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Major Heath Ruppert, USMC

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Marine Corps University
3070 Moreell Avenue
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14. ABSTRACT
Amphibious forces significantly contribute to maintaining access and security in the global littorals. Advancements in surface, air, cyber, and space A2/AD and ISR capabilities pose significant challenges for traditional surface and aviation amphibious operations. The ability of an adversary to physically, or virtually "see" surface amphibious forces beyond the horizon and potentially from the amphibious force's point of embarkation coupled with emerging A2/AD technologies are significant challenges. Although A2/AD capabilities are advancing, there is the opportunity to exploit the subsurface domain with current and emerging technological capability and capacity to provide a competitive advantage to amphibious forces. Subsurface Maneuver from the Sea (SMFTS) takes advantage of the subsurface maneuver space to affect an adversary physically, psychologically, and morally.

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United States Marine Corps
School of Advanced Warfighting
Marine Corps University
3070 Moreell Avenue
Marine Corps Combat Development Command
Quantico VA 22134

FUTURE WAR PAPER

REVITALIZING AN OLD IDEA: COMPLEMENTING OPERATIONAL MANEUVER CONCEPTS IN A COMPLEX SURFACE AND AIR A2/AD ENVIRONMENT WITH SUBSURFACE MANEUVER FROM THE SEA (SMFTS)

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OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF OPERATIONAL STUDIES**

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INTRODUCTION

The Marine Corps is "tasked in public law and national policy to conduct amphibious operations, including engagement, crisis response, and power projection operations, to assure access....[and retains] the primary responsibility for the development of amphibious doctrine, tactics, techniques, and equipment." [1] This responsibility contributes to the nation's ability to realize strategic goals in a dynamically evolving geo-strategic security environment. Today, emerging surface and air anti-access and area denial capabilities (A2/AD) pose significant challenges to amphibious forces and attract the focus of our attention. The increasing threat of A2/AD systems often leads to the assumption that amphibious operations are no longer a viable option for American power projection. Overcoming these challenges requires looking beyond familiar surface and aviation options engrained in our institutional thinking to find solutions for future littoral operations. Taking advantage of current technology and the subsurface domain to project power provides the opportunity to offset trending A2/AD challenges affecting expeditionary operations by exploiting physical, psychological, and moral opportunities.

Expeditionary operations from the sea have played an enduring role in securing United States national objectives. Despite the claim that evolving threats to naval forces have rendered amphibious operations untenable, global political, economic, and social trends appear to require continued power projection from the sea. As these circumstances evolve, the requirement to maintain an amphibious force capable of operating across the spectrum of war will remain. "Most maritime activities--commercial shipping, fishing, and oil and gas extraction, for example--take place within 200 miles of the shore. Additionally, more than 80 percent of the world's population currently resides within 100 miles of a coastline--and the proportion is increasing." [2] Thus, increasing population growth in the littorals, competition for resources, and rapidly

increasing global interconnectivity will pose significant challenges for the United States. Though the future is uncertain, the nature of problem in the littorals that the Department of Defense will face demands the capability to act from humanitarian and disaster relief operations to war.

With the above in mind, American naval forces have overcome past challenges that have threatened our ability to project an amphibious force. In spite of the complexity the current and future environment presents, there is an opportunity to overcome these challenges by exploring opportunities outside of ingrained institutional paradigms.

THE ISR AND A2/AD PROBLEM

On 3 January 2012, President Obama released a national security statement commenting that, "as we end today's wars, we will focus on a broader range of challenges and opportunities, including the security and prosperity of the Asia Pacific." [3] Two days later the Secretary of Defense released *Sustaining U.S. Leadership: Priorities for the 21st Century Defense for the Department of Defense,* outlining priorities to "preserve our ability to conduct the missions we judge most important to protecting core national interests", including "deterring and defeating aggression by adversaries, including those seeking to deny our power projection." [4] The document directs the U.S. military to maintain the ability to project power despite A2/AD threats. In that regard, "The U.S. military will invest as required to ensure its ability to operate effectively in anti-access and area denial (A2AD) environments." [5] Although the proliferation of surface, air, cyber, and space A2/AD capabilities present significant challenges to gaining access through expeditionary operations, they have also presented the opportunity to exploit the subsurface domain to enhance joint force capability.

This paper will address an opportunity for U.S. naval forces to cope with the operational level component of A2/AD. The Department of Defense 2013 document, *Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenges,* identifies A2/AD capabilities as "those which challenge and threaten the ability of the U.S. and allied forces to both get to the fight and to fight effectively once there....It is the effect of A2/AD on U.S. and expeditionary operations that matters." [6] Specifically, the document defines anti-access as an, "action intended to slow deployment of friendly forces into a theater or cause the forces to operate from distances farther from the locus of conflict than they would otherwise prefer, while defining area-denial as, "action intended to impede friendly operations within areas where an adversary cannot or will not prevent access." [7]

The President's renewed focus on the Pacific has contributed to an increased emphasis and attention paid to A2/AD, particularly those capabilities of "near peer competitors" such as China. Despite the renewed emphasis on the region and potential challenges presented to an expeditionary force, A2/AD is not a new threat. In 480 BC, the Greek independent states faced a threat to their existence by the Persian Empire led by emperor Xerxes. In the face of an overwhelming force, the Greeks employed anti-access operations across their land and sea domains to prevent the Persians from gaining access to mainland Greece. In a narrow coastal pass at Thermopylae, a Spartan force under the leadership of Leonidas attempted to deny the Persians access at a "spot where the mountains ran to the water's edge." [8] Concurrently, maritime anti-access operations were conducted in the straits near Salamis, under the leadership of the Athenian General, Themistocles. The Battle of Salamis enabled the Greeks to control the narrow channel between the island of Salamis and Athens and denied access to essential sea lines of communication on the part of the Persians.[9] The Greek forces at Thermopylae and Salamis

took advantage of extant technological capabilities and geographic circumstances to conduct A2/AD operations on land and at sea. Circumstances may have changed and technology has certainly advanced, but the idea of access and the need to overcome anti-access capabilities remains the same.

The United States will continue to face a rapidly changing environment regarding A2/AD, with "proliferation of national and commercial satellite services and missile technology." [10] Even so-called "rogue" states will have access to A2/AD systems.

In the Defense Secretary's annual report to Congress regarding China and evolving security developments, submitted in FY 2000, he stated that, "in more traditional domains, China's A2/AD focus appears oriented toward restricting or controlling access to China's periphery, including the western Pacific." [11] China's high-end A2/AD capability correlates with their national interests in the Western Pacific and serves as a baseline for exploiting opportunities further afield. The report states that China is enhancing its air, land, and maritime missile capabilities as well as cyber, air-to-air defense, space, and commercial and military intelligence, surveillance, and reconnaissance (ISR) capabilities. The rapidly expanding capacity, capability, and reach of China's A2/AD and ISR technologies presents the U.S. with significant challenges for future expeditionary operations in the region and threatens our freedom of movement in the maritime global commons.

And yet China's A2/AD capabilities have demonstrated shortcomings. For example, China "has not developed a robust, deep water anti-submarine warfare capability, in contrast to its strong capabilities in the air and surface domains." [12] This shortcoming in particular presents an opportunity for the Navy Marine Corps team, to exploit the subsurface domain with existing and emergent technology to realize continued operational maneuver from the sea.

MANEUVER CONCEPTS

Military theorists and practitioners such as Sun Tzu, J.F.C. Fuller, B.H. Liddell Hart, and the late Colonel John Boyd have heavily influenced Marine Cops maneuver warfare philosophy and doctrine, as described in *MCDP 1, Warfighting*, published in 1989. Likewise, concepts such as, "Operational Maneuver from The Sea" (OMFTS) and "Ship to Objective Maneuver" (STOM) (2006 and 2007 respectively) complement Marine Corps' maneuver warfighting philosophy in a manner to take advantage of maritime maneuver space and aviation. The marriage of these two concepts "couple doctrine with technological advances in speed, mobility, fire support, communications, and navigation to seamlessly and rapidly identify and exploit enemy weaknesses across the entire spectrum of conflict." [13] To that end, the combination of foundational warfighting philosophy and the OMFTS/STOM concepts provide the U.S. with a flexible and effective expeditionary capability.

Regrettably, however, persistent individual schemas and institutional paradigms dating from at least World War II tend to limit development to surface and air methods of conducting amphibious operations in the face of A2/AD measures designed to counter these traditional employment methods. However, there is the opportunity to exploit the subsurface maneuver space as innovative thinkers strived to explore during the Cold War. "The U.S. Navy and especially, the Soviet Navy undertook the design of large, specialized troop/equipment transports."[14] Specifically, the early Soviet 600 series projects leading to Project 748 submarine with the capability to, "carry up to 20 amphibious tanks and BTR-60P armored personnel carriers, and up to 470 troops"[15], to Project 717 in 1969 with the ability to deliver, "up to 800 marines and four personnel carriers, the transport of arms, munitions, fuel, and provisions."[16] As circumstances and priorities changed with the advent of nuclear weapons, the Soviet Navy

cancelled funded and scheduled production of these vessels. Concurrently, the U.S. Navy presented a preliminary design for an amphibious assault submarine capable of deploying 2,240 Marines and their equipment from rafts, but the concept was never developed.[17]

SUB-SURFACE MANEUVER FROM THE SEA

Within the context of maneuver warfare, OMFTS, and current amphibious doctrine, there is ample opportunity to enhance current maneuver concepts by exploring the sub-surface domain. A distinguishing principle of OMFTS is that it uses the surface of the sea as maneuver space to gain an advantage over an adversary by choosing flexible avenues of approach that avoid threats to amphibious naval forces. The aim of OMFTS and maneuver warfare in general is to paralyze the enemy by indirectly attacking his physical, moral, and psychological centers of gravity. In that regard, J.F.C. Fuller believed that "brain warfare" is the most effective and efficient way to destroy an enemy's military organization and hence his military strength.[18] Exploitation of the sub-surface environment has the potential to paralyze an adversary by generating circumstances about which the enemy is unable to cope, enabling the amphibious force to gain an advantage.

PHYSICAL SPHERE

The physical sphere encompasses functions derived from tangible assets to shatter an adversary's defensive system through movement. This is the, "result of a move which (a) upsets the enemy's dispositions and, by compelling a sudden 'change of front', dislocates the distribution and organization of his forces; (b) separates his forces; (c) endangers his supplies; (d) menaces the route or routed by which he could retreat in case of need and reestablish himself in his base or homeland."[19] These functions are attainable by introducing highly capable

disaggregated mobile units from undetected submarines as a complement to existing Amphibious Ready Groups (ARG) or Marine Expeditionary Units (MEU).

As a complementary force, a sub-surface amphibious maneuver element enables the ARG/MEU to conduct disaggregated or "split" operations in accordance with maturing principles addressed in the document entitled, *Disaggregated Amphibious Ready Group/Marine Expeditionary Unit Concept of Employment of 22 August 2014*. A sub-surface landing force has the ability to take advantage of extended maneuver space and can deploy in unexpected locations such as rivers or beaches unsuitable for traditional landing force operations. A sub-surface landing force can also get behind an adversary's coastal defensive system, including A2/AD defenses. The sub-surface landing force will thus have the opportunity to maneuver and penetrate coastal defensive systems from the rear and move toward the coast to dislocate defensive dispositions and disrupt A2/AD, C2, and logistic systems and thereby set the conditions for follow-on amphibious forces to succeed. Such a sub-surface force mimics the effects provided by an airborne force while avoiding the trending aviation A2/AD threats. [20] The mere threat of such operations can cause the adversary to alter his defensive systems, opening gaps for follow-on forces to exploit.

Operational subsurface maneuver requires the ability to exploit tactical level opportunities by deploying forces from the submarine and providing mobility once established ashore. Historically, limitations with ship to shore connectors (reliance on rubber rafts and swimmers) and lack of mobility once ashore limited objectives small forces deployed from submarines could achieve. To solve the WWII connector problem, the Marine Corps took advantage of existing commercial technology such as a swamp rescue vehicle, "the alligator",

and adapted it to operations in the Pacific. This creative thinking and innovation to leverage civilian capabilities significantly contributed to the Marine Corps success in World War II.

Today civilian recreational vehicles such as the "Quadski" a "transformable" amphibious jet-ski four-wheeler, and the "Jetlev-Flyer", water propelled jet pack, have the potential to introduce a force onto any shore. (See Appendix) Their small size permits taking advantage of topographical features which hinder current connectors and attract the focus of enemy defenses. Sustainment in the form of submarine-towable submersible containers and DARPA's Upward Falling Payloads (UFP) provide the opportunity to conceal logistics beneath the sea and remotely bringing it to the surface. Long-range communication capability provides the ability to coordinate naval and other fires in coordination with expeditionary fire support systems in order to provide an organic fires capability. Mobility, logistics, fires, and command and control developments are limited only by the imagination. The complementing ARG/MEU sub-surface maneuver element with these capabilities provide amphibious commanders with the flexibility to introduce forces from the sea while concurrently inflicting a psychological effect on the enemy by the threat of an undetected sub-surface force lurking in the depths.

PSYCHOLOGICAL SPHERE

"In the psychological sphere, dislocation is the result of the impression on the commander's mind of the physical effects." [21] Sub-surface maneuver provides the opportunity to apply maneuver warfare philosophy and concepts by taking advantage of, deception, surprise, and stealth to avoid adversary ISR and A2/AD threats. *JP-3-02, Amphibious Operations*, states that "certain amphibious operations (e.g., assaults and raids) seek to exploit the element of surprise and capitalize on enemy weakness by projecting and applying combat power precisely at

the most advantageous location and time." [22] Sub-surface maneuver enables the maneuver force to capitalize on clandestinity and surprise by way of an undetected sub-surface landing force.

At present, adversary ISR and A2/AD capabilities significantly reduce the ability to achieve amphibious surprise with the ability to see, monitor, and potentially destroy an amphibious force from the point of embarkation to the shoreline. Surface forces can be easily tracked by space-based and other ISR assets. This situational awareness provides the enemy with the ability to allocate his A2/AD capabilities at an appropriate time to counter an amphibious force. A sub-surface capability mitigates if not obviates the enemy's "awareness". Given that current adversary A2/AD capabilities focus on the surface amphibious threat, the introduction of a sub-surface force permits uncertainty thus affecting an adversary's ability to act. Knowing that a sub-surface force is enroute but not knowing when or where it might land increases the enemy's apprehension. This uncertainty also increases the speed required for an adversary's decision-making cycle and slows his reaction time to allocate defensive resources to the appropriate location. Conversely, the amphibious force extends its decision making process, thus creating a time and space advantage for the attacker. The psychological effects provided by the physical movement of an undetected sub-surface amphibious force presents an opportunity to gain an advantage by promoting conflict within the defender's decision-making process.

MORAL SPHERE

The essence of inflicting moral conflict upon an enemy is by creating and exploiting the impression of danger and exacerbating the atmosphere of uncertainty, which leads to a mistrust that unravels the bonds holding the system together. [23] A significant goal, then, is to bring about fear and anxiety and to cause internal friction in order to shatter an enemy's cohesion. The employment of sub-surface amphibious forces has the potential to achieve such a goal. At the

point where the defenders cohesion is shattered, the systematic dismantling of the independent components will lead to the erosion of the political and military leadership and perhaps the population's moral will. The sub-surface landing force enables the amphibious commander to "operate inside the enemy's ooda loops or get inside their mind-time-space as a basis to penetrate the moral-mental-physical being of one's adversaries in order to pull them apart and bring about their collapse."[24] The overall effect is to defeat an enemy by destroying his will.

DEVELOPING A SUB-SURFACE CAPABILITY TODAY

According to a 2007 RAND study: "Designing a new class of nuclear submarines is a very large and complex endeavor, lasting 15 year or longer."[25] Although the duration of submarine design and construction is a long-term endeavor, converting current assets provides the opportunity to address the need for a sub-surface amphibious force in the near term.

With the conclusion of the Cold War, nuclear weapons delivery capacity has been declining due to a host of political, economic, and military circumstances. With the implementation of the New Start Treaty between the United States and Russia, there is now an opportunity to create a sub-surface amphibious technological capability by simply converting excess nuclear submarine assets. [26]

The changing circumstances and excess capacity provides the opportunity to address a current need of maintaining the ability to project forces through conversions and new technology design. Rather than decommissioning existing platforms, converting the excess capacity to sustain amphibious forces provides a viable, cost effective, and timely option, especially in comparison to developing a new system. In that regard, "The Virginia class [submarine] has [an] improved capability to operate in the littoral regions….and is specifically designed to facilitate future technology insertion."[27]

The benefits (physical, psychological, and moral) of a rapid conversion of submarines, and the employment and advertisement of a sub-surface amphibious force have, the potential for immediate impact. Through continuous improvements to platforms and doctrinal development, the future of sub-surface amphibious operations holds great promise. For the long-term solution, the U.S. has the opportunity to develop fully integrated amphibious assault and aircraft carrying submarines to complement current surface capabilities.

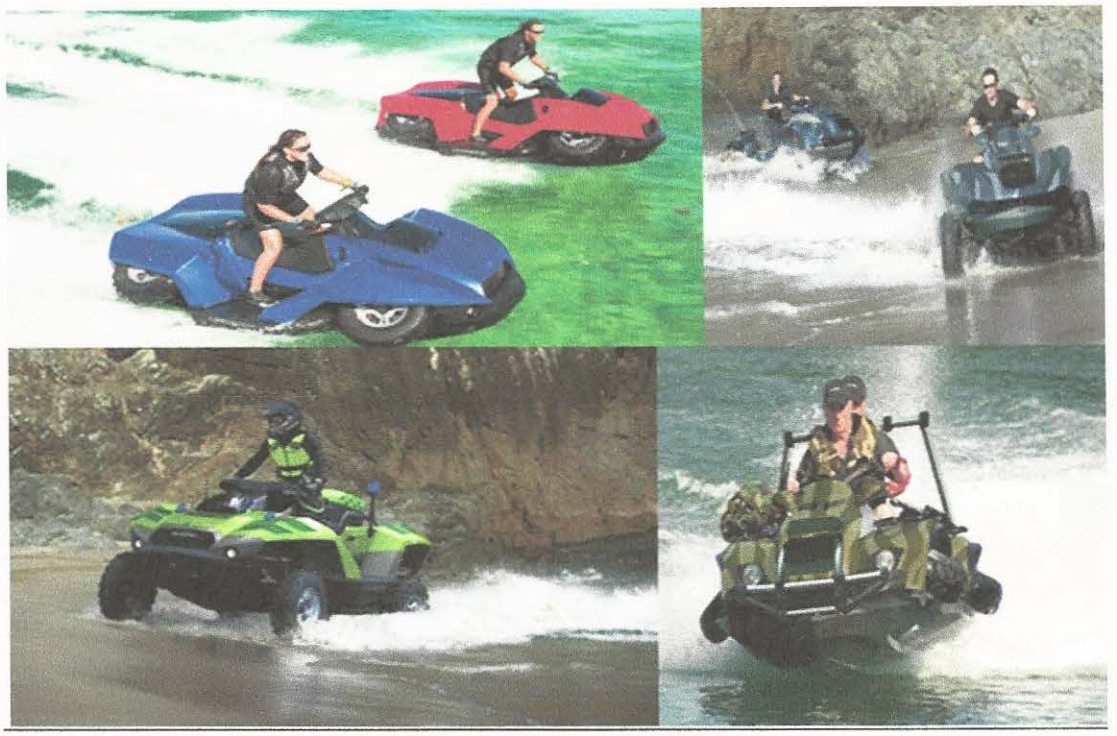
Although there is now an opportunity to develop a sub-surface capability to counter A2/AD threats, there are challenges, e.g., adversary anti-submarine warfare capabilities. Other challenges include the inherent complexities of the military industrial system, which has inhibited ideas in the past. The most pressing challenge will be to overcome the institutional paradigms within the Marine Corps and the Navy. Overcoming these challenges will require an open mind.

CONCLUSION

Expeditionary operations from the sea will continue to be a required capability for United States naval forces. Though trending A2/AD present challenges to current and future amphibious forces, there is an opportunity to project power by exploiting the sub-surface domain to gain competitive advantages over an adversary physically, psychologically, and morally. Just as the innovative thinkers of the interwar period and during WWII used the power of their ideas to transform institutions to meet the circumstances of the time, the same opportunity exists today. By looking outside of institutional norms and exploring nontraditional ideas, there is an opportunity to solve emerging problems with current and emergent technologies. The ability to employ and deploy an amphibious force from beneath the sea provides a capability to operate in complex strategic, operational, and tactical arenas.

Appendix

QuadSki



JetLev

Endnotes

[1] U.S. Marine Corps, Commandant of the Marine Corps. *Expeditionary Force 21: Forward and Ready: Now and in the Future*, March 4, 2014, 5.

[2] U.S. Marine Corps, Commandant of the Marine Corps. *Expeditionary Force 21: Forward and Ready: Now and in the Future*, March 4, 2014, 8.

[3] U.S. Department of Defense, *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense*, January 2012.

[4] *Ibid.*,

[5] *Ibid.*, 5.

[6] U.S. Department of Defense, *Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenges*, (May 2013), 2.

[7] *Ibid.*, 2.

[8] Sam J. Tangredi, *Anti-Access Warfare: Countering A2/AD Strategies*. (Annapolis, MD: Naval Institute Press, 2013), 9.

[9] *Ibid*,.11.

[10] *Ibid*.,51.

[11] Office of the Secretary of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2013*, Fiscal Year 2000, 32.

[12] *Ibid*,. 35.

[13] Headquarters U.S. Marine Corps, *Operational Maneuver from the Sea.* Washington, DC: Headquarters U.S. Marine Corps, January 4 1996, 28.

[14]Norman Polmar and K. J., *Cold War Submarines: The design and Construction of U.S. and Soviet Submarines* (Washington D.C.: Potomac Books Inc., 2004) 233.

[15]Ibid., 233.

[16]Ibid., 233.

[17]Ibid., 239.

[18] Frans P. B. Osinga, *Science, Strategy, and War: The Strategic Theory of John Boyd.* London: Routledge, 2007, 32.

[19] Liddell B.H. Hart, *Strategy*: 2nd ed. (New York: Frederick A. Praeger, 1967) 326.

[20] U.S. Department of the Army. *FM 90-26: Airborne Operations*, Headquarters, Department of the Army, December 1990, 1-3 to 1-4.

[21] Liddell B.H. Hart, *Strategy*: 2nd ed. (New York: Frederick A. Praeger, 1967) 326.

[22] Joint Publication 3-02, *Amphibious Operations*. Washington, DC: Joint Staff, July 18, 2014, I-2.

[23]Frans P. B. Osinga, *Science, Strategy, and War: The Strategic Theory of John Boyd.* London: Routledge, 2007, 171.

[24] Frans P. B. Osinga, *Science, Strategy, and War: The Strategic Theory of John Boyd.* London: Routledge, 2007, 165.

[25] John F. Schank, et al., *Sustaining U.S. Nuclear Submarine Design Capabilities* (Santa Monica, CA: RAND, 2007) 2, 34.

[26] Connor, Michael J, Rear Admiral. "Investing in the Undersea Future." United States Naval Institute. Proceedings 137 (6): 16-20, 2011. http://search.proquest.com/docview/872331066?accountid=14746.

[27] John F. Schank, et al., *Sustaining U.S. Nuclear Submarine Design Capabilities* (Santa Monica, CA: RAND, 2007) 11.

Bibliography

Boyd, Carl, and Yoshida, Akihiko. The Japanese Submarine Force and World War II. Annapolis MD: Naval Institute Press, 1995.

Connor, Michael J. "Investing in the Undersea Future." United States Naval Institute. Proceedings 137 (6): 16-20, 2011. http://search.proquest.com/docview/872331066?accountid=14746.

Hart, B.H. Liddell. *Strategy*: 2nd ed. New York: Frederick A. Praeger, 1967.

Headquarters U.S. Marine Corps. Warfighting. MCDP 1. Washington, DC: Headquarters U.S. Marine Corps, June 30, 1991.

Headquarters U.S. Marine Corps, *Operational Maneuver from the Sea.* Washington, DC: Headquarters U.S. Marine Corps, January 4 1996.

Joint Publication 3-02, *Amphibious Operations*. Washington, DC: Joint Staff, July 18, 2014.

Meilinger, Phillip S.,ed. *The Paths to Heaven: The Evolution of Air Power Theory*. Maxwell AFB, AL: Air University Press, 1997.

Office of the Secretary of Defense. *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2013*, Fiscal Year 2000.

Osinga, Frans P.B. *Science, Strategy, and War: The Strategic Theory of John Boyd.* London: Routledge, 2007.

Polmar, Norman, and Moore, K.J. *Cold War Submarines: The design and Construction of U.S. and Soviet Submarines.* Washington D.C.: Potomac Books Inc., 2004.

Polmar, Norman, and Noot, Jurrien. *Submarines of the Russian and Soviet Navies, 1718-1990*, Annapolis MD: Annapolis Institute Press., 1991.

Schank, John F., Mark V. Arena, Paul Deluca, Jessie Riposo, Kimberly Curry, Todd Weeks, and James Chiesa. *Sustaining U.S. Nuclear Submarine Design Capabilities*, Santa Monica, CA: RAND, 2007.

Tangredi, Sam J. *Anti-Access Warfare: Countering A2/AD Strategies*. Annapolis, MD: Naval Institute Press, 2013.

U.S. Department of the Army. *FM 90-26: Airborne Operations*, Headquarters, Department of the Army, December 1990.

U.S. Department of Defense. *Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenges*, May 2013.

U.S. Department of Defense, *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense*, January 2012.

U.S. Department of Defense, *Capstone Concept for Joint Operations: Joint Force 2020*, September 10, 2012.

U.S. Department of Defense, *Joint Concept for Entry Operations*, April 7, 2014.

U.S. Department of Defense, *Joint Operational Access Concept (JOAC),* January 17, 2012.

U.S. Department of the Navy, U.S. Fleet Forces Command and U.S. Marine Corps Combat Development and Integration, *Dissaggregated Amphibious Ready Group/Marine Expeditionary Unit Concept of Employment*, August 22, 2014.

U.S. Marine Corps, Commandant of the Marine Corps. *Expeditionary Force 21: Forward and Ready: Now and in the Future*, March 4, 2014.