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MASTER OF MILITARY STUDIES

INDIA'S LITTORAL SECURITY GAP: WHY A PARTNERSHIP IN DOCTRINE WITH
THE UNITED STATES MAKES SENSE

SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF MILITARY STUDIES

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Executive Summary

Title: India's Littoral Security Gap: Why a Partnership in Doctrine with the United States Makes Sense

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Thesis: Partnering in the development of littoral warfare doctrine provides the United States and India with a doctrine each currently lacks, allows for a shared understanding of the "why" within littoral operations, and provides an opportunity for the nations to share in an exchange as equals. The United States Marine Corps is the best service to lead the US participation due to its organic five domain design and its modest force structure.

Discussion: The littorals hold significant importance for the United States and India, albeit for different reasons. The United States military's desire to project power globally requires the ability to operate in the littorals. Growing threats to India's national security require an increased focus on defense requirements in the Indian Ocean Region. Furthermore, the nature of the littorals demands militaries understand how to conduct operations across the spectrum of conflict, regardless of a particular nation's preference in conducting operations. The presence of sizeable populations in the littorals, combined with its natural terrain, requires militaries conduct simultaneous operations in air, land, sea, space and cyberspace. While India made great strides during the past decade in the creation of joint doctrine, nothing in its possession addresses the complexities of a fight in the five domains. Furthermore, while the United States recently released operating concepts addressing the future littoral environment, it still lacks a comprehensive doctrine. Despite the apparent value of this partnership, two potential obstacles remain. First, these two nations possess a relationship filled with a history of diplomatic friction. Second, regardless of any history with the United States, India's primary diplomatic objective is to maintain its strategic autonomy.

Conclusion: The threats to security emanating from the littorals demand military attention. The United States and India share a gap, and the differing national emphasis on military operations actually benefits the development of this doctrine. As India looks to maintain its autonomy the United States must exercise prudence in approaching the endeavor. The United States Marine Corps provides the Indian military with a modestly sized partner that is also able to plan and operate in the five domains. Joining together in a partnership to fill a gap in littoral doctrine makes sense for both nations, and the Marine Corps provides a means to pursue this initiative.

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Preface

Littoral warfare doctrine will happen, whether it is written by a US-India partnership or not. It may exist as a single document, or as a collection of multiple doctrines which we use in the littorals. Either way it is coming. An underlying theme for this paper is simply recognizing the importance of relationships, and the value in developing new ones. You can always talk yourself out of doing something. The Commandant challenged Marines to think. I believe part of our thinking needs to involve talking ourselves into doing things, not out of them, if for no other reason than to attack our comfort zones and defeat complacency.

I thank my wife for her patience and support as I wrote this paper, my children for providing levity, and my parents' guidance years before I ever arrived at this point. Thanks to my brother Matty for helping with edits while skillfully pointing out what kind of a mental rock I am. I am also appreciative for the assistance and insight provided to me by my brother-in-arms Saurabh Misra, thanks for answering a thousand questions at midnight on a Sunday. I am grateful for the guidance and direction provided by Dr. Eric Shibuya as I worked through this paper, and for the recommendations from Dr. Jorge Benitez to strengthen the final product. And finally, to Brigadier Ravi Murugan, thank you for your guidance and patience as you responded to the queries of a confused Marine.

Introduction

As power shifts between nations and the proliferation of technology increases, governments face mounting threats to national security. The littorals represent an environment where these threats hold increasing importance. An estimated 75% of the world's population lives in the littorals, complicating the military options for future conflicts.¹ The United States (US) and India possess vast coastlines comprised of large population centers and powerful economies dependent upon maritime trade, leading to a shared interest in maritime security. Yet, the militaries of both nations lack littoral warfare doctrine.

The presence of civilians combined with the littoral's unique terrain requires simultaneous operations in the five domains.² The complexity of operating in multiple domains demands an effective joint force. In 2017, the United States Marine Corps (USMC) and United States Navy (USN) released a littoral operating concept recognizing these same points, but the US lacks an overall littoral doctrine. Operating concepts provide militaries with a valuable starting point for accomplishing operational and strategic objectives, but doctrine provides the foundation for the execution of operations.³ Doctrine provides the means to aggregate multiple related operating concepts together into a single source and outline the fundamental principles needed for success.⁴ Doctrine also allows militaries to address operating concepts either broadly or in detail. For example, the US military maintains Joint Publication (JP) 3-0 Operations as an all-encompassing doctrine for operations across the spectrum of conflict, but it also maintains publications with principles for specific types of operations such as JP 3-02 Amphibious Operations.⁵

By partnering in the development of doctrine the US and Indian militaries achieve two ends. First, they enable two nations with a historically limited relationship to strengthen their relationship by working as equals towards the same objective; building a foundation for future

relations. Second, developing doctrine enables the joint forces of both nations to explore the “why”, or purpose, of future littoral operations.⁶ Understanding the purpose benefits future operational design efforts.

In spite of the evidence pointing to the value of the littorals and the benefits of a partnership between the US and India on littoral doctrine, no efforts currently exist. At first, the absence of this effort seems to make sense. The US operating concepts view the littorals through the lens of power projection.⁷ India historically maintains a focus on defense against a land attack.⁸ Only after remembering that doctrine is the collection of related operating concepts does the value of the relationship become apparent. Advanced weapon systems and the geographic proximity of the littorals to India demands an understanding of how to project power in the littorals. Without this capability India risks ceding a staging point to their adversaries for attacks against the homeland. The littoral regions around India are too large to control physically. Conversely, the US’s focus on projecting power through operations like forcible entry still requires the ability to defend any terrain gained. During World War II, a major contributing factor to the Japanese defeat during the US island hopping campaign was Japan’s lack of a counter-landing capability.⁹ The US must devote the same attention to defense in the littorals as it does to offense if it is to avoid succumbing to the pitfalls of previous adversaries. The same traits that make India and the US so different provide the logical justification for their partnership in doctrine.

The following discussion begins with a brief synopsis of the littorals and the future of the environment. The paper then focuses heavily on India, highlighting the relevance of the littorals to India, Indian doctrine and the gaps facing the Indian military in a littoral fight with specific attention given to joint operations. This emphasis on India establishes the value of the littorals to India, and the justification for India’s future investment in this environment. The US is currently

pursuing this effort alone, potentially to its own detriment. For a partnership to emerge, the value of the littorals to India needs to be clear. The discussion then shifts to US operating concepts. While the US also lacks littoral doctrine, these concepts provide the framework for a future doctrine. To conclude the discussion the paper shows a shared understanding of the problem between the two nations and then discusses why a partnership in doctrine provides value to the US and India. The final pages provide steps for establishing the partnership, and the benefits available from the future exchange of ideas and training.

This paper does not address the India-Russia relationship in great depth. Russia and India maintain a close relationship, amplified by the decision in 2010 to define the relationship as a Special and Privileged Strategic Partnership.¹⁰ However, the relationships are shifting. In 2015, India and the US signed a 10-year defense framework agreement which specifically intends to develop capabilities for both militaries to use.¹¹ These developments include sensitive assets such as jet engines and aircraft carrier technology.¹² Based on this agreement, the Ministry of Defence stated in 2017 that the defense relationship between India and the US needs to be elevated.¹³ Furthermore, Russia recently started openly supporting Pakistan in certain political conflicts between India and Pakistan.¹⁴ This decision holds its own set of long term consequences. By combining the recent US-India defense agreement with changes in the diplomatic landscape, and the fact that maintaining strategic autonomy requires India to not favor one partner, a US-India partnership on doctrine appears logically acceptable. The challenges in the littorals provides this partnership with the best environment to focus the doctrine on.

The Littorals

The littorals are the landward and seaward portions of the coast in which forces based in both domains possess the capability to affect each other's operations. Current sensors and weapons

enable land, air, and sea forces to affect operations hundreds of miles into each domain. These advanced capabilities demand an operational recognition of the expanded coastal areas as a unified operating environment known as the littorals.¹⁵ The Indian Navy's (IN) doctrine reflects this same definition.¹⁶ The strength these air, land and sea forces bring to bear in their respective domains combined with the influence of space and cyberspace on today's operations, especially in heavily populated regions, requires militaries to recognize the importance of five domain operations in the littorals.

Amphibious operations demonstrate how the threats in the littorals demand militaries reevaluate their operational doctrine. The joint doctrines of the US and India define amphibious operations as the use of sea forces to project land forces ashore for the conduct of the land force's mission.¹⁷ The doctrines also both acknowledge that amphibious operations occur in the littorals; however, importantly they do not define amphibious operations as the only type of operations that occur in the littorals. Amphibious operations play a crucial role in the littorals as they provide the means to maneuver.¹⁸ This support for maneuver is only one aspect of littoral operations though. The broadness of the environment requires militaries to consider redefining their structures and terminology, with the specific understanding that littoral operations encompass more than power projection ashore.¹⁹ In addition to reconsidering administrative issues like terminology, the terrain and size of the littorals requires increasing the attention paid to warfighting principles like economy of force.

The distributed environment of the littorals demands militaries maximize the efficient use of forces and equipment. To conduct operations in this distributed environment, concepts like Expeditionary Advanced Base Operations (EABO) provide militaries with the ability to counter an adversary's sensors, conduct surveillance, or to refuel an aircraft.²⁰ These capabilities enable

success in high end operations like forcible entry and low-end operations such as humanitarian assistance disaster relief (HADR). As these capabilities address a complex environment, and span the spectrum of conflict, the importance of the joint force is apparent. Developing the knowledge and skills necessary to conduct joint operations in a complex environment requires a significant investment. For India, the littorals must represent an area worthy of the required investment.

India's Littoral Interests

India's label as a land power is accepted as a geographic reality.²¹ As a massive continental state, India possesses a landward focus. The countries most likely to threaten national security, China and Pakistan, share disputed land borders with India.²² Hegemony historically lasts for approximately 25 years before other nations begin to challenge the ruling power.²³ The US existed as a hegemon since the Cold War ended 27 years ago. Current popular opinion suggests China as the world's next hegemon, but first China must achieve regional hegemony, potentially posing a threat to India's national security.²⁴

China's rise implies a requirement for India to form alliances with other powers to counter Chinese actions, or to form a partnership with China. These implications hold little influence in India. The Government of India (GOI) traditionally adheres to a policy of strategic autonomy, preferring to remain distant from international disputes.²⁵ This does not mean India is fearful of conflict. The 1999 Kargil War with Pakistan demonstrated India's resolve to protect their national interests.²⁶ Furthermore, the nature of India's geopolitics dictates a constant preparation for conflict.

Yet, India remains cognizant of the importance of the sea domain. With one of the world's longest coastlines, and a powerful maritime trade industry, the importance of the Indian Ocean

Region (IOR) to national interests finds itself repeatedly referenced in Indian military doctrine.²⁷ India's adversaries share this recognition of the IOR's strategic value, and of the Asian seas in general. As the GOI strives to increase its economic growth and regional influence it finds itself forced to weigh in on regional disputes, steering a course for potential conflict with China. China currently claims a majority of the South China Sea as its exclusive territory.²⁸ This claim creates disputes with India's IOR neighbors such as Indonesia, as well as general disputes Asia-wide. These disputes possess a real potential for conflict. The maritime trade routes connect the IOR with the Pacific Ocean via the South China Sea. Therefore, once initiated, any conflict involving Asia's trade routes is likely to affect the IOR. Despite these challenges India maintains a strategic advantage via its control of the interior lines of communication to the IOR.²⁹ This advantage loses value though if the IN fails to operate effectively in the blue-water and the littorals.³⁰ Additionally, the region connecting the IOR and the Pacific Ocean consists of a considerably large littoral environment. The reality of India's geography requires a simultaneous investment in both blue-water and littoral development.

History and technological proliferation call into question India's future effectiveness in the littorals. Between 1987-1990, India conducted Operation Pawan in Sri Lanka against the Tamil Tigers.³¹ The Navy provided the Army forces forward support throughout the operation, but did so without significant maritime resistance. The technological advancements today allow even non-state actors to challenge every navy's ability to continuously support from sea in a contested environment. They also threaten the ability to safely disembark land forces. Without the ability to project power ashore against enemy territory a navy loses its ability to exploit opportunities.³²

Academics within India warn of the consequences when land powers attempt to reinvent themselves as sea powers, seen in the failures of early 1900's Germany and later with the Soviet

Union.³³ However, unlike Germany and the Soviet Union, India does not need to fight its way out of a blockaded Baltic Sea through geographic chokepoints. Additionally, India sees its historic land adversaries continuously advancing maritime capabilities. If left unchecked these advancements threaten the national security of India. China continues to build its undersea assets and uses this expanded capability to conduct maritime patrols to India's south and east.³⁴ In addition to increasing their own subsurface fleet, the Chinese reportedly agreed to submarine sales with Pakistan and Bangladesh.³⁵ Pakistan's continued improvement of the Navy reflects a conscious effort to improve their maritime capability since the early 2000's. In 2002, a conceptual goal for the Pakistan Navy included the ability to operate along the Indian eastern seaboard, and the ability to defeat Indian attempts to establish a blockade of Pakistan.³⁶

Aside from expanding their naval fleet, other Chinese actions demonstrate potential maritime threats to India. China continues to establish naval facilities and build islands throughout the Pacific and IOR.³⁷ These facilities enable China to protect the vulnerabilities of their trade avenues.³⁸ They also provide the ability to project naval power throughout Asia. The difficulty in sustaining these sites along extend lines of communication makes power projection impractical, but it is an option.³⁹ However, China understands overly aggressive actions in the IOR will receive a forceful response from India.⁴⁰

Suggesting India should only focus on its land borders while adversaries advance their maritime interests provides a false narrative. The military budget demonstrates the overarching importance of the land domain, but India continues to invest in maritime capability. Furthermore, the IN possesses the desire and the maritime strategy to establish themselves as the most powerful blue-water navy in the IOR.⁴¹ In 2005, the GOI agreed to purchase the *USS Trenton* from the US.⁴² The *USS Trenton* is a Landing Platform Dock (LPD), a ship used for amphibious

operations. The GOI decided on the purchase following a recent HADR mission in the Indian Ocean, and in recognition of trends related to amphibious warfare.⁴³ Demonstrating an intention to exist as a naval force with more than HADR response capability, the IN acquired the PJ-10 BrahMos anti-ship cruise missile(ASCM).⁴⁴ The PJ-10 provides the IN with a peerless ASCM, capable of defending India's interests against all adversaries.⁴⁵ In February of 2015, during a military exercise, the IN successfully launched a PJ-10 from a ship. The Ministry of Defence viewed this missile launch as a validation of the IN's concept of operations.⁴⁶

Outside of efforts to improve the IN, interactions with foreign partners further reinforces the GOI's recognition of the maritime domain. In 2003, India agreed to assume the maritime security mission for Mozambique, a role previously filled by China.⁴⁷ Then in 2005, following China's offer of naval assistance to Seychelles, the GOI donated an MK-3 patrol craft to the Seychelles Navy.⁴⁸ In 2007, the GOI finalized an agreement with Madagascar and operationalized a signals intelligence site in the island nation.⁴⁹ Through internal developments and external relations the GOI continuously demonstrated a commitment to improving maritime capability over the past two decades, laying the ground work for limited future power projection.

Even if India's preference for strategic autonomy limits future involvement in conflicts, the importance of the IOR requires India to have the ability to project power into the neighboring littorals. Projecting power across the five domains requires support from all the services. A joint operation of this nature benefits from the existence of doctrine to guide planning and execution.

Indian Doctrine

While US doctrine typically resides in the unclassified domain, Indian doctrine is often classified.⁵⁰ Therefore, this paper's discussion on Indian doctrine revolves around assumptions. Without access to its classified network there is no way to prove India lacks littoral doctrine.

However, unclassified documents allow for the analysis needed to reasonably conclude that it does not exist. The analysis also allows for assumptions regarding the unity of effort in India's joint force, or more directly, the gap facing the Indian military in joint interoperability. The following paragraphs provide a foundation for these assumptions, starting with India's joint doctrine.

The Indian military acknowledges the existence of multiple doctrines focused on joint operations.⁵¹ Access to these publications is limited, but two facts provide valuable context. First, the Indian military published most of the documents within the past ten years. Second, most of the documents were not updated but rather released for the first time.⁵² Validating doctrine requires rigorous testing through realistic training and exercises.⁵³ The initial release of multiple joint doctrines draws their validation into question, or at least when they were validated. The question of when they were validated is especially interesting considering the Ministry of Defence validated the IN's operating concept in 2015.⁵⁴ Finally, and most important to the argument at hand, the joint doctrines India possesses focus on operations conducted in up to three domains. While amphibious operations, air-land operations, and electronic warfare operations are important, a littoral doctrine needs to focus on integrating capabilities across five domains. Considering the relative newness of India's joint doctrines and the question of its validation, a partnership in doctrine for an environment as complex as the littorals appears justified. Luckily, the Joint Doctrine of the Indian Armed Forces (JDIAF) requires the military services to remain engaged in developing concepts and doctrine.

The Foundation of Indian Joint Doctrine

The JDIAF begins by affirming the Indian military's requirement to protect and preserve the values of the national constitution.⁵⁵ The document implies that protecting the territorial integrity

of the state is the most important national interest and is consistently at risk. The disputed land borders to the north, east and west require deterrent capabilities.⁵⁶ Yet, the document also acknowledges the importance of India's ocean boundary with the Indian Ocean. The IOR presents a significant source for growth and threats due to its impact on security, trade, and diplomacy. In recognition of the challenges approaching the nation from every direction the JDIAF requires a military prepared for the integrated application of the services in the pursuit of success in the air, land, and sea.⁵⁷ Furthermore, the doctrine stresses the importance of conducting joint training.

Joint training enables improved efficiency and allows military commanders to improve their abilities in the planning and execution of joint operations.⁵⁸ Failing to operate effectively as a joint force removes the force multiplier capability achieved in joint operations.⁵⁹ The achievement of joint interoperability rests in training. To maximize training value the JDIAF calls on the services to ensure a broad understanding of military history, doctrine, and concepts.⁶⁰ The Headquarters Integrated Defence Staff (HQ IDS), founded in 2001, provides the Indian military with a means to supervise the three services in their adherence to these joint requirements.⁶¹

The JDIAF lacks specific direction regarding terminology and processes, instead providing general guidance for the services. While decentralized control is important, too much latitude sometimes hinders efforts. Additionally, the document lacks any mention of the littoral environment, appearing to leave the definition of the littorals to the IN.

Indian Maritime Doctrine

India's maritime doctrine focuses on the requirements for a "blue-water" Navy.⁶² Declaring the doctrine's central concept as sea control, the document solidifies the value of a blue-water

force.⁶³ The JDIAF directs the IN to understand sea power as the sum of two separate concepts, sea control and sea denial.⁶⁴ Sea control requires the ability to use an assigned area of the sea for a defined period of time to achieve a specific purpose while denying an adversary use of the same area. Sea denial requires denying the adversary use of a sea area but not simultaneously controlling that area for one's own purposes.⁶⁵ To the IN, the aircraft carrier provides the best means to achieve sea control. This stems from the aircraft carrier's ability to link superior ordnance delivery capability via its organic air power, therefore making the aircraft carrier the best means to project naval power.⁶⁶

Despite this focus on the aircraft carrier and sea control, two aspects of the maritime doctrine demonstrate the IN's understanding to remain flexible for future maritime warfare. First, the doctrine provides an expanded definition of the sea control concept outlined in the JDIAF. In the expanded definition, the IN describes the difficulty in achieving sea control. The presence of neutrals in any conflict complicates the ability to control sea space in accordance with international law.⁶⁷ Second, despite its absence in the JDIAF, Indian maritime doctrine mentions the littorals repeatedly. The doctrine demonstrates a clear vision of the threats to sea control developing in the littorals.

In 2015 the IN released a maritime security strategy, re-emphasizing the value of the littorals. This document specifies primary and secondary areas of maritime interest.⁶⁸ In these lists, India announced a national interest in the oceanic waters ranging from western Africa to the international date line. More importantly, the document specifically included the littoral regions in each body of water as areas of national interest. The significance of the littoral regions ties to everything from trade impacts, to large Indian expatriate populations, to the local populations of

littorals themselves reminiscent of the IN's HADR success stories.⁶⁹ Despite the IN's emphasis on the importance of the littorals, its fellow services lack a similar conviction.

Indian Army Doctrine

The JDIAF acknowledges the existence of a 2010 IA doctrine, but internet search results for IA doctrine produce the 2004 version. The 2004 IA doctrine lacks a reference to littoral warfare, or even amphibious operations. However, it does acknowledge the need for the army to play a role in providing peace and stability to the IOR.⁷⁰ As the outdated version though, the document provides limited assistance towards understanding the current state of the IA. Analyzing the JDIAF and the works of Indian military theorists allows us to make educated assumptions about the sections of the 2004 version that the IA chose to update in 2010.

First, the HQ IDS released joint doctrine for amphibious operations in 2008 and air land operations in 2010. Both of these topics require the integration of land forces with the forces of either the sea or air domains. Based on the dates of the three documents and the mission of the HQ IDS, it is assumed that the 2010 IA addresses the littorals via amphibious operations as well as the integration of the three services capabilities in a joint fight. Second, the importance of the littorals developed into a more important issue for military theorists by 2010. The threats to India's security, and the requirements to protect its satellite territories, such as various islands in the littorals, requires the army to recognize the now supporting role it plays to future IN missions and objectives.⁷¹ In addition to improving interoperability with the IN, the 2010 release of Joint Doctrine for Air Land Operations implies changes in the 2010 IA doctrine regarding its relationship with the IAF. Luckily, the IAF doctrine is unclassified.

Indian Air Force Doctrine

The IAF doctrine lacks any mention of the littorals but it does dedicate three pages to maritime air operations. Conceding the IN's primary role in maritime operations, the document outlines the IAF's role in the sea domain.⁷² For the IAF, the highest authority controlling aviation assets in any domain remains an air force commander. Therefore, the IAF commander directs the prioritization of effort for IN aviation assets designed to assist the IN commander fighting at sea.⁷³ This centralized control of air operations reflects the JDIAF's requirement for the services to integrate their capabilities together as a joint force. However, a future littoral conflict potentially requires the simultaneous conduct of air operations over the Indian mainland, areas in and around the Bay of Bengal, and out in the blue-water. The decision to centralize control over all these operations needs to rest on the foundation of a detailed doctrine to ensure the commander at sea is not defeated due to the centralized control of aviation. This doctrine appears to exist in the Joint Doctrine for Maritime Air Operations, but without access to this doctrine there is no way to determine if it possesses the required flexibility for operations in the littorals.

The IAF also recognizes the threats from advanced of technologies requires a joint force able to provide complementary actions to achieve national objectives.⁷⁴ The overarching problem with the approach presented by the IAF is that it treats the aircraft carrier as part of the nation's aviation capability. The IN's doctrine bases its validation as a blue-water force on the capability of the aircraft carrier, implying the execution of maritime operations in a conflict involves the integration of maritime air, surface, and sub-surface forces. The IAF does not claim the carrier's aircraft as its own, but it does retain authority as the highest air commander. In the event of a conflict the services need to understand the process for prioritizing aviation missions, adjudicating target lists, or providing excess sorties. These types of issues are most likely defined

in the maritime air operations doctrine, and for army in the air land operations doctrine. As littoral warfare integrates all these domains together, a singular doctrine needs to exist incorporating the air, land, and sea aviation requirements.

The doctrine of the Indian Armed Forces demonstrates the potential for gaps in its joint operations and especially in the littorals. Yet, the various doctrines consistently recognize the need to operate as a joint force to achieve success in the future. The GOI created the HQ IDS to increase the effectiveness of the joint force. In the past ten years the HQ IDS made great strides in creating and releasing various joint doctrines. These doctrines focus on operations in three domains at best, with the littorals requiring success in five domains. Plenty of work remains for the HQ IDS to synchronize the joint and service doctrines with the requirements of developing threats if India hopes to achieve success during future conflicts.⁷⁵ While the Indian military recognizes the value of the littorals it faces significant gaps during the execution of future operations in this environment.

Joint Operations and the Value of Doctrine

Joint operations achieve a balance that individual services typically fail to reach during operations, but that balance is essential for success in the littorals.⁷⁶ The ability of the services to integrate together as a joint force for the achievement of an assigned mission maximizes operational effectiveness. Yet, while effectiveness increases, joint operations challenge the command and control structure. If the individual services hinder the command and control necessary for a joint effort, the advantage disappears. Doctrine provides a means to solve this dilemma, and thoroughly matured and tested doctrine provides the best method to achieve success during conflict.⁷⁷

The existence of any doctrine solves nothing without buy-in from the services. History suggests the Indian armed forces need more opportunities to work on issues of joint interoperability. During the 1999 Kargil War, a land-based border dispute, the Indian Army (IA) and Indian Air Force (IAF) repeatedly clashed over operational requirements. The IAF initially attempted to use their service's doctrine to avoid the conflict entirely.⁷⁸ After relenting to the IA's calls for support, the immediate loss of aircraft and a clear lack of training led to policies rendering the IAF's impact on the operation sub-optimal.⁷⁹ The limited effectiveness of the IAF led the IA to adopt a more self-reliant approach.⁸⁰ As the joint force faced obstacles in achieving its goals, the services defaulted to their own doctrine. In the Kargil War the IA and IAF managed to get away with failing as a joint force. In a littoral environment combining the sea, air, and land, failing to integrate as a joint force spells defeat.

The conflict between the services extends beyond operations. In the maritime domain, the relationship between the IN and IAF reveals more friction for the joint force. IAF doctrine acknowledges the IN's role in maritime air operations, but also declares the IAF as the commanding service for these operations. The IN appeared content with this role. Then in 2011, the IAF requested the procurement of amphibious aviation platforms to assist with maritime aviation operations.⁸¹ The request caught the IN by surprise and led to a public dispute between the services. These disputes display some friction that threatens the cohesion of the joint force.

These disputes also clash with the US littoral operating concepts, which outline the need for a cohesive joint force to achieve success in the littorals. For India, the littorals represent a strategic interest with impact on national security. While the GOI recognizes the importance of a joint force, it appears the military needs more opportunities to improve joint interoperability. Developing doctrine allows the Indian services to work together in an amicable environment,

while correcting shortfalls in the joint coordination processes. As the US littoral operating concepts demonstrate, success in the littorals depends upon a cohesive joint force.

United States Operating Concepts

The United States views littoral warfare as a significant element of the maritime domain. In 2016, the US Marine Corps (USMC) published the *Marine Corps Operating Concept* (MOC). The document focuses on the Marine Corps' role in future conflicts, with the littorals comprising only one of the environments likely to experience conflict.⁸² While not the focus of the concept, the littoral environment received heavy emphasis throughout the document. Then in 2017, the USMC and the USN published *Littoral Operations in a Contested Environment* (LOCE). The LOCE builds upon the lessons in the MOC and the USN's *A Cooperative Strategy for 21st Century Seapower*, which highlighted the impact of the littorals on sea control and sea denial operations.⁸³ These documents provide the most current insight into the US military's objectives and concerns in the littorals, demonstrating why this environment demands its own doctrine. Of the two concepts, the MOC deserves credit for generating the intellectual rigor currently supporting the development of littoral warfare doctrine.

Marine Corps Operating Concept

The MOC is intended to generate professional discussion about the requirements for the future battlefield.⁸⁴ The MOC addresses warfare as a whole. But other littoral warfare, other environments such as cyberspace received emphasis.⁸⁵ The MOC stresses the need for an integrated Naval Force if the US hopes to achieve maritime security, sea control, and power projection in the future.⁸⁶ While focused on the Naval Force, the MOC describes this force as an integral part of future combined or joint operations. Future fights simultaneously exist in the five

domains.⁸⁷ Success in future wars requires operating in these domains, as well as understanding how the domains overlap in an environment like the littorals.

The MOC emphasizes around five key drivers of change and five critical tasks related to these drivers. These five key drivers of change are: Complex terrain; Technology proliferation; Information as a weapon; Battle of signatures; and Increasingly contested maritime domain.⁸⁸ These key drivers present problems individually and collectively, and the littoral environment provides an example of the collective challenge. The shift in population density to the coastal regions increases the complexity of fighting in this environment. The proliferation of technology provides adversaries anti-access/area denial (A2/AD) weapon systems, threatening sea control and power projection. The growing presence of large populations in these environments increases the importance of controlling the narrative and emphasizes information's value as a weapon. As forces attempt to locate and destroy adversary forces, the A2/AD threat requires increased awareness to control battlefield signatures in the five domains. This complex environment holds the potential for the massive loss of life, with a contested maritime environment as the new normal.⁸⁹

This vision of the future environment drove the decision to assign five critical tasks to the Marine Corps: Integrate the Naval force to fight at and from the sea; Evolve the Marine Air-Ground Task Force (MAGTF); Operate with resilience in a contested-network environment; Enhance our ability to maneuver; and Exploit the competence of the individual Marine.⁹⁰ The MOC stresses the importance of integrated naval forces in the future combined/joint environment as the availability of advanced technology complicates the sea fight. The MAGTF must remain flexible in its structure and operational capability.⁹¹ One method to achieve success during this period of evolution rests in the continued emphasis on maneuver. The MOC specifically calls

upon the Marine Corps to develop a means to ensure littoral maneuver remains a capability available to the joint force.⁹² Finally, success ultimately relies on the individuals within the service. By developing and maximizing the technical, tactical, and leadership capabilities of the individuals in the Marine Corps, the service maximizes its ability to succeed in future conflicts.

Throughout the document, the littorals benefit from a great deal of emphasis, but the focal point focuses on achieving success in future conflicts. However, these future conflicts possess a high propensity for occurring in the littorals. The MOC identified the lack of littoral warfare doctrine as a deficiency in future conflicts. The USN and USMC released *Littoral Operations in a Contested Environment* to address this deficiency.

Littoral Operations in a Contested Environment

The LOCE builds upon the future threats facing naval forces in the littorals identified in MOC and the US Navy's *A Cooperative Strategy for 21st Century Seapower*. As the world's preeminent blue-water navy, the USN's *21st Century Strategy* covers much more of the future maritime environment than just the littorals but it repeatedly acknowledges the threats posed by the littorals to maritime operations. In the document's Foreword, signed by the Commandant of the Marine Corps, Chief of Naval Operations, and the Commandant of the Coast Guard, the three leaders single out the threat posed by the littorals to maritime operations.⁹³ Building upon the momentum generated by the MOC and the *21st Century Strategy*, the LOCE establishes a framework to guide future efforts aimed at the littoral threat.⁹⁴

The LOCE is similar to the MOC in that it lacks prescription or directives. The document is a concept designed to guide military thinkers. The LOCE states "Following this rigorous testing and refinement process, the ideas determined to have merit will generate changes to doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy..."⁹⁵

The LOCE recognizes the US military's gaps in littoral warfare doctrine, furthermore it emphasizes the need to develop the doctrine to address these gaps.

The LOCE's review of littoral warfare discusses two areas of interest with potential applicability for a future US/India partnership. The first area of interest addresses the immediate problem in the littorals. A lack of understanding regarding unity of effort exists among the naval forces. Recent operations required US Navy and Marine forces to operate separately from one another.⁹⁶ This decision, while beneficial to the operations at hand, denied the Navy and Marine forces opportunities to train and refine the skills necessary to operate as an effective integrated force.⁹⁷ As both the MOC and the LOCE list integrated and effective naval forces as essential for success in the littorals, this exposes a correctable deficiency.

The second area of interest for potential US and India efforts involves the conduct of littoral exercises. Exercises assist in achieving progress towards operational success. They also provide militaries with the ability to test joint interoperability. For example, as naval forces strive to execute operations in the littorals they must determine the best way to integrate Navy and Marine capabilities.⁹⁸ The integration of these capabilities holds implications for the design of command and control procedures. Conducting repeated exercises in the littorals reaffirms the effectiveness of the command and control process, and the operational employment of forces and equipment. Furthermore, realistic exercises provide the best means to test personnel, equipment, concepts, and doctrine in the most stressful conditions short of combat.⁹⁹ Realistic exercises also assists the different focuses with India's eyes towards national defense and the US's on power projection like forcible entry. Unlike the conflicts that arise between exercising nations seeking to achieve the same objectives, the difference in operational emphasis between India and the US allows for valuable flexibility in both executing the exercise and in planning the next iteration.

The development of doctrine requires realistic testing through exercises. This does not mean nations participating in the doctrine's development need to conduct bilateral exercises. As long as an open exchange of the exercise's results occurs the two countries maintain the ability to jointly participate in the doctrine's development. The countries need not limit themselves to large scale exercises either. Tabletop exercises, command post exercises, and wargames provide a means to exercise a concept without involve large force numbers. Regardless of future exercise development, a partnership of this nature occurs because the parties involved share a common recognition of a problem. Despite the many differences between the US and India, the doctrine and operating concepts of the two nations highlight similar predictions about future conflicts, as well as gaps in capability and planning.

Sharing a Problem

At this point, the greatest obstacles to a combined effort on littoral doctrine resides in India's focus of territorial border disputes, and the diplomatic preference for strategic autonomy. Both of these issues present smaller roadblocks towards a future relationship than one might assume. While most of its doctrine focuses on threats to the territorial borders, the continued recognition of the sea in the doctrine demonstrates a national vision beyond the land. However, future funding for maritime based issues remains a problem. The IN receives the least amount of money between the three services.¹⁰⁰ Luckily, developing doctrine presents a low-cost opportunity for advancing military readiness, a viable option in the face of limited finances. Additionally, as a joint force problem, cost sharing further alleviates the financial burden.

The issue of infringing upon India's strategic autonomy also lessens with the proper context. India's desire for strategic autonomy revolves around diplomatic positions, and less around military engagements. The Indian armed forces routinely engage in exercises with various

militaries from around the globe. The Indian Ministry of Defence describes these exercises as valuable demonstrations of the military's "professionalism globally and provide valuable exposure to its troops."¹⁰¹ The senior levels of government clearly feel India's autonomy remains preserved during military engagements.

The opinions of senior leaders directly impact this endeavor. The Indian preference to consider doctrine as classified presents a challenge, but not an insurmountable obstacle. The US routinely studies its military doctrine with foreign partners. The GOI simply needs to determine an acceptable comfort level and set boundaries prior to writing their document. Before making these concessions though, both nations need to agree that the littoral threat justifies the investment.

Why Littoral Doctrine

Both nations share an understanding of how the littorals threatens achievement of sea control. The IN's doctrine acknowledges the future challenges to sea control. The IN's review of littoral warfare also acknowledged the threats to ships presented by advanced land based weapon systems.¹⁰² This reflects the sentiments of the LOCE and the MOC which call for unity of effort and better integration among the naval forces to achieve sea control in the littorals. The MOC also stressed the requirement to maneuver in the littorals no matter the threat.¹⁰³

Additionally, the US concepts emphasize the success of the naval force rests in its ability to integrate with the larger joint fight. Joint capability carries an equal amount of emphasis in the Indian doctrine. In the JDIAF, joint interoperability provides the force multiplier upon which national security rests.¹⁰⁴ This theme repeats throughout the doctrine of each military service. India's clear recognition of the importance of the littorals and its commitment to joint operations

answers the question of why it need to invest in the littorals. That answer comes from the value of joint operations.

The JDIAF demands a military capable of conducting joint operations to achieve success in the future. The history of conflict between the services in the pursuit of operational success supports the need for a joint doctrine to assign responsibility in the littorals. Operations in the littoral environment simultaneously involves the five domains, demanding the unified effort of a joint force. The strategic importance of the IOR and its littorals, combined with the environment's requirement for joint interoperability justifies the investment in littoral doctrine.

Why Partner with the USMC

With the GOI committing resources towards this investment it needs to know, why make it a combined effort with the USMC? First, the partnership aligns with annual reports from the Ministry of Defence advocating for the maintenance of external relationships. Additionally, linking with a naval force aligns with previous Indian inclinations for the creation of maritime partnerships. Admiral Arun Prakash, former Chairman of the Chiefs of Staff Committee, personally advocated for the establishment of an Asian Maritime Partnership. This partnership provided a modest naval force of likeminded nations in a combined cause to ensure security of the sea.¹⁰⁵ Although a contextually different type of partnership, an effort with the US still involves likeminded nations addressing an issue of maritime security. And while some interactions with the US lack in simplicity, the US Marine Corps presents a modest force for the Indian military to engage in this partnership with.

With similar concerns regarding the developing threats in the littorals, the US makes sense as a partner because it too lacks an overall littoral warfare doctrine. The LOCE provides the partners with starting points to engage in the exchange of ideas, with concepts like EABO. The

public availability of the operating concepts enable the armed forces to start intellectually debating the concepts while the governments work through sensitivities involving classification issues. Additionally, providing a solid foundation for the doctrine's starting point is the rich US history in a specific aspect of littoral warfare, amphibious operations. This historical knowledge receives further support as the US dedicates a military service to conducting and improving amphibious operations, the United States Marine Corps.

As a representative for the US, the USMC is the partner of choice because of its capabilities and size. The design of the Marine Corps allows it to represent a joint force in planning and small exercises, especially with its organic 5th generation aircraft, fast attack aircraft, and special forces capabilities. While able to operate in all the domains, in a major combat operation the Marine Corps cannot replace the entire joint force. This limitation acts in favor of a US/India venture. The historic friction between the countries, and India's aversion to anything resembling balance-of-power politics, demands a prudent approach by the US. Limiting the size and scope of the forces participating in this endeavor enables prudence. The USMC provides a force capable of developing doctrine related to the five domains, with internal manpower limitations preventing the venture from inflating to a politically unpalatable size. Furthermore, as part of the Department of the Navy, the USMC and USN maintain a strong relationship. As demonstrated in their combined effort on the LOCE, an endeavor this important to sea control undoubtedly receives the full support of the whole USN/USMC team.

The most valuable contribution gained from partnering with the USMC and USN team in developing littoral doctrine comes from their ability to test it. The successful development of doctrine requires its repeated, realistic testing in training. Success depends on testing the doctrine across the spectrum of conflict, from high-intensity operations to operations short of war.¹⁰⁶ The

Navy/Marine Corps team inherently possesses the ability to effectively operate across the five domains. This provides a single point of contact for developing and testing the doctrine, and provides continuity for the US's participation.

Conclusion

The maturation of relations between India and the US requires a continued effort to develop trust. Each exists as a regional power in their own right though, therefore the development of a positive relationship benefits all. As a nation secure in its strategic autonomy, India possesses the decision-making authority for initiating this partnership with the US. However, the recent actions of India's adversaries show a growing interest in the Indian Ocean Region. Placing too much fear in the development of external relationships potentially works against India's interests.

The development of littoral warfare doctrine provides a cheap, amicable means to expand the relationship. Both nations lack this doctrine but acknowledge the importance of its creation. The United States Marine Corps' size, capability, and recent efforts in operational concepts like the LOCE and MOC exhibit why partnering with the USMC makes sense. Furthermore, the US Navy/Marine Corps team provides the Indian armed forces with a consistent partner to share in the growth experienced during the doctrine's testing.

By participating in the doctrine from the beginning the two countries also share in an exploration of the "why". In military planning, the "why" defines the purpose for planners. The value of sharing in exploration of the why is priceless for future operational design, and this exploration takes place on equal footing. Given their historic friction, it is impossible to overstate the value of strengthening the relationship on a foundation of equality.

With the world's population shifting to the coastal regions the littorals appear primed for a continuous presence in future conflicts. The question for the world's militaries changes from

“will there be a fight in the littorals” to “are you prepared for a fight in the littorals?” The US and India face similar gaps answering this question. As India balances budgets, borders, and its growing world influence, the United States Marine Corps makes the most sense as a partner during the search for a littoral solution.

Acronyms

A2/AD – Anti-access/Area Denial

ASCM – Anti-ship Cruise Missile

EABO – Expeditionary Advanced Base Operations

GOI – Government of India

HADR – Humanitarian Assistance Disaster Relief

HQ IDS – Headquarters Integrated Defence Staff

IA – Indian Army

IAF – Indian Air Force

IN – Indian Navy

IOR – Indian Ocean Region

JDIAF – Joint Doctrine of the Indian Armed Forces

JP – Joint Publication

LPD – Landing Platform Dock

LOCE – Littoral Operations in a Contested Environment

MAGTF – Marine Air-Ground Task Force

MOC – Marine Corps Operating Concept

US – United States of America

USMC – United States Marine Corps

USN – United States Navy

¹ Integrated Headquarters, Ministry of Defence (Navy), *Indian Maritime Doctrine*, Indian Navy Naval Strategic Publication 1.1 (Sivakasi: Standard Press, 2015), 48.

² Headquarters US Marine Corps. *The Marine Corps Operating Concept: How an Expeditionary Force Operates in the 21st Century* (Washington, DC: Headquarters US Marine Corps, Sep 2016), 4.

Land, sea, air, space, and cyberspace.

³ Milan Vego, "Littoral Warfare: Characteristics, Operational Concepts and Technical Requirements." *Naval Forces* 29, no. 4 (2008): 12.

"In the proper understanding of the term, an operational concept provides an outline on how to employ one's forces for accomplishing operational and strategic objectives... describes in general terms how one's naval combat arms should be deployed, employed and sustained in the course of accomplishing their operational and strategic objectives."

⁴ Ibid.

"Experience shows that it is not a good idea to have a single operational concept because that will restrict the number of options in the employment of one's combat forces. Hence, several operational concepts should be part of any sound operational doctrine. A service doctrine for the employment of one's naval forces in a high-intensity conflict should include operational concepts for conducting major naval operations against enemy fleet, and attack on the enemy's maritime trade and defence/protection of friendly maritime trade."

⁵ <http://www.jcs.mil/Doctrine/Joint-Doctrine-Pubs/3-0-Operations-Series/>

⁶ Joint Chiefs of Staff, *Joint Planning*, JP 5-0 (Washington, DC: Joint Staff, 16 June 2017), V-20.

⁷ Department of the Navy, "Littoral Operations in a Contested Environment." (2017), 5.

⁸ Varun Sahni, "India and the Asian Security Architecture." *Current History* 105, no. 690 (April 2006): 166.

⁹ Williamson Murray, "Strategic Bombing: The British, American, and German Experiences," in *Military Innovation in the Interwar Period*, ed. Williamson Murray and Allan R. Millett (New York: Cambridge University Press, 1996), 91.

¹⁰ "India-Russia Relations", updated May 2017,

http://www.mea.gov.in/Portal/ForeignRelation/India_Russia_May.pdf.

¹¹ Jim Garamone, "U.S., India Sign 10-Year Defense Framework Agreement", *Department of Defense News: Defense Media Activity*, last modified June 4, 2015,

<https://www.defense.gov/News/Article/Article/604775/>

¹² Ibid.

¹³ Ministry of Defence, Government of India, Annual Report 2016-2017, (2017): 174,

<https://mod.gov.in/documents/annual-report>

¹⁴ Rajesh Soami, "Has Russia Lost Patience with India", *The Diplomat*, last modified March 2, 2018, <https://thediplomat.com/2018/03/has-russia-lost-patience-with-india/>

¹⁵ Department of the Navy, "Littoral Operations in a Contested Environment." (2017), 3.

¹⁶ Integrated Headquarters, Ministry of Defence (Navy), *Indian Maritime Doctrine*, Indian Navy Naval Strategic Publication 1.1 (Sivakasi: Standard Press, 2015), 79.

¹⁷ The United States definition found in:

Joint Chiefs of Staff, *Amphibious Operations*, JP 3-02 (Washington, DC: Joint Staff, 18 July 2014), I-1.

"An amphibious operation is a military operation launched from the sea by an amphibious force (AF) to conduct landing force (LF) operations within the littorals. The littorals include those land

areas (and their adjacent sea and associated air space) that are predominantly susceptible to engagement and influence from the sea. Amphibious operations require the unique ability to operate across air, land, and sea.”

The Government of India definition found in:

Headquarters Integrated Defence Staff, *Joint Doctrine Indian Armed Forces*, JP 01 (New Delhi: 53 Printing Press, E-in-C’s Branch, April 2017), 29.

“Strategic payoffs in a conflict will be predominantly influenced through results of action on land. This is achieved jointly with other elements of National and Military power. Amphibious operations are Joint Military operations wherein land power is projected ashore from the sea. Amphibious operations may be conducted in order to capture or re-capture territories, obtain a site for an advance naval base or air base, deny the use of an area or facilities like a port to the enemy, further land operations from ashore, or to show presence.”

¹⁸ Headquarters US Marine Corps. *The Marine Corps Operating Concept: How an Expeditionary Force Operates in the 21st Century* (Washington, DC: Headquarters US Marine Corps, Sep 2016), 20.

¹⁹ Department of the Navy, “Littoral Operations in a Contested Environment.” (2017), 6.

“The word “littoral” was specifically chosen to frame the content in a manner that is much broader than just amphibious operations. The CNO and CMC endorsed the consensus position to explore a more integrated application of Navy and Marine Corps capabilities in operations on and from the sea. This included considering new, scalable models of command and control unconstrained by current force constructs and terminology.”

²⁰ Department of the Navy, “Littoral Operations in a Contested Environment.” (2017), 13.

²¹ Varun Sahni, “India and the Asian Security Architecture.” *Current History* 105, no. 690 (April 2006): 166.

²² *Ibid.*

²³ Varun Sahni, “India and the Asian Security Architecture.” *Current History* 105, no. 690 (April 2006): 164. “The history of the sovereign state system would suggest that hegemony is a relatively rare condition, as Christopher Layne has shown: since 1648, only France under Louis XIV and Victorian Britain achieved a state of unmatched power akin to that which the United States enjoys today. History also tells us that once attained, hegemony lasts about 25 years before other powers rise, singly or in coalitions, to challenge the hegemonic power.”

²⁴ *Ibid.*

²⁵ *Ibid.*

²⁶ Iskander Rehman, “India’s Aspirational Naval Doctrine.” In *The Rise of the Indian Navy: Internal Vulnerabilities, External Challenges*, ed. Harsh V. Pant (Location : Publisher, Year), 63.

²⁷ Headquarters Army Training Command, *Indian Army Doctrine*, (Shimla: Headquarters Army Training Command, October 2004), 7.

²⁸ David Stanway, “China Say US Warship Violated its South China Sea Sovereignty,” *Reuters.com*, January 20, 2018, <https://www.reuters.com/article/us-china-us-sovereignty/china-says-u-s-warship-violated-its-south-china-sea-sovereignty-idUSKBN1F9088>.

²⁹ Harsh V. Pant, “India in the Indian Ocean: A Mismatch Between Ambitions and Capabilities?.” In *The Rise of the Indian Navy: Internal Vulnerabilities, External Challenges*, ed. Harsh V. Pant (Location : Publisher, Year), 129.

³⁰ Ranjit B. Rai, “Indian Maritime Doctrine and Fleet Operation in the Indian Ocean.” *Naval Forces* 29, special issue Indian Navy – Today and Tomorrow (2008): 18.

³¹ *Ibid.*, 21

³² Milan Vego, “Two Sides of the Same Coin: Littoral Warfare and Expeditionary Warfare.” *Naval Forces* 29, no. 5 (2008): 19.

³³ Varun Sahni, “India and the Asian Security Architecture.” *Current History* 105, no. 690 (April 2006): 166.

³⁴ Sarosh Bana, “India’s Quest for Undersea Capabilities.” *Naval Forces* 36, no. 1 (2015): 7.

³⁵ Sergei DeSilva-Ranasinghe, “The Politics of Deterrence – Pakistan’s Naval Modernisation Programme.” *Naval Forces* 33, no. 5 (2012): 92.

³⁶ Ibid.

³⁷ Harsh V. Pant, “India in the Indian Ocean: A Mismatch Between Ambitions and Capabilities?.” In *The Rise of the Indian Navy: Internal Vulnerabilities, External Challenges*, ed. Harsh V. Pant (Location : Publisher, Year), 128.

³⁸ Ibid., 127.

³⁹ Ibid., 129.

⁴⁰ James R. Holmes, “The US-India Naval Cooperation: Moving Beyond Rhetoric.” In *The Rise of the Indian Navy: Internal Vulnerabilities, External Challenges*, ed. Harsh V. Pant (Location : Publisher, Year), 150.

⁴¹ Ranjit B. Rai, “Indian Maritime Doctrine and Fleet Operation in the Indian Ocean.” *Naval Forces* 29, special issue Indian Navy – Today and Tomorrow (2008): 18.

⁴² Gurpreet S. Khurana, “The Indian Navy's Amphibious Leap: 'With A Little Help From America',” *Institute for Defence Studies and Analyses* (2006):

https://idsa.in/idsastrategiccomments/TheIndianNavysAmphibiousLeap_GSKhurana_030406.

⁴³ Ibid.

⁴⁴ Edward Lundquist, “Anti-Ship Missiles: Finding the Right Fit, Form and Function for Fighting.” *Naval Forces* 36, no. 2 (2015): 34.

⁴⁵ Ibid.

⁴⁶ Ibid.

⁴⁷ Keith Jacobs, “The Indian Navy: Emerged Regional Naval Force.” *Naval Forces* 29, no. 1 (2008): 53.

⁴⁸ Ibid.

⁴⁹ Ibid.

⁵⁰ Integrated Headquarters, Ministry of Defence (Navy), *Ensuring Secure Seas: Indian Maritime Security Strategy*, Indian Navy Naval Strategic Publication 1.2, (New Delhi: FACET Design, October 2015), 63.

⁵¹ Headquarters Integrated Defence Staff, *Joint Doctrine Indian Armed Forces*, JP 01 (New Delhi: 53 Printing Press, E-in-C’s Branch, April 2017), 66.

Joint Doctrine for Amphibious Operations, Joint Doctrine for Special Forces Operations, Joint Doctrine for Maritime Air Operations, Joint Doctrine for Sub-Conventional Operations, Joint Doctrine for Electronic Warfare, Joint Doctrine for Air Land Operations, Joint Information Warfare Doctrine, Tri-Service C4I2SR Doctrine

⁵² Ministry of Defence, Government of India, *Annual Report 2008-2009*, (2009): 13, <https://mod.gov.in/documents/annual-report>

⁵³ Milan Vego, “Littoral Warfare: Characteristics, Operational Concepts and Technical Requirements.” *Naval Forces* 29, no. 4 (2008): 12.

⁵⁴ Edward Lundquist, “Anti-Ship Missiles: Finding the Right Fit, Form and Function for Fighting.” *Naval Forces* 36, no. 2 (2015): 34.

⁵⁵ Headquarters Integrated Defence Staff, *Joint Doctrine Indian Armed Forces*, JP 01 (New Delhi: 53 Printing Press, E-in-C's Branch, April 2017), 2.

⁵⁶ *Ibid.*, 7.

⁵⁷ *Ibid.*, 44.

⁵⁸ *Ibid.*

⁵⁹ *Ibid.*

⁶⁰ *Ibid.*

⁶¹ Ministry of Defence, Government of India, *Annual Report 2016-2017*, (2017): 9, <https://mod.gov.in/documents/annual-report>

⁶² Integrated Headquarters, Ministry of Defence (Navy), *Indian Maritime Doctrine*, Indian Navy Naval Strategic Publication 1.1 (Sivakasi: Standard Press, 2015), 15.

⁶³ *Ibid.*, 125.

⁶⁴ Headquarters Integrated Defence Staff, *Joint Doctrine Indian Armed Forces*, JP 01 (New Delhi: 53 Printing Press, E-in-C's Branch, April 2017), 24.

⁶⁵ *Ibid.*

⁶⁶ Integrated Headquarters, Ministry of Defence (Navy), *Indian Maritime Doctrine*, Indian Navy Naval Strategic Publication 1.1 (Sivakasi: Standard Press, 2015), 125.

⁶⁷ *Ibid.*, 77.

⁶⁸ *Ibid.*, 32.

“The primary areas of interest include: India’s coastal areas and maritime zones, including coastline, islands, internal sea waters, territorial waters, contiguous zone, EEZ, continental shelf and the South-West Indian Ocean including island nations therein; the Arabian Sea, Bay of Bengal, Andaman Sea, and their littorals; the Persian Gulf and its littoral, which is home to more than seven million expatriate Indians; the Gulf of Oman, Gulf of Aden, Red Sea, and their littoral regions; the East Coast of Africa littoral regions; and the choke points leading to, from and across the Indian Ocean and their littorals. The secondary areas of interest include: South-East Indian Ocean, including sea routes to the Pacific Ocean and littorals; South and East China Seas, Western Pacific Ocean, and their littorals; Southern Indian Ocean Region, including Antarctica; Mediterranean Sea, West Coast of Africa, and their littoral regions; and other areas of national interest based on considerations of Indian diaspora, overseas investments and political relations.”

⁶⁹ Integrated Headquarters, Ministry of Defence (Navy), *Ensuring Secure Seas: Indian Maritime Security Strategy*, Indian Navy Naval Strategic Publication 1.2, (New Delhi: FACET Design, October 2015), 99.

⁷⁰ Headquarters Army Training Command, *Indian Army Doctrine*, (Shimla: Headquarters Army Training Command, October 2004), 6.

⁷¹ Harinder Singh, “India’s Emerging Land Warfare Doctrines and Capabilities”, rev.(working paper, S. Rajaratnam School of International Studies Singapore, 2010), 8, available online at: <https://www.rsis.edu.sg/wp-content/uploads/rsis-pubs/WP210.pdf>

⁷² Indian Air Force Air Headquarters, *Basic Doctrine of the Indian Air Force 2012* (New Delhi: Indian Air Force Air Headquarters, 2012), 66.

⁷³ *Ibid.*, 68.

⁷⁴ *Ibid.*, 113.

⁷⁵ Harinder Singh, “India’s Emerging Land Warfare Doctrines and Capabilities”, rev.(working paper, S. Rajaratnam School of International Studies Singapore, 2010), 9, available online at: <https://www.rsis.edu.sg/wp-content/uploads/rsis-pubs/WP210.pdf>

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- ⁷⁶ Milan Vego, "Littoral Warfare: Characteristics, Operational Concepts and Technical Requirements." *Naval Forces* 29, no. 4 (2008): 11.
- ⁷⁷ *Ibid.*, 12.
- ⁷⁸ Marcus P. Acosta, "High Altitude Warfare: The Kargil Conflict and the Future." (master's thesis, Naval Post Graduate School, 2003), 58.
- ⁷⁹ *Ibid.*
- ⁸⁰ *Ibid.*, 44.
- ⁸¹ Shiv Aroor, "After IAF, Navy Now Wants Amphibian Aircraft." *Livefist Defence*, January 24, 2011, <https://www.livefistdefence.com/2011/01/after-iaf-navy-now-wants-amphibian.html>
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- ⁸⁵ *Ibid.*, 4.
- ⁸⁶ *Ibid.*
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- ⁸⁸ *Ibid.*, 5.
- ⁸⁹ *Ibid.*, 7.
- ⁹⁰ *Ibid.*, 10.
- ⁹¹ *Ibid.*, 13.
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- ⁹³ Department of the Navy, "A Cooperative Strategy for 21st Century Seapower, March 2015, iii.
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- ⁹⁵ *Ibid.*
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