MQ-1 Predator unmanned aerial vehicle at postflight inspection (U.S. Air Force/Stanley Thompson)

The Joint Stealth Task Force

An Operational Concept for Air-Sea Battle

By Harry Foster

It is time to come back to basics on Air-Sea Battle. Since the United States announced a pivot to the Asia-Pacific region, Air-Sea Battle has been derided as a strategy of tactics too focused on China, disparaged by the Army and Marines Corps as a budget ploy aimed at cutting ground forces, and even skewed as a diplomatic initiative.[1] Whether the scenario is in Asia, the Middle East, or even the Levant, Air-Sea Battle has been envisioned from its inception as a set of operational concepts to preserve combat effectiveness in areas where technology-based antiaccess/area-denial (A2/AD) strategies, coupled with disadvantageous geographic or diplomatic access, challenge U.S. ability to project power rapidly and persist with high operational tempo.

Many have construed the Department of Defense Joint Operational Access Concept—which emphasizes attacks-in-depth across broad areas, indirect approaches, and deception to reduce the pressure on forward basing—as the last word on Air-Sea Battle.[2] While this concept updates the American way of high-end warfare, it does not fully address the true A2/AD challenge: how to maintain *sensor and weapons density at distance*, *over time*, without forward bases or aircraft carriers. Overcoming this challenge requires more than achieving *cross-domain synergy*, a term describing better joint force integration and incorporation of emerging capabilities such as cyber warfare.[3] It also requires unconventional thinking about how the U.S. military Services combine sensors, weapons, and platforms to create new disruptive capabilities.

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In the spirit of bringing the Air-Sea Battle debate back to center, this article proposes the creation of a joint stealth task force initiative as part of the Air-Sea Battle concept set. Its purpose is to leverage the asymmetric advantages the United States enjoys in sensor technology, networking, long-range stealth, undersea warfare, and special operations to solve the density-at-distance, over-time problem. To understand why the Nation needs such an initiative, some background on the nature of A2/AD strategies is helpful.

Simply put, antiaccess/area denial is a set of overlapping military capabilities and operations designed to slow the deployment of U.S. forces to a region, reduce the tempo of those forces once there, and deny the freedom of action necessary to achieve military objectives. A2/AD capabilities are created by applying several affordable and readily available technologies to everything from missiles to mortars and from air defenses to conventional submarines. These capabilities, enabled largely by the proliferation of precision, make many U.S. fixed facilities vulnerable to attack in ways hard to imagine a decade ago. Similar capabilities also make surface naval forces such as aircraft carrier strike groups more susceptible to attack from significant distances.[4]

Antiaccess/Area-denial Lines of Operations

Line of Operation	Objective	Capability
Disrupt blue airbases	Slow force closure, deny air refueling, deny sensor and weapons density	Air, guided rocket, artillery, mortars, missiles, submarine, special operations
Deny sea approaches	Deny carrier approach, deny sensor and weapons density	Missile, submarine, small boat swarm
Deny/disrupt sea logistics	Deny operations	Special operations, air, missile, submarine
Disrupt space surveillance	Reduce sensor density	Ground- or space-based
Deny persistent intelligence, surveillance, and reconnaissance, and strike	Reduce/deny sensor and weapons density	Integrated air defenses, fighter forces, electronic warfare, cyber, counterspace
Decoy, deceive	Reduce sensor and weapons density	Physical and cyber means
Immunize against attack	Deny U.S. military objectives	Bury, harden, disperse
Deny command and control/ networked communications	Deny or confuse operations	Cyber/electronic warfare

Lines of Operation

As illustrated in the table, at least eight overlapping lines of operations comprise an A2/AD strategy. While each is intended to achieve a specific objective, the overall effect of these operations is to reduce the density of U.S. sensors and weapons at range. If A2/AD can disrupt either the “find” or “strike” component of the kill chain, then the strategy is effective.

Two factors make A2/AD a novel military strategy. First, these lines of operations strike directly at vulnerabilities in the U.S. concept of employment, which is highly dependent on forward bases, unimpeded seaborne logistics, and the time required to build forces. Efforts to defend forward bases and sea logistics impose heavy costs on the United States, forcing the deployment of lift-intensive air and missile defense units, driving a logistics-intensive dispersal of the force, and tying down naval forces to defend logistics convoys or provide air and missile defense. All these efforts sap already limited offensive power.

Second, a nation does not need to conduct operations across all of the lines to conduct A2/AD successfully. Merely disrupting U.S. operations enough to affect the availability of low-density/high-demand capabilities, such as air refueling, airborne surveillance, or airborne antisubmarine warfare capabilities, can be adequate to undercut U.S. operations.

Defeating A2/AD Strategies

The rationale for developing a joint stealth task force is grounded in a denial strategy. If the United States can maintain sensor and weapons mass at distance over time in the opening days of conflict, regardless of the status of its forward bases or aircraft carriers, then it can achieve its objectives while denying an adversary the benefit of its A2/AD investment. This approach is completely consistent with the goals of the Joint Operational Access Concept. The difference is that in addition to seeking cross-domain synergy, a joint stealth task force requires the Services to recognize the technological shifts taking place that enable new, collaborative uses of sensors, weapons, and platforms.

Key U.S. Gaps

Achieving joint operational access without forward land or sea bases is daunting. Five key capability gaps illustrate this difficulty.

Keeping Offensive Momentum Going. The first gap is how to keep meaningful offensive momentum if forward airfields are denied, aircraft carrier strike groups are pushed back, and space surveillance capabilities are degraded. While the United States still has freedom of action to strike fixed targets with standoff weapons, many of the key facilities posing a threat to joint operational access are mobile or hard and deeply buried, requiring either overflight or near flight of a sensor or strike platform.

Gaining Local Air Superiority for Operations. This near-flight requirement gives rise to the second gap: how to gain access for airborne sensors and weapons despite future integrated air defense systems that include advanced fighters, advanced surface-to-air missiles, active and passive cuing systems, and directed energy weapons. Most, if not all, of the concepts to achieve this objective require combinations of long-range stealthy bombers, short-range stealthy fighters, and standoff missiles. Conventional wisdom suggests that without escort fighters, it is not possible for larger reconnaissance or strike platforms to “get through.” But the problem of gaining air control without forward basing does not end here.

Littoral combat ship USS *Freedom* conducts counter illicit trafficking operations in Pacific (U.S. Navy/Michael C. Barton)

Maintaining an In-depth Defense against Cruise Missile Attacks. The third gap deals with how to deny airborne launch of cruise missiles (both land-attack and antiship) from airborne platforms. Concepts to accomplish this task normally consist of layered approaches that include attacking the host airfields, denying targeting data, attacking the launch platform, and attacking the missile itself either in midcourse flight or at endgame. With degraded forward airfields, however, U.S. action may be limited to conducting standoff strikes against fixed bases, disrupting command and control of forces, or conducting terminal defense. Without a substitute capability to conduct air control in the absence of forward bases, the U.S. air defense concept loses its depth, requiring commanders to double down on endgame defense.

Defending Forward Airborne Enablers. The fourth gap addresses defense of nonstealth airborne enablers operating inside of the A2/AD ring. These include antisubmarine warfare (ASW) capability such as maritime patrol aircraft and helicopters, air refueling aircraft, and airborne sensor aircraft. ASW platforms are an essential component of the outer defenses of a carrier strike group. Without the ability to project credible air defense for these platforms, a higher risk of submarine attack may limit the U.S. ability to bring aircraft carriers closer to the fight. Similar concerns apply to air refueling and Airborne Warning and Control System (AWACS) aircraft, whose forward presence is essential for maintaining persistence at range.

Countering Surface Action Groups Inside the A2/AD Ring. The final gap deals with a shortfall in the U.S. ability to locate and destroy naval surface action groups operating inside the A2/AD ring. Modern Chinese surface action groups can extend the A2/AD ring by providing long-range air defense using active electronically scanned array radars and sophisticated surface-to-air missiles. Defeating these surface action groups requires a joint U.S. Navy–Air Force effort.

To overcome these gaps, the United States must explore new ways to develop capabilities that can provide density and persistence at range, reducing the effects of degraded forward-basing. Achieving this goal requires not only linking long-range air capabilities, undersea stealth, and special operations forces operating ashore, but also leveraging advances in technology.

A Viable Concept?

As bomber, submarine, and special operations capabilities stand today, the rationale for a joint stealth task force may seem less than compelling. While bombers and submarines can keep offensive momentum going when forward bases are denied by attacking fixed targets using standoff missiles, all have significant limitations attacking hardened or mobile targets in an A2/AD environment. The U.S. stealthy bomber inventory is small and must operate from range, which greatly reduces sortie rate. Submarines, on the other hand, offer persistence, but have limited payload capacity and require significant time to reload. While special operations forces offer a covert means of surveillance, they have limited mobility and attack capability. Finally, none of these forces possess the counterair capability needed to establish local air superiority, attack key enemy airborne nodes such as airborne early warning, or defend U.S. forces from enemy fighters. Technology now offers the ability to reduce these limitations but only if Sailors, Airmen, and special operators look beyond platform capabilities and toward concepts of operations that connect sensors and weapons in new, disruptive ways.

Five Enabling Technologies

Technologies are emerging that could prove revolutionary if integrated with a vision toward maintaining sensor and weapons mass at distance over time without forward bases. These include technologies to find, fix, and communicate precise target location as well as technologies that serve to gain access. Undergirding several of these technologies is the availability of

F-22 Raptor over Andersen Air Force Base, Guam, participates in 3-month theater security package (U.S. Air Force/Kevin J. Gruenwald)

increasingly sophisticated unmanned vehicles capable of carrying sensors and weapons that perform a host of functions including acting as decoys, finding and striking targets, and degrading adversary situational awareness electronically. To understand how these technologies enable a joint stealth task force, we must first gain better insight into what these technologies are and how they relate to one another.

Find, Fix, Communicate. These technologies include the combination of advances in find-and-fix sensors and networking gateway technologies that allow distributed sensor data to be federated and shared with anyone connected to a network. The capability to sense the target environment with high fidelity across the electromagnetic spectrum from radio frequency to infrared (especially low- to mid-band) to the visible spectrum has exploded in recent years.[5] These sensors are becoming smaller with reduced power demands, allowing their deployment on smaller vehicles for the first time.

Networking gateway technology, like follow-ons to today's Battlefield Airborne Communications Node, can merge this multispectral sensor data from multiple platforms and share it beyond line of sight and regardless of the data link protocol.[6] Taken together, these developments represent a tactical breakthrough that is not yet fully appreciated. For the first time, any sensor can be connected to any weapon to provide target-quality data regardless of the platform. This means any weapon that is in range and has capability against a target can be brought to bear with any platform provided the required connectivity is established.

Swarm and Hypersonics. While the United States has enjoyed an airborne stealth advantage against integrated air defenses for more than two decades, swarm and hypersonic speed are two other approaches that can complicate adversary air defense targeting. Swarm logic has typically been associated with micro–unmanned aerial vehicles. However, the same approach could be used to organize flights of larger unmanned aerial vehicles, which could be used for a number of purposes simultaneously.[7] When connected to a find, fix, communicate network, these swarms can continuously report on ground, sea, and air targets; they can serve as weapons platforms to attack air defense systems from multiple axes; or they can serve as a "counterair picket" to pass missile targeting data to any platform carrying a counterair missile. Although these swarms will inevitably take losses, their distributed nature makes it difficult to destroy every member of the group, allowing for graceful degradation of the swarm's overall capability.

Whereas the objective of swarming vehicles is to overwhelm enemy air defenses, the high-speed regime of hypersonic missiles offers survivability on par with stealth.[8] In addition to being highly survivable, hypersonic speed provides for timely attacks against mobile targets. For example, while a cruise missile flying at 0.7 Mach requires 28 minutes to reach a target 200 nautical miles away, a hypersonic missile traveling at 7.0 Mach requires only about 3 minutes. Taken together, swarm and hypersonic missiles provide a distributed means to conduct surveillance and reconnaissance against mobile targets deep into enemy territory and a timely and survivable way to strike once a target is located.

Counterair. Since the advent of the airplane, military planners have pushed for faster, more maneuverable fighter aircraft in order to maneuver the aircraft into a limited weapons employment zone for both gun and missile attacks against an opponent. Beginning with the advent of all-aspect missile seekers in the 1990s, however, the need for platform speed and maneuverability became less relevant as beyond-visual-range missile attacks became the norm.[9] By combining developments in find, fix, communicate, swarm, and counterair technologies—and by using larger missiles such as the Patriot PAC-2 or PAC-3 to offset the speed advantage of enemy fighters—an opportunity exists to expand counterair capabilities to nontraditional platforms such as existing transport aircraft, bombers, or future long-range strike vehicles.[10]

Undersea. As the Navy retires its *Ohio*-class SSGNs (nuclear-powered guided-missile submarines) and *Los Angeles*–class nuclear-powered attack submarines, it will sustain a 66 percent reduction in undersea payload capacity between 2024 and 2030 unless programmatic changes are made.[11]

The Navy has several options. First, it could design and build a new class of SSGN, possibly based on the *Ohio*-class replacement ballistic-missile submarine design. However, most defense analysts consider that option unaffordable. The second option would insert payload modules in the last 20 *Virginia*-class attack submarines. This option would expand a single *Virginia*-class submarine's Tomahawk cruise missile capacity from 12 to 40 missiles. More importantly, *Virginia* payload module tubes could launch a variety of missile form factors such as miniature air-launched decoys, cruise missiles to carry intelligence, surveillance, and reconnaissance sensors or weapons, or future attack payloads such as hypersonic-glide vehicles. All these systems could contribute to locating, attacking, and degrading A2/AD systems. The incoming U.S. submarine force commander indicated that he plans to pursue the *Virginia* payload module option.[12]

A third, longer-term option the United States should explore is leveraging advances in unmanned undersea vehicles (UUVs) to augment manned submarine payload capacity. While these vehicles possess limited capability compared to manned submarines, hybrid UUVs (HUUVs) could be designed to work in concert with manned submarines. For example, a large HUUV with vertical-launch missile tubes could be towed by submarines submerged. They could remain tethered to the host submarine, or they could be moored to the seabed near the submarine's operating area. During heightened tensions, submarines could tow the HUUVs while on patrol to augment their internal payload capacities. During conflict, after the submarine expends its internal and towed payload, it could drop off the empty HUUV, pick up a new one from an undersea storage site, and return quickly to the fight. Without such a concept, the submarine would have to traverse thousands of miles to a distant reload port, taking it out of the fight for many weeks.[13]

Speed of Light. The final technology area is sensitive and deals with advancements in cyber capabilities, electronic warfare, and directed energy. The capabilities in this area are changing rapidly, are disruptive, and will likely prompt a move-countermove competition between nations over time. This makes it difficult to predict what opportunities and challenges lie ahead in this area. What is clear, however, is that these capabilities will play an essential role in the joint stealth task force's ability to maintain sensor and weapon density at range without forward bases.

These five areas provide the means to close the capability gaps that currently hinder full execution of the Joint Operational Access Concept. The next sections explain how these technologies could come together to enable an effective concept of operations for a joint stealth task force.

Architecture

The joint stealth task force is not platform-centric. Instead, it is a construct of six major capability groups.

First, a connected find-and-fix network may be distributed among platforms deployed on land, at sea, in the air, in space, or in the cyber domain. The data produced may connect directly to the weapons network or be further processed and fused with other sensor data depending on the type of data and its end use.

Second, a connected weapons network consists of land-attack, countersea, and counterair capabilities. These weapons may be standoff or stand-in and actively or passively guided depending on the target type and geospatial orientation of the weapons network. The network also includes speed-of-light capabilities to attack cyber target sets using a variety of electronic and photonic means.

Third, a gateway communications construct connecting finders to shooters integrates sensor and weapons networks. This backbone is not a centralized enterprise communication architecture. Instead, it relies on redundant, overlapping communications pathways that employ decentralized communications gateways to translate and facilitate data exchange across a variety of networks. This approach provides for a data network tailored to operational requirements while enabling the plug-and-play exchange of sensor, finished intelligence, command, and targeting data that is resilient in dense electronic warfare or space-denied communications environments. Its distributed, ad hoc, constantly changing composition also makes it more resilient to cyber attack.

Fourth, special operations forces may prove useful in an A2/AD environment by placing sensors, creating access points into closed networks, and performing other functions to disrupt enemy operations. By integrating into the joint stealth task force's sensor and weapons networks, special operations forces can call for supporting fires and other support.

Fifth, a fleet of undersea or airborne trucks may carry communications nodes, sensors, munitions, or other unmanned vehicles. These trucks are distinguished from today's platforms in that they may perform a number of ancillary tasks not directly related to their primary mission. For example, an air refueling tanker could serve as a communications node for a submarine, sensor platform for early warning, or even launch platform for small unmanned vehicles that will form a counterair picket.

Sixth, a command and control function plans and synchronizes the task force's activities. This activity may be hosted on a truck platform or reside on land if communication with the task force is assured. Employment at the tactical level is led by tactical commanders who operate independently based on understanding the commander's intent.

Concept of Operations

The joint stealth task force aims to achieve three essential concepts: holding deeply buried targets at risk, holding mobile targets at risk, and conducting counterair tasks to protect friendly forces and gain access into the A2/AD ring.

Concept One: Gain Access to Hold Hard and Deeply Buried Targets at Risk. As discussed earlier, holding hard and deeply buried targets at risk requires a penetrating aircraft capable of delivering heavy munitions specifically designed for these targets. To gain access, these aircraft may be forced to overcome the challenges of defeating naval surface action groups, land-based fighter aircraft, and a modern integrated air defense system with active and passive detection ability.

Accomplishing this objective begins by preparing the battlespace. Submarines, possibly with HUUVs, deploy to their operating areas. Special operations forces may also be positioned during this phase to accomplish specific tasks to prepare for follow-on operations. Once a strike is directed, submarines assume a high data rate communications posture and long-range unmanned aerial vehicles deploy to establish the basic communications backbone.

Gaining access begins by locating specific elements of the integrated air defense system. To detect mobile threats, a nonstealth air truck such as a C-17 deploys a swarm of unmanned aerial vehicles over the horizon that fly in at various altitudes to stimulate and detect threat emitters. As key threat emitters along the ingress route for the penetrating platform appear, the command and control node selects the best available weapon from the network (consisting mainly of submarines at this point) and directs the attack. To provide additional weapons and to attack fixed elements of the integrated air defenses system, nonstealth air trucks such as B-1s or B-52s move closer to enemy air defenses. Synchronized with these actions, speed-of-light weapons degrade enemy command and control systems.

With the A2/AD network stimulated, submarines launch miniature air decoys to confuse the air picture further. Simultaneously, an air truck delivers a second swarm of counterair pickets equipped with passive and active seekers. This swarm deploys ahead of two B-2 bombers loaded with 32 Patriot PAC-2 missiles each. These aircraft and their associated swarm conduct counterair sweep for a stealth air truck attacking hard and deeply buried targets far in the adversary interior. As the counterair pickets encounter enemy fighters, the B-2s, 80 miles behind, fire their PAC-2s.

After the strike, while U.S. aircraft egress, submarines continue their air defense role as air trucks deploy a third set of counterair pickets. As the strike force exits, counterair pickets create a defensive line to protect departing aircraft and approaching tankers.

Concept Two: Hold Mobile Targets at Risk. Mobile targets present a difficult problem given the breadth and depth of some nations' developing A2/AD systems. Detecting these targets requires widespread surveillance and reconnaissance and using space-, air-, and ground-based sensors. In the A2/AD environment, swarms of UAVs use cooperative search strategies to locate and find these mobile targets, while another swarm maintains links to the weapons and command and control networks. Attrition by enemy air defenses is inevitable in these swarms, but their distributed nature allows the mission to continue.

When a target does appear, it must be struck quickly. Accordingly, airborne and undersea trucks must be positioned as close to the coast as possible, well inside the range of enemy fighters. Submarines routinely operate close-in and can attack these targets with cruise missiles. However, as discussed earlier, magazine size can quickly become an issue unless submarines are augmented by HUUVs. Stealth air trucks carrying PAC-2 and associated swarms of counterair pickets could also support this mission. By operating in an integrated way, this undersea and airborne stealth team can provide a bubble of air superiority to allow persistent airborne weapons presence close to the coast. This reduces missile time of flight and denies adversaries the benefit of their A2/AD strategy.

Concept Three: Defeat Cruise Missiles and Protect U.S. Forward Aircraft. The joint stealth task force can also be incorporated into a layered defense to defeat enemy cruise missiles and protect U.S. antisubmarine warfare, air refueling, and AWACS aircraft. Building on ideas presented in the first two concepts, the following explains how these counterair capabilities can be brought to bear.

Defeating a cruise missile threat begins by attacking the enemy aircraft or submarine prior to launch. Just as the joint stealth task force created an air superiority bubble for air trucks to loiter close to the coast in concept two, the same approach could be used to attack aircraft carrying cruise missiles. Should a cruise missile be launched, however, another line of counterair pickets could detect and cue the weapons network to attack it. As the defense moves further away from enemy A2/AD systems, nonstealth air trucks could launch weapons and be integrated with Aegis and Patriot systems to provide rear-area defense.

B-2 Spirit over Andersen Air Force Base in Guam as part of continuing operations to maintain bomber presence in region (U.S. Air Force/Kevin J. Gruenwald)

Finally, protecting U.S. aircraft operating forward requires a layered defense as well. The same linear defense used to stop cruise missile attacks might also serve as a frontline to protect these aircraft against attacks. A second line of counterair pickets and nonstealth air trucks armed with counterair missiles may also be needed to provide endgame defense.

It is time to come back to basics on Air-Sea Battle. Defeating A2/AD is about keeping sensor and weapons density at range persistently without forward bases or aircraft carriers. This joint stealth task force concept represents the kind of new, platform-agnostic thinking needed to accomplish the task. Making it a reality will require research and investment shifts across the Defense Department budget. For example, the United States lacks sufficient range capacity in its air portfolio, and it lacks undersea payload capacity to execute this concept today or in the near term. Some of the unmanned systems described herein require development, and hypersonic research is just beginning to show promise. On the other hand, networking technology already supports the operational concepts proposed and is getting better quickly. Although more research and development is needed, the technologies required to support this concept are real. It is time for warfighters to take notice, start debating alternative concepts, test promising concepts using wargames, and ultimately conduct joint experiments to field new capabilities. **JFQ**

Notes

[1] "The China syndrome: AirSea Battle is now the Pentagon's priority, but it has its critics," *The Economist*, June 9, 2012, available at <www.economist.com/node/21556587>.

[2] The Joint Operational Access Concept is described as a broader overarching concept under which Air-Sea Battle falls. See Department of Defense (DOD), *Joint Operational Access Concept Version 1.0* (Washington, DC: DOD, January 17, 2012), 6, available at <www.defense.gov/pubs/pdfs/JOAC_Jan%202012_Signed.pdf>.

[3] Ibid., 14.

[4] Andrew F. Krepinevich, *Why AirSea Battle?* (Washington, DC: Center for Strategic and Budgetary Assessments, 2010), 13–25.

[5] Jonathan W. Greenert, "Payloads Over Platforms," U.S. Naval Institute *Proceedings* 138, no. 7 (July 2012), available at <www.usni.org/magazines/proceedings/2012-07/payloads-over-platforms-charting-new-course>.

[6] "Bringing Home the BACN to Front Line Forces," *Defense Industry Daily*, July 2, 2012, available at <www.defenseindustrydaily.com/Bringing-Home-the-BACN-to-Front-Line-Forces-05618/>.

[7] "Boeing Shows UAS Swarm Technology," United Press International, August 22, 2011, available at <www.upi.com/Business_News/Security-Industry/2011/08/22/Boeing-shows-UAS-swarm-technology/UPI-55701314017280/>.

[8] Committee on Future Air Force Needs for Survivability, National Research Council, *Future Air Force Needs for Survivability* (Washington, DC: National Academies Press, 2006), 63.

[9] John Stillion, Northrop Grumman Analysis Center, "Trends in Air to Air Combat," briefing, March 2011.

[10] The idea to employ Patriot missiles from airborne platforms is not novel. See "Patriot Air-Launched Hit-To-Kill (ALHTK) (United States), Air-to-air missiles—Beyond visual range," *Jane's Air Launched Weapons*, September 6, 2010, available at <http://articles.janes.com/articles/Janes-Air-Launched-Weapons/Patriot-Air-Launched-Hit-To-Kill-ALHTK-United-States.html>.

[11] Naval Submarine League, "U.S. Submarine Force Way Ahead," briefing, August 17, 2011.

[12] Michael J. Connor, "Investing in the Undersea Future," U.S. Naval Institute *Proceedings* 137, no. 6 (June 2011), available at <www.usni.org/magazines/proceedings/2011-06/investing-undersea-future>.

[13] Karl Hasslinger and Paul Everson, "Junior Officers Design Submarine Force for Next 100 Years," *Undersea Warfare* 2, no. 4 (Summer 2000), available at <www.navy.mil/navydata/cno/n87/usw/issue_8/future_force.html>.