortages below the minimum number of RBA required for training. Any reduction in Marine aviation capability has a direct effect on overall Corps combat capability, as the Corps usually fights with its ground and aviation forces integrated as Marine Air-Ground Task Forces (MAGTFs).

Additionally, the current inventory of non-commissioned officers and staff non-commissioned officers does not meet USMC force structure requirements. This will pose readiness challenges for the Corps as the shortage of “small unit leaders with the right grade, experience, technical skills and leadership qualifications” grows.

In 2010, the USMC determined that its ideal force size would be 186,800 in light of the requirements of the President’s National Security Strategy. However, given the budget pressures from the Budget Control Act (BCA) of 2011 and the newer 2012 DSG, the Corps decided that a force size of “182,100 active component Marines could still be afforded with reduced modernization and infrastructure support.”

One impact of reduced capacity is a reduction in dwell time. The stated ideal deployment-to-dwell (D2D) time ratio is 1:3 (seven months deployed for every 21 months at home), which is possible with 186,000 troops. The “fundamental difference” between that optimal force size and an active end strength of 182,000 is a lower D2D ratio of 1:2, which translates to roughly seven-month deployments separated by stretches of 14 months at home. Under current budget constraints, some individuals and even whole units with critical skills “are operating in excess of a 1:2
The (D2D) ratio.” A return to BCA-level budget caps in FY 2018 could reduce capacity even further, and the dwell ratio for the Marine Corps could fall to 1:1. This increase in deployment frequency would exacerbate the degradation of readiness, as people and equipment would be used more frequently with less time to recover between deployments.

**Capability**

The nature of the Marine Corps’ crisis response role requires capabilities that span all domains. The USMC ship requirement is managed by the Navy and is covered in the Navy’s section of the Index. The Marine Corps is focusing on “essential modernization” and emphasizing programs that “underpin our core competencies,” making the Amphibious Combat Vehicle (ACV) and the F-35 Joint Strike Fighter (JSF) programs its top two priorities.

Of the Marine Corps’ current fleet of vehicles, its amphibious vehicles—specifically, the Assault Amphibious Vehicle (AAV-7A1) and Light Armored Vehicle (LAV)—are the oldest, with the AAV-7A1 averaging over 40 years old and the LAV averaging 25 years old. The AAV-7A1 is currently undergoing survivability upgrades, with the first round of upgrades (AAV SU) delivered to U.S. Marine Corps Base Quantico on March 4. These upgrades will help to bridge the capability gap until the fielding of the ACV. Comparative-ly, the Corps’ M1A1 Abrams inventory is 26 years old with an estimated 33-year life span, and its fleet of light tactical vehicles such as HMMWVs (“Humvees”) is relatively young, averaging seven years old.

The Corps’ main combat vehicles all entered service in the 1970s and 1980s, and while service life extensions, upgrades, and new generations of designs have allowed the platforms to remain in service, these vehicles are quickly becoming ill-suited to the changing threat environment. For example, with the advent of improvised explosive devices (IEDs), the flat-bottom hulls found on most legacy vehicles are ineffective compared to the more blast-resistant V-shaped hulls incorporated in modern designs. Furthermore, the cost of maintaining these legacy systems diverts funding from innovation and modernization.

The Corps’ aircraft have age profiles similar to the Navy’s. As of February 2016, the USMC had 262 F/A-18 A–Ds (including one reserve squadron) and 27 EA-6Bs in its primary mission aircraft inventory, and both aircraft have already surpassed their originally intended life spans. The Marine Corps began to retire its EA-6B squadrons in FY 2016 with the decommissioning of Marine Tactical Electronic Warfare Squadron 1 and will continue to decommission the remaining three at a rate of one per year through FY 2019. The 2016 Marine Aviation Plan projects that a total of 18 Prowlers will remain in the active and reserve components in FY 2017. Unlike the Navy, the Corps did not acquire the newer F/A-18 E/F Super Hornets; thus, the older F/A-18 Hornets are going through a service life extension program to extend their life span to 10,000 flight hours from the original 6,000 hours. This was intended to bridge the gap to when the F-35Bs and F-35Cs enter service to replace the Harriers and most of the Hornets. However, delays in the service life extension program and “increased wear on aging aircraft” have further limited availability of the F/A-18 A-D and AV-8B. The AV-8B Harrier, designed to take off from the LHA and LHD amphibious assault ships, will be retired from Marine Corps service in 2026. The AV-8B received near-term capability upgrades in 2015 that will continue in 2017 in order to maintain its lethality and interoperability until the F-35 transition is complete. The Corps declared its first F-35B squadron operationally capable on July 31, 2015, after it passed an “Operational Readiness Inspection” test. However, problems with the aircraft’s software continue to generate concern, with the potential for performance and schedule delays to accumulate between $20 billion and $100 billion in additional costs. On June 30, 2016,
the Marine Corps stood up its second F-35B squadron, transitioning from an AV-8B Marine Attack Squadron to a Marine Fighter Attack Squadron.\textsuperscript{50}

The Marine Corps has two Major Defense Acquisition (MDAP) vehicle programs: the Joint Light Tactical Vehicle (JLTV) and Amphibious Combat Vehicle (ACV).\textsuperscript{51} The JLTV is a joint program with the Army to acquire a more survivable light tactical vehicle to replace a percentage of the older HMMWV fleet, originally introduced in 1985. The Army retains overall responsibility for JLTV development through its Joint Program Office.\textsuperscript{52} The Marines intend to purchase 5,500 vehicles (10 percent of a total of 54,599),\textsuperscript{53} and acquisition of the JLTVs should be completed by FY 2023. However, the FY 2017 USMC budget request funds only 192 vehicles, 77 fewer JLTVs than originally requested, in order to prioritize funding for ACV and GATOR.\textsuperscript{54} The program is still in development and has experienced delays in the past due to a change in requirements, a contract award protest, and concerns regarding technical maturity.\textsuperscript{55} In 2014, the Corps cancelled the HMMWV Sustainment Modification Initiative, which would have upgraded 13,000 vehicles,\textsuperscript{56} in order to prioritize JLTV funding.\textsuperscript{57} Although the Marine Corps has indicated that the JLTV will not be a one-for-one replacement of the HMMWV,\textsuperscript{58} there are concerns that reduced procurement will create a battlefield mobility gap for some units.\textsuperscript{59}

Following FY 2015 plans for the JLTV, the program awarded a low-rate initial production (LRIP) contract, which includes a future option of producing JLTVs for the Marine Corps, to defense contractor Oshkosh.\textsuperscript{60} The Corps procured 130 JLTVs across FY 2015 and FY 2016.\textsuperscript{61} The lack of operational detail in the Army’s updated Tactical Wheeled Vehicle Strategy could be an issue for future USMC JLTV procurement and modernization plans.\textsuperscript{62} Nevertheless, the USMC expects the JLTV program, consisting of “one infantry battalion fully fielded with the JLTV plus a training element,” to reach initial operational capability (IOC) in the fourth quarter of 2018.\textsuperscript{63}

The Marine Corps plans to replace the AAV-7A1 with the ACV, which completed its Milestone B requirements in November 2015\textsuperscript{64} and will move into the engineering, manufacture, and development phase in FY 2017.\textsuperscript{65} The ACV, which took the place of the Expeditionary Fighting Vehicle (EFV), “has been structured to provide a phased, incremental capability.”\textsuperscript{66} The AAV-7A1 was to be replaced by the EFV, a follow-on to the cancelled Advanced AAV, but the EFV was also cancelled in 2011 due to technical obstacles and cost overruns. Similarly, the Corps planned to replace the LAV inventory with the Marine Personnel Carrier (MPC), which would serve as a Light Armored Vehicle with modest amphibious capabilities but would be designed primarily to provide enhanced survivability and mobility once ashore.\textsuperscript{67} However, budgetary constraints led the Corps to shelve the program, leaving open the possibility that it may be resumed in the future.

After restructuring its ground modernization portfolio, the Marine Corps determined that it would combine its efforts by upgrading 392 of its legacy AAVs and continuing development of the ACV in order to replace part of the existing fleet and complement the upgraded AAVs.\textsuperscript{68} This would help the Corps to meet its requirement of armored lift for 10 battalions of infantry.\textsuperscript{69} The USMC’s acquisition objective for the ACV is 204 vehicles for the first increment.\textsuperscript{70} Brigadier General Joseph Shrader confirmed that this ACV 1.1 increment would not replace the AAV, but rather would serve to “enhance that capability.”\textsuperscript{71}

The ACV 1.1 platform is notable in that it will be an amphibious wheeled vehicle instead of a tracked vehicle, capable of traversing open water only with the assistance of Navy shore connectors such as Landing Craft, Air Cushion Vehicles (LCAC). The ACV 1.2 platform is being planned as a fully amphibious, tracked version.\textsuperscript{72} Development and procurement of the ACV program will be phased so that the new platforms can be fielded incrementally.
alongside a number of modernized AAVs. Plans call for a program of record of 694 vehicles, with the first battalion to reach IOC in FY 2020, and for modernizing enough of the current AAV fleet to outfit four additional battalions, which would allow the Corps to meet its armored lift requirement for 10 battalions. In addition, the Corps will purchase new vehicles based on the MPC concept.

The F-35B remains the Marine Corps’ largest investment program in FY 2017. The Corps announced IOC of the F-35B variant in July 2015. The service’s total procurement will consist of 420 F-35s (357 F-35Bs and 63 F-35Cs). The AV-8Bs and F/A-18A-Ds will continue to receive interoperability and lethality enhancements in order to extend their useful service lives during the transition to the F-35.

As the F-35 enters into service and legacy platforms reach the end of their service life, the Marine Corps expects a near-term inventory challenge. Specifically, this is due to a combination of reduced JSF procurement, increasing tactical aircraft utilization rates, and shortfalls in F/A-18A-D and AV-8B depot facility production. In March 2016, General Robert Neller, Commandant of the Marine Corps, assessed that “[i]f these squadrons [in the F/A-18 community] were called on to fight today they would be forced to execute with 86 less jets than they need.” Like the F-35A, the F-35B and F-35C variants are subject to development delays, cost overruns, budget cuts, and production problems. The F-35B in particular was placed on probation in 2011 because of its technical challenges. Probation has since been lifted, and the Corps declared IOC with its first F-35B squadron, VMFA-121, on July 31, 2015.

Today, the USMC MV-22 program is operating with few problems and nearing completion of the full acquisition objective of 360 aircraft. As of April 2016, the Marine Corps had received 269 of the 360 aircraft included in the program of record. Following deactivation of the final CH-46 squadron in April 2015, the Osprey has replaced the Sea Knight as the USMC’s primary medium lift platform. However, new Osprey squadrons were not commissioned fast enough to replace the retiring CH-46 squadrons. Currently, there are 14 fully operational capability squadrons to meet these needs, and two additional squadrons are forming. The MV-22’s capabilities are in high demand from the Combatant Commanders (COCOMS), and the Corps is adding capabilities such as fuel delivery and use of precision-guided munitions to the MV-22 to enhance its value to the COCOMs.

The Marine Corps is struggling to sustain the Osprey’s capability rates because of a shortfall in its “ability to train enlisted maintainers in the numbers and with the qualifications necessary to sustain the high demand signal.”

The USMC heavy lift replacement program, the CH-53K, conducted its first flight on October 27, 2015. The CH-53K will replace the Corps’ CH-53E, which entered service in 1980. However, “unexpected redesigns to critical components have delayed aircraft assembly and testing and have slowed delivery of test aircraft” pushing the expected LRIP decision into 2017. The helicopter is now predicted to reach IOC in 2019, almost four years later than initially anticipated. This is of increasing concern as the Marine Corps maintains only 146 CH-53Es, only 47 of which are considered flyable. Although the Marine Corps began a reset of the CH-53E in 2016 to bridge the procurement gap, it will not have enough helicopters to meet its heavy-lift requirement without the transition to the CH-53K. The FY 2017 request asks for continued Research, Development, Test and Evaluation (RDT&E) funding, along with $437 million for an initial procurement quantity of two CH-53Ks, and retains the current program of record of 200 CH-53Ks.

Readiness

The Marine Corps’ first priority is to be the crisis response force for the military, which is why investment in readiness has been prioritized over capacity and capability. However, in order to invest in readiness in a time of downward fiscal pressure, the Corps has
been forced to reduce end strength and delay investment in modernization. Even though funding for near-term readiness has been relatively protected from cuts, future readiness is threatened by underinvestment in long-term modernization and infrastructure. As General Dunford has explained, extended or long-term imbalance among the USMC “pillars” of readiness, which address both operational and foundational readiness, “will hollow the force and create unacceptable risk for our national defense.”

In FY 2016, according to Marine Corps Assistant Commandant General John M. Paxton, Jr., “approximately half of our non-deployed units are suffering from some degree of personnel, equipment, or training shortfalls.” Personnel and equipment shortages, lower end strength, shorter dwell times, and a scarcity of prepositioned ships have inhibited sufficient training for home-station units and have “degraded full spectrum capability across the Service.”

Marine aviation in particular is experiencing significant readiness shortfalls. With a smaller force structure and fewer aircraft available for training, aviation units are having difficulty keeping up with demanding operational requirements. All of the Marine Corps’ fixed-wing and tiltrotor aircraft are operating in excess of a 1:2 D2D ratio. High operational tempos, coupled with a 5.6 percent reduction in operations and maintenance funding from FY 2015 to FY 2016, put increasing stress on depots. This stress is increased by reduced procurement and workforce cuts, which contribute to readiness problems and leave fewer aircraft available for training or operations.

Only 43 percent of the Marine Corps’ total aircraft inventory is currently considered flyable, which “leaves the Corps shy of being able to meet our wartime commitments” and reduces the aircraft available for training. As a result, average flight hours have reached “historic lows.” According to General Paxton, the Marine Corps is concerned about these conditions and the possible correlation to “an increasing number of aircraft mishaps and accidents,” acknowledging that “if you fly less and maintain slower there’s a higher likelihood of accidents.”

In order to achieve the minimum readiness goal, squadrons must be qualified to perform 70 percent of their Mission Essential Tasks. However, nearly half of the last 27 deployed squadrons failed to meet the necessary “training and readiness levels to be safe and meet the minimum for tactical proficiency.” In FY 2017, the Marine Corps will prioritize readiness funding for deployed and pre-deployment units. This decision comes at the expense of non-deployed forces. According to General Paxton, “[b]y degrading the readiness of these bench forces to support those forward deployed, we are forced to accept increased risk in our ability to respond to further contingencies, our ability to assure we are the most ready when the nation is least ready.”

The Marines’ Ground Equipment Reset Strategy has been progressing and is anticipated to be completed by the end of FY 2017. All of the equipment in Afghanistan was withdrawn by February 2015. As of March 2016, 78 percent of ground equipment had been reset, and the Marine Corps expects to complete its total reset requirement by 2019. Reconstituting equipment and ensuring that the Corps’ inventory can meet operational requirements are critical aspects of readiness.

Scoring the U.S. Marine Corps

**Capacity Score: Weak**

Based on the deployment of Marines across major engagements since the Korean War, the Corps requires roughly 15 battalions for one MRC. Therefore, it would need a force of around 30 battalions to fight two
MRCs simultaneously. The government force-sizing documents that discuss Marine Corps composition support this. Though the documents that make such a recommendations count the Marines by divisions, not battalions, they are consistent in arguing for three Active Marine Corps divisions, which in turn requires roughly 30 battalions. With a 20 percent strategic reserve, the ideal USMC capacity for a two-MRC force-sizing construct is 36 battalions.

More than 33,000 Marines were deployed in Korea, and over 44,000 were deployed in Vietnam. In the Persian Gulf, one of the largest Marine Corps missions in U.S. history, some 90,000 Marines were deployed, and around 66,000 were deployed for Operation Iraqi Freedom. As the Persian Gulf War is the most pertinent example for this construct, a force of 180,000 Marines is a reasonable benchmark for a two-MRC force, not counting Marines that would be unavailable for deployment (assigned to institutional portions of the Corps) or that are deployed elsewhere. This is supported by government documents that have advocated for a force as low as 174,000 (1993 Bottom-Up Review) and as high as 202,000 (2010 Quadrennial Defense Review), with an average end strength of 185,000 being recommended.

- **Two-MRC Level:** 36 battalions.

- **Actual 2016 Level:** 23 battalions.

The Corps is operating with slightly less than 64 percent of the number of battalions relative to the two-MRC benchmark. This is the same capacity level as measured in the 2016 Index, and the Corps’ capacity is therefore scored as “weak” again in 2017.

**Capability Score: Marginal**

The Corps receives scores of “weak” for “Capability of Equipment,” “marginal” for “Age of Equipment” and “Health of Modernization Programs,” but “strong” for “Size of Modernization Program.” Therefore, the aggregate score for Marine Corps capability is “marginal.” Excluded from the scoring are various ground vehicle programs that have been cancelled and are now being reprogrammed. This includes redesign of the MPC.

**Readiness Score: Marginal**

In FY 2016, approximately half of USMC units experienced degraded readiness. As the nation’s crisis response force, the Corps requires that all units, whether deployed or non-deployed, be ready. Thus, this Index scores the Corps’ readiness as “marginal” because the USMC is meeting only half of its readiness requirement. Last year, the USMC reported more specifically that 42 percent of units experienced degraded readiness, leaving 58 percent ready. Since the reporting was more vague this year, this Index assumes that the level is nearly the same, although it could be lower given that half would literally mean 50 percent ready, 8 percent lower than the reported 58 percent measured in the 2016 Index.

**Overall U.S. Marine Corps Score: Marginal**

The Marine Corps is scored as “marginal” overall in the 2017 Index. This is the same as the assessment in the previous Index. However, the Corps is at the lower end of this category, and the possibility of further declines in both capacity and readiness signals that this score could drop to “weak” in the near future given continued high demand and OPTEMPO on this service and the need to preserve immediate readiness concerns at the expense of the future force.
# U.S. Military Power: Marine Corps

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Endnotes:


4. Ibid., p. 11.


7. Ibid.


15. Dunford statement, January 28, 2015, p. 32.


18. International Institute for Strategic Studies, The Military Balance 2016: The Annual Assessment of Global Military Capabilities and Defence Economics (London: Routledge, 2016), pp. 44–45. The prior year figure was not repeated in recent testimony. Since publication of the 2016 IISS Military Balance, one Prowler squadron has been decommissioned, and one harrier squadron has been transitioned to an F-35B squadron. Factoring in these changes to the IISS Military Balance, there are 60 total squadrons in the Marine Corps active component, including all fixed-wing and rotary aircraft squadrons, training and transport squadrons, and one combat search and rescue squadron (does not include the “VIP” transport squadron). Using the same metrics, the total for 2015 based on the IISS Military Balance would have been 64.


22. Ibid.


32. Ibid., p. 11.


43. Ibid., p. 39.
47. Grosklags, Davis, and Manazir, “Department of the Navy’s Aviation Programs,” April 20, 2016, p. 3.
66. Ibid.
69. In regard to this overall requirement—armored lift for 10 battalions of infantry—the AAV Survivability Upgrade Program would provide for four battalions, and ACV 1.1 and ACV 1.2 would account for six battalions. Ibid., pp. 27–28.
72. Feickert, “Marine Corps Amphibious Combat Vehicle (ACV) and Marine Personnel Carrier (MPC).”
73. Dunford statement on Marine Corps readiness, February 26, 2015, p. 28.
77. Ibid, p. 3.
78. Vice Admiral Paul Grosklags, Principal Military Deputy, Assistant Secretary of the Navy (Research, Development and Acquisition); Rear Admiral Michael C. Manazir, Director, Air Warfare; and Lieutenant General Jon Davis, Deputy Commandant for Aviation, “Department of the Navy’s Aviation Programs,” statement before the Subcommittee on Seapower, Committee on Armed Services, U.S. Senate, March 25, 2015, p. 10, http://www.armed-services.senate.gov/imo/media/doc/Grosklags_Manazir_Davis_03-25-15.pdf (accessed August 30, 2016).
86. Grosklags, Manazir, and Davis, “Department of the Navy’s Aviation Programs,” March 25, 2015, p. 16.
87. Ibid.
90. Ibid., p. 93.

92. Ibid., p. 10.


95. Ibid.


99. Ibid., pp. 6 and 9.

100. Ibid., p.


102. Ibid., p. [3].


107. Ibid., p. 13.

108. This count is based on an average number of 1.5 divisions deployed to major wars (see Table 6, p. 226) and an average of 10–11 battalions per division.
U.S. Nuclear Weapons Capability

Assessing the state of U.S. nuclear weapons capabilities presents several challenges.

First, the U.S. has elected to maintain nuclear warheads—based on designs from the 1960s and 1970s—that were in the stockpile when the Cold War ended rather than take advantage of technological developments to field new warheads that could be designed to be safer and more secure and could give the United States improved options for guaranteeing a credible deterrent.

Second, the lack of detailed publicly available data about the readiness of nuclear forces, their capabilities, and weapon reliability makes analysis difficult.

Third, the U.S. nuclear enterprise is composed of many components, some of which are also involved in supporting conventional missions. For example, dual-capable bombers do not fly airborne alert with nuclear weapons today, although they did so routinely during the 1960s (and are capable of doing so again if the decision should ever be made to resume this practice). Additionally, the national security laboratories do not focus solely on the nuclear weapons mission; they also perform a variety of functions related to nuclear non-proliferation, medical research, threat reduction, and countering nuclear terrorism, including nuclear detection.

Thus, assessing the extent to which any one piece of the nuclear enterprise is sufficiently funded, focused, and effective with regard to the nuclear mission is problematic.

In today’s rapidly changing world, the U.S. nuclear weapons enterprise should be flexible and resilient to underpin the U.S. nuclear deterrent. If the U.S. detects a game-changing nuclear weapons development in another country, the ability of the U.S. nuclear weapons complex to provide a timely response is important.

The U.S. maintains an inactive stockpile that includes near-term hedge warheads that can be put back into operational status within six to 24 months. Extended hedge warheads are said to be ready within 24 to 60 months. The U.S. preserves significant upload capability on its strategic delivery vehicles, which means that the nation can increase the number of nuclear warheads on each type of its delivery vehicles if contingencies warrant. For example, the U.S. Minuteman III intercontinental ballistic missile (ICBM) can carry up to three nuclear warheads, though it is currently deployed with only one.

Presidential Decision Directive-15 (PDD-15) requires the U.S. to maintain the ability to conduct a nuclear test within 24 to 36 months of a presidential decision to do so. However, successive governmental reports have noted the continued deterioration of technical and diagnostics equipment and the inability to fill technical positions supporting nuclear testing readiness. A lack of congressional support for improving technical readiness further undermines efforts by the National Nuclear Security Administration (NNSA) to comply with the directive.

The weapons labs are beset by demographic challenges of their own. Thomas D’Agostino, former Under Secretary of Energy for Nuclear Security and Administrator of the NNSA, has stated that it is quite plausible...
that by 2017, the United States will not have a single active engineer who had “a key hand in the design of a warhead that’s in the existing stockpile and who was responsible for that particular design when it was tested back in the early 1990s.”6 This is a significant problem because for the first time since the dawn of the nuclear age, the U.S. will have to rely on the scientific judgment of people who were not directly involved in nuclear tests of weapons that they designed, developed, and are certifying.

Not all of the existing inactive stockpile will go through the life-extension program. Hence, our ability to respond to contingencies by uploading weapons kept in an inactive status could decline with the passage of time.

The shift of focus away from the nuclear mission after the end of the Cold War caused the NNSA laboratories to lose their sense of purpose and to feel compelled to reorient and broaden their mission focus. According to a number of studies, their relationship with the government also evolved in ways that reduce output and increase costs. The NNSA was supposed to address these problems but has largely failed in this task, partly because “the relationship with the NNSA and the National security labs appears to be broken.”7

In 1999, the Commission on Maintaining U.S. Nuclear Weapons Expertise concluded that 34 percent of the employees supplying critical skills to the weapons program were more than 50 years old. The number increased to 40 percent in 2009.8 The U.S. high-technology industry, on average, has a more balanced employee age distribution.9 In 2012, a number of the Los Alamos National Laboratory’s employees were laid off in anticipation of a $300 million shortfall.10

Both the lack of resources and the lack of sound consistent policy guidance have undermined the morale of the workforce. The Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise recommended fundamental changes in the nuclear weapons enterprise’s culture, business practices, project management, and organization. Others proposed moving the NNSA to the Department of Defense.11

Another important indication of the health of the overall force is the readiness of forces that actually operate U.S. nuclear systems. In 2006, the Air Force mistakenly shipped non-nuclear warhead components to Taiwan.12 A year later, the Air Force transported nuclear-armed cruise missiles across the U.S. without authorization (or apparently even awareness that it was doing so, mistaking them for conventional cruise missiles).13 These serious incidents led to the establishment of a Task Force on DOD Nuclear Weapons Management, which found that “there has been an unambiguous, dramatic, and unacceptable decline in the Air Force’s commitment to perform the nuclear mission and, until very recently, little has been done to reverse it” and that “the readiness of forces assigned the nuclear mission has seriously eroded.”14

Following these incidents, the Air Force instituted broad changes to improve oversight and management of the nuclear mission and the inventory of nuclear weapons, including creating the Air Force Global Strike Command to organize, train, and equip intercontinental-range ballistic missile and nuclear-capable bomber crews as well as other personnel to fulfill a nuclear mission and implement a stringent inspections regime.

The success of these changes has been limited. In January 2014, the Air Force discovered widespread cheating on nuclear proficiency exams and charged over 100 officers with misconduct. The Navy had a similar problem, albeit on a smaller scale.15 The Department of Defense conducted two nuclear enterprise reviews, one internal and one external. Both reviews identified a lack of leadership attention, a lack of resources to modernize the atrophied infrastructure, and unduly burdensome implementation of the personnel reliability program as some of the core challenges preventing a sole focus on accomplishing the nuclear mission.16

The ICBM Force Improvement Program was initiated and mostly implemented
throughout 2014 and into 2015, and the Air Force shifted over $160 million to address problems, modernize certain facilities, and generally improve morale. The Air Force has also seen an increase in badly needed manpower—but not nearly enough to alleviate manpower concerns. If changes in the nuclear enterprise are to be effective, leaders across the executive and legislative branches will have to continue to provide sufficient resources to mitigate readiness and morale issues within the force in the years ahead.

Fiscal uncertainty and a steady decline in resources for the nuclear weapons enterprise (trends that have begun to reverse in recent years) have negatively affected the nuclear deterrence mission. Admiral Cecil D. Haney, Commander, U.S. Strategic Command (STRATCOM), testified in March 2016 that:

Much remains to be done to sustain and modernize the foundational nuclear deterrent force that we need to protect the Nation from existential threats in an increasingly uncertain and unpredictable environment. We must continue to meet critical investment timelines to ensure that aging platforms and weapons systems do not reach the point at which their viability becomes questionable.17

In recent years, the Administration has advanced a comprehensive modernization program for nuclear forces—warheads, delivery systems and command and control—and has robustly funded this program in its budget requests. At the same time, Congress in large part has funded the modernization program. Because such modernization activities require long-term funding commitments, it is important that a bipartisan approach continue this commitment in future years.

**Implications for U.S. National Security**

U.S. nuclear forces play an important role in the global nonproliferation regime by providing U.S. assurances to NATO, Japan, and South Korea that lead these allies either to keep the number of their nuclear weapons lower than otherwise would be the case (France, the U.K.) or to forgo their development and deployment altogether. North Korea has proven that a country with very limited intellectual and financial resources can develop a nuclear weapon if it decides to do so. Iran continues to be on a path to obtaining a nuclear weapon, and the Joint Comprehensive Plan of Action might make reaching the goal easier by providing Iran with money and access to advanced technologies.

This makes U.S. nuclear assurances to allies and partners ever more important. Should the credibility of American nuclear forces continue to degrade, countries such as South Korea could pursue an independent nuclear option, which would raise several thorny issues including possible additional instability across the region.

Certain negative trends could undermine U.S. nuclear deterrence if problems are not addressed. There is no shortage of challenges on the horizon, from an aging nuclear weapons infrastructure and workforce to the need to recapitalize all three legs (land, air, and sea) of the nuclear triad, from the need to conduct life-extension programs while maintaining a self-imposed nuclear weapons test moratorium to limiting the spread of nuclear know-how and the means to deliver nuclear weapons. Additionally, the United States must take account of adversaries who are modernizing their nuclear forces, particularly Russia and China.

Deterrence is a complex interplay between U.S. conventional and nuclear forces and the psychology of both allies and adversaries that the U.S. would use these forces to defend both the interests of the U.S. and those of its allies. Nuclear deterrence must reflect the mindset of the adversary the U.S. seeks to deter. If an adversary believes that limited nuclear war can be fought and won, then the task for U.S. leaders is to convince the adversary otherwise
even if U.S. leaders think it is not possible to control escalation. The U.S. nuclear portfolio must be structured in terms of capacity, capability, variety, flexibility, and readiness to achieve this objective. In addition, military requirements and specifications for nuclear weapons will be different depending on who is being deterred, what he values, and what the U.S. seeks to deter him from doing.

Due to the complex interplay among strategy, policy, actions that states take in international relations, and other actors’ perceptions of the world around them, it is quite possible that one might never know precisely if and when a nuclear or conventional deterrent provided by U.S. forces loses credibility. Nuclear weapons capabilities take years or decades to develop, as does the infrastructure supporting them—an infrastructure that the U.S. has neglected for decades. We can be reasonably certain that a robust, well-resourced, focused, and reliable nuclear enterprise is more likely to sustain its deterrent value than is an outdated and questionable one.

The U.S. is capable of incredible mobilization when danger materializes. The nuclear threat environment is dynamic and proliferating, with old and new actors developing advanced capabilities while the U.S. enterprise is relatively static, potentially leaving the United States at a technological disadvantage. This is worrisome because of its implications both for the security of the United States and for the security of its allies and the free world generally.

Scoring U.S. Nuclear Weapons Capabilities

The U.S. nuclear weapons enterprise is composed of several key elements that include warheads; delivery systems; nuclear command and control; intelligence, surveillance, and reconnaissance; aerial refueling; and the physical infrastructure that designs, manufactures, and maintains U.S. nuclear weapons. The complex also includes the talent of people from physicists to engineers, maintainers, and operators, without which the continuous maintenance of the nuclear infrastructure would not be possible.

The factors selected below are the most important elements of the nuclear weapons complex. They are judged on a five-grade scale, where “very strong” means that a sustainable, viable, and funded plan is in place and “very weak” means that the U.S. is not meeting its security requirements and has no program in place to redress the shortfall, which has the potential to damage vital national interests if the situation is not corrected.

Current U.S. Nuclear Stockpile Score: Strong

U.S. warheads must be safe, secure, effective, and reliable. The Department of Energy (DOE) defines reliability as “the ability of the weapon to perform its intended function at the intended time under environments considered to be normal” and as “the probability of achieving the specified yield, at the target, across the Stockpile-to-Target Sequence of environments, throughout the weapon’s lifetime, assuming proper inputs.” Since 1993, reliability has been determined through an intensive warhead surveillance program; non-nuclear experiments (that is, without the use of experiments producing nuclear yield); sophisticated calculations using high-performance computing; and related evaluations.

Nuclear warhead and delivery system reliability becomes more important as the number and diversity of nuclear weapons in the stockpile decreases, because fewer types of nuclear weapons leave a smaller margin of error should one type of a weapon be affected by a technical problem that requires either the repair or the decommissioning of a weapon type or its delivery system. Americans and allies must be confident that U.S. nuclear warheads will perform as expected.

As warheads age, they become less able to perform their mission as expected, and this can
complicate military planning significantly. Despite creating impressive amounts of knowledge about nuclear weapons physics and materials chemistry, the U.S. may not be completely certain about the long-term effects of aging components that comprise a nuclear weapon. Former NNSA spokesman Bryan Wilkes said, “We know that plutonium pits have a limited lifetime.”\textsuperscript{21} A plutonium pit is a crucial component of a nuclear weapon,\textsuperscript{22} and with life-extension programs introducing new components to warheads whose radiological effects are not fully known, the level of uncertainty has increased.

The United States has the world’s safest and most secure stockpile, but security of long-term storage sites including overseas sites, potential problems introduced by improper handling, or unanticipated effects stemming from long-term handling could compromise the integrity of U.S. warheads. The nuclear warheads themselves contain security measures that are designed to make it difficult, if not impossible, to detonate a weapon absent a proper authorization.

**Grade:** The Department of Energy and Department of Defense are required to assess the reliability of the nuclear stockpile annually. This assessment does not include delivery systems, although the U.S. Strategic Command does assess overall weapons system reliability, which includes both the warhead and delivery platforms.

Absent nuclear weapons testing, the assessment of weapons reliability becomes more subjective, albeit based on experience and non-nuclear tests rather than fact. While certainly an educated opinion, it is not a substitute for the type of objective data obtained through nuclear testing. Testing was used to diagnose potential problems and to certify the effectiveness of fixes to those problems. Given that modern simulation is based on nuclear tests that were conducted primarily in the 1950s and 1960s, using testing equipment of that era, there is a great deal that modern testing equipment and computer capability could teach about nuclear physics.

According to the late Major General Robert Smolen, some of the nuclear weapon problems the U.S. now faces “in the past would have [been] resolved with nuclear tests.”\textsuperscript{23} By 2005, a consensus emerged in the NNSA, informed by the nuclear weapons labs, that it would “be increasingly difficult and risky to attempt to replicate exactly existing warheads without nuclear testing and that creating a reliable replacement warhead should be explored.”\textsuperscript{24}

When the U.S. did conduct nuclear tests, it was frequently found that small changes in a weapon’s tested configuration had a dramatic impact on weapons performance. In fact, the 1958–1961 testing moratorium resulted in weapons with serious problems being introduced into the U.S. stockpile.\textsuperscript{25}

In fiscal year (FY) 2015, the NNSA assessed that it met its goal of maintaining a safe, secure, and effective stockpile.\textsuperscript{26}

The lack of nuclear weapons testing creates some uncertainty concerning the adequacy of fixes to the stockpile when problems are found. This includes updates made in order to correct problems that were found in the weapons or changes in the weapons resulting from life-extension programs. It is simply impossible to duplicate exactly weapons that were designed and built many decades ago. According to former Defense Threat Reduction Agency Director Dr. Stephen Younger, we have had “a number of problems that were never anticipated” and had to fix them by using “similar but not quite identical parts.”\textsuperscript{27} The high costs of having to certify weapons without nuclear testing are resulting in fewer types of weapons and, as a consequence, a greater impact across the inventory if there is an error in the certification process.
Secretary of Defense Robert Gates warned in October 2008 that, “[t]o be blunt, there is absolutely no way we can maintain a credible deterrent and reduce the number of weapons in our stockpile without either resorting to testing our stockpile or pursuing a modernization program.”  The U.S. is pursuing warhead life-extension programs that replace aging components before they can cause reliability problems. However, the national commitment to this modernization program, including the necessary funding over the long term, continues to be uncertain.

In light of our overall assessment, we grade the U.S. stockpile as “strong.”

**Reliability of U.S. Delivery Platforms Score: Strong**

Reliability encompasses not only the warhead, but the strategic delivery vehicles as well. This includes a successful missile launch, the separation of missile boost stages, the performance of the missile guidance system, the separation of the multiple re-entry vehicle warheads from the missile post-boost vehicle, and the accuracy of the final re-entry vehicle in reaching its target.

The U.S. conducts ICBM and submarine launched ballistic missile (SLBM) flight tests every year to ensure the reliability of its systems. Anything from electrical wiring to faulty booster separations could degrade the efficiency and safety of the U.S. strategic deterrent if it were to malfunction. U.S. strategic, long-range bombers regularly conduct intercontinental training and receive upgrades in order to sustain a high level of combat readiness. However, potential challenges are on the horizon.

**Grade:** U.S. ICBMs and SLBMs are flight tested annually, and these tests were successful in 2015. To the extent that data from these tests are publicly available, they provide objective evidence of the delivery systems’ reliability and send a message to U.S. adversaries that the system works. The aged systems, however, occasionally have reliability problems. Overall, this factor earns a grade of “strong.”

**Nuclear Warhead Modernization Score: Weak**

During the Cold War, the United States maintained a strong focus on designing and developing new nuclear warhead designs in order to counter Soviet advances and modernization efforts and to leverage advances in understanding the physics, chemistry, and design of nuclear weapons. Today, the United States is focused on sustaining the existing stockpile, not on developing new warheads, even though all of its nuclear-armed adversaries are developing new nuclear warheads and capabilities and accruing new knowledge in which the U.S. used to lead. Since the collapse of the Soviet Union, nuclear weapons and delivery vehicles have not been replaced despite being well beyond their designed service life. This may increase the risk of failure due to aging components and signal to adversaries that the United States is less committed to nuclear deterrence.

New weapon designs could allow American engineers and scientists to improve previous designs and address more effective means to address existing military requirements (for example, the need to destroy deeply buried and hardened targets) that have emerged in recent years. With new warheads, the safety and security of American weapons could also be enhanced in ways that may not be possible today without nuclear testing.

An ability to work on new weapon designs would also help American experts to remain engaged and knowledgeable, would help to attract the best talent to the nuclear enterprise, and could help the nation to gain additional insights into foreign nations’ nuclear weapon programs. As the Panel to Assess the Reliability, Safety, and Security of the United States Nuclear Stockpile noted, “Only through work on advanced designs will it be possible to train the next generation of weapon designers and producers. Such efforts are also needed to exercise the DoD/NNSA weapon development interface.” Other nations maintain their levels of proficiency by having their scientists work on new nuclear warheads and
possibly conducting very low-yield nuclear weapons tests.

**Grade:** The lack of plans to modernize nuclear weapons—life-extension programs are not modernization—and the restrictions on thinking about new designs that might be able to accomplish the deterrence mission in the 21st century more effectively earn nuclear warhead modernization a grade of “weak.”

**Nuclear Delivery Systems**

**Modernization Score: Marginal**

Today the United States fields a triad of nuclear forces with delivery systems that are safe and reliable. That said, as these systems age, there is increased risk of significant negative impact on operational capabilities. The older weapons are, the more at risk they are from faulty components or malfunctioning equipment. Age can degrade reliability by increasing the potential for systems to break down or fail to respond correctly. Corrupted systems, defective electronics, or performance degradation due to long-term storage defects (in the case of nuclear warheads as well) can have serious implications for American deterrence and assurance. If a strategic delivery vehicle cannot be counted on to operate at all times, its deterrence and assurance value is significantly reduced.

While the U.S. Air Force and U.S. Navy have plans to modernize or replace each leg of the nuclear triad in the next several decades, fiscal constraints are likely to make such efforts difficult. The Navy is fully funding its programs to replace the *Ohio*-class submarine and to life extend and eventually replace the Trident SLBM, but existing ICBMs and SLBMs are expected to remain in service until 2032 and 2042, respectively, and new bombers are not planned to enter into service until 2023 at the earliest. Budgetary shortfalls are leading to uncertainty as to whether the nation will be able to modernize all three legs of the nuclear triad. Yet a triad is a “requirement” according to the U.S. Strategic Command.\(^{32}\) This requirement, which has been validated by all U.S. Nuclear Posture Reviews since the end of the Cold War, provides U.S. leadership with credibility and flexibility, attributes that are necessary for any future deterrence scenarios.

Maintenance issues caused by the aging of American SSBNs and long-range bombers could make it difficult to deploy units overseas for long periods of time or remain stealthy in enemy hotspots. The United States can already send only a limited number of bombers on missions at any one time. As Bradley Thayer and Thomas Skypek have noted, “Using 2009 as a baseline, the ages of the current systems of the nuclear triad are 39 years for the *Minuteman III*, 19 years for the *Trident II D-5* SLBM, 48 years for the *B-52H*, 12 years for the *B-2*, and 28 years for the *Ohio* Class SSBNs.”\(^{33}\) Remanufacturing some weapon parts is difficult and expensive because some of the manufacturers are no longer in business or the materials that constituted the original weapons are no longer available (for example, due to environmental restrictions). The ability of the U.S. to produce solid-fuel rocket engines and possible U.S. dependence on Russia as a source for such engines are other long-range concerns.\(^{34}\)

**Grade:** U.S. nuclear platforms are in dire need of recapitalization. The U.S. has put into place plans for nuclear triad modernization, and despite some delays, funding for these programs has been sustained by Congress notwithstanding difficulties caused by sequestration. At the same time, there is uncertainty regarding when the new platforms will enter into force and be nuclear-certified and uncertainty regarding U.S. future stockpile strategy. These considerations earn this indicator a grade of “marginal.”

**Nuclear Weapons Complex Score: Weak**

A large part of maintaining a reliable and effective nuclear stockpile depends on the facilities where U.S. devices and components are developed, tested, and produced. These facilities constitute the foundation of our strategic arsenal and include the:
Los Alamos National Laboratories,

Lawrence Livermore National Laboratories,

Sandia National Laboratory,

Nevada National Security Site,

Pantex Plant,

Kansas City Plant,

Savannah River Site, and

Y-12 National Security Complex.

In addition to these government sites, the defense industrial base supports the development and maintenance of American delivery platforms. These complexes design, develop, test, and produce the weapons in the U.S. nuclear arsenal. Their maintenance is of critical importance. As the 2010 Nuclear Posture Review (NPR) stated:

In order to remain safe, secure, and effective, the U.S. nuclear stockpile must be supported by a modern physical infrastructure—comprised of the national security laboratories and a complex of supporting facilities—and a highly capable workforce with the specialized skills needed to sustain the nuclear deterrent.\(^35\)

A flexible and resilient infrastructure is an essential hedge in the event that components fail or the U.S. is surprised by the nuclear weapon capabilities of potential adversaries.\(^36\) U.S. research and development efforts and the industrial base that supports modernization of delivery systems are an important part of this indicator.

Maintaining a safe, secure, effective, and reliable nuclear stockpile requires modern facilities, technical expertise, and tools both to repair any malfunctions quickly, safely, and securely and to produce new nuclear weapons if required. The existing nuclear weapons complex is not fully functional. The U.S. cannot produce more than a few new warheads per year. There are limits on the ability to conduct life-extension programs. Dr. John Foster has reported that the U.S. no longer can “serially produce many crucial components of our nuclear weapons.”\(^37\)

If the facilities are not properly funded, the U.S. will gradually lose the ability to conduct high-quality experiments. Obsolete facilities and poor working environments make maintaining a safe, secure, reliable, and militarily effective nuclear stockpile exceedingly difficult, in addition to demoralizing the workforce and hampering further recruitment. The NNSA’s facilities are old: More than 50 percent are more over 40 years old, nearly 30 percent date to the Manhattan Project of the 1940s, and 12 percent are considered excess or no longer needed.\(^38\) As a consequence, the NNSA had about $3.7 billion in deferred maintenance at the end of FY 2015.

Since 1993, the DOE has not had a facility dedicated to production of plutonium pits, one of the main components of America’s nuclear warheads. The U.S. currently keeps about 5,000 plutonium pits in strategic reserve. There are significant disagreements as to the effect of aging on pits and whether the U.S. will be able to maintain them indefinitely without nuclear weapons testing. Currently, the U.S. can produce no more than about 10 plutonium pits a year at the Los Alamos PF-4 facility. Infrastructure modernization plans for PF-4, if funded, will boost that number to about 20 by the middle of the next decade and to between 50 and 80 by the end of the next decade. Russia can produce around 2,000 pits a year.\(^39\)

Manufacturing non-nuclear components can be extremely challenging either because some materials may no longer exist or because manufacturing processes have been forgotten and must be retrieved. There is a certain element of art to the process of building a nuclear weapon, and such a skill can be acquired and maintained only through actual hands-on experience.
**Grade:** On one hand, the U.S. maintains some of the world’s most advanced nuclear facilities. On the other, some parts of the complex—most importantly, parts of the plutonium and highly enriched uranium component manufacturing infrastructure—have not been modernized since the 1950s, and plans for long-term infrastructure recapitalization remain uncertain. The infrastructure therefore receives a grade of “weak.”

**Quality of People Working in the National Nuclear Laboratories Score: Marginal**

Combined with nuclear facilities, U.S. nuclear weapons scientists and engineers are critical to the health of the complex and the stockpile. The 2010 NPR emphasizes that:

>[A] highly skilled workforce [is] needed to ensure the long-term safety, security, and effectiveness of our nuclear arsenal and to support the full range of nuclear security work to include non-proliferation, nuclear forensics, nuclear, counter-terrorism, emergency management, intelligence analysis and treaty verification.40

The ability to maintain and attract a high-quality workforce is critical to assuring the future of the American nuclear deterrent. Today’s weapons designers and engineers are first-rate, but they also are aging and retiring, and their knowledge must be passed on to the next generation that will take on this mission. To do that, young designers need challenging warhead design and development programs to hone their skills. No such challenging programs are in place today. The NNSA and its weapons labs understand this problem and are taking steps, with the support of Congress and despite significant challenges, to mentor the next generation.

The U.S. currently relies on non-yield-producing laboratory experiments, flight tests, and the judgment of experienced nuclear scientists and engineers to ensure continued confidence in the safety, security, effectiveness, and reliability of its nuclear deterrent. Without their experience, the nuclear weapons complex could not function. A basic problem is that few scientists or engineers at the NNSA weapons labs have had the experience of taking a warhead from initial concept to a “clean sheet” design, engineering development, and production. The complex must attract and retain the best and brightest. Between 2014 and 2016, the NNSA lost 106 people out of a total of 2,340 employed as of April 2016.41 The average age of the workforce increased to 48.1 years.42

**Grade:** In addition to employing world-class experts, the NNSA labs have had recent success in attracting and retaining talent. The NNSA, however, has had less success in providing these people with challenging warhead design and development programs. Because many scientists and engineers with practical nuclear weapon design and testing experience are retired, nuclear warhead certifications will therefore rely on the judgments of people who have never tested or designed a nuclear weapon. Management challenges and a lack of focus on the nuclear weapon mission contribute to the lowering of morale in the NNSA complex. In light of these issues, which have to do more with policy than with the quality of people, the complex earns a score of “marginal.”

**Readiness of Forces Score: Marginal**

The readiness of forces is a vital component of America’s strategic forces. The military personnel operating the three legs of the nuclear triad must be properly trained and equipped. It is also essential that these systems be maintained in a high state of readiness.

During FY 2016, the services continue to align resources in order to preserve strategic capabilities in the short term, but long-term impacts remain uncertain. Continued decline in U.S. general purpose forces could eventually affect nuclear forces, especially the bomber leg of the nuclear triad. Changes prompted by the 2014 Navy and Air Force cheating scandals have begun to address some of the morale issues. A sustained attention to the situation in the nuclear enterprise is critical.
Grade: Uncertainty regarding the further potential impacts of budgetary shortfalls, as part of the overall assessment, earns this indicator a grade of “marginal.”

Allied Assurance Score: Marginal

The number of weapons that U.S. allies keep is an important element when speaking about the credibility of America’s extended deterrence. Allies that already have nuclear weapons can coordinate action with other powers or act independently. During the Cold War, the U.S. and the U.K. cooperated to the point where joint targeting was included. France maintains its own independent nuclear arsenal, partly as a hedge against the uncertainty of American credibility. The U.S. also deploys nuclear gravity bombs in Europe as a visible manifestation of its commitment to its NATO allies.

The U.S., however, must concern itself not just with NATO, but with Asian allies as well. The United States provides nuclear assurances to Japan and South Korea, both of which are technologically advanced industrial economies facing nuclear-armed adversaries and potential adversaries. If they do not perceive U.S. assurances as credible, they have the capability and know-how to build their own nuclear weapons and to do so quickly. That would be a major setback for U.S. nonproliferation policies.

Grade: At this time, most U.S. allies are not seriously considering developing their own nuclear weapons. European members of NATO continue to express their commitment to and appreciation for NATO as a nuclear alliance. Doubts about the modernization of dual-capable aircraft and even about the weapons themselves, as well as NATO’s lack of attention to the nuclear mission and its intellectual underpinning, preclude assigning a score of “very strong.” Additionally, the perception among some that America has accepted Iran’s nuclear program may encourage other countries in the Middle East region to seek similar capabilities. Thus, allied assurance remains “marginal.”

Nuclear Test Readiness Score: Weak

Testing is one of the key elements of maintaining a safe, secure, effective, and reliable nuclear deterrent. While the U.S. is currently under a self-imposed nuclear testing moratorium, it maintains a low level of nuclear test readiness at the Nevada National Security Site (formerly Nevada Test Site). The approach is questionable with regard to its efficacy in assuring that the U.S. has the timely ability to conduct yield-producing experiments should it discover a flaw in one or more types of its nuclear weapons that requires experimentation to correct. The U.S. might need to test to develop a weapon with new characteristics that can be validated only by testing and to verify render-safe procedures. Yield-producing experiments can also play an important role if the U.S. needs to react strongly to other nations’ nuclear weapons tests and communicate its resolve or to understand other countries’ new nuclear weapons.

Current law requires that the U.S. be prepared to conduct a nuclear weapons test within a maximum of 36 months after a presidential decision to do so. The current state of test readiness is between 24 and 36 months, although both the NNSA and Congress required the NNSA to be ready within 18 months in the past. The U.S. could meet the 18-month requirement only if certain domestic regulations, agreements, and laws were to be waived.

“Test readiness” refers to a single test or a very short series of tests, not a sustained nuclear testing program. Because of a shortage of resources, the NNSA has been unable to achieve this goal. The test readiness program is supported by experimental programs at the Nevada National Security Site, nuclear laboratory experiments, and advanced diagnostics development.

Grade: As noted, the U.S. can meet the readiness requirement mandated by the law only if certain domestic regulations, agreements, and laws are waived. In addition, the U.S. is not prepared to sustain testing activities beyond a few limited experiments, which
certain scenarios might require. Thus, testing readiness earns a grade of “weak.”

**Overall U.S. Nuclear Weapons Capability Score: Marginal**

Though modernization programs for warheads and delivery systems are quite uncertain, the infrastructure supporting nuclear programs is aged, and nuclear test readiness has revealed troubling problems within the forces, those weak spots are offset by strong delivery platform reliability and allies who remain confident in the U.S. nuclear umbrella. Averaging the subscores across the nuclear enterprise therefore results in an overall score of “marginal.”

### U.S. Military Power: Nuclear

<table>
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<tr>
<th></th>
<th>VERY WEAK</th>
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<th>MARGINAL</th>
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<td>Delivery Platform</td>
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<td>Reliability</td>
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<td>Warhead Modernization</td>
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<td><strong>OVERALL</strong></td>
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Endnotes:

2. Ibid.


9. Ibid.


19. Ibid.


42. Ibid.


Methodology

The assessment portion of the Index of U.S. Military Strength is composed of three major sections that address America’s military power, the operating environments within or through which it must operate, and threats to U.S. vital national interests.

The authors of this study used a five-category scoring system that ranged from “very poor” to “excellent” or “very weak” to “very strong” as appropriate to each topic. This particular approach was selected to capture meaningful gradations while avoiding the appearance that a high level of precision was possible given the nature of the issues and the information that was publicly available.

Some factors are quantitative and lend themselves to discrete measurement; others are very qualitative in nature and can be assessed only through an informed understanding of the material that leads to a judgment call. Further, conditions in each of the areas assessed are changing throughout the year, so any measurement is based on the information at hand and must necessarily be viewed as a snapshot in time. While this is not entirely satisfactory when it comes to reaching conclusions on the status of a given matter, especially the adequacy of military power (and will be quite unsatisfactory for some readers), we understand that senior officials in decision-making positions will never have a comprehensive set of inarguable hard data on which to base a decision.

Purely quantitative measures alone tell only part of the story when it comes to the relevance, utility, and effectiveness of hard power. In fact, assessing military power or the nature of an operating environment using only quantitative metrics can lead to misinformed conclusions. Raw numbers are a very important component, but they tell only a part of the story of war. Similarly, experience and demonstrated proficiency are often decisive factors in war, but they are nearly impossible to measure.

This Index’s assessment of the global operating environment focused on three key regions—Europe, the Middle East, and Asia—because of their importance relative to U.S. vital security interests.

For threats to U.S. vital interests, the Index identifies the countries that pose the greatest current or potential threats to U.S. vital interests based on two overarching factors: their behavior and their capability. The classic definition of “threat” considers the combination of intent and capability, but intent cannot be clearly measured, so “observed behavior” is used as a reasonable surrogate since it is the clearest manifestation of intent. The selection of threat countries is based on their historical behavior and explicit policies or formal statements vis-à-vis U.S. interests, scoring them in two areas: the degree of provocative behavior that they exhibited during the year and their ability to pose a credible threat to U.S. interests irrespective of intent.

Finally, the status of U.S. military power is addressed in three areas: capability (or modernity), capacity, and readiness. All three are fundamental to success even if they are not de facto determinants of success, something we explain further in the section. Also addressed is the condition of the United States’ nuclear
We assess the Global Operating Environment.

Not all of the factors that characterize an operating environment are equal, but each contributes to the degree to which a particular operating environment is favorable or unfavorable to future U.S. military operations. Our assessment of the operating environment utilized a five-point scale, ranging from “very poor” to “excellent” conditions and covering four regional characteristics of greatest relevance to the conduct of military operations:

1. **Very Poor.** Significant hurdles exist for military operations. Physical infrastructure is insufficient or nonexistent, and the region is politically unstable. The U.S. military is poorly placed or absent, and alliances are nonexistent or diffuse.

2. **Unfavorable.** A challenging operating environment for military operations is marked by inadequate infrastructure, weak alliances, and recurring political instability. The U.S. military is inadequately placed in the region.

3. **Moderate.** A neutral to moderately favorable operating environment is characterized by adequate infrastructure, a moderate alliance structure, and acceptable levels of regional political stability. The U.S. military is adequately placed.

4. **Favorable.** A favorable operating environment includes good infrastructure, strong alliances, and a stable political environment. The U.S. military is well placed in the region for future operations.

5. **Excellent.** An extremely favorable operating environment includes well-established and well-maintained infrastructure; strong, capable allies; and a stable political environment. The U.S. military is exceptionally well placed to defend U.S. interests.

The key regional characteristics consisted of:

a. **Alliances.** Alliances are important for interoperability and collective defense as allies would be more likely to lend support to U.S. military operations. Various indicators provide insight into the strength or health of an alliance. These include whether the U.S. trains regularly with countries in the region, has good interoperability with the forces of an ally, and shares intelligence with nations in the region.

b. **Political Stability.** Political stability brings predictability for military planners when considering such things as transit, basing, and overflight rights for U.S. military operations. The overall degree of political stability indicates whether U.S. military actions would be hindered or enabled and considers, for example, whether transfers of power in the region are generally peaceful and whether there have been any recent instances of political instability in the region.

c. **U.S. Military Positioning.** Having military forces based or equipment and supplies staged in a region greatly facilitates the ability of the United States to respond to crises and, presumably, achieve successes in critical “first battles” more quickly. Being routinely present in a region also assists in maintaining familiarity with its characteristics and the various actors that might try to assist or thwart U.S. actions. With this in mind, we assessed whether or not the U.S. military was well-positioned in the region. Again, indicators included bases, troop presence, prepositioned equipment, and recent examples of military operations.
d. **Infrastructure.** Modern, reliable, and suitable infrastructure is essential to military operations. Airfields, ports, rail lines, canals, and paved roads enable the U.S. to stage, launch operations from, and logistically sustain combat operations. We combined expert knowledge of regions with publicly available information on critical infrastructure to arrive at our overall assessment of this metric.

**Assessing Threats to U.S. Vital Interests**

To make the threats identified herein measurable and relatable to the challenges of operating environments and adequacy of American military power, *Index* staff and outside reviewers evaluated separately the threats according to their level of provocation (i.e., their observed behavior) and their actual capability to pose a credible threat to U.S. interests on a scale of 1 to 5, with 1 representing a very high threat capability or level of belligerency. This scale corresponds to the tone of the five-point scales used to score the operating environment and military capabilities in that 1 is bad for U.S. interests and 5 is very favorable.

Based on these evaluations, provocative behavior was characterized according to five descending categories: benign (5); assertive (4); testing (3); aggressive (2); and hostile (1). Staff also characterized the capabilities of a threat actor according to five categories: marginal (5); aspirational (4); capable (3); gathering (2); and formidable (1). Those characterizations—behavior and capability—form two halves of the overall threat level.

**Assessing U.S. Military Power**

Also assessed is the adequacy of the United States’ defense posture as it pertains to a conventional understanding of “hard power,” defined as the ability of American military forces to engage and defeat an enemy’s forces in battle at a scale commensurate with the vital national interests of the U.S. The assessment draws on both quantitative and qualitative aspects of military forces, informed by an experience-based understanding of military operations and the expertise of the authors and internal and external reviewers.

It is important to note that military effectiveness is as much an art as it is a science. Specific military capabilities represented in weapons, platforms, and military units can be used individually to some effect. Practitioners of war, however, have learned that combining the tools of war in various ways and orchestrating their tactical employment in series or simultaneously can dramatically amplify the effectiveness of the force committed to battle.

The point is that a great number of factors make it possible for a military force to locate, close with, and destroy an enemy, but not many of them are easily measured. The scope of this specific project does not extend to analysis of everything that makes hard power possible; it focuses on the status of the hard power itself.

This *Index* assesses the state of military affairs for U.S. forces in three areas: capability, capacity, and readiness.

**Capability.** Capability is scored based on the current state of combat equipment. This involves four factors: the age of key platforms relative to their expected life span; whether the required capability is being met by legacy or modern equipment; the scope of improvement or replacement programs relative to the operational requirement; and the overall health and stability (financial and technological) of modernization programs.

This *Index* focused on primary combat units and combat platforms (e.g., tanks, ships, and airplanes) and elected not to include the array of system and component upgrades that keep an older platform viable over time, such as a new radar, missile, or communications suite. New technologies grafted onto aging platforms ensure that U.S. military forces keep pace with technological innovations relevant to the modern battlefield, but at some point, the platforms themselves are no longer viable and must be replaced. Modernized
sub-systems and components do not entirely substitute for aging platforms, and it is the platform itself that is usually the more challenging item to field. In this sense, primary combat platforms serve as representative measures of force modernity just as combat forces are a useful surrogate measure for the overall military that includes a range of support units, systems, and infrastructure.

In addition, it is assumed that modernization programs should replace current capacity at a one-to-one ratio; less than a one-to-one replacement assumes risk, because even if the newer system is presumably better than the older, until it is proven in actual combat, having fewer systems lessens the capacity of the force, which is an important factor if combat against a peer competitor carries with it the likelihood of attrition. For modernization programs, only Major Defense Acquisition Programs (MDAPs) are scored.

The capability score uses a five-grade scale. Each service receives one capability score that is a non-weighted aggregate of scores for four categories: (1) Age of Equipment, (2) Modernity of Capability, (3) Size of Modernization Program, and (4) Health of Modernization Program. General criteria for the capability categories are:

**Age of Equipment**
- **Very Weak**: Equipment age is past 80 percent of expected life span.
- **Weak**: Equipment age is 61 percent–80 percent of expected life span.
- **Marginal**: Equipment age is 41 percent–60 percent of expected life span.
- **Strong**: Equipment age is 21 percent–40 percent of expected life span.
- **Very Strong**: Equipment age is 20 percent or less of expected life span.

**Capability of Equipment**
- **Very Weak**: Majority (over 80 percent) of capability relies on legacy platforms.
- **Weak**: 60 percent–79 percent of capability relies on legacy platforms.
- **Marginal**: 40 percent–59 percent of capability is legacy platforms.
- **Strong**: 20 percent–39 percent of capability is legacy platforms.
- **Very Strong**: Less than 20 percent of capability is legacy platforms.

**Size of Modernization Program**
- **Very Weak**: Modernization program is significantly too small or inappropriate to sustain current capability or program in place.
- **Weak**: Modernization programs are smaller than current capability size.
- **Marginal**: Modernization programs are appropriate to sustain current capability size.
- **Strong**: Modernization programs will increase current capability size.
- **Very Strong**: Modernization programs will vastly expand capability size.

**Health of Modernization Program**
- **Very Weak**: Modernization programs facing significant problems; too far behind schedule (five-plus years); cannot replace current capability before retirement; lacking sufficient investment to advance; cost overruns including Nunn–McCurdy breach. (A Nunn–McCurdy breach occurs when the cost of a new item exceeds the most recently approved amount by 25 percent or more or if it exceeds the originally approved amount by 50 percent or more. See Title 10, U.S.C. § 2433, Unit Cost Reports (UCRs).)
• **Weak**: Facing procurement problems; behind schedule (three–five years); difficult to replace current equipment on time or insufficient funding; cost overruns enough to trigger an Acquisition Program Baseline (APB) breach.

• **Marginal**: Facing few problems; behind schedule by one–two years but can replace equipment with some delay or experienced some funding cuts; some cost growth but not within objectives.

• **Strong**: Facing no procurement problems; can replace equipment with no delays; within cost estimates.

• **Very Strong**: Performing better than DOD plans, including lower actual costs.

**Capacity.** To score capacity, the service’s size (be it end strength or number of platforms) is compared to the force size required to meet a simultaneous or nearly simultaneous two-war or two–major regional contingency (MRC) benchmark. This benchmark consists of the force needed to fight and win two MRCs and a 20 percent margin that serves as a strategic reserve. A strategic reserve is necessary because deployment of 100 percent of the force at any one time is highly unlikely. Not only do ongoing requirements like training or sustainment and maintenance of equipment make it infeasible for the entirety of the force to be available for deployment, but committing 100 percent of the force would leave no resources available to handle unexpected situations.

Thus, a “marginal” capacity score would exactly meet a two-MRC force size, a “strong” capacity score would equate to a plus-10 percent margin for strategic reserve, and a “very strong” score would equate to a 20 percent margin.

**Capacity Score Definitions**

• **Very Weak**: 0 percent–37 percent of the two-MRC benchmark.

• **Weak**: 38 percent–74 percent of the two-MRC benchmark.

• **Marginal**: 75 percent–82 percent of the two-MRC benchmark.

• **Strong**: 83 percent–91 percent of the two-MRC benchmark.

• **Very Strong**: 92 percent–100 percent of the two-MRC benchmark.

**Readiness.** The readiness scores are from the military services’ own assessments of readiness based on their requirements. These are not comprehensive reviews of all readiness input factors, but rather rely on the public statements of the military services regarding the state of their readiness.

It should be noted that even a “strong” or “very strong” score does not indicate that 100 percent of the force is ready; it simply indicates that the service is meeting 100 percent of its own readiness requirements. Often, these requirements assume that a percentage of the military at any one time will not be fit for deployment. Because of this, even if readiness is graded as “strong” or “marginal,” there is still a gap in readiness that will have significant implications for immediate combat effectiveness and the ability to deploy quickly. Thus, anything short of meeting 100 percent of readiness requirements assumes risk and is therefore problematic.

Further, a service’s assessment of its readiness occurs within its size or capacity at that time and as dictated by the Defense Strategic Guidance, National Military Strategy, and related top-level documents generated by the Administration and senior Defense officials. It does not account for the size-related “readiness” of the force to meet national security requirements assessed as needed by this Index. Thus, for a service to be assessed as “very strong” would mean that 80 percent–100 percent of the existing force in a service meets that service’s requirements for being “ready” even if the size of the service is less than that
required to meet the two-MRC benchmark. Therefore, it is important for the reader to keep this in mind when considering the actual readiness of the force to protect U.S. national security interests against the challenges presented by threats around the world.

Readiness Score Definitions

- **Very Weak**: 0 percent–19 percent of service’s requirements.
- **Weak**: 20 percent–39 percent of service’s requirements.
- **Marginal**: 40 percent–59 percent of service’s requirements.
- **Strong**: 60 percent–79 percent of service’s requirements.
- **Very Strong**: 80 percent–100 percent of service’s requirements.
Glossary of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>A2/AD</td>
<td>anti-access/area-denial</td>
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<td>AAMDS</td>
<td>Aegis Ashore Missile Defense System</td>
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<td>AAV</td>
<td>Amphibious Assault Vehicle</td>
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<td>ABM</td>
<td>Ansar Bayt al-Maqdis</td>
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<td>ACF</td>
<td>Army contingency force</td>
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<td>ACV</td>
<td>Amphibious Combat Vehicle</td>
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<td>Air Defense Identification Zone</td>
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<tr>
<td>AEHF</td>
<td>Advanced Extremely High Frequency (satellite system)</td>
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<td>airborne early warning</td>
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<td>Armed Forces of the Philippines</td>
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<td>AFRICOM</td>
<td>U.S. Africa Command</td>
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<td>U.S. Air Force Special Operations Command</td>
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<td>Air Independent Propulsion</td>
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<td>Air and Missile Defense Radar</td>
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<td>Armored Multipurpose Vehicle</td>
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<td>Afghan National Security Forces</td>
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<td>AN/TPY-2</td>
<td>Army Navy/Transportable Radar Surveillance</td>
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<td>APC</td>
<td>armored personnel carrier</td>
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<td>APS</td>
<td>Army Prepositioned Stocks</td>
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<td>AQAP</td>
<td>Al-Qaeda in the Arabian Peninsula</td>
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<td>AQIM</td>
<td>Al-Qaeda in the Islamic Maghreb</td>
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<td>amphibious ready group</td>
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<td>ASBM</td>
<td>Anti-ship ballistic missile</td>
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<td>ASEAN</td>
<td>Association of Southeast Asian Nations</td>
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<td>air warfare</td>
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<td>BBA</td>
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<td>Budget Control Act of 2011</td>
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<td>border defense cooperation agreement</td>
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<td>beyond visual recognition</td>
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<td>C2</td>
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<td>C4ISR</td>
<td>command, control, communications, computers, intelligence, surveillance, and reconnaissance</td>
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<td>combat aviation brigade</td>
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<td>Congressional Budget Office</td>
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<td>CCT</td>
<td>Combat Controller</td>
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<td>CELAC</td>
<td>Community of Latin American and Caribbean States</td>
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<td>U.S. Central Command</td>
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<td>Combined Forces Command (South Korea–U.S.)</td>
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<td>CIA</td>
<td>Central Intelligence Agency</td>
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<td>Chemistry and Metallurgy Research Replacement</td>
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<td>combat mission team</td>
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<td>CSO</td>
<td>Critical Skills Operator</td>
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<td>Federally Administered Tribal Areas</td>
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<td>HA/DR</td>
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<td>Islamic Revolutionary Guard Corps</td>
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<td>LeT</td>
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<td>mine countermeasure vessel (ship)</td>
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<td>Movement for Oneness and Jihad in West Africa</td>
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<td>Operation Noble Eagle</td>
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<td>Presidential Nuclear Initiative</td>
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<td>positioning, navigation, and timing</td>
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<td>Abbreviation</td>
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<td>Provisional Reconstruction Team</td>
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<td>SAM</td>
<td>surface-to-air missile</td>
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<td>search and rescue</td>
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<td>Space-Based Infrared System (satellite system)</td>
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<td>special mission unit</td>
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<td>attack submarine, nuclear-powered</td>
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<td>surface warfare</td>
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<td>unmanned aerial vehicle</td>
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<td>Unmanned Carrier-Launched Airborne Surveillance and Strike</td>
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<tr>
<td>USAFCENT</td>
<td>U.S. Air Forces Central</td>
</tr>
<tr>
<td>USAFE</td>
<td>U.S. Air Forces Europe</td>
</tr>
<tr>
<td>USARAF</td>
<td>U.S. Army Africa</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------</td>
</tr>
<tr>
<td>USARCENT</td>
<td>U.S. Army Central</td>
</tr>
<tr>
<td>USARPAC</td>
<td>U.S. Army Pacific</td>
</tr>
<tr>
<td>USAREUR</td>
<td>U.S. Army Europe</td>
</tr>
<tr>
<td>USASOC</td>
<td>U.S. Army Special Operations Command</td>
</tr>
<tr>
<td>USFJ</td>
<td>U.S. Forces Japan</td>
</tr>
<tr>
<td>USFK</td>
<td>U.S. Forces Korea</td>
</tr>
<tr>
<td>USNAVCENT</td>
<td>U.S. Naval Forces Central</td>
</tr>
<tr>
<td>USNORTHCOM</td>
<td>U.S. Northern Command</td>
</tr>
<tr>
<td>USSOCOM</td>
<td>U.S. Special Operations Command</td>
</tr>
<tr>
<td>USSOUTHCOM</td>
<td>U.S. Southern Command</td>
</tr>
<tr>
<td>USW</td>
<td>undersea warfare</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>V</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>VEO</td>
<td>violent extremist organizations</td>
</tr>
<tr>
<td>VLS</td>
<td>vertical launching system</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>W</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>WGS</td>
<td>Wideband Global SATCOM (satellite system)</td>
</tr>
<tr>
<td>WMD</td>
<td>weapons of mass destruction</td>
</tr>
<tr>
<td>WRM</td>
<td>wartime readiness materials</td>
</tr>
<tr>
<td>WWTA</td>
<td>Worldwide Threat Assessment</td>
</tr>
</tbody>
</table>
Appendix: Military Capabilities and Corresponding Modernization Program
### Main Battle Tank

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1A1/2 Abrams</td>
<td></td>
<td></td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 2,384</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 5.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 1980</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Abrams is the main battle tank used by the Army in its armored brigade combat teams (BCTs). The Abrams went through a remanufacture program to extend its life to 2045.

### Infantry Fighting Vehicle

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>M2 Bradley</td>
<td></td>
<td></td>
<td>Ground Combat Vehicle (GCV) was cancelled. Concept design contracts were awarded in May 2015 for a Future Fighting Vehicle.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 6,547</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 1981</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Bradley is a tracked infantry fighting vehicle (IFV) meant to transport infantry and provide covering fire. The Bradley complements the Abrams tank in armored BCTs. Originally intended to be replaced by the Ground Combat Vehicle (now canceled), the Bradley underwent a remanufacture program to extend the life of the platform. The Army plans to keep the Bradley in service until 2045.

### Armored Fighting Vehicle

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stryker</td>
<td></td>
<td></td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 3,604</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 2002</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Stryker is a wheeled armored fighting vehicle that makes up the Stryker BCTs. The program was considered an interim vehicle to serve until the arrival of the Future Combat System (FCS), but that program was cancelled due to technology and cost hurdles. The Stryker is undergoing modifications to receive a double-v hull (DVH) to increase survivability. The Stryker is expected to remain in service for 30 years.

See Methodology for descriptions of scores. Fleet age—Average age of fleet. Date—Year fleet first entered service.
### Armored Personnel Carrier

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>M113 Armored Personnel Carrier</td>
<td></td>
<td></td>
<td>Armored Multi-Purpose Vehicle (AMPV)</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Inventory: 3,000</td>
<td></td>
<td></td>
<td>Timeline: 2018–2035</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Fleet age: 17</td>
<td></td>
<td></td>
<td>The AMPV will be adapted from an existing vehicle design that allowed the program to bypass the technology development phase. An engineering and manufacturing development contract was awarded to BAE Systems for the integration and assembly of 29 prototype vehicles. IOC is not expected until 2022.</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Date: 1960</td>
<td></td>
<td></td>
<td>PRODUCTION</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SPENDING ($ millions)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2,897</td>
<td>$381</td>
<td>$15,461</td>
</tr>
</tbody>
</table>

### Light Wheeled Vehicle

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMMWV</td>
<td>1</td>
<td>1</td>
<td>Joint Light Tactical Vehicle (JLTV)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Inventory: 150,000</td>
<td></td>
<td></td>
<td>Timeline: 2015–2035</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Fleet age: 21</td>
<td></td>
<td></td>
<td>Currently in development, the JLTV is a vehicle program meant to replace some of the HMMWVs and improve reliability and survivability of vehicles. So far, the program has experienced a one-year delay due to changes in vehicle requirements. This is a joint program with USMC. Low rate initial production was awarded to a single contractor in August 2015.</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Date: 1985</td>
<td></td>
<td></td>
<td>PRODUCTION</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1,021</td>
<td>48,078</td>
<td>SPENDING ($ millions)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$901</td>
<td>$21,186</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See Methodology for descriptions of scores.  Fleet age—Average age of fleet  Date—Year fleet first entered service
## Army Scores

### Attack Helicopter

<table>
<thead>
<tr>
<th>Platform</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>Modernization Program</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>AH-64 A-D Apache</td>
<td></td>
<td></td>
<td>AH-64E Reman</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>AH-64E</td>
<td></td>
<td></td>
<td>AH-64E New Build</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

**AH-64 A-D Apache**
- Inventory: 600
- Fleet age: 15
- Date: 1984

The Apache is an attack helicopter that makes up the Army Combat Aviation Brigades. There are currently two variants, the AH-64A and AH-64D. The AH-64A is being retired. AH-64D makes up 82 percent of the inventory and entered service in 1998. The expected life cycle is about 20 years.

**AH-64E**
- Inventory: 130
- Fleet age: 2
- Date: 2013

The AH-64E variant of the Apache is a remanufactured version with substantial upgrades in powerplant, avionics, communications, and weapons capabilities. The expected life cycle is about 20 years.

### Medium Lift

<table>
<thead>
<tr>
<th>Platform</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>Modernization Program</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>UH-60A Black Hawk</td>
<td></td>
<td></td>
<td>UH-60M Black Hawk</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>UH/HH-60M Black Hawk</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**UH-60A Black Hawk**
- Inventory: 802
- Fleet age: 24
- Date: 1979

The Black Hawk UH-60A is a medium-lift utility helicopter. The expected life span is about 25 years. This variant of the Black Hawk is now being replaced by the newer UH-60M variant.

**UH/HH-60M Black Hawk**
- Inventory: 700
- Fleet age: 9
- Date: 2006

The Black Hawk UH-60M is a medium-lift utility helicopter that is a follow-on to the UH-60A. As the UH-60A is retired, the M variant will be the main medium-lift rotorcraft used by the Army. Expected to remain in service until 2030.

See Methodology for descriptions of scores. Fleet age—Average age of fleet; Date—Year fleet first entered service.
### Heavy Lift

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH-47D Chinook</td>
<td>1</td>
<td></td>
<td>CH-47F</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Inventory: 75</td>
<td></td>
<td></td>
<td>Timeline: 2003–2018</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 1962</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Chinook is a heavy-lift helicopter. It has an expected life cycle of 20 years. The CH-47Ds were originally upgraded from earlier variants of the CH-47s.</td>
<td></td>
<td></td>
<td>Currently in production, the CH-47F program is intended to keep the fleet of heavy-lift rotorcraft healthy as older variants of the CH-47 are retired. The program includes both remanufactured and new builds of CH-47s. The F variant has engine and airframe upgrades to lower the maintenance requirements. Total procurement numbers include the MH-47G configuration for U.S. Special Operations Command (67 total).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CH-47F Chinook</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 325</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 4.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 2001</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CH-47F is “a remanufactured version of the CH-47D with a new digital cockpit and modified airframe to reduce vibrations.” It also includes a common aviation architecture cockpit and advanced cargo-handling capabilities. The expected life span is 35 years.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Intelligence, Surveillance, and Reconnaissance (ISR)

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>MQ-1C Gray Eagle</td>
<td>5</td>
<td>5</td>
<td>MQ-1C Gray Eagle</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Inventory: 90</td>
<td></td>
<td></td>
<td>Timeline: 2010–2016</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 2009</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Gray Eagle is a medium-altitude long-endurance (MALE) UAV used to conduct ISR missions. The use of MALE UAVs is a new capability for the Army. The Gray Eagle is currently in production.</td>
<td></td>
<td></td>
<td>The MQ-1C UAV provides Army reconnaissance, surveillance, and target acquisition capabilities. Procurement of the MQ-1C program is complete. The Army approved an additional 15 aircraft in FY 2016.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Source

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service
### Aircraft Carrier

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nimitz-Class Aircraft Carrier (CVN-68)</td>
<td></td>
<td></td>
<td>Ford-Class Aircraft Carrier (CVN-78)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 10</td>
<td></td>
<td></td>
<td>Timeline: 2008–2018</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 24.5 Date: 1975</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The expected life of the Nimitz-class nuclear aircraft carrier is 50 years. The class will start retiring in the mid-2020s and will be replaced by the Ford-class carriers.</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

### Large Surface Combatant

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ticonderoga-Class Cruiser (CG-47)</td>
<td></td>
<td></td>
<td>Zumwalt-Class Destroyer (DDG-1000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 20</td>
<td></td>
<td></td>
<td>Timeline: 2007–2009</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 25.2 Date: 1983</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Ticonderoga-class guided missile cruiser has a life expectancy of 35 years. There are plans to lay up half of the cruiser fleet to modernize it and extend its life into the 2030s. Two cruisers began modernization in FY 2015. There are no replacements currently planned.</td>
<td>2</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

| Arleigh Burke-Class Destroyer (DDG-51) | | | Arleigh Burke-Class Destroyer (DDG-51) | | |
| Inventory: 62 | | | Timeline: 1985–2022 | | |
| Fleet age: 14.4 Date: 1991 | | | | | |
| The Arleigh Burke-class guided missile destroyer is the only operating class of large surface combatant currently in production. The DDG-51 has a 35-year life expectancy. | 3 | | 4 | 4 | 4 |

See Methodology for descriptions of scores. Fleet age—Average age of fleet. Date—Year fleet first entered service.
### NAVY SCORES

#### Small Surface Combatant

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Littoral Combat Ship (LCS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inventory:</strong> 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fleet age:</strong> 4.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Date:</strong> 2008</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Littoral Combat Ship includes two classes: the Independence-class and the Freedom-class, both of which are in the early phases of production. The ship is expected to have a service life of 25 years. The LCS is designed to meet multiple missions and make up the entirety of the small surface combatant requirement. LCS 7 will be commissioned in October 2016.</td>
<td></td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Avenger-Class Mine Counter Measure (MCM-1)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inventory:</strong> 11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fleet age:</strong> 23.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Date:</strong> 1987</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Designed for mine sweeping and hunting/killing, 11 of the 14 Avenger-class ships built are still active. The class has a 30-year life span. The remaining MCMs are expected to be decommissioned throughout the 2020s. There is no replacement in production for this class of ship, but the Navy plans to fill its mine countermeasure role with the LCS.</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### SSGN Cruise Missile Submarine

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohio-Class (SSGN-726)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inventory:</strong> 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fleet age:</strong> 30.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Date:</strong> 1981</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rather than retiring the four oldest Ohio-class ballistic missile submarines early, the Navy converted them to SSGN-726 guided missile submarines, equipping them with conventional Tomahawk cruise missiles rather than Trident ballistic missiles tipped with nuclear warheads. The SSGNs provide the Navy with a large stealthy strike capability. The conversion began in 2002 and was completed in 2007. Since the conversion, they are expected to be retired in the late 2020s. The Navy has no planned replacement for the SSGNs once they retire.</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See Methodology for descriptions of scores.  
Fleet age—Average age of fleet  
Date—Year fleet first entered service
### Attack Submarines

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Seawolf-Class (SSN-21)</strong></td>
<td></td>
<td></td>
<td><strong>Virginia-Class (SSN-774)</strong></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Inventory: 3</td>
<td></td>
<td></td>
<td>Timeline: 1998–2021</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Fleet age: 15.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 1997</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Larger and equipped with more</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>torpedo tubes than the U.S.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Navy's other current nuclear-</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>powered attack submarines,</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>the class was cancelled</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>after three submarines were</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>purchased due to budget</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>constraints in the 1990s.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Seawolf-class submarines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>are expected to be retired in</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 years.</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meant to replace the Los</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Angeles-class, the Seawolf has</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>been replaced by the Virginia-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>class attack submarine.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Los Angeles-Class (SSN-688)</strong></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Inventory: 36</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 1976</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>The Los Angeles-class comprises</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>the largest portion of the</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Navy’s attack submarine fleet.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>The class has a 30-year service life. Of the 62 built, 25 have been decommissioned and one was converted into a moored training ship. The last Los Angeles-class submarine is expected to retire in the late 2020s. The Virginia-class is replacing this submarine class.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Virginia-Class (SSN-774)</strong></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Inventory: 12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 2004</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Virginia-class is the U.S. Navy’s next-generation attack submarine. The life expectancy of the Virginia-class is 33 years. The Virginia-class is in production and will replace the Los Angeles-class and Seawolf-class attack submarines as they are decommissioned.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See Methodology for descriptions of scores.  
Fleet age—Average age of fleet  
Date—Year fleet first entered service

**Procurement and Spending**  
Through FY 2016  
Pending
### SSBN Ballistic Missile Submarine

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ohio-Class (SSBN)</strong></td>
<td></td>
<td></td>
<td>N/A—SSBN(X) not yet a Major Defense Acquisition Program (MDAP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 24.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 1984</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

The SSBN Ohio-class is one of the three legs of the U.S. military's nuclear triad. The Ohio-class's expected service life is 42 years. The Ohio-class fleet will begin retiring in 2027 at an estimated rate of one submarine per year until 2039. The Navy plans to replace the Ohio-class with the SSBN(X) or next-generation "Ohio replacement program."

### Amphibious Warfare Ship

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wasp-Class Amphibious Assault Ship (LHD-1)</strong></td>
<td>3</td>
<td></td>
<td><strong>America-class (LHA-6)</strong></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Inventory: 8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 18.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 1989</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Wasp-class is the Navy's current amphibious landing helicopter deck, meant to replace the Tarawa-class LHA. This ship has a 35-year life span. This class is no longer in production and will be replaced by the new America-class.

<table>
<thead>
<tr>
<th><strong>America-Class Amphibious Assault Ship (LHA-6)</strong></th>
<th>5</th>
<th></th>
<th><strong>America-class (LHA-6)</strong></th>
<th>1</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventory: 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 1.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The America-class is the Navy's new class of large-deck amphibious assault ships, is meant to replace the retiring Wasp-class LHDs. The lead ship was delivered in April 2014. The America-class is designed to accommodate the Marine Corps's F-35Bs.

**PROCUREMENT**

- 2

**SPENDING ($ millions)**

- 7.398
- 3.429

See Methodology for descriptions of scores.    Fleet age—Average age of fleet    Date—Year fleet first entered service
## Amphibious Warfare Ship

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>PLATFORM</th>
<th>MODERNIZATION PROGRAM</th>
<th>MODERNIZATION PROGRAM</th>
<th>MODERNIZATION PROGRAM</th>
<th>MODERNIZATION PROGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Antonio-Class Amphibious Transport Dock (LPD-17)</td>
<td>Inventory: 9</td>
<td>San Antonio-Class Amphibious Transport Dock (LPD-17)</td>
<td>San Antonio-Class Amphibious Transport Dock (LPD-17)</td>
<td>San Antonio-Class Amphibious Transport Dock (LPD-17)</td>
<td>San Antonio-Class Amphibious Transport Dock (LPD-17)</td>
</tr>
<tr>
<td>Fleet age: 5.6</td>
<td>Date: 2006</td>
<td>Timeline: 1996–2016</td>
<td>The LPD-17s are replacements for the San Antonio-class LPDs. All 12 LPD-17s have been procured.</td>
<td>PROCUREMENT</td>
<td>PROCUREMENT</td>
</tr>
<tr>
<td>Age Score</td>
<td>Capability Score</td>
<td>Size Score</td>
<td>Health Score</td>
<td>PROCUREMENT</td>
<td>PROCUREMENT</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>SPENDING ($ millions)</td>
<td>SPENDING ($ millions)</td>
</tr>
<tr>
<td>Fleet age: 26.8</td>
<td>Date: 1985</td>
<td></td>
<td>N/A—LX(R) not yet a Major Defense Acquisition Program (MDAP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PROCUREMENT</td>
<td>PROCUREMENT</td>
</tr>
<tr>
<td>Harpers Ferry-Class Dock Landing Ships (LSD-49)</td>
<td>Inventory: 4</td>
<td>Harpers Ferry-Class Dock Landing Ships (LSD-49)</td>
<td>Harpers Ferry-Class Dock Landing Ships (LSD-49)</td>
<td>Harpers Ferry-Class Dock Landing Ships (LSD-49)</td>
<td>Harpers Ferry-Class Dock Landing Ships (LSD-49)</td>
</tr>
<tr>
<td>Fleet age: 19.6</td>
<td>Date: 1995</td>
<td></td>
<td></td>
<td>PROCUREMENT</td>
<td>PROCUREMENT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SPENDING ($ millions)</td>
<td>SPENDING ($ millions)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>N/A—LX(R) not yet a Major Defense Acquisition Program (MDAP)</td>
<td>N/A—LX(R) not yet a Major Defense Acquisition Program (MDAP)</td>
</tr>
</tbody>
</table>

See Methodology for descriptions of scores.

Fleet age—Average age of fleet

Date—Year fleet first entered service
### Airborne Early Warning

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>E-2C Hawkeye</strong></td>
<td>1</td>
<td>2</td>
<td><strong>E-2D Advanced Hawkeye</strong></td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td><strong>Inventory:</strong> 57</td>
<td></td>
<td></td>
<td><strong>Timeline:</strong> 2009–2024</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fleet age:</strong> 31</td>
<td></td>
<td></td>
<td><strong>SPENDING ($ millions)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Date:</strong> 1964</td>
<td></td>
<td></td>
<td><strong>PROCUREMENT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The E-2C Hawkeye is a battle management and airborne early warning aircraft. While still operational, the E-2C is nearing the end of its service life and is being replaced by the E-2D Advanced Hawkeye. The E-2C fleet received a series of upgrades to mechanical and computer systems around the year 2000.</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>E-2D Advanced Hawkeye</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inventory:</strong> 19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fleet age:</strong> 3.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Date:</strong> 2013</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>A more advanced version of the E-2C, the E-2D provides improved battle management capabilities. The program recently started production.</strong></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### Electronic Attack Aircraft

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EA-18G Growler</strong></td>
<td>5</td>
<td>5</td>
<td><strong>EA-18G Growler</strong></td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td><strong>Inventory:</strong> 114</td>
<td></td>
<td></td>
<td><strong>Timeline:</strong> 2006–2016</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fleet age:</strong> 3</td>
<td></td>
<td></td>
<td><strong>SPENDING ($ millions)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Date:</strong> 2010</td>
<td></td>
<td></td>
<td><strong>PROCUREMENT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The EA-18G electronic warfare aircraft replaced the legacy EA-6B Prowlers. The platform is still in production and is relatively new.</strong></td>
<td></td>
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</tbody>
</table>

See Methodology for descriptions of scores.  
Fleet age—Average age of fleet  
Date—Year fleet first entered service
## NAVY SCORES

### Fighter/Attack Aircraft

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>F/A-18 A-D Hornet</strong></td>
<td></td>
<td></td>
<td><strong>F-35C Joint Strike Fighter</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 328</td>
<td></td>
<td></td>
<td>Timeline: 2009–2033</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Fleet age: 24.5, Date: 1983</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The F/A-18 is the Navy’s older carrier-based fighter and strike attack aircraft. The Navy has been trying to extend the life of the later variants (C-D) from 6,000 flight hours to potentially 10,000. However, some are being retired and eventually will be replaced by the F/A-18 E/F Super Hornet and F-35C variant.</td>
<td></td>
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</tr>
</tbody>
</table>

| **F/A-18 E/F Super Hornet** | 2         |                  | **F-35C Joint Strike Fighter** | 1          | 1            |
| Inventory: 550              |           |                  | Timeline: 2009–2033           |           |              |
| Fleet age: 13.4, Date: 2001 |           |                  |                         |            |              |
| The F/A-18 E/F Super Hornet is a newer, more capable version of the Hornet. The Navy is aiming to have a combination of Super Hornets and F-35Cs make up their carrier-based strike capability. The F/A-18E-F has an expected service life of 20 years. | | |

### NOTES:
- The total program dollar value reflects the full F-35 joint program, including engine procurement. The Navy is also procuring 67 F-35Cs for the Marine Corps. Age of fleet is calculated from date of commissioning to January 2016.

### SOURCE:

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service
### Strategic Bomber

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B–52</strong></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Inventory: 58</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 52.7</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 1955</td>
<td></td>
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</tr>
<tr>
<td>The B-52, the oldest of the bombers, can provide global strike capabilities with conventional or nuclear payloads, although it largely has made up the core of the strategic bomber force. The aircraft entered service in 1955 and was in production until 1962.</td>
<td></td>
<td></td>
<td>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **B–1** |           |                  |                       | 3          | 1            |
| Inventory: 61 |         |                  |                       |            |              |
| Fleet age: 28 |       |                  |                       |            |              |
| Date: 1986 |           |                  |                       |            |              |
| The B-1, originally designed to carry nuclear weapons, was reconfigured for conventional weapons in the early 1990s. The program entered service in 1986 and completed production in 1988. The B-1B will remain in service until 2040. |   |    |                       |            |              |

| **B–2** |           |                  |                       | 4          |              |
| Inventory: 20 |         |                  |                       |            |              |
| Fleet age: 21.1 |       |                  |                       |            |              |
| Date: 1997 |           |                  |                       |            |              |
| The B-2 bomber provides the USAF with global strike capabilities. It can carry both nuclear and conventional payloads. Initially deployed in 1997, the aircraft communication modules are being upgraded. It is expected to remain in service until 2058. |   |    |                       |            |              |

See Methodology for descriptions of scores. Fleet age—Average age of fleet. Date—Year fleet first entered service.
## AIR FORCE SCORES

### Ground Attack Aircraft

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A-10 Thunderbolt II</strong></td>
<td></td>
<td></td>
<td><strong>F-35A</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 143</td>
<td></td>
<td></td>
<td>TIMELINE: 2007-2038</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 1977</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>The A-10 is the only USAF platform designed primarily for close air support and does so with a variety of conventional munitions. The USAF has proposed retiring the aircraft earlier than the planned 2028 date for budget reasons.</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **F-16**                |           |                  |                       |            |              |
|                        |           |                  |                       |            |              |
| Inventory: 570          |           |                  |                       |            |              |
| Fleet age: 24.9         |           |                  |                       |            |              |
| Date: 1978              |           |                  |                       |            |              |
| The F-16 is a multirole aircraft that was built between 1976 and 1999. It has received various upgrade blocks over that time. The aircraft was expected to last about 30 years. | 1 | 1 |

| **F-35A**               |           |                  |                       |            |              |
|                        |           |                  |                       |            |              |
| Inventory: 102          |           |                  |                       |            |              |
| Fleet age: 1.9          |           |                  |                       |            |              |
| Date: 2016              |           |                  |                       |            |              |
| See Ground Attack Modernization Program entry. The USAF has received a small portion of a projected 1,763 total aircraft for the program. | 5 |  |  |

### Fighter Aircraft

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>F-15</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 317</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 27.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 1979</td>
<td></td>
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</tr>
<tr>
<td>The F-15 is a legacy fighter that performs air superiority missions. It is no longer in production. The newer F-15E Strike Eagle variant is to operate until 2025 to supplement the F-22.</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **F-22**                |           |                  |                       |            |              |
|                        |           |                  |                       |            |              |
| Inventory: 165          |           |                  |                       |            |              |
| Fleet age: 7.9          |           |                  |                       |            |              |
| Date: 2005              |           |                  |                       |            |              |
| The F-22 is the preeminent air superiority fighter aircraft. The stealth aircraft completed production in 2009 after a dramatic cut of its overall order from 750 to 187. It is currently being modified. | 5 | 2|

See Methodology for descriptions of scores.  Fleet age—Average age of fleet  Date—Year fleet first entered service
### Tanker

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>KC-10</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 59</td>
<td>Fleet age: 30.6</td>
<td>Date: 1981</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>An aerial refueling tanker supporting the USAF’s Mobility and Lift mission, the KC-10 was deployed in 1981. The aircraft was purchased to increase the number of tankers available, which the Air Force posited did not meet current requirements. The aircraft is no longer in production but is planned to remain in inventory until 2040.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>KC-135</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 156</td>
<td>Fleet age: 54</td>
<td>Date: 1956</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The KC-135 supports the mobility and lift mission by providing the joint force aerial refueling capability. The KC-135 makes up the bulk of the aerial refueling capability. The aircraft was initially deployed in 1956, completing production in 1965. The aircraft has undergone several modifications, mainly engine upgrades to improve reliability. It is expected to be in service until 2040, but excessive usage has created many reliability issues due to problems from wear and tear, such as corrosion and fuel bladder leaks.</td>
<td></td>
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</tr>
</tbody>
</table>

### Heavy Lift

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>C-5</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 36</td>
<td>Fleet age: 35.5</td>
<td>Date: 1970</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The C-5 is the USAF’s largest mobility and lift aircraft, enabling it to transport a greater amount of cargo (270,000 pounds) compared with other transport aircraft. Originally deployed in 1970, the aircraft has undergone three modification cycles. The latest started in 2009 to upgrade the platform to a C-5M. The modification program is currently ongoing. The aircraft will remain in service until the 2030s.</td>
<td></td>
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</tr>
</tbody>
</table>

### PROCUREMENT SPENDING ($ millions)

<table>
<thead>
<tr>
<th>PROCUREMENT</th>
<th>SPENDING ($ millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KC-135</td>
<td>$10,311 $37,901</td>
</tr>
<tr>
<td>C-5</td>
<td>$7,067</td>
</tr>
</tbody>
</table>

See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service
### Heavy Lift

#### C-17

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-17</td>
<td>3</td>
<td>5</td>
<td>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Inventory: 170  
Fleet age: 12  
Date: 1993  

The C-17 is a large fixed-wing transport aircraft in support of USAF’s mobility and lift mission. The aircraft can lift 170,900 pounds and land on short runways. The aircraft entered service in 1995. The program was expanded from 120 aircraft to 223 aircraft. The procurement program for the C-17 was recently completed. The aircraft was originally planned to last 30 years, but more frequent usage may shorten that life span.

### Medium Lift

#### C-130 H/J

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-130 J</td>
<td>1</td>
<td>5</td>
<td>C-130 J</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

Timeline: 1994–2023  

The family of C-130 aircraft supports the USAF’s tactical mobility and lift capability. Unlike the other transport aircraft, the C-130 can land on rough dirt strips. It can carry about 42,000 pounds and is expected to last 25 years.

The program provides the Air Force with an upgraded medium-lift capability. The C-130J can lift over 40,000 pounds of cargo. The frame supports various other types of aircraft, such as the USMC tanker KC-130J. There are few issues with the current acquisition of C-130Js.

**PROCUREMENT**

- 151

**SPENDING ($ millions)**

- 12,288
- 3,797

See Methodology for descriptions of scores.  
Fleet age—Average age of fleet  
Date—Year fleet first entered service
## Intelligence, Surveillance, and Reconnaissance (ISR)

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RQ-4 Global Hawk</strong></td>
<td></td>
<td></td>
<td><strong>RQ-4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 33</td>
<td></td>
<td></td>
<td>Timeline: 2002–2012</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The RQ-4 is an unmanned aerial vehicle (UAV) that supports the USAF’s ISR mission. Unlike the MQ-1 or MQ-9, the RQ-4 is a high-altitude, long-endurance (HALE) UAV, which in addition to higher altitude has a longer range than medium-altitude, long-endurance (MALE) UAVs. Originally deployed in 2011, the new Block 40 version is being procured. The life expectancy of the Global Hawk is 20 years.</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **MQ-1 Predator**     |           |                  | **MQ-9**               |            |              |
| Inventory: 110        |           |                  | Timeline: 2002–2017    |            |              |
| Fleet age: 8.4        |           |                  |                        |            |              |
| Date: 2005            |           |                  |                        |            |              |
| The MQ-1 Predator is a MALE UAV that supports the USAF’s ISR mission. The MQ-1 is being replaced by the newer MQ-9. The expected life span of the MQ-1 is 20 years. | 3 | |

| **MQ-9 A/B**          |           |                  |                        |            |              |
| Inventory: 194        |           |                  |                        |            |              |
| Fleet age: 5.1        |           |                  |                        |            |              |
| Date: 2007            |           |                  |                        |            |              |
| The MQ-9 Reaper is the replacement for the MQ-1 Predator, to fulfill the USAF’s ISR mission. The UAV is in production. The expected life span of the MQ-1 is 20 years. | 3 | |

| **RC-135 Rivet Joint**|           |                  |                        |            |              |
| Inventory: 22         |           |                  |                        |            |              |
| Fleet age: 52         |           |                  |                        |            |              |
| Date: 1964            |           |                  |                        |            |              |
| The RC-135 is a manned ISR aircraft. It was originally fielded in 1964. The Air Force plans to keep the system in service until 2018. | 1 | |

| **U-2**               |           |                  |                        |            |              |
| Inventory: 27         |           |                  |                        |            |              |
| Fleet age: 32.6       |           |                  |                        |            |              |
| Date: 1956            |           |                  |                        |            |              |
| Initially deployed in 1956, this manned ISR aircraft can operate at high altitudes and long ranges. The U-2 has undergone a series of modification programs since 1967 to extend the life of the aircraft. | 4 | |

See Methodology for descriptions of scores. Fleet age—Average age of fleet. Date—Year fleet first entered service.
## Command and Control

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>E-3 AWACS</strong></td>
<td></td>
<td></td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 31</td>
<td>Fleet age: 37.1</td>
<td>Date: 1978</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The E-3 is an airborne warning and control system (AWACS) that provides USAF with command and control and battle management capabilities. The aircraft entered service in 1978. No longer in production, the current inventory is undergoing modifications to upgrade computing systems. The fleet is currently intended to remain in service until 2025.</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>E-8 JSTARS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 16</td>
<td>Fleet age: 14.7</td>
<td>Date: 1997</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The E-8 is a newer command and control aircraft that provides battle management and C4ISR capabilities, mainly by providing ground surveillance to various air and ground commanders in theater. The aircraft first entered service in 1997 and is not currently in production. The Air Force plans to retire the JSTARs in the early 2030s.</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See Methodology for descriptions of scores. Fleet age—Average age of fleet. Date—Year fleet first entered service.
### AIR FORCE SCORES

**Space Superiority**

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Global Positioning System (GPS)</strong></td>
<td></td>
<td></td>
<td><strong>GPS III</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 32</td>
<td></td>
<td></td>
<td>Timeline: 2012–2014</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 30.6</td>
<td></td>
<td></td>
<td>GPS III is a more advanced GPS satellite to replace the legacy systems. It is expected to start launches in 2016. Technical issues during development led to a two-year delay.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 1990</td>
<td></td>
<td></td>
<td><strong>PROCUREMENT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>SPENDING ($ millions)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td>$4,796</td>
<td>$761</td>
</tr>
<tr>
<td><strong>Spaced-Based Infrared System (SBIRS)</strong></td>
<td>5</td>
<td>3</td>
<td><strong>SBIRS High</strong></td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Inventory: n/a</td>
<td></td>
<td></td>
<td>Timeline: 2009–2013</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: n/a</td>
<td></td>
<td></td>
<td>The SBIRS High constellation is a multipurpose program that will fulfill the requirements not only of ballistic missile defense, but also of other general defense needs, such as space surveillance and battlefield awareness. The program is in production and struggling with recurring cost overruns. The program should be completed by 2019.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 2010</td>
<td></td>
<td></td>
<td><strong>PROCUREMENT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>$15,213</td>
<td>$1,994</td>
</tr>
</tbody>
</table>

**NOTE:** The total program dollar value reflects the full F–35 joint program, including engine procurement.


See Methodology for descriptions of scores. Fleet age—Average age of fleet Date—Year fleet first entered service
### Main Battle Tank

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1A1 Abrams</td>
<td></td>
<td></td>
<td>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Inventory:** 445  
**Fleet age:** 26  
**Date:** 1989

The M1A1 Abrams Main Battle Tank provides the Marine Corps with heavy-armor direct fire capabilities. It is expected to remain in service beyond 2028.

### Light Wheeled Vehicle

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMMWV</td>
<td>1</td>
<td>1</td>
<td>Joint Light Tactical Vehicle (JLTV)</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

**Inventory:** 24,000  
**Fleet age:** 21  
**Date:** 1985

The HMMWV is a light wheeled vehicle used to transport troops with some measure of protection against light arms, blast, and fragmentation. The expected life span of the HMMWV is 15 years. Some HMMWVs will be replaced by the Joint Light Tactical Vehicle (JLTV).

Currently in development, the JLTV is a vehicle program meant to replace some of the HMMWVs and improve reliability, survivability, and strategic and operational transportability. So far, the program has experienced a one-year delay due to changes in vehicle requirements. This is a joint program with the Army. Both services will enter the final year of low rate initial production in 2017.

**PROCUREMENT**  
130  
**SPENDING (\$ millions)**  
$387  
$2,166
## Amphibious Assault Vehicle

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AAV-7A1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 1,311</td>
<td>Date: 1972</td>
<td></td>
<td><strong>Amphibious Combat Vehicle (ACV)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 40</td>
<td>Timeline: n/a</td>
<td></td>
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</tr>
<tr>
<td>The Amphibious Assault Vehicle transports troops and cargo from ship to shore. The AAV-7 has been through a service life extension to extend its expected life to 42 years.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>Modernization Program</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LAV-25</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 252</td>
<td>Date: 1983</td>
<td></td>
<td><strong>PROCUREMENT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 24</td>
<td></td>
<td></td>
<td><strong>SPENDING ($ millions)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The LAV is a wheeled light armor vehicle with modest amphibious capability used for armored reconnaissance and highly mobile fire support. It has undergone several service life extensions to expand its life span to 42 years and will be in service until 2035.</td>
<td></td>
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</table>

## Attack Helicopters

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>Modernization Program</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AH-1W Cobra</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 112</td>
<td>Date: 1986</td>
<td></td>
<td><strong>AH-1Z</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 24</td>
<td>Timeline: 2004–2020</td>
<td></td>
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</tr>
<tr>
<td>The Super Cobra is an attack helicopter that provides the Marines with close air support and armed reconnaissance. The Super Cobra will remain in service until 2021, when it will be replaced with the AH-1Z.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>Modernization Program</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AH-1Z Viper</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 47</td>
<td>Date: 2010</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleet age: 3</td>
<td></td>
<td></td>
<td><strong>PROCUREMENT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The AH-1Z Viper is the follow-on to the AH-1W Cobra attack helicopter. The Viper will have greater speed, payload, and range, as well as a more advanced cockpit. It is expected that the AH-1Z will fully replace the AH-1W Cobra in 2021. The expected operational life span of the Viper is 30 years.</td>
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</tbody>
</table>

See Methodology for descriptions of scores.  Fleet age—Average age of fleet  Date—Year fleet first entered service
### Airborne Electronic Attack Aircraft/ Ground Attack Aircraft

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EA-6B</strong></td>
<td></td>
<td></td>
<td><strong>F-35B/C</strong></td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Inventory: 18</td>
<td>Fleet age: 27</td>
<td>Date: 1971</td>
<td>Timeline: 2008–2033</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Prowler provides the USMC with an electronic warfare capability. It will be retired in 2019 and will be replaced by the F-35B.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>AV-8B</strong></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Inventory: 131</td>
<td>Fleet age: 18</td>
<td>Date: 1985</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Harrier is a vertical/short takeoff and landing aircraft designed to fly from LHA/LHDs. It provides strike and reconnaissance capabilities. The aircraft will be retired around 2024.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>F-35B</strong></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Inventory: 39</td>
<td>Fleet age: 1</td>
<td>Date: 2015</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The F-35B is the Marine Corps' short takeoff and vertical landing variant meant to replace the AV-8B Harrier. Despite some development problems, the F-35B achieved IOC in July 2015.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>F/A-18 A-D</strong></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Inventory: 247</td>
<td>Fleet age: 23.5</td>
<td>Date: 1978</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Many aircraft in the F/A-18 fleet have logged about 8,000 hours compared with the originally intended 6,000. The fleet life has been extended until 2030. This is necessary to bridge the gap to when the F-35Bs and F-35Cs are available.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

See Methodology for descriptions of scores. Fleet age—Average age of fleet. Date—Year fleet first entered service.
## Medium Lift

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MV-22</strong></td>
<td></td>
<td></td>
<td><strong>MV-22B</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 269</td>
<td>5</td>
<td>5</td>
<td>Timeline: 1997–2031</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Fleet age: 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 2007</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>The Osprey is a vertical takeoff and landing tilt-rotor platform designed to support expeditionary assault, cargo lift, and raid operations. The program is still in production. The program life expectancy of the MV-22 is 23 years.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PROCUREMENT</th>
<th>SPENDING ($ millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>372</td>
<td>86</td>
</tr>
<tr>
<td>$44,886</td>
<td>$10,977</td>
</tr>
</tbody>
</table>

## Heavy Lift

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CH-53E Super Stallion</strong></td>
<td></td>
<td></td>
<td><strong>CH-53K</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 139</td>
<td>2</td>
<td>1</td>
<td>Timeline: 2017–2028</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Fleet age: 26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 1981</td>
<td></td>
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</tr>
<tr>
<td>The CH-53E is a heavy-lift rotorcraft. The aircraft will be replaced by the CH-53K, which will have a greater lift capacity. The program life of the CH-53E is 41 years.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PROCUREMENT</th>
<th>SPENDING ($ millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All 194 pending</td>
<td>$5,469 $23,734</td>
</tr>
</tbody>
</table>

## Tanker

<table>
<thead>
<tr>
<th>PLATFORM</th>
<th>Age Score</th>
<th>Capability Score</th>
<th>MODERNIZATION PROGRAM</th>
<th>Size Score</th>
<th>Health Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>KC-130J</strong></td>
<td></td>
<td></td>
<td><strong>KC-130J</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inventory: 45</td>
<td>4</td>
<td>5</td>
<td>Timeline: 1997–2028</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Fleet age: 8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date: 2004</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The KC-130J is both a tanker and a transport aircraft. It can transport troops, provide imagery reconnaissance, and perform tactical aerial refueling. This platform is currently in production. The airframe is expected to last 38 years.</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PROCUREMENT</th>
<th>SPENDING ($ millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>49</td>
</tr>
<tr>
<td>$4,314</td>
<td>$5,478</td>
</tr>
</tbody>
</table>

### NOTES:
- The total program dollar value reflects the full F-35 joint program, including engine procurement. As part of the F-35 program, the Navy is purchasing 67 F-35Cs for the U.S. Marine Corps, which are included here. The MV-22B program also includes some costs from the U.S. Air Force procurement. The AH-1Z costs include costs of UH-1 procurement.

See Methodology for descriptions of scores. Fleet age—Average age of fleet  Date—Year fleet first entered service
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- An evaluation of threats to U.S. vital interests, identifying those who desire to harm American interests and the extent to which they can do so.
- An in-depth analysis of the U.S. military’s ability to provide for the common defense.
- Easy-to-read charts, maps, and tables that highlight key factors affecting the condition and relevance of America’s military power.
- Special essays on military strategy and cybersecurity, among others, that provide a solid foundation upon which to build a more informed understanding of national security and defense matters.
- A preface by Senator Jim DeMint, President of The Heritage Foundation.

The 2017 Index of U.S. Military Strength is written for those who wish to understand how global conditions affect America’s most important interests and whether the United States’ military is up to the challenge of protecting those interests.

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