Maritime Homeland Defense:
A Role for Land-Based Airpower?

Lt Col Alexus G. Grynkewich, USAF*

Editorial Abstract: Given the increasing frequency and resourcefulness with which terrorists have planned and carried out attacks, it is reasonable to believe that maritime operations at US ports and on the high seas are in danger. Lieutenant Colonel Grynkewich contends that airpower can and should assist in countering this threat, and could do so with modest increases in personnel and/or equipment by using currently available manned and unmanned aircraft and space platforms.

In July 1921, eight of the Army’s Martin bombers, participating in a series of joint Army-Navy tests, sank the captured German battleship Ostfriesland. Shortly thereafter, Brig Gen William “Billy” Mitchell, deputy chief of the Army Air Service, declared that “the problem of destruction of seacraft by [air] forces has been solved and is finished.” This declaration proved premature, however: attacking ships from the air remains complex. The sequential requirements of finding the target ship, identifying it as a hostile enemy vessel, and neutralizing it still pose significant tactical and technical problems. The challenges become especially salient when one faces an asymmetric threat. Nonetheless, examining each of these steps can identify areas in which the inherent flexibility of land-based airpower might enhance US maritime defenses. At the same time, it reveals several command and control (C2) issues that the government must resolve if it decides to use land-based airpower in a maritime-defense role. Prior to addressing these issues, however, this article briefly examines the contemporary maritime-defense environment.

The Contemporary Maritime-Defense Environment

The conflict in which the United States finds itself today differs significantly from earlier wars. In previous conflicts, conventional forces waged a largely symmetric war. In contrast, the 2003 National Strategy for Combating Terrorism correctly noted that today’s enemy “is a flexible, transnational network structure, enabled by modern technology and characterized by loose interconnectivity both within and between groups.” The attacks of 11 September 2001 (9/11) demonstrated the potential power of this new way of war. On that day, “transnational terrorists, organized in widely dispersed, networked nodes, ... swarm[ed] together swiftly, on cue, then pulse[d] to the attack simultaneously.”

Although terrorists used aircraft to attack on 9/11, they could easily adapt this highly effective mode to the maritime domain by using commercial vessels to clandestinely deliver weapons of mass destruction, detonating their cargo once in port. Lacking such weapons, terrorists could take control of an ocean freighter and use its cargo or even the ship itself as a weapon. Detonation of a large tanker carrying liquefied natural gas in port could destroy a major US city. Less dramatically, attackers could use any
large ship “as a collision weapon for destroying a bridge or refinery located on the waterfront.”

Al-Qaeda understands and appreciates the potential modes of attack from the maritime domain. The group reportedly has as many as 23 freighters at its disposal, one of which may have delivered explosives to Saudi Arabia for a car-bomb attack in 1995. Another may have transported bomb-making materials for the attacks on US embassies in Kenya and Tanzania in 1998. Closer to home, Richard Clarke, former White House counterterrorism director, asserted that terrorists affiliated with al-Qaeda “infiltrated Boston by coming in on liquid natural gas tankers from Algeria.” Others report that terrorist-affiliated pirates have forcibly boarded vessels and practiced steering “at varying speeds for several hours.”

As the United States defends against this new kind of enemy, it must also adapt to a changing operational environment. Prior wars had defined combat zones. In today’s conflict with terrorism, however, the combat zone defies attempts at geographic confinement. Accordingly, maritime-defense activities must comply with peacetime international law. The Law of the Sea, based on various international norms and treaties, including four 1958 conventions to which the United States is a party, seeks to facilitate and encourage global commerce, and the United States shares this interest. Both the National Security Strategy and National Strategy for Maritime Security recognize that the “safety and economic security of the United States depends upon the secure use of the world’s oceans.” In this context, traditional US doctrine that calls for the application of overwhelming force does not always work. Simply put, blowing up ships that appear to threaten the homeland is incompatible with facilitating global commerce.

In 2003 approximately 6,000 vessels made roughly 60,000 stops in US ports. The United States must maintain this global commerce yet also protect its 98,000 miles of shoreline; 3.5 million square miles of ocean area; 1,000 harbor channels; and approximately 300 ports. In the contemporary operational environment, finding, identifying, and neutralizing the enemy requires a far different skill set from that developed for conventional conflicts. Despite some progress, the United States still faces several critical gaps between its required and resident capacities. Fortunately, the speed, range, and flexibility of land-based airpower have the potential to close or eliminate many of these gaps.

Finding the Threat

For maritime homeland defense, finding a threat means detecting its existence and locating it with enough precision to allow follow-on steps in the engagement chain. To fulfill this objective, the US government has outlined the maritime domain awareness (MDA) initiative, defined by Homeland Security Presidential Directive (HSPD) as “the effective understanding of anything associated with the global Maritime Domain that could impact the security, safety, economy, or environment of the United States.” An effective MDA surveillance system identifies threats by looking for anomalous patterns of behavior and fusing that information with other intelligence, such as that derived from human or technical sources. For example, vessels that failed to comply with standard procedures, those operating from nonfriendly ports, or those crewed by suspect personnel would trigger a flag in the MDA system, prompting a response. Primary responsibility for fusing and analyzing maritime intelligence under MDA belongs to the National Maritime Intelligence Center, which includes intelligence elements from the Navy, Marine Corps, Coast Guard, Drug Enforcement Agency, and US Customs Service.

MDA is attempting to solve two parts of the maritime-defense problem: an ability to track maritime
traffic in general and an ability to discern which specific maritime track constitutes a threat. Land-based airpower could provide significant enhancements to the first of these problems. In the best-case scenario, intelligence will identify a specific vessel of concern, at which point commanders can task assets to fix its location and track it. Space-based assets have some utility in this regard, but orbital patterns generally do not meet capabilities requirements for persistence, timing, or location. Although the space-based radar program could potentially eliminate this shortfall, at present, adjusting orbital patterns in order to image emerging targets requires significant time. Additionally, “most low Earth Orbit (LEO) satellites have a specific target in view for less than 10 minutes at a time and revisit the same sites only infrequently.”

Unmanned aerial vehicles (UAV) possess the range, altitude, and payload to bridge this capability gap. For example, the RQ-4A Global Hawk can fly 1,200 miles and still have an on-station time of 24 hours, during which the aircraft’s synthetic aperture radar as well as its electro-optical and infrared cameras “can image an area the size of Illinois.” With a reported one-foot radar resolution and a ground moving target indicator (GMTI) mode able to track moving targets down to four knots, the RQ-4A is more than capable of finding and tracking most seaborne vessels.

Manned aircraft also offer a means of finding threats to maritime defense. For example, the U-2 reconnaissance aircraft reportedly has the following range capabilities: electro-optical imaging of 120 kilometers (km), radar-imaging of 180 km, and signals intelligence out to 280 km. Additionally, although primarily known for its ability against ground targets, the E-8C Joint Surveillance Target Attack Radar System has a potential maritime search-and-track capability as well. The E-8’s radar field of view covers over 19,000 square miles and can detect targets over 250 km away. Finally, despite their limited utility for searching broad areas, most fighter and bomber aircraft can use radar, infrared, and television imaging to generate high-quality targeting information on surface tracks. Once cued to a target’s general location, aircrews can use these systems to aid in its identification.

Unfortunately, no concepts of operation currently exist for using long-range manned aircraft or UAVs to track maritime vessels. Today most UAV platforms belong to the Air Force although the Coast Guard and Navy both have programmed future purchases. The Coast Guard plans to acquire four Mariner aircraft, a derivative of the Predator B, as part of its Integrated Deepwater Initiative. The Navy’s Broad Area Maritime Surveillance (BAMS) program has a requirement for “enough systems to cover five major areas of the world 24 hours a day, year round.” Although the Navy has not further quantified the number of UAVs it plans to purchase, estimates suggest that the BAMS will “require dozens of aircraft and associated systems that could cost more than $50 million each.”

For the short term, using Air Force assets for sea surveillance offers a partial solution to the challenge of finding maritime-defense threats. However, each current Air Force platform has to make trade-offs among persistence, resolution, and wide-area coverage. For the longer term, the near-space platform (operating above an altitude of 75,000 feet but below 62.5 miles) may be able to overcome these limitations. Such platforms—usually some type of blimp or rigid airship—can provide more persistence than space-based assets and UAVs. Since “near-space platforms are 10–20 times closer to their targets than a typical 400-kilometer LEO satellite,” they “can be 10–20 times smaller for similar performance, or the same size optics can get 10–20 times better resolution.” Near-space platforms cruise “more slowly than most air breathers, so getting to their assigned stations will take longer. However, once there they can stay for a very long time,” perhaps as long as six months. Furthermore, because of their extreme altitude, near-space assets have an especially wide field of view. At 120,000 feet, a near-space
platform would have a sensor footprint 1,700 miles in diameter. Finally, near-space platforms are relatively cost-effective. According to a spokesman at the US Air Force Space Battlelab project, at a cost of $500,000 for each 175-foot near-space airship, “you could probably roll about 40 of these off the line for the price of one Global Hawk.”

**Identifying the Threat**

The United States reportedly used a combination of space-based and Navy assets in December 2002 to track the *So San*, a North Korean vessel carrying a cargo of Scud missiles between the reclusive Pyongyang regime and Yemen. To some extent, this capability mirrors that required for nontraditional maritime—defense missions. However, it is important to note that US intelligence provided advanced knowledge of the *So San* prior to its departure from North Korea, enabling the United States to position its orbital and surface assets appropriately in order to track the vessel once it departed for Yemen. Another significant difference between the *So San* episode and certain maritime homeland-defense scenarios is that in the *So San* case, intelligence provided a specific vessel as a target to fix and track. In maritime homeland defense, it is more likely that intelligence will indicate only the existence of a threat without precise information on the specific vessel. For example, a foreign intelligence service might inform the US government that it has credible information that a group of terrorists had stowed away on a vessel bound for the West coast sometime in the last 48 hours. More precise information on the type of vessel may or may not be available, leading to a high number of suspect vessels.

Standoff sensors—whether space based, air breathing, surface, or subsurface—will have only limited utility in these circumstances. In a conventional maritime battle, signals intelligence or imagery intelligence can “find” targets of significance: a conventional naval vessel emits various signals, making it detectable by signals intelligence, and any imagery of the vessel will likely reveal its type, if not specific identification. Against an asymmetric maritime homeland-defense threat, however, few if any external indicators exist that will distinguish the actual threat vessel from surrounding suspect vessels. A vessel used as a launch platform conceivably could have some visual or emission-based distinguishing features, but, just as likely, no such features will exist at all. Similarly, onboard explosives or weapons of mass destruction may or may not be visible via spectral or air-sample analysis. Cases involving a band of unconventional fighters on board a vessel (with the intent to commandeer it or use it to infiltrate personnel) also present problems. Except when members of the group foolishly expose themselves—either to visual observation on the vessel’s surface or through some type of exploitable communications link such as a satellite phone—stowaway groups of fighters will likely remain undetected and undetectable from standoff sensors.

MDA aims to overcome this shortfall by fusing information on vessels, cargo, and crew members to identify unconventional threats to maritime defense. Still, it likely will not reveal them all. The asymmetric maritime enemy will seek to maintain anonymity against the backdrop of a massive volume of legitimate maritime traffic, thus creating a problem similar to that found in other types of unconventional warfare. Mao Tse-tung noted that guerrillas are the “fish” that swim in the “sea” of a country’s population. In the case of maritime homeland defense, the fish are threat vessels that hide in the sea of legitimate traffic. To defeat all or part of the MDA system, a hostile force merely needs to avoid suspicious behavior. By following all appropriate procedures, operating from friendly (or at least nonenemy) ports, crewing ships with personnel traveling under aliases, or stowing away on a ship with a legitimate crew, unconventional bands of fighters could slip under the MDA radar and carry out their mission prior to detection.

These limitations suggest that, for the foreseeable future, boarding parties will remain the most effective
means for distinguishing between friendly and hostile maritime traffic. Recent maritime-defense scenario modeling at the Naval Postgraduate School revealed that, with nominal intelligence warning, parties would need to board and search about 20 vessels in order to find the actual threat. Unfortunately, modeling also revealed two significant capability shortfalls: (1) delayed intelligence warning resulted in inadequate time to board and inspect all suspect ships, and (2) a simultaneous attack from multiple ports increased the number of vessel-boarding requirements, overwhelming current capabilities. In both instances, the size of the maritime domain did not allow the limited number of boarding forces to move with enough speed to meet operational requirements.

To solve this problem requires rapid delivery of a long-range boarding party. With a top speed in excess of 45 knots, the Littoral Combat Ship (LCS) partially meets these requirements. In modeling of single-axis, single-vessel attack scenarios, the increased speed of the LCS either decreased the number of boarding teams required (since the same team can leapfrog through a series of suspect vessels) or, alternatively, increased the available search time per vessel. Nonetheless, because we need even faster boarding-party delivery, the Navy is considering maritime-defense missions using the MH-60, including helicopter delivery of boarding teams in rigid-hull inflatable boats. Using the LCS (or legacy vessels) to ferry boarding teams to within helicopter ranges and then employing helicopters to deliver them would provide an additional four hours of search time per boarding.

The V-22 Osprey could further increase available search time. The Air Force and Marine Corps are testing their respective versions of the V-22, an aircraft that can take off like a helicopter and then tilt its rotors forward to cruise like a fixed-wing aircraft at approximately 250 knots. With aerial-refueling support, land-based V-22s could lengthen search time by an order of magnitude. Current procurement plans call for 348 Marine Corps MV-22s, 50 Air Force CV-22s, and 48 Navy HV-22s. Marine Corps variants will perform the heavy-lift mission, replacing older helicopters. The Air Force version is slated for special operations. The Navy will use its HV-22s for search and rescue as well as logistics. Adding the mission of maritime defense to any of the services’ V-22 fleets would require additional aircraft purchases at a cost of approximately $40 million each. Still, delivery of boarding teams using V-22s would allow the United States to rapidly discern whether or not a specific vessel presented a maritime threat to homeland defense.

Neutralizing the Threat

Finding and identifying a threat comprise only the first half of the maritime-defense problem. During limited scenarios in which command authorities declare a vessel hostile (implying kill authority), aerial-refueled fighters, long-range bombers, or UAV platforms could provide rapid, lethal response over the vast distances inherent in the maritime realm. The Air Force has demonstrated its ability to act against moving maritime targets with the Affordable Moving Surface Target Engagement (AMSTE) program (which uses the Joint Direct Attack Munition guided by the global positioning system, updated by aircraft with GMTI-capable radar) and the CBU-97, a guided cluster munition also known as the sensor-fuzed weapon. Other weapons capable of striking moving maritime targets include the AGM-65 Maverick and AGM-114 Hellfire missiles. Finally, the Navy’s P-3 and F/A-18 aircraft and the Air Force’s B-52 bomber can employ the AGM-84D Harpoon antiship missile.

Destroying a vessel is the option of last resort, however. Commanders probably would not approve such action without perfect intelligence—a chimerical commodity. This suggests that the largest gap in the US military’s ability to engage maritime threats is a lack of nonlethal or ship-disabling weaponry. Since boarding teams can use the minimum required force to subdue a threat, they themselves represent a potentially nonlethal or ship-disabling weapon. Thus, we can improve this capability through faster
delivery of these teams. Accordingly, the LCS, helicopter, and V-22 options for rapid and long-range delivery discussed above also would add capability to the neutralize phase of engagement.

In certain scenarios, delivering a boarding party to a suspect vessel might prove impossible because small arms or man-portable missiles could threaten air- and surface-based insertion methods. Alternatively, a noncooperative vessel might maneuver to imperil the lives of the team during its boarding attempts. Ironically, acts of noncompliance without hostile behavior—resulting from the crew’s desire to conceal illegal activities (e.g., smuggling) rather than its intent to carry out an act of war—present the greatest problem. In such ambiguous situations, destroying the vessel is not an option, thus suggesting an urgent need for nonlethal or ship-disabling standoff weapons.

Because one can most effectively disable a ship by neutralizing its propulsion or steering system, a small-warhead kinetic weapon that homes on a ship’s screws, engine room, or bridge would serve as an appropriate attack tool. Capable of applying this type of small warhead and highly accurate firepower, the AC-130 gunship “incorporates side-firing weapons integrated with sophisticated sensor, navigation and fire control systems to provide surgical firepower or area saturation during extended loiter periods, at night and in adverse weather. The sensor suite consists of a television sensor, infrared sensor and radar.” With its extremely accurate fire control system, the AC-130 can place 105mm, 40mm and 25mm munitions on target with first round accuracy. Strafing from fighter and attack aircraft offers another option. In general, however, gunfire from a fighter/attack aircraft is somewhat less accurate than that from a gunship. With fixed gun positions and limited systems to assist in cueing, the accuracy of such strafing depends primarily on visual acquisition of the target and the pilot’s gunnery skills.

Nonkinetic weapons could also disable a vessel. The Coast Guard has experimented with nonexplosive devices for fouling propulsion or steering systems, including both surface- and air-delivered entanglement systems. To date, it has focused on small boats, but the Joint Non-Lethal Weapons program is examining future entanglement devices, and larger versions lie within the realm of possibility. The nonnuclear electromagnetic pulse (EMP) weapon—a second nonkinetic option for disabling a ship—produces a short but intense pulse that “can result in irreversible damage to a wide range of electrical and electronic equipment, particularly computers and radio or radar receivers.” Using such a weapon against large commercial vessels that depend on onboard computer systems for control and navigation would significantly degrade those functions. The Los Alamos National Laboratory first demonstrated EMP weapons in the 1950s, and “since that time a wide range of [EMP-weapon] configurations has been built and tested, both in the US and [Russia].”

Nonlethal entanglement or EMP weapons have the potential to quickly neutralize any potential maritime threat to the homeland without destroying the vessel, compromising any evidence or intelligence on board, or threatening the lives of noncombatants. Air delivery of these systems would enable rapid employment over long distances. Nonetheless, these nonlethal options must undergo testing and analysis to confirm their effects, particularly with respect to the possibility of collateral damage from EMP employment near other ships or in port. Ideally, using a nonlethal weapon would leave the suspect threat vessel adrift without significant collateral damage, allowing boarding parties to search it at their leisure.

Despite the promise such weapons hold for simplifying the maritime homeland-defense problem, mission complexity increases exponentially as intelligence specificity decreases. An especially problematic scenario emerges when intelligence indicates that an attack is in progress without knowing either the specific target or its port of origin. In such cases, every ship is suspect. Such a scenario effectively precludes maritime interdiction. Without stopping and inspecting every vessel bound for the United States, we have no way of knowing which vessel is hostile. Furthermore, by remaining hidden...
until shortly before the actual attack, stowaway terrorists can limit our response time to as little as 20 minutes. With no indicators to distinguish the attacking ship from others until endgame and inadequate time to deploy boarding teams, the latter become largely ineffective. One solution to this problem calls for using nonlethal shore batteries as a defense of last resort. If authorities suspect that a ship has come under hostile control, an in-place and on-call shore battery could respond in time to disable it. Unfortunately, we are years away from such a capability.

Rather than waiting for development of a static defensive system based on shore batteries, land-based airpower offers a flexible-response capability. Aircraft on combat air patrol (CAP) could rapidly engage vessels that emerge as threats as they approach or enter US ports. Command authorities can stand aircraft CAPs up or down and move them to different geographic locations as the threat dictates. Intelligence would determine which ports to defend and how long to maintain the CAP. Until the fielding of nonlethal weapons, the 20–30 mm cannons on most fighter/attack aircraft or the various-caliber weapons on the AC-130 gunship (or perhaps even attack helicopters) could disable threat vessels by targeting screws, bridges, or engine rooms. When nonlethal weapons become available, slow movers—including manned or unmanned helicopters and light fixed-wing aircraft—represent the best choice for their employment. Thus, we should consider fighters, bombers, or gunships only an interim solution until nonlethal weapons reach full maturity.

**Command and Control Considerations**

Using Air Force assets for maritime defense raises several C2 issues. Although the Department of Defense (DOD) has responsibility for maritime defense in the forward areas, the *Maritime Operational Threat Response for the National Strategy for Maritime Security* gives the Department of Homeland Security (DHS) authority to interdict maritime threats in waters subject to US jurisdiction. Nonetheless, if the DHS asks the DOD for assistance, the maritime homeland-defense mission would then fall under the jurisdiction of US Northern Command (NORTHCOM) and US Pacific Command. Unfortunately, current maritime homeland-defense capability exists largely on an ad hoc basis. NORTHCOM in particular has received criticism for not devoting enough attention to the maritime mission. Because the command does not have assigned naval forces, it relies “on contingency planning for future events and theoretically acts as a coordinating bridge between the Navy and Coast Guard for Maritime Homeland Defense/Security issues.” Furthermore, although the North American Regional Aerospace Defense Command agreement between the United States and Canada recently expanded to include a maritime-surveillance role, the command “will not exercise operational control over maritime assets.”

The question then arises as to who will exercise operational control over maritime assets. One option would have combatant commanders assign all forces performing the maritime-defense mission to their joint force maritime component commander (JFMCC). Air Force and joint doctrine account for situations in which the JFMCC might “plan and direct limited Air Force support operations.” Another option calls for the combatant commander to establish a Joint Task Force for Maritime Homeland Defense (JTF-MHD). In this case, land-based air assets could remain under a separate subordinate component command at the discretion of the JTF commander. In either case, having all surface- and air-based maritime-defense forces under the authority of a single commander (e.g., the NORTHCOM JFMCC or JTF-MHD commander) would ensure unity of effort during maritime-interdiction missions.

Another C2 question in maritime homeland defense concerns how DOD forces under the combatant
commander should interact with the Coast Guard. Confusing the issue somewhat is the fact that the Coast Guard could serve as the supported or supporting command, depending on whether or not the maritime mission took the form of homeland security or homeland defense.\(^6\) The president makes this decision when he assigns lead-federal-agency authority during a crisis, but the Coast Guard is taking steps to integrate its forces with those of the DOD in order to make the transition from supported to supporting command as seamless as possible. These include pursuing changes to the law that clarifies the Coast Guard’s role as a force provider to the combatant commanders under the Goldwater-Nichols Department of Defense Reorganization Act of 1986; adapting Coast Guard doctrine, plans, and policies to reflect the service’s integration into the combatant-command structure; and detailing personnel to the Office of the Secretary of Defense, Joint Staff, and the combatant commands.\(^6\) Indeed, a Coast Guard rear admiral currently serves as NORTHCOM’s deputy director of operations (J-3).\(^6\)

The final—but perhaps most challenging—question with respect to C2 for maritime homeland defense has to do with which service or services should have responsibility for organizing, training, and equipping the land-based air forces intended for the maritime-defense mission. On the one hand, the Coast Guard’s dual role as a law-enforcement agency and military force under Title 14 might make it the logical steward of such forces. On the other, the Navy, with its long history of performing maritime-intercept operations, might qualify as the service with the greatest knowledge of how to conduct maritime-defense missions. Although both arguments have merit, we must consider whether or not the Air Force should assume responsibility for employing land-based airpower assets for maritime defense.

One of Phillip Meilinger’s propositions regarding airpower is that “airpower’s unique characteristics require centralized control by airmen.”\(^6\) He notes that, historically, the Air Force has felt that without centralized control, airpower would be parcelled out to surface commanders who would jealously guard their air assets to the detriment of the theaterwide effort.\(^6\) An analogous concern exists with respect to airpower in the maritime homeland-defense mission. Most of the air assets that have a potential maritime-defense role could also be used for other missions critical to the war on terror. In this type of warfare, persistent surveillance, precision targeting, and long-range delivery of personnel constitute critical airpower capabilities regardless of the composition of the surface underneath. Giving responsibility for air assets used for maritime homeland defense to maritime services might constrain their use either in other theaters or for other missions. We could avoid this problem by assigning responsibility for organizing, training, and equipping these forces to the Air Force.

**Conclusion**

The Air Force needs to start thinking about its role in maritime defense now. The fact that Air Force forces are already spread thin by virtue of air defense requirements at home and the war on terror abroad may drive resistance to picking up a new mission. Upon close inspection of this matter, however, we find that only modest investments of current Air Force assets can produce a significant increase in maritime-defense capability. We would need a limited number of long-range surveillance missions for prescribed time periods (defined by intelligence and availability of the surface fleet) to find and track suspect vessels. Similarly, placing a single long-range bomber on 24-hour alert status for maritime interdiction would ensure rapid, immediate, and long-range firepower. In both cases, these aircraft could operate out of their home bases, with no need to forward deploy to the coasts. We would have to make a slightly larger investment to provide maritime CAPs over US ports as the last line of defense. Although aircraft (whether fighter/attack, gunship, UAV, or helicopter) would need to fly CAP only a limited number of times, this mission would necessitate additional training. Regardless, placing limited numbers of aircraft (and required tanker support) on 24-hour alert status for CAP over major ports would guarantee minimal disruption. If intelligence ever indicated an increased maritime threat, aircraft could
be added to the alert packages.

Over the longer term, the service that gains responsibility for developing land-based airpower capabilities for maritime defense will need to innovate. The enemy is adapting, and the threat of a maritime 9/11 is real. Innovative concepts of operation—such as using the V-22 for long-range maritime insertions—could significantly enhance maritime defense. Likewise, innovative technological advances—such as the development of nonlethal weapons—would increase military flexibility and bolster the nation’s security. Although legitimate reasons exist for assigning responsibility for developing such innovations to the maritime services, equally valid reasons suggest giving this responsibility to the Air Force. Either way, we must act now. The armed forces and their civilian leadership must decide which service should provide airpower capabilities to defend the maritime domain against asymmetric threats. Failure to do so delays the development of the maritime defense that we so desperately need.

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[Feedback? Email the Editor ]

Notes


19. Ibid., 9, 12. This document lists several of the criteria used to provide “knowledge” in the maritime domain (p. 9) and describes how a vessel is “flagged” (p. 12).


Demand,” Aviation Week and Space Technology 164, no. 3 (16 January 2006): 203.


32. Ibid.


34. Ibid., 48.

35. Ibid., 44, fig. 2.


During situations in which a suspect vessel performs such a hostile act, we could craft the rules of engagement to allow destructive kinetic options, ironically simplifying the tactical problem.


Ibid.

Kessler et al., *Maritime Threat Response*, 253. Shore batteries could also benefit from air-asset support, such as airborne spotting. Lethal shore batteries are less desirable, given the fog and friction present under the extremely short timeline during which authorities would attempt to determine whether or not a vessel was hostile.

Maritime Security Policy Coordinating Committee, *Maritime Operational Threat Response for the


62. Adm Thad Allen, commandant of the Coast Guard, “State of the Coast Guard Address,” All American Patriots: United States News and Information, 13 February 2007, http://www.allamericanpatriots.com/m-news+article+storyid -19692.html (accessed 18 February 2007). Determining whether or not a particular mission falls under homeland security or homeland defense is not always easy. During a crisis, the president would decide whether the DOD or DHS has lead-federal-agency responsibilities. Supported/supporting command relationships would follow from that decision.


66. Ibid., 66.

Contributor

Lt Col Alexus G. Grynkwich (USAFA; MA, University of Georgia; MA, Naval Postgraduate School) is executive officer, Air Combat Command Directorate of Requirements, Langley AFB, Virginia. He previously served as director of operations, 59th Test and Evaluation Squadron, F-22A operational test pilot, and chief of F-22 Standardization and Evaluation, Nellis AFB,
Nevada; F-16 pilot, 18th Fighter Squadron, Eielson AFB, Alaska; flight commander, 421st Fighter Squadron, Hill AFB, Utah; and weapons officer, 8th Fighter Squadron, Kunsan Air Base, Korea. Colonel Grynkewich is a distinguished graduate of Squadron Officer School and intermediate developmental education at the Naval Postgraduate School, Monterey, California.

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