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14. ABSTRACT The protection of shipping mission is a core mission of any navy. Despite this, over the past century, the capital ship primacy of Mahan and offensive ethos of Nelson have repeatedly caused naval leaders to relegate protection of shipping to a "lesser included" mission status, often leading to devastating losses of shipping when war came. Today, the protection of shipping mission still finds itself behind more high-profile missions such as strike warfare and ballistic missile defense. Naval leaders must recognize that the dynamic range of threats, littoral maneuver challenges, and unique political and ROE limitations found in the limited conflicts we now face will continue to require joint force commanders to provide for the direct defense of shipping in future conflicts. The latest revisions of joint, Navy, and Allied doctrine leverage advances in maritime domain awareness and coordination with the maritime industry to counter low-intensity threats from piracy and terrorism, but do not sufficiently address more complex threats. Only through increases in joint/combined capacity for protection of shipping tasks, and improved levels of awareness, training, and readiness in the protection of shipping mission will operational level commanders have the means to ensure the safety of shipping along all points of the threat spectrum.					
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Protection of Shipping: A Forgotten Mission with Many New Challenges

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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Abstract

The protection of shipping mission is a core mission of any navy. Despite this, over the past century, the capital ship primacy of Mahan and offensive ethos of Nelson have repeatedly caused naval leaders to relegate protection of shipping to a “lesser included” mission status, often leading to devastating losses of shipping when war came. Today, the protection of shipping mission still finds itself behind more high-profile missions such as strike warfare and ballistic missile defense. Naval leaders must recognize that the dynamic range of threats, littoral maneuver challenges, and unique political and ROE limitations found in the limited conflicts we now face will continue to require joint force commanders to provide for the direct defense of shipping in future conflicts. The latest revisions of joint, Navy, and Allied doctrine leverage advances in maritime domain awareness and coordination with the maritime industry to counter low-intensity threats from piracy and terrorism, but do not sufficiently address more complex threats. Only through increases in joint/combined capacity for protection of shipping tasks, and improved levels of awareness, training, and readiness in the protection of shipping mission will operational level commanders have the means to ensure the safety of shipping along all points of the threat spectrum.

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Introduction

Protecting commercial shipping at sea is one of the oldest missions of any navy. The first known navy in history was formed by the Minoan civilization (2200-1450 B.C.) to protect their merchant trade on the Aegean Sea.¹ Over three thousand years later, in 1794, the United States Congress authorized construction of the USS *Constitution* and the five other inaugural frigates of the United States Navy to defend U.S. merchant shipping from attacks along the Barbary Coast. Throughout history, protection of commerce on the high seas has always been a *raison d'être* for any navy.

Captain Alfred Thayer Mahan famously highlighted this fundamental relationship between navies and commerce, writing “The necessity of a navy, in the restricted sense of the word, springs...from the existence of a peaceful [means of] shipping, and disappears with it.”² This core tenet of Captain Mahan’s thesis endures today in the U.S. strategic thought, with “preserve freedom of the seas” and “facilitate and defend commerce” highlighted as key guiding principles in the *National Strategy for Maritime Security* and *Naval Operations Concept 2006*.³

Despite the nearly universal acceptance of protection of seaborne commerce as a fundamental naval mission throughout history, there has neither been agreement on where protection of shipping sits in the overall priority of naval missions, nor agreement at the strategic, operational, or tactical level on how a navy should actually execute the protection of shipping mission. Just in the last century, the navies of the United States,

¹ Brian Lavery, *Ship: The Epic Story of Maritime Adventure* (New York: DK Publishing, 2004), p. 23.

² Alfred Thayer Mahan, *The Influence of Sea Power Upon History 1660-1783*, 5th ed. (Boston: Little, Brown, and Co., 1894), p. 26.

³ U.S. Department of Homeland Security, *National Strategy for Maritime Security* (Washington, DC: Department of Homeland Security, 2005) pp. 7-8; Chief of Naval Operations and Commandant of the Marine Corps, *Naval Operations Concept 2006* (Washington, DC: Department of the Navy, 2006), pp. 7-8.

United Kingdom, Germany, and Japan all found themselves woefully unprepared to protect their nation's merchant shipping when war came. Naval leaders have consistently placed a low priority on defensive missions such as merchant escort, preferring to focus resources on offensive missions that can achieve the classic goal of sweeping the enemy from the sea through decisive fleet action. Still yet, when naval leaders have been faced with serious threats to seaborne trade, the best practices for protecting shipping learned in previous conflicts have often been forgotten, resulting in unacceptable losses to merchant shipping.

Today, the U.S. Navy finds itself in much of the same situation. Despite adhering to the defense of commerce as a core naval mission in national strategic guidance, protection of shipping is often considered a "lesser included" mission, overshadowed in resource allocation in theater and operational planning by more high-technology and high-visibility missions such as strike warfare and ballistic missile defense. As globalization continues to build upon the economies-of-scale, "just-in-time" efficiencies of the current global maritime industry, and threats come from a complex mix of state and non-state actors in an unpredictable continuum of limited to full-scale regional conflicts, the need for proficiency in the protection of shipping mission will continue into the 21st century. Recent revisions to joint, Navy, and Allied doctrine leverage advances in maritime domain awareness and improved coordination with the maritime industry to better counter low-intensity threats from piracy and terrorism, but will not suffice when joint force commanders are required to provide direct defense for shipping against more complex threats. Increased joint/combined capacity for protection of shipping tasks, and improved levels of awareness, training, and readiness in the protection of shipping

mission are required at the operational level in order to ensure joint force commanders are prepared to successfully defend shipping along all points of the threat spectrum.

This paper will briefly examine the historical evolution of naval protection of shipping doctrine, highlighting the fundamental reasons why the mission has all too often been neglected in naval planning. Building upon this historical context, the paper will examine the current status of U.S. protection of shipping doctrine, explore where it fits into overall strategy, and illustrate the current shortfalls in theater and operational-level planning for the protection shipping mission. Finally, this paper will offer policy makers recommendations on how these shortfalls can be addressed, in order to ensure today's joint force commanders are adequately prepared to protect the vital links of seaborne trade.

Historical Perspective: Routinely Unprepared for a Recurring Mission

Mine countermeasures (MCM) is often portrayed as the most critical mission area the U.S. Navy loves to neglect. While the debate over the Navy's preparedness for MCM operations is appropriate and certainly well known,⁴ the propensity for navies to forget the hard lessons and challenges of protecting shipping receives less attention, despite the far greater strategic consequences this short memory has led to in history. The fifteen U.S. ships damaged by mines since World War II, the amphibious assault on Wonson deterred by North Korean mines in 1950, and the Navy's frustrations countering Iranian mines in the Persian Gulf during the "Tanker Wars" of the 1980s pale in strategic and operational consequence when compared to the 609 Allied merchant ships, totaling over

⁴ For discussion of U.S. MCM, see Robert O'Donnell and Scott C. Truver, "Mine Warfare Confronts an Uncertain Future," U.S. Naval Institute *Proceedings* 132, no. 7 (July 2006), pp. 42-47; Scott C. Truver, "Part I: U.S. Navy MCM Programmes," *Naval Forces* 25, no. 3 (2004), pp. 63-71, and "Surprised Again in the Gulf," *The New York Times*, 28 July 1987, sec. A.

3.1 million gross tons, sunk by German U-Boats when the U.S. Navy was caught unprepared to protect critical shipping along the U.S. Eastern Seaboard and Gulf of Mexico from December 1941 to August 1942.⁵ This was only an initial fraction (14 percent by tonnage) of the total shipping losses the Allies would suffer in WWII, and the U.S. Navy was certainly not the only navy unprepared to protect shipping in its home waters when war broke out. During Britain's first nine months of war, 462 merchants, totaling over 1.2 million gross tons were sunk in the approaches to the British Isles.⁶ All of these losses came despite the Allies' hard lessons learned in protection of shipping during the First World War, when the emergence of an unrestricted submarine *guerre de course* by German U-Boats nearly forced Britain out of the war in the spring of 1917.

How could the leaders of the most powerful navies in the world, despite the hard lessons learned by their predecessors (often within the living memory of that generation), repeatedly find themselves unprepared to provide an adequate level of protection for their merchant shipping when war came? This question has been asked by scholars and historians after the major conflicts of the past century, with most offering conclusions that boil down to two fundamental root causes: strict adherence to Mahan's theory of decisive fleet action, and the traditionally offensive-minded nature of naval leaders.⁷

⁵ The U-Boat operations in American Waters from December 1941 to August 1942 correlate to the period commonly referred to as the 'Second Happy Time' for the U-Boats in the Battle of the Atlantic. For cited statistics, see Clay Blair, *Hitler's U-Boat War: The Hunters 1939-1942* (New York: Random House, 1996) p. 695.

⁶ For a summary of total Allied and neutral shipping losses to enemy action over the entire war, see S.W. Roskill, *The War At Sea 1939-1945*, vol. 3, part 2 (London: Her Majesty's Stationary Office, 1961), p. 479. For cited losses around the British Isles, see S.W. Roskill, *The War At Sea 1939-1945*, vol. 1 (London: Her Majesty's Stationary Office, 1954), p. 617.

⁷ See John Winton, *Convoy: The Defense of Sea Trade 1890-1990* (London: Michael Joseph Ltd., 1983), Bowling, Roland A., "The Negative Influence of Mahan on the Protection of Shipping in Wartime: The Convoy Controversy in the Twentieth Century," Ph.D. thesis, Orono, ME: University of Maine, 1980. Printed from microfilm (Ann Arbor, MI: University Microfilms International, 1982); Sankey L. Blanton, "Learning the Wrong Lessons," U.S. Naval Institute *Proceedings* 113, no. 10 (October 1987), pp. 178-182; E. Cameron Williams, "The Four 'Iron Laws' of Naval Protection of Shipping," *Naval War College*

The Influence of Mahan on Protection of Shipping

The first root cause for past protection of shipping failures comes from Mahan's assessment of the value of commerce warfare. Although Mahan acknowledged a *guerre de course* can disrupt trade and distract the enemy from his main effort, at the strategic level, he felt it was only "worrying but not deadly" to the enemy.⁸ Laying the doctrinal foundation for the primacy of battleships over cruisers, submarines, and other commerce raiders that would endure for the next fifty years, Mahan concluded that:

"It is not the taking of individual ships or convoys, be they few or many, that strikes down the money power of a nation; it is the possession of that overbearing power on the sea which drives the enemy's flag from it, or allows it to appear only as a fugitive; and which, by controlling the great common, closes the highways by which commerce moves to and from the enemy's shores. This overbearing power can only be exercised by great navies..."⁹

Placed in a larger protection of shipping context, the Mahan school of thought argued that although battleships were far less efficient than smaller escort combatants in protecting shipping at the tactical level, at the strategic level, only large, powerful battle lines could ultimately assure the safety of friendly shipping by driving the enemy fleet from the seas. This line of thinking couples neatly with Clausewitz's classic principles of concentration of force and directing one's own main effort against the enemy's center of gravity (in this case, the enemy's battle fleet).¹⁰ By defeating the enemy fleet and achieving control of the seas, friendly merchant shipping is indirectly protected, since

Review, May-June 1986, pp. 35-42; and Edward R. Summerfield, "Protection of Merchant Shipping: Forgotten Lessons," U.S. Naval Institute *Proceedings* 90, no. 9 (September 1964), pp. 40-47.

⁸ Mahan, p. 136.

⁹ Mahan, p. 138.

¹⁰ Carl von Clausewitz, *On War*, trans. and ed. by Michael Howard and Peter Paret, indexed ed. (1984; repr., Princeton: Princeton University Press, 1989), pp. 204 and 595.

enemy forces would not remain in sufficient force to sink enough friendly shipping to affect the ultimate strategic outcome of the conflict.

Either explicitly or implicitly subscribing to Mahan's doctrine, peacetime navies have traditionally sized the proportion of escort vessels in their fleet based on the number required to protect their capital ships, not the number required to protect shipping. Only after the ominous clouds of war emerged, forcing emergency fleet expansion, have additional escorts been produced in large numbers specifically to protect shipping. With the inherent delays in ship construction, this lack of sufficient escorts at the outset of war has, and still may, lead to devastating losses of shipping.

Is the Best Defense a Good Offense?

The Royal Navy's defeat of the combined French-Spanish fleet off Cape Trafalgar in 1805 illustrates the links between the two basic factors that have negatively influenced the protection of shipping mission over the ensuing two centuries. Just as Admiral Horatio Nelson's brilliant actions inspired future generations of naval officers to "seek their own Trafalgar" by achieving a decisive victory of their own, the spirit of Nelson's pre-battle advice that "no captain can do very wrong if he places his Ship alongside that of the Enemy"¹¹ symbolizes the offensive spirit that permeated naval leadership then, and remains today. Taking the "best defense is a good offense" mindset, naval leaders have traditionally been instilled with a strong offensive ethos. Reinforced in popular culture, this offensive spirit is embodied in the "Follow me" standing orders of

¹¹ Horatio Nelson, as quoted in René Maine, *Trafalgar: Napoleon's Naval Waterloo*, trans. Rita Eldon and B.W. Robinson (New York: Charles Scribner's Sons, 1957), p. 202. Ironically, despite the opposing French Admiral Villeneuve's reputation as a passive and uninspiring commander, his orders to subordinate commanders echoed the offensive-minded spirit of Nelson's. Villeneuve's pre-battle signal stipulated that "Any captain who is not under fire is not at his post; if a ship before or behind him is closer to the enemy than he is, he is not at his post. A signal to recall him to his duty would be a blot on his honour." See Maine, p. 203.

the dashing Admiral David Beatty to his battle cruiser squadron at Dogger Bank and Jutland, and the famous “ATTACK – REPEAT – ATTACK” order of Admiral William “Bull” Halsey at the Battle of Santa Cruz. Despite their propensity for accepting dangerously high levels of operational risk, Beatty and Halsey were often romanticized as Nelsonic heroes in the press and subsequent popular history, while their contemporaries, Admirals John Jellicoe and Raymond Spruance, often had to defend their more operationally conservative and strategically pragmatic actions.¹²

As navies assessed the lessons of World War II and struggled to find their role in the new atomic era, the spirit of Nelson and Mahan still reigned supreme. Questioning a more defensive posture for the Royal Navy, Lord Chatfield bemoaned that “people have been saying how sad it is that the Navy’s becoming a defensive service. But...the Navy’s defense is an offensive defensive. To pursue the enemy all over the world until it finds the enemy and destroys him – that is the role of the Navy in maritime defense.”¹³ More recently, this offense-first spirit was clearly evident in the “deterrence through forward presence” themes that grew out of the Reagan Administration’s maritime strategy for countering the growing Soviet threat in the 1980s (which included a significant threat to NATO shipping). Arguing against more defensive-minded alternatives, Secretary of the Navy John Lehman, Jr. scoffed “The very concept of a Maginot line in the oceans of the

¹² For a contrast of Beatty and Jellicoe, see Robert K. Massie, *Castles of Steel: Britain, Germany, and the Winning of the Great War at Sea* (New York: Ballantine Books, 2003), pp. 83, 95-96, and 669-684. For contrast of Halsey and Spruance, see E. B. Potter, *Bull Halsey* (Annapolis: Naval Institute Press, 1985) p. 317. For Halsey’s attack order at Santa Cruz, see Potter, p. 164.

¹³ Ernle Chatfield, speech to the House of Lords, 02 December 1954. Cited from partial transcript in *British Naval Documents 1204-1960*, ed. John B. Hattendorf and others (Aldershot, UK: Scolar Press, 1993), p. 814. Of note, Chatfield was a disciple of Admiral Beatty, having served as Beatty’s Flag Captain aboard HMS *Lion* at Dogger Bank and Jutland. Chatfield later went on to serve as First Sea Lord from 1933 to 1938. See Massie, pp. 380, 387-389, 584, and 590.

Greenland-Iceland-United Kingdom (GIUK) Gap is militarily preposterous and politically corrosive.”¹⁴

Writing on the state of the protection of shipping mission as the Reagan maritime strategy emerged, Commander E. Cameron Williams noted the continued strong perception that assigning forces for the direct protection of shipping “is a purely defensive and passive measure, alien to the spirit of offensive warfare.” Williams also noted the continued economic resistance of shipowners to any protective measures that limited their independence of operation, and deemed historical trends so consistently strong that he put forth what he called “the four ‘Iron Laws’ of naval protection of merchant shipping.” He postulated that at the outbreak of war:

1. Shipowners always resist convoying.
2. Naval authorities, too, resist convoying, although for different reasons.
3. Merchant ship losses, once the enemy mounts an attack on shipping, are unacceptably high.
4. Convoying has always proved to be the only workable solution.¹⁵

Although debating the specific protective tactics (i.e., convoys, defended lanes, armed merchants, etc.) is beyond the operational scope of this discussion, when simply regarding Williams’ references to convoys as a specific tactic for providing direct protection for shipping, it is still fair to consider whether these “Iron Laws” continue to apply in a modern context. The capital ship primacy of Mahan and offensive ethos of Nelson are still evident in the carrier and air wing dominated fleet of today, and these “Iron Laws” founded on the experiences of the World Wars and Cold War set a high

¹⁴ John F. Lehman, Jr., *The Maritime Strategy in the Defense of NATO*, Center for Strategic and International Studies *Significant Issues Series* VIII, no. 7 (Washington, DC: Center for Strategic and International Studies, 1986), p. 7. Secretary Lehman’s reference to a “Maginot line” in the GIUK Gap is an indirect criticism of the defensive proposals in British Defense Secretary John Nott’s 1981 White Paper on defense. See Winton, p. 348.

¹⁵ Williams, p. 35.

historical burden of proof to consider when judging the ability of today's Navy to ensure the safe passage of seaborne trade against the evolving and complex mix of 21st century threats.

The Protection of Shipping Mission Today: Have We Learned Anything?

From a purely superficial standpoint, perhaps the first indication of where protection of shipping falls in the current hierarchy of naval missions comes from an October 2003 revision to Navy Tactics, Techniques, and Procedures (NTTP) 3-07.12, which officially changed the name of the mission (and the NTTP manual) from "Naval Control and Protection of Shipping (NCAPS)," to "Naval Cooperation and Guidance for Shipping (NCAGS)."¹⁶ Similar changes were made to corresponding portions of Allied and joint doctrine.¹⁷ Reflecting more than simply just another change in military acronyms, the shift from "control and protection" to "cooperation and guidance" indicates a deliberate doctrinal shift. The increasingly stringent "just in time" and economy-of-scale efficiency demands of the globalized maritime industry,¹⁸ coupled with shrinking numbers and increased multi-mission demands on Allied naval forces, led to doctrinal and organizational structure changes made "in recognition of the fact that short of full-scale conflict, control of merchant shipping by the military authorities is most

¹⁶ Chief of Naval Operations, *Naval Control and Guidance for Shipping (NCAGS)*, Navy Tactics, Techniques, and Procedures (NTTP) 3-07.12 (Washington, DC: Department of the Navy, CNO, 24 October 2003), p. 1-1.

¹⁷ Chairman, Joint Chiefs of Staff, *Sealift Support to Joint Operations*, Joint Publication (JP) 4-01.2 (Washington, DC: CJCS, 31 August 2005), pp. VII-1-VII-3; and North Atlantic Treaty Organization (NATO), *Naval Control and Guidance for Shipping Manual (NCAGS)*, ATP-2(B) Vol. I (Brussels: NATO Standardization Agency, May 2004).

¹⁸ For a general summary of global maritime trade, see United Nations Conference on Trade and Development, *Review of Maritime Transport 2005* (New York: United Nations, 2004). For a full discussion of global maritime trade in a national security context, see Sam J. Tangredi, ed., *Globalization and Maritime Power* (Washington, DC: U.S. Government Printing Office, 2002); and Andrew Forbes, ed., *The Strategic Importance of Seaborne Trade and Shipping: A Common Interest of Asia Pacific* (Canberra: Commonwealth of Australia, 2003).

unlikely (as well as very unpopular), [with] co-ordination being the pragmatic option.”¹⁹

Framed in a modern context, the change in U.S. and NATO doctrine is essentially a re-validation of Williams’ first and second “Iron Laws” of naval protection of shipping: shipowners will resist control and protection measures due to their economic impact, and naval authorities will also resist direct involvement, although for different reasons.

If current NCAGS doctrine essentially concedes to the truths of Williams’ first two “Iron Laws,” does it logically follow that the third law – merchant ship losses will be unacceptably high at the start of a conflict – will also hold true in today’s evolving threat environment? This likely depends on the level of threat and scope of the conflict. Driven by post-9/11 homeland security/homeland defense initiatives to increase visibility over the movements of ships and cargos on the high-seas, the revised NCAGS doctrine and organizational structure is well-positioned to handle many low-to-mid range threats to (and potentially from) merchant shipping. The new structure significantly leverages the recent advances in maritime domain awareness achieved through such technological initiatives as vessel automatic identification systems (AIS), INMARSAT communications, and networked vessel traffic systems (VTS). These technological gains in information management are coupled with increased active two-way cooperation with the maritime industry, with all data flowing into newly established regional information “fusion centers.”

These centers, such as the Pacific Shipping Coordination Center, NATO Shipping Centre, and U.S. Fifth Fleet’s Maritime Liaison Office (MARLO), are manned by a mix of active duty, reserve, and civilian personnel with experience in the maritime industry,

¹⁹ NATO Shipping Centre, “Background – Naval Co-Operation and Guidance for Shipping,” <http://shipping.eastlant.nato.int/> (accessed 30 September 2006).

and are linked to maritime information networks used by industry and inter-agency organizations such as the U.S. Coast Guard's Maritime Information Fusion Center (MIFC).²⁰ Although several of the regional shipping coordination centers are still yet to become fully operational, the intent is for these centers to serve as coordination and communication bridges between theater/operational commanders and the maritime industry, providing a means to exchange threat information, de-conflict U.S./coalition naval operations with shipping, and synchronize efforts to maintain shipping clear from potential danger areas.

The revised cooperation-based NCAGS structure has been employed in several major coalition exercises, and underwent a real-world test during the recent Israeli-Hezbollah conflict in the summer of 2006. This included a full activation of the NATO Shipping Centre to assist in the coordination of shipping passing through the Israeli blockade of Lebanon.²¹ While tighter cooperation with industry, improved vessel tracking, and a network of shipping coordination centers that build to a create a sort of "Maritime NORAD" have undeniable benefits for homeland security/homeland defense

²⁰ For description of the mission, organization, and manning of Shipping Coordination Centers, see Chief of Naval Operations, NTTP 3-07.12, pp. 3-1 - 3-2; U.S. Fleet Forces Command, "Pacific Shipping Coordination Center: Current Operations," PowerPoint, September 2004. Available on the SIPRNET (brief is unclassified) at <http://www-info.cpf.navy.smil.mil/n3/homelandsecuri/pacflt%20scc%20brief%2002-2004.ppt> (accessed 28 September 2006); and Maritime Liaison Office (MARLO) Bahrain, <http://www.marlobahrain.org/> (accessed 09 September 2006).

²¹ NATO Shipping Centre, "Lebanon," 12 September 2006, <http://shipping.eastlant.nato.int/Lebanon.htm> (accessed 12 September 2006). For additional information on recent and planned NCAGS exercises, see NATO Shipping Centre, "Exercise Brilliant Midas 06 (BRMS 06)," 23 August 2006, <http://shipping.eastlant.nato.int/BRMS.htm> (accessed 12 September 2006); Lloyd's Register-Fairplay Ltd., "NATO Exercise Loyal Mariner 2005," Sea-Sentinel subscription database, 17 March 2005, <http://sea-sentinel.com> (accessed 08 September 2006); United Kingdom Hydrographic Office, "NATO HQs use Customized ARCS in Asia Piracy Exercise," October 2005, http://www.ukho.gov.uk/content/corpattachments/press_releases/piracy20-10-05.pdf (accessed 08 September 2006); Australian Government, Department of Defense, "Navy and Shipping Authorities Working to Protect Our Shipping Lanes," 07 May 2004, <http://www.defense.gov.au/media/2004/040507.doc> (accessed 08 September 2006); and Koninklijke Marine (Royal Netherlands Navy), "Bright Future 2004," http://www.marine.nl/images/Bright%20Future%202004_tcmlo-7888.pdf (accessed 08 September 2006).

missions and the protection of shipping from limited and localized threats, the new cooperation and threat avoidance-based NCAGS doctrine provides no fresh insight for an operational commander faced with the unenviable task of providing hands-on, direct protection of merchant shipping against higher-end threats that cannot be neutralized through passive avoidance measures alone.

Despite assigning theater-level coordination and liaison duties to regional shipping coordination centers, doctrine still holds theater, and specifically, Navy component commanders responsible for the day-to-day execution of NCAGS policy and procedures in order to affect the safe transit of shipping. Highlighting the particularly significant strategic vulnerability of Military Sealift Command (MSC) vessels, Joint Publication (JP) 4-01.2 stipulates that “military forces must be assigned either to eliminate the threats so that ships can transit unopposed at any time, or to provide direct protection, to include ship augmentation during transits of threat environments.”²² JP 4-01.2 acknowledges that the amount of shipping requiring protection, and the need to concurrently fulfill other primary missions (such as strike, maritime interdiction, ballistic missile defense, etc.), will likely result in a scarcity of sufficient protection assets. Echoing classic Mahanian and offensive-minded themes, it concludes that “offensive actions that reduce threats to sealift shipping also may eliminate the need for naval escorts and be a more efficient use of resources.”²³

In a major operation in which U.S./coalition forces control the pace and breadth of conflict escalation, a theater/operational commander may have sufficient time, space, and forces available to execute a deliberate “rollback” of threats prior to exposing

²² CJCS, p. III-5. For delineation of NCAGS execution responsibilities to theater/operational commanders, also see CNO, NTTP 3-07.12, pp. 2-2, and 3-1– 3-3.

²³ CJCS, p. III-7.

commercial and strategic lift shipping to potential danger. In a scenario such as this, the information exchange and voluntary cooperation of shipping fundamental to current NCAGS doctrine is likely to be sufficient to minimize overall risk, without placing significant resource demands on operational commanders for escorts, or an unbearable economic impact on the maritime industry and global economy.

However, in conflict scenarios where the theater/operational commander has much less control over the factors of space, time, and force, major seams begin to emerge in current protection of shipping doctrine. In low-to-mid intensity conflicts, an operational commander may have a wide array of geographic and rules of engagement (ROE) restraints that severely limit the commander's ability to proactively neutralize threats to shipping. Neutrality, state sovereignty, and territorial concerns can limit a commander from conducting offensive actions against criminal and trans-national threats (such as piracy), and serve as operational barriers when political and strategic concerns of unnecessary/undesired conflict escalation exist. This was the case during the Tanker Wars of the Iran-Iraq War, when Fifth Fleet commanders were forced into a purely defensive mission, unable to take offensive action against Iranian or Iraqi threats to shipping in the Persian Gulf due to official U.S. neutrality in the conflict.²⁴ Facing a diverse range of surface, air, cruise missile, mine, and asymmetric threats in the extremely confined littoral waters of the Persian Gulf, U.S. naval commanders found themselves ill-prepared when the combined influences of world oil economics and Cold

²⁴ Of note, U.S. commanders (including Deputy National Security Adviser General Colin Powell) considered air strikes on Iranian CSSC-2/HY-2 "Silkworm" coastal defense cruise missile sites following an attack on the re-flagged tanker *Sea Isle City* in October 1987, but decided against them due to concerns of showing support for Iraq and possibly causing conflict escalation. See Martin S. Navais and E.R. Hooton, *Tanker War: The Assault on Merchant Shipping During the Iran-Iraq Crisis, 1980-1988* (London: I.B. Tauris Publishers, 1996), p. 154.

War geopolitics lead the Reagan administration to order convoy operations for U.S.-flagged tankers in the summer of 1987. Although Operation Earnest Will was ultimately accomplished (more through determined effort than operational art), the shortfalls in overall readiness to take on such a challenging defensive mission were clearly evident in the well-known (and somewhat embarrassing) mine damage incidents to the tanker SS *Bridgeton* and USS *Samuel B. Roberts*, and contributed to the confusing tactical decision-making environments that surrounded the cruise missile strike on the USS *Stark* and shoot-down of an Iranian Airbus A300 jetliner by the USS *Vincennes*.²⁵

Recent attacks on oil infrastructure by al-Qaeda and Iraqi insurgents,²⁶ coupled with a resurgent and emboldened Iran, leave the security of critical shipping lanes in the Persian Gulf still far from assured. U.S. forces could easily find themselves called again to defend seaborne oil and gas trade in the Persian Gulf in the near future, under unpredictable conditions of ambiguous warning, restrained ROE, and an uncertain pace of conflict escalation that forces commanders into purely defensive postures similar to those of the Tanker Wars. The complex challenges of a conflict in the confined space of the Persian Gulf would severely limit options for rerouting shipping clear of danger, and certainly stress the Navy's protection of shipping doctrine as they did twenty years ago. Unfortunately, the space, time, and force operational factors facing a Combined Joint Task Force (CJTF) or numbered fleet commander responsible for executing the

²⁵ For more on the Tanker Wars, Operation Earnest Will, and the incidents mentioned, see Nadia El-Sayed El-Shazly, *The Gulf Tanker War: Iran and Iraq's Maritime Swordplay* (London: MacMillan Press, 1998); Anthony H. Cordesman and Abraham R. Wagner, *The Lessons of Modern War, Volume II: The Iran-Iraq War* (Boulder: Westview Press, 1991); Paul Stillwell, "SS *Bridgeton*: The First Convoy," US Naval Institute *Proceedings* 114, no. 5 (May 1988), pp. 52-57; and, pp. 558-566; and Navais and Hooton.

²⁶ See Hassan M. Fattah, "Suicide Bombers Fail to Enter Saudi Oil Plant," *The New York Times*, 25 February 2006, sec. A; and Peter Brookes, "Al Qaeda's Saudi Agenda: Terror vs. Oil," Press Room Commentary, The Heritage Foundation, 21 June 2004, <http://www.heritage.org/Press/Commentary/ed062104f.cfm> (accessed 03 October 2006).

protection of shipping mission in a larger scale, high-intensity regional conflict are no less daunting.

A large-scale theater contingency involving major combat operations against a regional or near-peer competitor, such as a crisis on the Korean Peninsula or in the Taiwan Strait, has the potential to stress the seams that exist in current protection of shipping doctrine, and dangerously expose critical vulnerabilities at the operational level. As previously discussed, the theater, and subordinate naval component commanders are responsible for the execution of NCAGS policy and ensuring the safe passage of shipping, but are likely to face significant force allocation shortfalls for this task when considering the myriad of other missions with which they are also likely to be tasked.

In crises requiring the rapid re-supply and reinforcement of strategic areas (such as South Korea and Taiwan), the pace of conflict escalation and initial availability of forces will not provide the luxury of time for an offensive “rollback” of threats prior to the need for sealift forces to begin entering potential danger zones in the Joint Operating Area (JOA). Considering the level of resource demand potentially required to provide defensive screening for aircraft carriers, amphibious shipping, combat logistics ships, mine countermeasure vessels, and pre-positioning/strategic sealift shipping flowing into the JOA, it is highly unlikely any additional forces would be available to the joint force maritime component commander (JFMCC) to allocate to the direct defense of commercial shipping. Prioritization of scarce resources to protect pre-positioning and other strategic sealift shipping is certainly warranted in most scenarios, but the risk to commercial shipping cannot be ignored. The economic disincentives of sailing into an active war zone with little or no protection may be sufficient to convince most merchant

traffic to cooperate with NCAGS authorities and voluntarily seek alternate safe routes around potential danger areas, but considering Taiwan's extremely heavy reliance on imported food and energy for survival, solving an operational economy of force problem by simply steering commercial shipping clear of the danger area may be counterproductive to the overall strategic objective of the operation.

The political ambiguity surrounding U.S. policy on involvement in a China-Taiwan crisis makes the level of direct military intervention equally uncertain, and could contribute to many of the same operational restraints naval commanders faced during their efforts to protect neutral shipping during the Iran-Iraq War. Crisis escalation concerns may prohibit U.S. strikes on some PRC targets on the Chinese mainland, leaving U.S. commanders in an uneasy situation similar to the Taiwan Strait Crisis of 1958, when ships of the Seventh Fleet were ordered to "escort and protect [Republic of] China resupply ships" sailing into a blockaded Jinmen harbor, yet cautioned that "offensive action against the mainland ...should not be taken except as a last resort."²⁷

Policy Recommendations

A large-scale conflict in East Asia stemming from a Taiwan Strait crisis, or threats to critical energy supply lines in the confined waters of the Persian Gulf represent two of the most difficult protection of shipping challenges the U.S. Navy could face in coming years. To help mitigate the operational risks and shortfalls identified in current

²⁷ Commander-in-Chief, Pacific Fleet (CINCPACFLT) to Commander, Seventh Fleet (COMSEVENTHFLT), Navy telegram 6342, 26 August 1958, quoted in Leonard H. D. Gordon, "United States Opposition to Use of Force in the Taiwan Strait, 1954-1962," *The Journal of American History* 72, no. 3 (December 1985), pp. 637-660. Also see Xiaobing Li, "PLA Attacks and Amphibious Operations During the Taiwan Strait Crisis of 1954-55 and 1958," in *Chinese Warfighting: The Experience Since 1949*, ed. Mark A. Ryan, David K. Finkelstein, and Michael A. McDevitt (Armonk, NY: M. E. Sharpe, 2003), pp. 143-172.

NCAGS doctrine and mission readiness, the following recommendations are provided for consideration by U.S. policy makers:

- o *Increase joint/combined capacity for the protection of shipping mission.*

No peacetime navy in history has ever had sufficient resources to maintain the number of escorts required to protect shipping during wartime. With U.S. shipbuilding dollars expected to be extremely tight in future years due to ever-rising costs of modern technology in fleet recapitalization, the costs of the Global War on Terror, and domestic pressures to contain the overall defense budget, this historical trend is not likely to change in the near future.

Recognizing that not all protection of shipping missions will require high-end defensive capability, the continued pursuit of the current Littoral Combatant Ship (LCS) acquisition program, Coast Guard-Navy “National Fleet” concept, and coalition “1000 Ship Navy” plan proposed by the Chief of Naval Operations will all serve to increase the effective numbers of potential escorts available, and promote better joint/combined interoperability that is key to increasing capacity in the protection of shipping mission.²⁸

Likewise, the Navy should welcome and promote current initiatives to increase U.S. Air Force capability, proficiency, and joint interoperability in maritime interdiction and over-water defensive counter air (DCA) missions.

Leveraging USAF assets can provide theater and operational commanders

²⁸ For more on the “National Fleet” concept, see Thad Allen and Mike Mullen, “America’s National Fleet: A Coast Guard-Navy Imperative, U.S. Naval *Proceedings* 132, no. 8 (August 2006), pp. 16-20. For the “1000 Ship Navy,” see Mike Mullen, address, World Affairs Council, Pittsburg, PA, 19 May 2006. Transcript available at <http://www.navy.mil/navydata/cno/mullen/speeches/mullen060519-wac.txt> (accessed 05 October 2006); and Chief of Naval Operations, “The ‘1000 Ship Navy:’ Global Maritime Partnerships,” PowerPoint, September 2006.

more force allocation options in reducing threats to shipping in challenging littoral environments, as well as help mitigate the heavy multi-mission demands that will likely draw high-end Aegis surface combatants away from the protection of shipping role.²⁹

o *Increase operational-level readiness for the protection of shipping mission.*

Currently there is little awareness of the doctrine, organizational structure, or expected responsibilities for the protection of shipping mission at the operational level (or below). Virtually all of the NCAGS knowledge in the fleet resides in a small cadre of reservists, leaving operational commanders with little to no visibility on how to incorporate protection of shipping best practices into planning and execution.³⁰ Several major theater-level concept and operations plans have been updated to incorporate the basic elements of new NCAGS doctrine, but numbered fleet and strike group commanders are rarely forced to include realistic protection of shipping planning considerations in exercises or real-world operations, providing little opportunity to test the seams between theater, CJTF, and local/tactical commanders in protection of shipping missions.

Time and resource constraints may preclude the preferred option of including meaningful NCAGS/protection of shipping training into Joint Task Force Exercises, but synthetic training scenarios currently in the strike group

²⁹ For a current discussion on use of USAF capabilities in maritime roles see Lawrence Spinetta, "Cutting China's 'String of Pearls,'" U.S. Naval Institute *Proceedings* 132, no. 10 (October 2006), pp. 40-42.

³⁰ Heavy reliance on reservists to handle the NCAGS/protection of shipping mission is common practice in most NATO navies, and typical in non-NATO navies as well. For Canadian and South African examples, see Paul Henault, "Graduation day for new Naval Reserve Intelligence course," *Trident* 38, no. 16 (09 August 2004), p. 6; and Glenn von Zeil, "Naval SADC course presented," *SA Soldier* 13, no. 6 (June 2006), p. 14.

work-up and sustainment process (such as Battle Group Inport Exercises (BGIE), Fleet Inport Synthetic Training (FIST), and Maritime Group Inport Training (MGIT) exercises) could easily be modified to test commanders and their staffs on the complex coordination, ROE, and space-time-force operational art challenges of executing NCAGS/protection of shipping tasking concurrently with other expected missions.³¹ Synthetic training would provide realistic training without imparting a real-world impact on shipping, and permit evaluation of standard coordination and protection of shipping measures of performance in the Universal Navy Task List that are otherwise difficult to evaluate in normal peacetime operations.³² Once deployed, strike group staffs can interact in table-top NCAGS exercises with shipping coordination centers and numbered fleet staffs in overseas theaters with minimal impact on other real-world operations.

Conclusion

With the continued preeminence of aircraft carriers and their air wings as the core combat elements of the U.S. Navy, the decisive sea control philosophy of Mahan, and offensive ethos of Nelson, Beatty, Halsey, and “31 Knot” Burke will continue to resonate in the thinking of Navy leaders for the foreseeable future. When combined with the

³¹ For an illustrative example of current fleet synthetic training, see Kristine DeHoux, “MGIT Presents Cost-Effective Way to Train Battle Groups,” Navy Newsstand press release no. NNS030128-11, 29 January 2003, <http://www.news.navy.mil>.

³² Chief of Naval Operations and Commandant of the Coast Guard, *Universal Navy Task List (UNTL)*, OPNAVINST 3500.38/USCG COMDTINST M3500.1A (Washington, DC: Department of the Navy and Department of Transportation, 01 May 2001). The UNTL includes tasks and standards for the coordination and protection of shipping from the national strategic, down to the tactical level. For tactical tasks updated for new NCAGS (vice NCAPS) doctrine, see Naval Warfare Development Command, *Naval Tactical Task List (NTTL) 3.0 (DRAFT)* (Newport, RI: Department of the Navy, NWDC, 01 November 2005).

fiscal constraints on defense spending and harsh economic efficiency demands of the globalized maritime industry, these influences will continue to validate Commander Williams’ “Four ‘Iron Laws’ of naval protection of shipping” as long as non-state actors, regional powers, or near-peer competitors seek to seize, disrupt or destroy seaborne trade to further their own objectives. Although the threat of full-scale global war has been significantly reduced in the post-Cold War era, naval leaders must recognize that the dynamic range of threats, littoral maneuver challenges, and unique political and ROE limitations found in the more limited conflicts we now face will continue to require joint force commanders to provide direct defense for shipping in future conflicts.

The latest revisions of joint, Navy, and Allied doctrine provide commanders with a good blueprint for leveraging advances in maritime domain awareness and coordination with the maritime industry to counter current low-intensity threats such as piracy and terrorism, but only through increases in joint/combined capacity for protection of shipping tasks, and improved levels of awareness, training, and readiness will operational commanders have the means to ensure the safety shipping along all points of the threat spectrum. Without these improvements, protection of shipping will continue to be regarded as a “lesser included” task behind under more high-profile Navy missions, and Commander Williams’ third “Iron Law” – shipping will suffer unacceptable losses when conflict erupts – will yet again be validated.

Bibliography

- Allen, Thad, and Mike Mullen. "America's National Fleet: A Coast Guard-Navy Imperative." U.S. Naval Institute *Proceedings* 132, no. 8 (August 2006): 16-20.
- Australian Government, Department of Defense. "Navy and Shipping Authorities Working to Protect Our Shipping Lanes." 07 May 2004. <http://www.defense.gov.au/media/2004/040507.doc> (accessed 08 September 2006).
- Band, Jonathan. "Fighting Terrorism on the Oceans." Keynote speech, Royal United Services Institute (RUSI) Conference on "Transportation Security: Threats and Responses." 24 October 2002. Transcript available from Allied Maritime Component Commander Headquarters Northwood, http://www.manw.nato.int/manw/pages/update/envision_3_02/terrorism.htm.
- Blair, Clay. *Hitler's U-Boat War: The Hunters 1939-1942*. New York: Random House, 1996.
- _____. *Hitler's U-Boat War: The Hunted 1942-1945*. Reprint, London: Cassell & Co., 2001. First published 1998 by Random House.
- Blanton, Sankey L. "Learning the Wrong Lessons." U.S. Naval Institute *Proceedings* 113, no. 10 (October 1987): 178-182.
- Brookes, Peter. "Al Qaeda's Saudi Agenda: Terror vs. Oil." Press Room Commentary, The Heritage Foundation, 21 June 2004. <http://www.heritage.org/Press/Commentary/ed062104f.cfm> (accessed 03 October 2006).
- Bowling, Roland A. "The Negative Influence of Mahan on the Protection of Shipping in Wartime: The Convoy Controversy in the Twentieth Century." Ph.D. thesis, Orono, ME: University of Maine, 1980. Printed from microfilm, Ann Arbor, MI: University Microfilms International, 1982.
- Chairman, Joint Chiefs of Staff. *Sealift Support to Joint Operations*. Joint Publication (JP) 4-01.2. Washington, DC: Department of Defense, CJCS, 2005.
- Chief of Naval Operations. *U.S. Naval Control of Shipping Organization* OPNAVINST 3450.18. Washington, DC: Department of the Navy, CNO, 1995.
- _____. *Naval Control and Guidance for Shipping (NCAGS)*. Navy Tactics, Techniques, and Procedures (NTTP) 3-07.12. Washington, DC: Department of the Navy, CNO, 2003.
- _____. "The '1000 Ship Navy:' Global Maritime Partnerships." PowerPoint. September 2006.

- Chief of Naval Operations and Commandant of the Coast Guard, *Universal Navy Task List (UNTL)*. OPNAVINST 3500.38/USCG COMDTINST M3500.1A. Washington, DC: Department of the Navy and Department of Transportation, 2001.
- Chief of Naval Operations and Commandant of the Marine Corps. *Naval Operations Concept 2006*. Washington, DC: Department of the Navy, 2006.
- Clausewitz, Carl von. *On War*. Edited and translated by Michael Howard and Peter Paret, 1976. Reprinted with indexed edition. Princeton: Princeton University Press, 1984. Page references are to 1989 reprint of 1984 edition.
- Commander-in-Chief, Pacific Fleet (CINCPACFLT) to Commander, Seventh Fleet (COMSEVENTHFLT). Navy telegram 6342. 26 August 1958. Quoted in Leonard H. D. Gordon. "United States Opposition to Use of Force in the Taiwan Strait, 1954-1962." *The Journal of American History* 72, no. 3 (December 1985).
- Cordesman, Anthony H., and Abraham R. Wagner. *The Lessons of Modern War, Volume II: The Iran-Iraq War*. Boulder: Westview Press, 1991. First printed 1990.
- DeHoux, Kristine. "MGIT Presents Cost-Effective Way to Train Battle Groups." Navy Newsstand press release no. NNS030128-11. 29 January 2003. Available at <http://www.news.navy.mil>.
- El-Shazly, Nadia El-Sayed. *The Gulf Tanker War: Iran and Iraq's Maritime Swordplay*. New York: St. Martin's Press, 1999.
- Fattah, Hassan M. "Suicide Bombers Fail to Enter Saudi Oil Plant." *The New York Times*. 25 February 2006.
- Forbes, Andrew, ed. *The Strategic Importance of Seaborne Trade and Shipping: A Common Interest of the Asia Pacific*. Canberra: Commonwealth of Australia, 2003.
- Gamlen, Elizabeth. "US Military Intervention in the Iran-Iraq War 1987-8." Peace Research Report No. 21. Bradford, UK: University of Bradford, 1989.
- Grubb, Michael. "Merchant Shipping in a Chinese Blockade of Taiwan." Research paper, Newport, RI: U.S. Naval War College, Strategic Research Department, 2006.
- Gouge, Michael J. "Soviet Subs and the Resupply of NATO." U.S. Naval Institute *Proceedings* 114, no. 12 (December 1988): 109-114.
- Hattendorf, John B., R. J. B. Knight, A. W. H. Pearsall, N. A. M. Rodger, and Geoffrey Till, eds. *British Naval Documents 1204-1960*. Aldershot, UK: Scolar Press, 1993.

Henault, Paul. "Graduation day for new naval Reserve Maritime Intelligence course." *Trident* 38, no. 16 (09 August 2004): 6.

Koninklijke Marine (Royal Netherlands Navy) "Bright Future 2004." http://www.marine.nl/images/Bright%20Future%202004_tcmlo-7888.pdf (accessed 08 September 2006).

Lavery, Brian. *Ship: The Epic Story of Maritime Adventure*. New York: DK Publishing, 2004.

Lehman, John F. Jr. *The Maritime Strategy in the Defense of NATO*. Center for Strategic and International Studies *Significant Issues Series* 7, no. 7. Washington, DC: Center for Strategic and International Studies, 1986.

Lloyd's Register-Fairplay Ltd. "NATO Exercise Loyal Mariner 2005," Sea-Sentinel subscription database. 17 March 2005. <http://sea-sentinal.com> (accessed 08 September 2006).

Mahan, Alfred Thayer. *The Influence of Sea Power Upon History 1660-1783*. Fifth edition, Boston: Little, Brown, and Co., 1894. First published 1890.

Maine, René. *Trafalgar: Napoleon's Naval Waterloo*. Translated by Rita Eldon and B.W. Robinson. New York: Charles Scribner's Sons, 1957.

Maritime Liaison Office (MARLO), Bahrain. <http://www.marlobahrain.org> (accessed 09 September 06).

Massie, Robert K. *Dreadnought: Britain, Germany, and the Coming of the Great War*. New York: Ballantine Books, 1991.

_____. *Castles of Steel: Britain, Germany, and the Winning of the Great War at Sea*. New York: Ballantine Books, 2003.

Mullen, Mike. Address, World Affairs Council. Pittsburgh, PA. 19 May 2006. Transcript available at <http://www.navy.mil/navydata/cno/mullen/speeches/mullen060519-wac.txt> (accessed 05 October 2006).

Naval Warfare Development Command. *Naval Tactical Task List (NTTL) 3.0 (DRAFT)*, Newport, RI: Department of the Navy, NWDC, 2005.

Navias, Martin S., and E.R. Hooton. *Tanker Wars: The Assault on Merchant Shipping During the Iran-Iraq Conflict, 1980-1988*. New York: I.B. Tauris Publishers, 1996.

- Nelson, William H. "Peacekeepers at Risk." U.S. Naval Institute *Proceedings* 113, no. 7 (July 1987): 90-97.
- Neshiem, Paulette. "Protection of Merchant Shipping." Research paper, Carlisle Barracks, PA: U.S. Army War College, 1990.
- North Atlantic Treaty Organization (NATO). *Naval Co-Operation and Guidance for Shipping Manual (NCAGS.) ATP-2(B) Volume I*. Brussels: NATO Standardization Agency, 2004.
- North Atlantic Treaty Organization (NATO) Shipping Centre. "Exercise Brilliant Midas 06 (BRMS 06)." 23 August 2006. <http://shipping.eastlant.nato.int/BRMS.htm> (accessed 12 September 2006).
- _____. "Lebanon." 12 September 2006. <http://shipping.eastlant.nato.int/Lebanon.htm> (accessed 12 September 2006).
- _____. "Background – Naval Co-Operation and Guidance for Shipping." <http://shipping.eastlant.nato.int/> (accessed 30 September 2006).
- New York Times*, "Surprised Again in the Gulf, 28 July 1987.
- O'Donnell, Robert, and Scott C. Truver. "Mine Warfare Confronts an Uncertain Future." U.S. Naval Institute *Proceedings* 132, no. 7 (July 2006): 42-47.
- Potter, E. B. *Bull Halsey*. Annapolis: Naval Institute Press, 1985.
- Roskill, S. W. *The War at Sea 1939-1945*. 3 vols. London: Her Majesty's Stationary Office, 1954-1961.
- Spinetta, Lawrence. "Cutting China's 'String of Pearls.'" U.S. Naval Institute *Proceedings* 132, no. 10 (October 2006): 40-42.
- Stillwell, Paul. "SS *Bridgeton*: The First Convoy." U.S. Naval Institute *Proceedings* 114, no. 5 (May 1988): 52-57.
- Summerfield, Edward R. "Protection of Merchant Shipping: Forgotten Lessons." U.S. Naval Institute *Proceedings* 90, no. 9 (September 1964): 40-47.
- Tangredi, Sam, ed. *Globalization and Maritime Power*. Washington, DC: U.S. Government Printing Office, 2002.
- Truver, Scott C. "Part I: U.S. Navy MCM Programmes." *Naval Forces* 25, no. 3 (2004): 63-71.

- United Kingdom Hydrographic Office. "NATO HQs use Customized ARCS in Asia Piracy Exercise." October 2005. http://www.ukho.gov.uk/content/corpattachments/press_releases/piracy20-10-05.pdf (accessed 08 September 2006).
- United Nations Conference on Trade and Development. *Review of Maritime Transport 2004*, New York: United Nations, 2004.
- United Nations Conference on Trade and Development. *Review of Maritime Transport 2005*, New York: United Nations, 2005.
- U.S. Department of Homeland Security. *National Strategy for Maritime Security*. Washington, DC: U.S. Department of Homeland Security, 2005.
- U.S. Fleet Forces Command. "Pacific Shipping Coordination Center: Current Operations." PowerPoint. 12 September 2006. Available on the SIPRNET (brief is unclassified) at <http://www-info.cpf.navy.smil.mil/n3/homelandsecurity/pacflt%20scc%20brief%202002-2004.ppt> (accessed 28 September 06).
- Winton, John. *Convoy: The Defense of Sea Trade 1890-1990*. London: Michael Joseph Ltd., 1983.
- Walsh, Patrick. Address, MARLO Conference. 04 May 2006. Transcript available at <http://www.marlobahrain.org/briefs/VADM-Walsh.pdf> (accessed 09 September 2006)
- Williams, E. Cameron. "The Four 'Iron Laws' of Naval Protection of Shipping." *Naval War College Review* 39 (May-June 1986): 35-42.
- Weinberger, Caspar W. "Security Arrangements in the Persian Gulf." Report to Congress. Alexandria, VA: Defense Technical Information Center, 1987
- Xiaobing Li. "PLA Attacks and Amphibious Operations During the Taiwan Strait Crisis of 1954-55 and 1958." In *Chinese Warfighting: The Experience Since 1949*, ed. Mark A. Ryan, David K. Finkelstein, and Michael A. McDevitt, 143-172. Armonk, NY: M. E. Sharpe, 2003.
- Zeil, Glenn von. "Naval SADC course presented." *SA Soldier* 13, no. 6 (June 2006): 14.