Dispersed Agile Logistics in a Contested INDOPACOM Area of Responsibility

Word Count: 3089 words

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE *(DD-MM-YYYY)*	**2. REPORT TYPE**	**3. DATES COVERED** *(From - To)*
13-MAY-2022	FINAL	N/A

4. TITLE AND SUBTITLE

Dispersed Agile Logistics in a Contested INDOPACOM Area of Responsibility

5a. CONTRACT NUMBER
N/A

5b. GRANT NUMBER
N/A

5c. PROGRAM ELEMENT NUMBER
N/A

6. AUTHOR(S)

James P. Morrison
LCDR, USN

5d. PROJECT NUMBER
N/A

5e. TASK NUMBER
N/A

5f. WORK UNIT NUMBER
N/A

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Writing & Teaching Excellence Center
Naval War College
686 Cushing Road
Newport, RI 02841-1207

8. PERFORMING ORGANIZATION REPORT NUMBER
N/A

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

N/A

10. SPONSOR/MONITOR'S ACRONYM(S)
N/A

11. SPONSOR/MONITOR'S REPORT NUMBER(S)
N/A

12. DISTRIBUTION / AVAILABILITY STATEMENT
Distribution Statement A: Approved for public release; Distribution is unlimited.

13. SUPPLEMENTARY NOTES A paper submitted to the faculty of the NWC in partial satisfaction of the requirements of the curriculum. The contents of this paper reflect my own personal views and are not necessarily endorsed by the NWC or the Department of the Navy.

14. ABSTRACT

The U.S. Navy has enjoyed relatively uncontested sealines of communication since the end of World War II. In today's geo-political environment, China seeks to assert itself as a global power, putting U.S. naval logistics at risk. Through a network of capabilities, including the employment of Anti-Ship Ballistic Missiles (ASBM), China has effectively created an Anti-Access/Area Denial environment in the South China Sea (SCS). The current logistics concept of operations is not sufficient to sustain ships with the required fuel to maintain a continuous force projection posture in the SCS because the Navy's technological and practical inability to defend against Chinese ASBMs. Furthermore, a direct conflict with China, will result in substantial losses to both personnel and material. The current inventory of Combat Logistics Force (CLF) oilers and the Maritime Administration's Ready Reserve Force will not meet the demand. Though logistics for the fleet encompasses a wide range of needs, this argument presented here, focuses solely on the sustainment of petroleum products and the use of oilers (T-AOs and T-AOEs). To compete in an A2/AD environment in the SCS, the U.S. Navy will need to pull back outside the first island chain and develop a dispersed agile logistics concept of operations to deliver fuel to random fuel rendezvous points based on date time groups with the fleet under an emissions control (EMCON) posture to avoid detection. Additionally, the Navy needs to integrate domestic and foreign-flagged commercial entities to supplement Maritime Sealift Command shortfalls. By protecting CLF oilers and engaging alternative procurement sources through contracting, the fleet will maintain an adequate fuel supply to meet its needs.

15. SUBJECT TERMS (Key words)
Contested Logistics, refueling, South China Sea.

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**	N/A		Director, Writing Center
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED			**19b. TELEPHONE NUMBER** *(include area code)* 401-841-6499

INTRODUCTION

Since the end of World War II, the United States Navy has enjoyed relatively uncontested logistical sea lines of communication, keeping the fleet sustained without much external friction. However, in today's geopolitical climate, particularly in the Indo-Pacific area of responsibility, uncontested logistics is not a guarantee. More than half of the world's population and a preponderance of the global gross domestic product resides in this region.[1] The People's Republic of China (PRC) continues to exert its influence throughout the Indo-Pacific region and beyond, to assert themselves as a globally dominant power. U.S. national interest requires a balanced, stable, and accessible Indo-Pacific from the west coast to India, including Oceania and the Pacific Islands. The PRC displays intentions of not being a part of the community at large as it challenges international laws and norms to control the region. The global well-being and basic rights to freedom of the seas is at risk.

The Navy has a major stake in the power competition between the PRC and the rest of the world. To project influence and uphold laws and the right of passage to keep the region accessible, the Navy maintains a constant presence throughout the Indo-Pacific. Perpetual operations at sea require a robust and agile sustainment system to keep ships and aircraft supplied with fuel. Admiral Hyman Rickover notes, "bitter experience in war has taught the maxim that the art of war is the art of the logistically feasible."[2] The current status quo demonstrates that constant fleet operation and sustainment remains feasible; however, if China contests Navy logistics, the challenge of refueling the fleet and maintaining U.S. influence in the Indo-Pacific region becomes exceedingly more complex.

---

[1] National Security Council, *Indo-Pacific Strategy of the United States,* (Washington, D.C.: The White House, February 2022), 5. https://www.whitehouse.gov/wp-content/uploads/2022/02/U.S.-Indo-Pacific-Strategy.pdf

[2] Harry B. Harris, *Logistics Officer Association Symposium*, National Harbor, MD: U.S. Indo-Pacific Command, October 13, 2016, 1. https://www.pacom.mil/Media/Speeches-Testimony/Article/974913/logistics-officer-association-symposium/.

Current maritime logistical infrastructure and concept of operations will not suffice in a direct conflict with the PRC. A conflict in the South China Sea (SCS) gives China a marked advantage with regards to time, space, and force. The ballistic missile and missile defense technology gap alone presents a challenge to protecting Naval assets. The proximity of the fight to the homeland of the PRC—should conflict break out—provides a numerical edge even assuming technological parity. In the event of a direct conflict with China, operations in the SCS or anywhere within the first island chain are not feasible and the U.S. will be required to pull back outside the first island chain perimeter. While the entire logistical enterprise of the Department of Defense includes the sustainment of a number of critical supplies including food, materiel, weapons, etc. from T-AKE and similar platforms, this analysis focuses solely on the challenge of keeping the fleet fueled with petroleum products from T-AO and T-AOE oiler platforms. Potential challenges posed by a Chinese anti-access/area denial (A2/AD) environment, should be mitigated by dispersing and randomizing rendezvous points and conducting fuels transfer under emissions control (EMCON), while maximizing efforts to diversify fuel support through contracting efforts with domestic and partner-nation commercial tanker entities.

CHALLENGES OF CONTESTED LOGISTICS

Anti-Access/Area Denial: A Technology and Force Gap

Sea control spans the various domains of the sea from the surface and subsurface, extending upward through the airspace and further into the space domain. The struggle for sea control in the SCS is a fait accompli considering the advances in military technology and in force infrastructure employed by the People's Liberation Army Navy (PLAN). Vego suggests, "Today, it is possible to have a general sea control on the open ocean but less so in the peripheral

or marginal seas such as the [SCS] or the East China Sea."[3] China's military ambitions have included technological growth in several areas including intelligence, surveillance, and reconnaissance (ISR), advanced radars, satellites, aviation, submarines, and cruise and ballistic missiles, establishing effective A2/AD tools. Here presented, is an examination of the anti-ship ballistic missiles (ASBM) posing a great threat to surface ships, particularly Military Sealift Command's (MSC) fleet of oilers given its lack of integrated self-defense capability. Figure 1 highlights the ranges of Chinese weapons systems and platforms and how their reach goes well beyond the first island chain. According to the Marine Corps' Tentative Manual for Expeditionary Advanced Base Operations, "…expanded range and magazine depth of land-based rocket forces and bomber-borne antiship missiles generate a disproportionate threat to surface naval forces."[4] The civilian-crewed Combat Logistics Force (CLF) vessels of the MSC lack organic protection functions given their lack of active defense capabilities against a Chinese

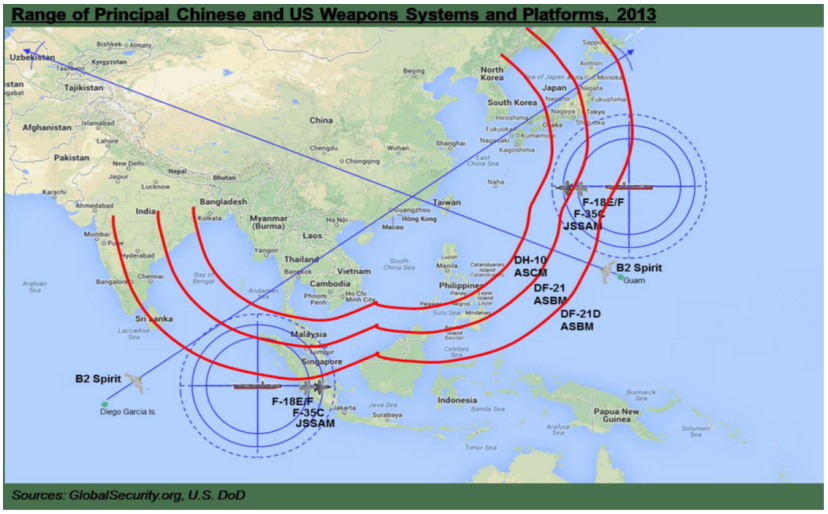

Figure 1. Range of Principle Chinese and U.S. Weapons Systems and Platforms.[5]

[3] Milan Vego, *The Objectives of Naval Warfare*, (Newport, RI: U.S. Naval War College, 2015), 7.
[4] Department of the Navy, Headquarters, United States Marine Corps, *Tentative Manual for Expeditionary Advanced Base Operations*, (Washington, D.C.: Department of the Navy, Headquarters, United States Marine Corps, 2021), 1-3.
[5] Brad Donnelly, "Emerging Concepts" (lecture, U.S. Naval War College, Newport, RI, January 27, 2022).

ASBM and would likely succumb to the first salvo. Simply escorting or reverting to a convoy-style concept of operations in the SCS would not be sufficient to effectively refuel the fleet in a contested environment.

The Navy does possess active defenses against ASBM in the form of anti-ballistic missiles (ABM), the standard missiles (SM-2s, SM-3s, and SM-6s). However, a surface combatant (DDG or CG) equipped for ballistic missile defense can only carry up to 24 or 25 of these missiles.[6] Assuming the effectiveness of these ABMs is not 100 percent, tactics dictate launching at minimum two missiles for each incoming threat, putting an oiler, or any vessel, at risk with no ABMs available after the thirteenth ASBM is launched.[7] Furthermore, the Western Pacific's close proximity to the Chinese mainland, the PRC will not be constrained or limited by the supply of missiles, having a sufficient inventory to defeat a significant number of surface targets. Technology notwithstanding, logistical operations in the SCS are not possible due to the force and space advantage China enjoys over the Navy's current concept of operations.

Proving the infeasibility of the current model, a group of students at the Naval Postgraduate School used modeling and simulation to analyze the effective throughput and performance of the current logistical concepts at sea in a contested, A2/AD environment. "We concluded that almost all [supply] vessels completed less than one round trip and only about one delivery. This is a daunting outcome that alone proves the need for upgrade of the logistics capabilities of the U.S. Navy."[8] The results of the models demonstrate that—across various ship classes— the current system of refueling ships at sea, particularly the SCS, is not possible.

---

[6] Marshall Hoyler. "China's 'Antiaccess' Ballistic Missiles and U.S. Active Defense," *Naval War College Review*: Vol. 63: No. 4, Article 10. 2010, 8. https://digital-commons.usnwc.edu/nwc-review/vol63/iss4/10

[7] Hoyler, "China's 'Antiaccess' Ballistic Missiles," 89.

[8] Sean Dougherty, et al., "Logistics in Contested Environments," (master's thesis, Naval Postgraduate School, 2020), 155.

MSC Fleet/MARAD Ready Reserve Force

Refueling the fleet with limited numbers of aging oilers in an uncontested environment is already challenging. At present only 16 active oilers comprise the MSC fleet which includes both T-AO and T-AOE class ships.[9] These ships spend more than six months at sea per year.[10] In an A2/AD environment, as described above, 16 oilers is simply insufficient to maintain constant flow of fuel to the fleet, especially if losses occur. Another critical vulnerability in the event of a U.S.-China war, aside from the active MSC CLF oilers, is the Department of Transportation (DOT) Maritime Administration's (MARAD) Ready Reserve Force. Theoretically available to supplement the active force, this reserve fleet has been activated in the past for both the Gulf War and the Global War on Terror. These assets have proven vital to the logistical networks during several conflicts and will prove valuable in future contested theaters. Problematically though, the reserve force employs just one additional oiler. Furthermore, the force struggles with readiness and personnel issues as displayed during U.S. Transportation Command's (TRANSCOM) recent TURBO ACTIVATION readiness exercise of 2019. "Of the 61 ships assigned to the Organic Surge Fleet at the start of TA 19+, a total of 63.9% (39 of 61 ships) were ready for tasking (RFT)."[11] If a U.S.-China war occurred today, the current size and readiness of both TRANSCOM's MSC CLF fleet of oilers and DOT's MARAD Ready Reserve Force would be insufficient, increasing the risk of sustained combat operations in the Indo-Pacific region.

---

[9] Military Sealift Command, "Ship Inventory," accessed May 2, 2022, https://www.msc.usff.navy.mil/Ships/Ship-Inventory/.

[10] Craig Hooper. "RUNNING ON EMPTY." *Proceedings - United States Naval Institute 136*, no. 10, 2010, 60.

[11] John Fasching, "Strategic Mobility: The Essential Enabler of Military Operations in Great-Power Competition," *The Heritage Foundation 2021 Index of Military Strength*, January 13, 2021, 59. https://www.heritage.org/2021-index-us-military-strength/topical-essays/strategic- mobility-the-essential-enabler-military.

OVERCOMING THE CHALLENGES

Passive Defense through EMCON and Dispersed Agile Network for Refueling

Active missile defenses, as previously discussed, will not suffice to protect Naval surface combatants nor the CLF assets they may be tasked with protecting. The high-end fight in the SCS disadvantages United States meaning the Navy must pull back outside of the first island chain and revert to passive defenses to lower the threat of ASBMs to an acceptable risk. EMCON eliminates the propagation of electronic emissions from the ship to avoid detection from radar and other electronic and signals intelligence (ELINT and SIGINT) gathering systems. It can be assumed that China's advances in its network of satellites will be able to quickly identify and track ships not under EMCON. EMCON drastically reduces a ship's operational effectiveness and puts it in a vulnerable position while the radars are turned off.[12] Furthermore, operating in an environment without the use of communications makes command and control even more challenging proving a need for predetermined and agile network for refueling at sea.

A dispersed agile and randomized network of assets will provide anti-scouting protection needed in a fight with China. Using both Hawaii and Diego Garcia as Naval Advanced Logistics Support Sites (NALSS) for staging and preparing fuel for dispersing to CLF oilers will provide the hub of the hub-and-spoke system for a fuel sustainment concept of operations.[13] While establishing Naval Forward Logistics Sites (NFLS) in places such as Guam, Okinawa, Manila, Singapore, etc. can provide the air and seaports required to aide in-theater combat, these sites will be critical vulnerabilities due to their closer proximity to mainland China rendering them unreliable. Overcoming PRC missile and ISR technology, fuel sustainment for the fleet requires a new concept of at-sea NFLS. From the NALSS locations, tankers and CLF oilers, the new

[12] Hoyler, "China's 'Antiaccess' Ballistic Missiles," 88.
[13] Jamie Gannon, *A Primer for: Naval Operational Logistics*, (Newport, RI: U.S. Naval War College, 2022), 11.

NFLSs, will be dispatched to randomized locations based on predetermined coordinates that change over time. At the operational level, theater special instructions (SPINS) will include a matrix of those coordinates for fuel rendezvous points throughout the Indo-Pacific Region, outside the first island chain, based on date time groups. When a surface asset requires refueling, its commander will consult the SPINS for an oiler resupply location. Theoretically, these SPINS will be published, encrypted, and disseminated monthly via burst communications in which ships will be able to receive passively, rather than coming out of EMCON.

Connected replenishment (CONREP), the primary method to be used for at sea refueling, is a procedure in which a Navy vessel pulls alongside an MSC ship and connects via wires, cables, and hoses to send supplies across to the ship. In order to accomplish this feat while in EMCON, both the MSC fleet and the Navy will revert to legacy forms of communication such as semaphore, signal flags, and light signals, as well as adhering to previously established "HERO EMCON Bill" to conduct the evolution safely.[14] Another option for refueling from these oilers would be to fill and deploy large floating bladders of fuel to which a ship can pull alongside, connect, and transfer aboard. As platforms are lost in the battle, as can be expected, the reliance on these bladders will increase. The Marine Corps' Tentative Manual for Expeditionary Advanced Based Operations acknowledges this capability as a low signature manner to store fuel, which would also work for transferring fuel to the receiving ship with less risk to assets. "…the use of afloat caches for bulk fuels creates economy in the fuel network by increasing inventory control in a low-signature manner, thereby reducing fuel storage in more vulnerable locations ashore."[15] A combination of CONREP under EMCON and floating bladders of fuel, both conducted at random fuel rendezvous points established by the theater SPINS can reduce

[14] Department of the Navy, *Naval Warfare Publication Underway Replenishment*, NWP 4-01.4. (Washington, D.C.: Department of the Navy, 1996), 1-2.
[15] Department of the Navy, Headquarters United States Marine Corps, *Tentative Manual for EABO*, 7-2.

the risk of contested logistics to an acceptable level while maintaining fleet sustainment and providing continuous operations in theater.

U.S. and Partner Nation Commercial Oiler Integration (Contracting)

This analysis reflects current operational capabilities and omits potential technological innovation. Simply building a larger fleet of oilers cannot be a part of the solution to deal with a contested environment today. As a potential solution, domestic and foreign commercial tanker relationships can contribute to the dispersed agile system described previously to fortify the depth of the oiler fleet. Operational contract support (OSC) is the bedrock of commercial assistance to the Department of Defense in areas that the military cannot organically support. OSC is, "the process of planning for, and obtaining supplies, services, and construction from commercial sources, in support of combatant commander (CCDR) directed operations, as well as CCDR-directed, single-Service activities, regardless of designation as a formal contingency operation or not."[16] By expanding the aperture outside current military means, sourcing from multiple friendly nations and commercial entities can maintain an adequate fuel supply. Operational commanders should ensure Warranted Contracting Officers—the only U.S. Government officials allowed to obligate funds on contracted actions—are assigned to the staff and are an integral part of the planning and development of the operational design.[17]

COUNTER ARGUMENT

DMO Concept of Operations to Mitigate the A2/AD Threat

Some may argue that a Distributed Maritime Operations (DMO) concept is the answer to the A2/AD threat in the SCS. Employing DMO and distributed lethality is the practice of separating fleet assets, rather than concentrating forces, to prevent detection as passive protection

[16] Chairman, U.S. Joint Chiefs of Staff, *Operational Contract Support*, Joint Publication (JP) 4-10 (Washington, DC.: CJCS, 2019), I-2.
[17] Chris Dalton, *Operational Contract Support A Primer for Commanders*, (Newport, RI: U.S. Naval War College, 2020), 2.

in the large domain that is the sea. Implementing DMO relies heavily on the concept of "mission command" as described by Milan Vego. "In the German-style 'mission command' (Auftragstaktik), once the higher commander has assigned a certain military objective to be accomplished it becomes the mission (Auftrag) for a subordinate commander."[18] Mission command facilitates operations under EMCON and would prove effective in evading the ELINT and SIGINT scouting functions of the PRC. Notably, Vice Admiral Philip Sawyer is comments, "Distributed Maritime and Expeditionary Operations in a Peer Contested Environment…[is] our operational approach to winning the high-end fight at sea."[19] Under such operations, a distributed agile network of both land-based and afloat NFLSs, as described above, is a sufficient model to successfully refuel at sea. Furthermore, agreements with friendly host nations that already support the fleet will be major hubs for ships to refuel, avoiding the more dynamic at sea refueling evolutions. The distributed nature of operations and a mix of at-sea and in-port fueling options will prevent detection and allow for safe, reliable fuel sustainment.

Rebuttal of the Counter Argument

While the idea of DMO capitalizes on the anti-scouting function described in the framework of this analysis and partially mitigates Chinese A2/AD capabilities, it will not be sufficient to maintain operations in the SCS. The technology and force discrepancies between China and the U.S. are too great and the scouting abilities of the PRC are such that China will learn quickly of Navy presence in the SCS. Even under EMCON, operations within the SCS are susceptible to detection from both China's Maritime Militia and its fishing fleets. "The maritime militia, a separate organization from both the PLAN and China Coast Guard (CCG), consists of

[18] Milan Vego, *The Commander's Estimate of the Situation and the Decision*, (Newport, RI: U.S. Naval War College, 2019), 7.
[19] Edward Lundquist, "DMO Is Navy's Operational Approach to Winning the High-End Fight at Sea," *Seapower*, 2021, 1. https://seapowermagazine.org/dmo-is-navys-operational-approach-to-winning-the-high-end-fight-at-sea/.

citizens working in the marine economy who receive training from the PLA and CCG to perform tasks including but not limited to border patrol, surveillance and reconnaissance, maritime transportation, search and rescue, and auxiliary tasks in support of naval operations in wartime."[20] The inability to remain undetected is a major consideration for pulling back outside the first island chain. Additionally, operating in the SCS would require even greater frequency of refueling due to increased operating speeds. Currently, a DDG holds only enough fuel to last approximately 16 days, requiring refueling on the order of once every two weeks.[21] Ships operating in the SCS will be required to maneuver at greater speeds to evade enemy offenses. Therefore, in a contested environment the sustainment requirement would likely double with refueling being required about once per week, further complicating the complexity of fuel sustainment. The geopolitical situation and the lack of reliable partner nations are two additional considerations. Adopting DMO will not significantly reduce China's ability to find, fix, target, and track our fleet in the SCS and will not enhance the safety or reliability of fuel sustainment at sea and therefore does not allow us to operate within the first island chain.

CONCLUSIONS and RECOMMENDATIONS

Fuel is a major limiting factor for the Navy. Without naval forces, the U.S. cannot project power on the sea or in the air. Due to China's advantage in missile technology and force, as well as its ISR capabilities, operations and fuel sustainment in the SCS are not in current state. Pulling back past the first island chain lowers the risk to the Naval and MSC fleets. A new robust, dispersed, and agile sustainment model must be adopted to ensure adequate fuel supply and to allow for power projection in a high-end conflict. A hub-and-spoke model centered in both Hawaii and Diego Garcia, using a network of randomized rendezvous points distributed via

[20] Shuxian Luo and Jonathon Panter, "China's Maritime Militia and Fishing Fleets." *Military Review*, (Fort Leavanworth, KS: Army University Press, 2021), 12. https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/January-February-2021/Panter-Maritime-Militia/.
[21] Gannon, Jamie. "A Primer for: Naval Operational Logistics," 37.

theater SPINS to allow for a join up under EMCON using of traditional visual signals for CONREP and supplementation with low-profile floating fuel bladders, offers greater chance of success. Furthermore, the integration of domestic and foreign commercial tanker and oilers should be the subject of thorough planning and robust contracting relationships. These practices should be implemented as soon as possible through annual exercises such as RIMPAC and PACIFIC SENTRY. Additional research and development into a future logistics force structure, one that incorporates larger at sea NFLSs to provide fuel for smaller faster supply vessels with lower radar cross sections, will enhance logistical capabilities. To supplement manned vessels, an area for further study is the integration unmanned systems into the future structure of CLF platforms. Ultimately, if a war with China were imminent, protecting the oiler fleet with passive defenses like EMCON and standing forces outside the first island chain represents the best chance of ensuring safe and effective fuel sustainment, the lifeblood of the U.S. Navy.

BIBLIOGRAPHY

Bethel, Samuel. "Sustainment in an Anti-Access/Area-Denial Environment." *Army Sustainment*, 2016.

Chairman, U.S. Joint Chiefs of Staff. *Operational Contract Support*. Joint Publication (JP) 4-10 Washington, DC.: CJCS, 2019.

Curtis, William. "Strategic Sealift: Management of the Ready Reserve Force." Master's thesis, U.S. Naval War College, 1992.

Dalton, Chris. *Operational Contract Support A Primer for Commanders*. Newport, RI: U.S. Naval War College, 2020.

Department of the Navy. *Naval Warfare Publication Underway Replenishment.* NWP 4-01.4. Washington, D.C.: Department of the Navy, 1996.

Department of the Navy, Headquarters United States Marine Corps. *Tentative Manual for Expeditionary Advanced Base Operations*. Washington, D.C.: Department of the Navy, Headquarters United States Marine Corps, 2021.

Donnelly, Brad. "Emerging Concepts." Lecture at the U.S. Naval War College, Newport, RI, January 27, 2022.

Dougherty, Sean R., et al., "Logistics in Contested Environments." Master's thesis, Naval Postgraduate School, 2020.

Dutta, Debasis. "Probabilistic Analysis of Anti-ship Missile Defense Effectiveness." *Defense Science Journal* vol. 64, no. 2, 2014.

Fasching, John. "Strategic Mobility: The Essential Enabler of Military Operations in Great-Power Competition." *The Heritage Foundation 2021 Index of Military Strength*. January 13, 2021. https://www.heritage.org/2021-index-us-military-strength/topical-essays/strategic- mobility-the-essential-enabler-military.

Fitzgerald, Michael and Brendan Pigott. "High-End Warfare Requires Changes to the Combat Logistics Force." *Proceedings – United States Naval Institute* vol. 143, no. 11. 2017.

Frittelli, John. *Maritime Administration's Ready Reserve Sealift Fleet*. CRS Report No. IN11416. Washington, D.C.: Congressional Research Service, 2020. https://crsreports.congress.gov

Gannon, Jamie. *A Primer for: Naval Operational Logistics*. Newport, RI: U.S. Naval War College, 2022.

Harris, Harry B. *Logistics Officer Association Symposium*. National Harbor, MD: U.S. Indo-Pacific Command, October 13, 2016. https://www.pacom.mil/Media/Speeches-Testimony/Article/974913/logistics-officer-association-symposium/.

Hooper, Craig. "Running on Empty." *Proceedings - United States Naval Institute* vol. 136, no. 10. 2010.

Hoyler, Marshall. "China's 'Antiaccess' Ballistic Missiles and U.S. Active Defense," *Naval War College Review*: Vol. 63: No. 4, Article 10. 2010. https://digital-commons.usnwc.edu/nwc-review/vol63/iss4/10

Lewis, George and Frank von Hippel. "Limitations on Ballistic Missile Defense – Past and Possibly Future." *Bulletin of the Atomic Scientists*, vol 74, no. 4, 2018.

Loseke, Barry and Kevin Yarnell. "Next Generation Logistics Ships (NGLS): Refuel." Master's thesis, Naval Postgraduate School, 2020.

Lundquist, Edward. "DMO Is Navy's Operational Approach to Winning the High-End Fight at Sea," Seapower, 2021.

Luo, Shuxian, and Jonathon Panter. "China's Maritime Militia and Fishing Fleets." *Military Review*. Fort Leavanworth, KS: Army University Press, 2021. https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/January-February-2021/Panter-Maritime-Militia/.

Melso, M. W. "Enhannced Network Seabasing (ENS): 'Prioritizing Surface Sustainment Capabilities.'" Master's thesis, Marine Corps University, 2004.

Mercogliano, Salvatore. "Turbo Activation: Ready, Set…sealift!" *gCaptain,* 2021. https://gcaptain.com/turbo-activation-ready-set-sealift/.

Mewbourne, Dee. "Assured Logistics in a Contested Environment." *Defense Transportation Journal* vol. 72, no. 6, 2016.

Military Sealift Command. "Ship Inventory." Accessed May 2, 2022. https://www.msc.usff.navy.mil/Ships/Ship-Inventory/.

National Security Council. *Indo-Pacific Strategy of the United States*. Washington, D.C.: The White House, 2022. https://www.whitehouse.gov/wp-content/uploads/2022/02/U.S.-Indo-Pacific-Strategy.pdf.

Popa, Christopher, et al. "Distributed Maritime Operations and Unmanned Systems Tactical Employment." Master's thesis, Naval Postgraduate School, 2018.

Smallberg, Michael. "Greater Efficiency through Total Fuel Consumption Analysis." *Proceedings – United States Naval Institute* vol. 146, no. 7, 2020.

Solomon, Jonathan. "Defending the Fleet from China's Anti-Ship Ballistic Missile: Naval Deception's Roles in Sea-Based Missile Defense." Master's Thesis, Georgetown University, 2011.

Sorenson, Christian. "Logistics in a Contested Environment: Network Analysis and Flow Optimizationn." Master's thesis, Naval Postgraduate School, 2020.

Vego, Milan. *The Commander's Estimate of the Situation and the Decision*. Newport, RI: U.S. Naval War College, 2019.

Vego, Milan. *The Objectives of Naval Warfare*. Newport, RI: U.S. Naval War College, 2015.

Vego, Milan. *Obtaining and Maintaining Sea Control*. Newport, RI: U.S. Naval War College, 2015.