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PHILIPPINE NAVY MARITIME SITUATIONAL AWARENESS SYSTEM: CURRENT SITUATION, GAPS, AND POTENTIAL ROLE OF MARITIME SPECIAL OPERATIONS FORCES

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THESIS

PHILIPPINE NAVY MARITIME SITUATIONAL AWARENESS SYSTEM: CURRENT SITUATION, GAPS, AND POTENTIAL ROLE OF MARITIME SPECIAL OPERATIONS FORCES

by

Joel V. Cabigon

December 2020

Thesis Advisor:	Douglas A. Borer
Second Reader:	Timothy J. Doorey

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13. ABSTRACT (maximum 200 words)

The Philippines needs a comprehensive maritime domain awareness (MDA) capability to counter increased state and non-state maritime threats. One of the goals of the Philippine military modernization program is to improve maritime situational awareness through the Philippine Navy Maritime Situational Awareness System (PNMSAS). The primary aim of this research is to understand the current status of the PNMSAS, the gaps, and the potential role of maritime special operations forces in enhancing the Philippines' maritime situational awareness. This qualitative research utilizes data gleaned from government documents and key informant interviews, as well as information obtained from published literature. The Philippine Navy has undertaken several initiatives to date. These include the establishment of new coast watch stations and the upgrading of existing ones, and the procurement of new naval platforms that can augment information collection for maritime situational awareness. The Philippines, however, is hampered by scant resources and the long-term delivery of acquired land-based and mobile sensors, and thus needs to look for a cost-effective information collection system that does not depend on expensive technology alone. This thesis examines the potential role of maritime special operations forces as a low cost/low technology solution that will augment existing initiatives and enhance the Philippine Navy's maritime domain awareness capability.

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requirements for the degree of

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The Philippines needs a comprehensive maritime domain awareness (MDA) capability to counter increased state and non-state maritime threats. One of the goals of the Philippine military modernization program is to improve maritime situational awareness through the Philippine Navy Maritime Situational Awareness System (PNMSAS). The primary aim of this research is to understand the current status of the PNMSAS, the gaps, and the potential role of maritime special operations forces in enhancing the Philippines' maritime situational awareness. This qualitative research utilizes data gleaned from government documents and key informant interviews, as well as information obtained from published literature. The Philippine Navy has undertaken several initiatives to date. These include the establishment of new coast watch stations and the upgrading of existing ones, and the procurement of new naval platforms that can augment information collection for maritime situational awareness. The Philippines, however, is hampered by scant resources and the long-term delivery of acquired land-based and mobile sensors, and thus needs to look for a cost-effective information collection system that does not depend on expensive technology alone. This thesis examines the potential role of maritime special operations forces as a low cost/low technology solution that will augment existing initiatives and enhance the Philippine Navy's maritime domain awareness capability.

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LIST OF ACRONYMS AND ABBREVIATIONS

AADS	Active Archipelagic Defense Strategy
AFP	Armed Forces of the Philippines
AIS	Automatic Identification System
ASEAN	Association of Southeast Asian Nations
CCG	Chinese Communist Coast Guard
CCP	Chinese Communist Party
COP	Common Operating Picture
EEZ	Exclusive Economic Zone
FONOP	Freedom of Navigation Operations
HUMINT	Human Intelligence
LMD	Littoral Monitoring Detachment
LMS	Littoral Monitoring Stations
MDA	Maritime Domain Awareness
MRIC	Maritime Research Information Center
MSA	Maritime Situational Awareness
MSAC	Maritime Situational Awareness Center
NCWS	National Coast watch System
NICTC	Naval Information and Communication Technology Center
PAFMM	People's Armed Forces Maritime Militia
PLAN	People's Liberation Army Navy
PN	Philippine Navy
PNMSAS	Philippine Navy Maritime Situational Awareness System
SCS	South China Sea
SIGINT	Signal Intelligence
UNCLOS	United Nations Convention on the Law of the Sea

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Finally, to my Almighty God, you have given me the strength and fortitude to keep pushing on in this race called life even though I keep on stumbling. I dedicate this simple written work for your glory!

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I.   INTRODUCTION

A.   BACKGROUND

The Republic of the Philippines is an archipelagic sovereign state in Southeast Asia with 7,641 islands[1] and a total maritime area of 586,210 square nautical miles. Surrounding the archipelago are three central water bodies: the Philippine Sea in the west, the Sulu-Celebes sea in the south, and the Pacific Ocean in the east. Due to its fragmented topography, the Philippines has one of the longest coastlines globally, spanning about 10,850 miles. The Philippines' maritime domain also bears geopolitical, military, and economic significance. Maritime Domain refers to "all areas and things of, on, under, relating to adjacent to, or bordering on a sea, ocean, or other navigable waterway, including all maritime-related activities, infrastructure, and people, cargo, and vessels, and other conveyances."[2] The Philippines' archipelagic makeup and location have a distinct strategic advantage of a central position and a good base for military operations. One of the best shipping routes from the South China Sea (SCS) to the Pacific Ocean passes through the Philippine archipelago. Serving as a regular transit area of foreign-registered vessels, the Philippines accommodates a high volume of marine traffic. The Philippines is also a part of the Coral Triangle, a center of marine biodiversity that yields a rich reserve of marine resources. To the east of Luzon island is the Philippine Rise,[3] with a span of 24.4 million hectares. This unexplored region shows promising natural gas deposits and minerals essential in the production of steel. However, despite the numerous advantages and benefits the country is reaping from its unique disposition and formation, growing multifaceted challenges continue to beset the country. These challenges include preserving sovereignty over the country's waters, manifestations of maritime terrorism, increasing maritime security threats, and various maritime violations such as foreign vessel intrusion, illegal

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[1] Deped Tambayan, "There Are 7,641 Islands in the Philippines," *Deped Tambayan* (blog), accessed October 14, 2020, https://www.depedtambayanph.net/2019/10/there-are-7641-islands-in-philippines.html.

[2] U.S. Department of Homeland Security, "National Strategy for Maritime Security," last modified May 8, 2019, https://www.dhs.gov/national-plan-achieve-maritime-domain-awareness.

[3] Formerly known as Benham Rise. Source: Executive Order No. 25 s. 201, "Executive Order No. 25 s. 2017" (2017), https://www.officialgazette.gov.ph/2017/05/16/executive-order-no-25-s-2017/.

fishing, trafficking, smuggling, and piracy. Having extensive and complex maritime challenges, the Philippines needs to have a robust, efficient, and dependable navy monitoring the maritime domain.

Maritime Domain Awareness (MDA) is defined as "the effective understanding of any activity associated with the maritime environment that could impact the security, safety, economy or environment."[4] Achieving MDA is critical for maritime security, especially in an archipelagic and maritime nation like the Philippines.[5] It is also a common understanding that the foundation of maritime security is situational awareness. Situational awareness is achieved by gathering timely and relevant information, establishing a reliable database and analysis, and rapidly disseminating to forces able to act on the MDA information. Maritime domain awareness in the Philippines is still in a relatively nascent stage. In March 2009, when the Philippine Baseline Act (R.A. No. 9522) was signed into law, the Philippines began to shift its focus from internal operations, such as counterinsurgency/counterterrorism, to external defense, such as maritime security. This law extended the country's maritime boundaries that incorporated the Spratly Islands (see Figure 1). After that, China's increasing assertiveness in the West Philippine Sea[6] (WPS), manifested by Chinese naval presence in Philippine sovereign waters, deployment of fishery patrol vessels, and other coercive diplomacy measures designed to consolidate China's jurisdictional claims.[7] These sea forces focus on security enforcement of China's established territorial waters in the South China Sea and increase the People's Liberation Army Navy (PLAN) to engage in other international waters.

In addition to expanding its naval reach in the WPS, China has effectively manipulated a space called the "gray zone." Such a "gray zone" allows for competitive

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[4] U.S. Department of Homeland Security, "National Strategy."1

[5] Christian Bueger, "Effective Maritime Domain Awareness in the Western Indian Ocean" (Working Paper, Institute for Security Studies, Unpublished, 2017), 2, http://rgdoi.net/10.13140/RG.2.2.10288.46089.

[6] The Philippine renamed the waters in the eastern part SCS as the West Philippine Sea to solidify its maritime sovereignty. Source: Administrative Order No. 29, (Manila: Official Gazette of the Republic of the Philippines, 2012), https://www.officialgazette.gov.ph/2012/09/05/administrative-order-no-29-s-2012/.

[7] Renato Cruz De Castro, "The Philippines Discovers Its Maritime Domain: The Aquino Administration's Shift in Strategic Focus from Internal to Maritime Security," *Asian Security* 12, no. 2 (May 3, 2016): 111, https://doi.org/10.1080/14799855.2016.1195813.

interactions among state and non-state actors that aim to change the status quo without resulting in war. One noticeable element in China's gray zone campaign is the utilization of its fishing fleet as maritime militias. With these ongoing developments, China's gray-zone maritime strategy poses a significant threat in the region.

Figure 1.   Territorial map claimed by the Philippines, showing internal waters, territorial sea, international treaty limits, and exclusive economic zone.[8]

As one of the SCS dispute parties, the Philippines is significantly affected by China's expanding reach and gray zone operations. This tactic's inherent strategic ambiguity allows China to forward its claims inside the Philippines' Exclusive Economic Zone (EEZ) without resorting to armed conflict. China's domineering presence in the WPS has made the Philippines realize the need to develop its naval capabilities to secure some

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[8] Source: Roel Balingit, *Territorial Map Claimed by the Philippines, Showing Internal Waters, Territorial Sea, International Treaty Limits and Exclusive Economic Zone*, June 25, 2007, Wikipedia (blog), https://commons.wikimedia.org/wiki/File:Ph_Territorial_Map.png.

of the features it is claiming in the WPS and the protection of its maritime borders.[9] A major component of the Armed Forces of the Philippines (AFP) responsible for the Philippines' naval defense is the Philippine Navy (PN). While it is vigorously pursuing the AFP Modernization program, particularly in deterrence capability, the PN must continuously adapt ways to perform its mandate of securing and preserving its maritime domain. To concentrate its efforts on critical roles and functions to effectively address maritime challenges, the Philippine Navy set forth its Active Archipelagic Defense Strategy (AADS) in 2013. One of the three concepts in the AADS, which is the central theme of this research, is Maritime Situational Awareness (MSA). The Philippine Navy Maritime Situational System Awareness System (PNMSAS) plays a vital role in ensuring that this MSA concept enhances MDA and border security. Embracing its role as guardian of the Philippine seas, the Philippine Navy, through the PNMSAS, should continuously adapt new situational awareness methods amidst fast technological innovations and changing regional dynamics.

B.   RESEARCH GOAL

This research's primary goal is to understand the current status of the PNMSAS, the gaps, and the potential role of maritime special operations forces (SOF) in enhancing the Philippines' maritime situational awareness.

This research paper aims to provide academic support, evaluation, and understanding of how to improve the PNMSAS through low-tech solutions, professional human resources, and inter-unit collaboration. The paper also aims to serve as a jumping off point for further studies on the feasibility of utilizing existing maritime SOF in the country.

C.   RESEARCH QUESTION

This research examines the developing importance of maritime domain awareness to the Philippines' strategic plan. It addresses this main problem of how to enhance the

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[9] De Castro, "The Philippines Discover Its Maritime Domain," 111.

PNMSAS in a rapidly changing maritime environment. It also explores these related questions:

1. What is the primary security challenge the Philippines is facing in its maritime domain?

2. What initiatives has the Philippine Navy undertaken, in terms of maritime situational awareness, in countering the security challenge in its maritime domain?

3. What are the issues and gaps of the PNMSAS?

4. How can maritime special operations forces contribute to and enhance the PNMSAS?

D.   SCOPE AND LIMITATION

This study focuses on the maritime situational awareness capability of the PNMSAS. It does not tackle the maritime situational capability of other maritime law enforcement agencies of the Philippines, such as the Philippine Coast Guard (PCG), the Philippine National Police Maritime Group (PNP-MG), or the Bureau of Fisheries and Aquatic Resources (BFAR). While maritime domain awareness encompasses various maritime security challenges, this research will be highlighting and focusing on China's expansionism in the West Philippine Sea. Restricted access to highly classified documents has also limited the reference materials for this study, especially on special operations forces' participation in MDA settings.

E.   METHODOLOGY

This qualitative research utilizes data gleaned from source documents and key informants, mainly from the Philippine government, to describe the current situation and identify challenges faced by existing PNMSAS initiatives focusing on situational awareness. Interviews were conducted with selected subject matter experts (SMEs) on the PNMSAS through email correspondence. Existing literature was also reviewed.

F.   THESIS OUTLINE

The literature review in Chapter II discusses a brief concept of MDA situational awareness, as well as Philippine legal, strategic, and policy bases for MDA in the next chapter. The current and emerging threat to the Philippine maritime domain, emphasizing China's interest and approach in the SCS, will also be briefly explained. The chapter ends with recommendations from several experts on how the Philippines should deal with China's aggressive tactics, and a synthesis of what has been covered in the literature review.

Chapter III introduces the PNMSAS, the structure of MRIC, and existing information collection capabilities. This chapter will discuss the challenges of PNMSAS and lays down the possible role of maritime SOF in addressing it.

The final chapter brings together the conclusions drawn from the gap analysis and makes recommendations on future directions for improving the PNMSAS.

II.   LITERATURE REVIEW

"The heart of the Maritime Domain Awareness program is accurate information, intelligence, surveillance, and reconnaissance of all vessels, cargo, and people extending well beyond our traditional maritime boundaries."

— President Bush, January 20, 2002

A.   MDA SITUATIONAL AWARENESS

The United Nations International Maritime Organization (IMO) defines MDA as "the effective understanding of anything associated with the maritime domain that could impact the security, safety, economy, or environment of a nation or region."[10] Before the United Nations Convention on the Law of the Sea (UNCLOS),[11] most nations focused on maintaining the MDA of its territorial waters, or the band of water that extends 12 nautical miles from a coastal baseline. Also, most nations have been traditionally focusing on naval threats and law enforcement. Historically, MDA customarily refers to maritime intelligence, and the methods used are just visual observation at sea and ashore. Enhancing maritime intelligence during this developmental phase was through the latest optics technology and access to higher elevations. With the advent of technology such as radios, radars, satellites, AIS,[12] and sensors, the maritime domain coverage against traditional naval threats has been extended, to a certain degree, beyond visual range. In the past, before the Cold War ended and the UNCLOS took effect, most of the navies of the world were primarily concentrated on maritime intelligence that was limited to the naval capabilities

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[10] Dalaklis Dimitrios, "Improving Maritime Situational Awareness: Establishing a 'Maritime Safety and Security Network'" (8th NMIOTC Annual Conference 2017, Chania-Greece, June 8, 2017), https://doi.org/10.13140/RG.2.2.24614.32329.

[11] UNCLOS was adapted in 1982 and entered into force in 1994. The Philippines was the eleventh country to ratify the treaty in 1984.

[12] The Automatic Identification System (AIS) is a tracking system for all vessels over 300 gross tons. The vessel regularly transmits a ship's position and heading, as well as ship identification information via VHF radio. This system is required by the International Maritime Organization (IMO).

and positions of naval platforms and troops of other nations.[13] The national maritime law enforcement agencies were also limited only to intelligence gathering, to support law enforcement efforts during this period.

During the last decade or so, the international community started to shift its attention to the maritime domain, encompassing traditional naval threats and state and non-state transnational criminal activities.[14] Two significant developments drove these changes. The first is the UNCLOS signing, which obligated nations to extend their maritime domain to their 200 nautical mile EEZ.[15] EZ's declaration appeared to take care of coastal states' growing economic demand without expanding the span of a states' territorial waters.[16] This development ran parallel to nations' attention regarding maritime security challenges such as smuggling, drug trafficking, environmental degradation, piracy, and IUU fishing.[17] The second development is the end of the cold war, which altered some of the focus of naval intelligence towards non-state maritime threats. United Nations Convention on the Law of the Sea, Article 55, 40,

The modern MDA concept traces its roots from the consequences of the September 11 attacks in the U.S. by the Islamist terrorist groups and the unexpected surge in information technology.[18] Homeland security focus would become entrenched in the MDA concept, which would set in motion a series of interagency and multinational collaborations and the development of MDA fusion centers all around the world. One successful model for achieving effective MDA in a collaborative environment that the new

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[13] Timothy J. Doorey, "Maritime Domain Awareness," in *In Global Responses to Maritime Violence: Cooperation and Collective Action*, ed. Paul Shemella (Stanford University Press, 2016), 126.

[14] Doorey, 127.

[15] According to UNCLOS, the EEZ gives a state exclusive rights to marine and mineral resources found within the designated zone. Source: "UNCLOS, Article 55" (1994), 40, https://www.un.org/depts/los/convention_agreements/texts/unclos/part5.htm.

[16] Tsailas Demetrios, "War On The Exclusive Economic Zone," *Strategy International* (blog), March 18, 2012, https://strategyinternational.org/war-exclusive-economic-zone/.

[17] Illegal, unreported and unregulated (IUU).

[18] Andrew Metrick and Kathleen H. Hicks, "Contested Seas: Maritime Domain Awareness in Northern Europe" (Washington, DC: Center for Strategic and International Studies, March 2018), 13, https://www.csis.org/programs/international-security-program/global-threats-and-regional-stability/contested-seas.

MDA centers attempted to copy is the Joint Interagency Task Force-South (JIATF South). It is an organization that brought together international, federal, state, and local actors for interdicting illicit maritime drug trafficking, primarily cocaine, in the Caribbean basin. JIATF-South carries "the gold standard" for interagency cooperation, and it has been often mentioned in written works on interagency collaboration using a whole-of-government approach.[19] However, this trend led to MDA's dominant practice that focuses heavily on civil and law enforcement elements in the maritime domain. Metric and Hicks pointed out that "a weakness of this modern MDA concept is that many of the associated capabilities and frameworks have been focused on civil maritime issues instead of warfighting functions."[20] Despite this shortcoming, there is now an ongoing thrust for a comprehensive MDA that brings back the military requirements that have been lost in a civil maritime focused MDA system.[21] With the resurgence of great power competition, especially in a highly contested region such as the SCS, this development in the MDA proves to be timely.

According to the National Maritime Intelligence-Integration Office (NMIO), "MDA is not a particular mission or task, but rather the result of the proper integration of a diverse set of capabilities, which provide decision-makers with an effective understanding of the maritime domain."[22] MDA is a vital part of a nation's security strategy, which is difficult to achieve. According to Doorey, achieving comprehensive maritime domain awareness will always be more of a goal than an obtainable objective, and he provided the following fundamental building blocks for governments to enhance their MDA:

1. *Limited Scope for MDA efforts*. Most countries do not have sufficient monitoring capabilities to cover their entire areas of responsibility (AORs). Governments must

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[19] Evan Munsing and Christopher J Lamb, "Joint Interagency Task Force–South: The Best Known, Least Understood Interagency Success," *National Defense University Press*, June 2011, 117, 1, https://ndupress.ndu.edu/Portals/68/Documents/stratperspective/inss/Strategic-Perspectives-5.pdf.

[20] Metrick and Hicks, "Contested Seas," v.

[21] Metrick and Hicks, 15.

[22] National Maritime Intelligence-Integration Office (NMIO), "National Concept of Operations for Maritime Domain Awareness" (National Maritime Intelligence-Integration Office (NMIO), December 2007), 6, https://nmio.ise.gov/Portals/16/Docs/071213mdaconops.pdf?ver=2015-12-04-123515-657.

therefore prioritize where to concentrate their limited resources so that they have a deeper understanding of their most vulnerable areas of responsibility and extend their coverage to define a manageable area of interest (AOI), the area from where their maritime threats originate prior to entering their AORs. In short, governments must identify their MDA gaps and do their best to fill those gaps with the available resources on hand. Also, having identified the gaps and shortfalls in MDA, governments will know how to get assistance from other governmental agencies, non-governmental organizations, regional partners, or allied countries.

2. *Interagency and Multinational Approaches*. Current maritime challenges pose risks over countries relying on shared maritime commons for growth and continuity. This shared reality provides tremendous opportunities to advance interagency collaboration and multinational cooperation on MDA and other maritime security issues.

3. *Mix of High and Low Technology.* Governments should not hesitate to use advanced technologies for MDA. Most state-of-the-art technologies are readily available and reasonably priced in the commercial sector. However, these MDA technologies should complement simple MDA systems (i.e., human networks) to exchange information and to observe more of the maritime domain.

4. *Common Reporting Standards for Contacts of Interest*. Governments should strive to standardize MDA reporting formats and procedures among agencies and regional partners. A standardized reporting system is critical for the real-time and detailed dissemination of MDA information to decision-makers. It will increase speed and reduce error rates, especially among partners without a shared language.

5. *Training and Education.* MDA requires a highly trained workforce to do what is necessary to collect, collate, analyze, and disseminate information to concerned agencies and decision-makers in a timely manner. The senior workforce should also be highly educated to prepare them for dynamic circumstances and assist with interagency and regional efforts to adopt new technologies and enhance information-sharing agreements.

Therefore, MDA organizations must have a well-established education and training system in order for them to be efficient and effective.[23]

MDA can be broken down into two components—Maritime Intelligence and Maritime Situational Awareness (MSA). According to Cheng, "Maritime intelligence is the integration of all available information to identify, locate, and track potential threats in the maritime, while maritime situational awareness is the persistent monitoring of the maritime domain."[24] The intelligence gathered in the maritime space is shared among interagency and regional partners in the maritime domain.

The Philippine Navy defines MSA as "the comprehensive knowledge obtained from all-source information systems, continuous and integrated data collection, and information exchanges relating to [the] maritime domain and other allied operating domains to support decision-making."[25] MSA contributes to MDA national effort by promptly providing information to stakeholders on what is observable, known, and anticipated in the maritime domain.

MDA and MSA may seem similar in undertakings, but they have different meanings and it is often confusing for agencies to know which term to use and how. As has been laid out earlier, MDA is a broader term that centers on all matters connected to the maritime domain. In contrast, Bueger explains that "MSA emphasizes space and time (situations) and is hence more oriented towards operations, incidents, real-time analysis, and rapid reactions."[26] MSA focuses more on the understanding of what is taking place at sea. Put simply, MDA is a broader concept that includes MSA. With the above insights, this research opted to use the term MDA Situational Awareness to simplify definitions.

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[23] Doorey, "Maritime Domain Awareness."

[24] Dean Cheng, "The Importance of Maritime Domain Awareness for the Indo–Pacific Quad Countries" (Washington, DC: The Heritage Foundation, March 6, 2019): 2, https://www.heritage.org/global-politics/report/the-importance-maritime-domain-awareness-the-indo-pacific-quad-countries.

[25] Philippine Navy, email message to author, September 8, 2020.

[26] Christian Bueger, "From Dusk to Dawn? Maritime Domain Awareness in Southeast Asia," *Contemporary Southeast Asia* 37, no. 2 (August 31, 2015): 160, https://doi.org/10.1355/cs37-2a.

The tasks that support MDA situational awareness falls into four broad categories (Figure 2). These performance tasks are usually in this sequence and are part of a repetitive process, varying depending on the situation. MDA situational awareness involves the collection, fusion, analysis, and dissemination of data and information. Notice that the process starts with "observables." One must also understand that there are "non-observables" such as financial transactions, communications among bad actors, human networks, and many more. Intelligence gathered on non-observables can play an essential role in MDA analysis and should be incorporated whenever possible.
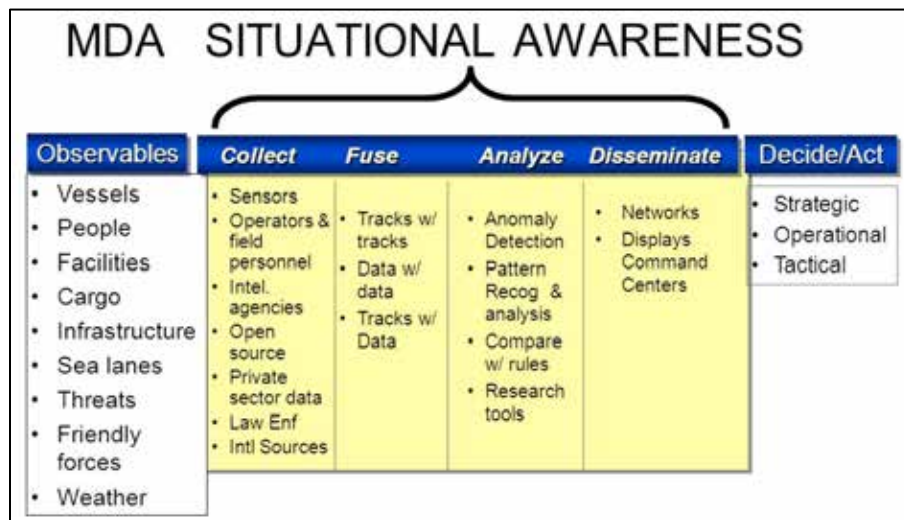
Figure 2.   MDA situational awareness cycle.[27]

According to Andrew Metrick and Kathleen Hicks, "Collection refers to gathering raw data on the maritime domain to include subsurface, surface, and aerial targets of interests."[28]   NMIO disclosed that "data and information may come from routine surveillance operations and sensors, cued intelligence sensors and sources, open-source publications, archived databases, or reports from members of the maritime community."[29]

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[27] Timothy J. Doorey, email message to author, February 28, 2020.

[28] Metrick and Hicks, "Contested Seas," 2.

[29] National Maritime Intelligence-Integration Office, "National Concept of Operations for Maritime Domain Awareness," 7.

The span of coverage that a network of collection sensors can provide is crucial in determining the effectiveness of the sensors.[30]

Data fusion combines data or information from the collection of assets.[31] This analysis creates a common operating picture (COP) to derive a greater awareness of the maritime domain's state. This process usually entails using computer-assisted analysis programs to transform data and information into usable intelligence for decision-makers. A determining factor in the analytic structure capabilities is if it can effectively integrate extensive sensor inputs to produce applicable intelligence.

Dissemination is the method of providing actionable intelligence to relevant platforms, agencies, and other decision-making bodies in a timely manner.[32] This dissemination of information and data goes through a network infrastructure with multi-level security access. For a dissemination network infrastructure to be adequate, the system must relay critical information throughout the whole spectrum of warfare.

B.   POLICY ENVIRONMENT

The Philippines have adopted several policies and strategies, reinforcing the need to develop the necessary capabilities to preserve its maritime sovereignty.

1. The 1987 Constitution of the Republic of the Philippines

The highest law of the land provides the mandate of the AFP as "protector of the people and the State" directed "to secure the sovereignty of the State and the integrity of the national territory (Article II, Section 3)."[33] Additionally, the law also underscores that "the Philippines renounces war as an instrument of national policy, adopts the generally accepted principles of international law as part of the law of the land and adheres to the

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[30] Metrick and Hicks, "Contested Seas," 2.

[31] Metrick and Hicks, 3.

[32] Metrick and Hicks, 3.

[33] The 1987 Constitution of the Republic of the Philippines (1987), https://www.officialgazette.gov.ph/constitutions/1987-constitution/.

policy of peace, equality, justice, freedom, cooperation, and amity with all nations (Article II, Section 2)."[34]

2. National Marine Policy

The Philippines adopted a policy showcasing an integrated strategy for managing and developing its marine resource in 1994.[35] One of its key policy areas is maritime security. This pillar involves securing the country's maritime assets and zones to protect the Philippines as a nation from all threats, external or internal. It emphasizes that the key to maritime security is the modernization of the government's armed forces by investing in more robust marine vessels. It also includes information and communication technology upgrades to respond to the government forces' demands and the citizens involved in marine protection and security. A review of this policy in 2016 revealed the need to strengthen the security of the archipelagic sea lanes and EEZs from illegal fishing and poaching. The review recommended that sufficient resources be made available to naval and coastal services for constant monitoring and evaluation of security activities in the maritime domain.

3. National Security Policy 2017−2022

The National Security Policy (NSP) reiterates the preservation and protection of sovereignty and territorial integrity as one of the pillars of national security.[36] Moreover, it declares territorial integrity as one of the national security interests and emphasizes its sovereign rights exercise over its 200 nautical miles EEZ. Relatedly, it considers the dispute over the WPS as one of the primary national security challenges. In light of the favorable July 2016 Permanent Court of Arbitration (PCA) ruling, the country will treat

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[34] The 1987 Constitution of the Republic of the Philippines.

[35] Edna Co, Mark Anthony Gamboa, and Michael Eric Castillo, "National Marine Policy Review and Strategic Direction: Review and Update of the 1994 National Marine Policy and the Formulation of the National Marine Strategy," *Public Policy Journal* 21, no. 1 (2016), 1.

[36] National Security Council, *National Security Policy 2017–2022* (Manila: Official Gazette of the Republic of the Philippines, 2017), https://www.nsc.gov.ph/attachments/article/NSP/NSP-2017-2022.pdf.

this sensitive issue with caution to avoid potential armed conflicts and rally international support for a rules-based approach and the 2016 Arbitral Tribunal ruling.

4. National Security Strategy 2018

The preservation of sovereignty and national territorial integrity is one of the core interests of the National Security Strategy (NSS).[37] It also articulated bilateral and multilateral negotiations as channels to solve disputes. Significantly, the NSS also laid down the use of the following relevant instruments of national power: political and legal tools to pursue a rules-based approach in defending the country's sovereignty and territorial integrity; a diplomatic mechanism to enhance foreign relations in pursuit of shared interests; an intelligence instrument to include counterintelligence to deny the enemy's collection efforts; and a military and law enforcement instrument to protect the country from foreign threat and aggression. Further, the NSS involves the enhancement of the Philippines' maritime domain awareness.

5. The National Baselines Law

On March 10, 2009, Republic Act No. 9522 was signed into law to amend the previous laws that define the Philippines' archipelagic baseline.[38] The establishment of the new archipelagic baselines serves as a basis for the Philippines' maritime and economic jurisdiction consistent with UNCLOS and international law. It also incorporated the Kalayaan Group of Islands and Scarborough Shoal in the West Philippine Sea under the Philippines' sovereignty. Vietnam and China manifested submitted a diplomatic protest on this act.

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[37] National Security Council, *National Security Strategy* (Manila: Official Gazette of the Republic of the Philippines, 2018), https://www.officialgazette.gov.ph/downloads/2018/08aug/20180802-national-security-strategy.pdf.

[38] Republic Act No. 9522 (Manila: Official Gazette of the Republic of the Philippines, 2009), https://www.officialgazette.gov.ph/2009/03/10/republic-act-no-9522/.

6. Executive Order No. 57

On September 6, 2011, the National Coast Watch System (NCWS) was established, which serves as the "central-interagency mechanism for a coordinated and coherent approach to national maritime issues and maritime security operations towards enhancing governance in the country's maritime domain.[39] The system comprises three organs: National Coast Watch Council is considered the brain of the system, National Coast Watch Secretariat is the hand or policy pusher, and the National Coast Watch Center is the leg or the operating arm of the system.[40] The NCW Center serves as the operating arm of the NCWS in charge of implementing and coordinating maritime security operations following the strategic direction and policy guidance issued by the Council. Its operational requirements in particular for maritime situational awareness and maritime security response is supported by the PN, Philippine Coast Guard (PCG), Philippine National Police Maritime Group (PNP-MG), Bureau of Customs (BOC), Bureau of Immigration (BI), Bureau of Fisheries and Aquatic Resources (BFAR), National Bureau of Investigation (NBI), Philippine Center on Transnational Crimes (PCTC), National Prosecution Service of the Department of Justice, and other maritime security stakeholders.

7. National Military Strategy 2019

The National Military Strategy (NMS) addresses both external and internal threats simultaneously without losing focus on the AFP's primary mandate - the defense of the country's territory, sovereignty, government, and the Filipino people.[41] Its strategic approaches include the whole-of-nation approach, alliance leveraging, joint forces development, and strategic flexibility in conventional and unconventional means to confront various threats.

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[39] Executive Order No. 57 (Manila: Official Gazette of the Republic of the Philippines, 2011), https://www.officialgazette.gov.ph/downloads/2011/09sep/20110906-EO-0057-BSA.pdf.

[40] Carmelo Inocando, email message to author, April 16, 2020.

[41] Juan Celebrado, email message to author, September 23, 2020.

8. Active Archipelagic Defense Strategy 2017

With the strategic goal of securing sovereignty, defending territorial integrity, and protecting maritime interests, the Active Archipelagic Defense Strategy (AADS) guides naval forces' employment in joint, combined, and inter-agency operations.[42] This strategy is anchored on three mutually strategic approaches: Maritime Operations (MO), Maritime Cooperation (MC), and Maritime Situational Awareness (MSA). Relevant naval operational tasks include engaging stakeholders and maritime agencies, increasing the capacities of Philippine Navy Auxiliary Reserve Units (PNARU) and line reserves as force multipliers, integrating and mobilizing naval reserves, and employing forces for asymmetric warfare. Significantly, the AADS identifies the WPS as a priority area for MSA.

C.   EXTERNAL SECURITY ENVIRONMENT

Due to existing territorial disputes and an upsurge of maritime encounters in the SCS, the Philippines' security environment's characteristics mostly involve increasing tensions among the Indo-Pacific region's leading players. The 2020 Congressional Research Service report even says that "in an international security environment described as one of renewed great power competition, the South China Sea (SCS) has emerged as an arena of U.S.-China strategic competition."[43] Both countries are striving to bolster their alliances and influence in the region. Amidst the great power competition between the U.S. and China, more freedom of navigation and overflight operations (FONOPS) have been taking place along the WPS to support open Indo-Pacific advocacy. Larter mentioned in his article for the DefenseNews that "the U.S. Navy conducted more freedom of navigation operations in 2019 than in any year since the U.S. began more aggressively challenging China's claims in the South China Sea in 2015."[44]

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[42] Jofel Besa, email message to author, September 27, 2020.

[43] "Report on U.S.-China Competition in East, South China Sea," *USNI News* (blog), February 4, 2020, https://news.usni.org/2020/02/04/report-on-u-s-china-competition-in-east-south-china-sea.

[44] David Larter, "*In Challenging China's Claims in the South China Sea, the U.S. Navy Is Getting More Assertive,*" *Defense News*, February 18, 2020, https://www.defensenews.com/naval/2020/02/05/in-challenging-chinas-claims-in-the-south-china-sea-the-us-navy-is-getting-more-assertive/.

China's current militarization activities in its reclaimed islands in the WPS pose a severe threat to the Philippines. It is also the most prominent issue for the AFP since PLAN military capabilities are continually developing and increasing. Its proximity to the Philippine western coast's territorial baselines would be able to target the country within its potential striking radius.[45] Moreover, China's aggressive stance in the region triggered the development of defense capabilities among other neighboring regional states. In July 2014, Japan revised the Constitution's interpretation that finally allowed them to apply the right of collective self-defense.[46] This move enabled Japan to develop its capabilities against external invasion. Taiwan has stepped up its defense capacity in becoming more "self-sufficient" by developing a more independent defense industry.[47] Vietnam procured submarines from Russia to enhance its deterrence capacity. With 6 Kilo-class submarines in its current inventory, the Vietnam People's Navy (VPN) is the most formidable submarine force among the Association of Southeast Asian Nations (ASEAN).[48] In 2009, Vietnam also launched its maritime militia for sovereignty protection and economic development. However, lacking a grand strategy for coordination, the Vietnam maritime militia could only enlist 1% of Vietnam's registered fleet.[49] Malaysia is increasing its defense spending to enhance defense readiness, especially in improving the mobility of the armed forces.[50] On the other hand, Indonesia is looking to establish or expand military

[45] Celebrado, email message to author.

[46] Sean Mirski, "*A Primer on Japan's Constitutional Reinterpretation and Right to Collective Self-Defense*," *Lawfare*, November 7, 2014, https://www.lawfareblog.com/primer-japans-constitutional-reinterpretation-and-right-collective-self-defense.

[47] Martin Banks, "*Taiwan Official Pledges Boost in Defense Capabilities Won't Be Deterred by Chinese 'Coercion,'*" *Defense News*, May 2, 2019. https://www.defensenews.com/global/asia-pacific/2019/05/02/taiwan-official-pledges-boost-in-defense-capabilities-wont-be-deterred-by-chinese-coercion/.

[48] "Vietnamese Navy Kilo Submarines," *Medium*, April 22, 2019, https://medium.com/indo-pacific-geomill/vietnamese-navy-kilo-submarines-77ce5dc97b0b.

[49] Shashank Bengali and Vo Kieu Bao Uyen, "*Fishermen Become Prey out on a Strategic Sea*," *L.A. Times*, November 15, 2020, https://enewspaper.latimes.com/infinity/article_share.aspx?guid=717f63e0-491b-4451-9b8a-58db047b45d9.

[50] Hadi Azmi, "Malaysia's 2020 Budget Includes Program to Reduce Reliance on Foreign Workers," Benar News, October 11, 2019, https://www.benarnews.org/english/news/malaysian/new-budget-10112019154919.html.

bases in its sovereign maritime waters in or adjacent to the South China Sea to guard its national interest and protect its sovereignty in the SCS.[51]

Aligned with the region's defense capability developments are the rampant illicit activities occurring in the WPS, which significantly affect maritime security. Illegal fishing in the EEZ dramatically affects the oceans' health and the Philippine fisherfolks' economic development. Illegal fishers from Vietnam, China, Taiwan, Malaysia, and other regional neighbors enter the Philippine EEZ with more sophisticated fishing equipment, which gives them the advantage of greater fish yield.[52] Another widespread illicit activity in the WPS that has a detrimental impact on the economy due to its high number of occurrences is poaching. Roughly 71,400 metric tons of captured fisheries, with an estimated PHP7.1 billion value, are lost every year to poaching.[53]

D.   THE CHINA CHALLENGE

There is a need to review China's interest and its strategies that paved the way for its considerable success in its advances in the WPS.

1. China's Interest in the South China Sea

According to Sigfrido Burgos Caceres, China's interest in the SCS is driven by three interrelated factors: prosperity (economic wealth), power, and security.[54] Financial wealth translates to power, power ensures security, and security provides opportunities for more wealth and more power. The need to sustain its accelerated economic growth and to provide for the domestic needs of its large population base is the leading cause of China's interest in the South China Sea. The preservation and projection of power is another factor driving China's interest in the SCS. Caceres stated that the Chinese Communist Party (CCP) is credited with advancing the people's economic prospects, which leads to

[51] Zachary Keck, "Indonesia Is Building New Military Base in South China Sea" (The Center for the National Interest, July 10, 2015), https://nationalinterest.org/blog/the-buzz/indonesia-building-new-military-base-south-china-sea-13305.

[52] Co, Gamboa, and Castillo, "National Marine Policy Review," 37.

[53] Co, Gamboa, and Castillo, 37.

[54] Sigfrido Burgos Cáceres, *China's Strategic Interests in the South China Sea: Power and Resources* (New York, NY: Routledge, 2014), 1, https://b-ok.cc/book/2361665/a0169f.

stability.[55] Therefore, the preservation of the CCP is crucial in keeping the populace contented to prevent mass revolts and civil unrest that may threaten the regime. Fully realizing that domestic power preservation and prosperity are closely intertwined, the Politburo Standing Committee implemented a plan in March 2011 to maintain popular support by pursuing economic growth and prosperity, which translates to employment, income, and a comfortable life for its populace.[56] Having attained superpower status, China must also fortify its influence at the regional and international level by projecting its foreign and economic policies with its strong military backing. China's foreign policy is geared toward securing new sources of energy and protecting current sources. Caceres claims that "resource security takes on a more pragmatic approach, one that hinges on the deployment of Chinese state-owned enterprises and government agencies in search of inputs that can be secured, processed, and transported where they are needed."[57] The rich resources of the SCS will sustain China's economic growth, which will uphold its power in both domestic and international settings. The last factor that is pushing China's interest in the SCS is security. The SCS is the gateway for China to access the Pacific and Indian Oceans, which is vital for its import and export economy. Securing the SCS for its economic interest will drive China's prosperity. From a military standpoint, China also considers the SCS as a critical vulnerability and desires to fortify it against potential adversaries. As part of its deterrence strategy against U.S. military operations in the SCS, China implemented its compelling anti-access and area denial (A2/AD) defense capabilities.[58]

2. Chinese Strategies in the South China Sea

China's national priorities show its assertion and its strengthening position in its maritime territories in the SCS. In achieving this goal, O'Rourke said that "China appears to be employing an integrated, whole-of-society strategy that includes diplomatic,

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[55] Cáceres, 49.

[56] Cáceres, 4.

[57] Cáceres, 136.

[58] Missile Defense Advocacy Alliance, "China's Anti-Access Area Denial – Missile Defense Advocacy Alliance," *MDAA* (blog), August 24, 2018, https://missiledefenseadvocacy.org/missile-threat-and-proliferation/todays-missile-threat/china/china-anti-access-area-denial/.

informational, economic, military, paramilitary/law enforcement, and civilian elements."[59] Table 1 shows an overview of China's perceived goals complemented with the ongoing support actions in SCS. It is evident from the table that China has fully integrated a system that maximizes all three sea forces to establish control over its claimed nine-dash line. The process addresses both internal and external threats that may arise in their campaign to control the South China Sea.

Table 1. China's Apparent Goals and Supporting Actions for the South China Sea (as assessed in January 2020 CNAS report).[60]

Supporting actions	Apparent goals		
	Rally support domestically	Deter the U.S.	Intimidate neighbors and encourage appeasement/ compliance
PLA operations [a]	x	x	x
China Coast Guard operations [b]	x	x	x
Maritime militia swarming			x
Dredging fleet and island construction team operations [c]	x	x	x

a. Includes military exercises, weapons tests, port visits, patrols throughout the SCS, military parades, and echelon formation participation.

b. Includes deployment of large vessels and participation in echelon formation.

c. Includes large-scale dredging and island-building, and construction of permanent facilities on disputed features.

a. Anti- Access and Area Denial (A2/AD)

MDAA describes A2/AD as an "attempt to deny an adversary's freedom of movement on the battlefield."[61] As part of its anti-access measures, China uses ballistic

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[59] Ronald O'Rourke, "U.S.-China Strategic Competition in South and East China Seas: Background and Issues for Congress" (Congressional Research Service, October 13, 2020), 8, https://crsreports.congress.gov.

[60] Adapted from O'Rourke, 9.

[61] Missile Defense Advocacy Alliance, "China's Anti-Access Area Denial."

and cruise missiles with ranges of 1,500 km to 800km. These weapons can be fielded on land reclamations in the SCS, and it can also be fielded aboard warships, aircraft, and submarines. China's area denial in the SCS region depends on its fighter jets, complemented by a sophisticated air and missile defense system. These defense platforms are usually acquired from Russia, but some have been produced locally. This strategy of the PLA is to "advance its capacity to integrate sensors and long-range precision strike assets to defend against perceived threats to national sovereignty and territorial integrity."[62]

b.   *Chinese Coast Guards (CCG)*

As part of defending territorial claims in the region, there has been an ongoing trend in the Southeast Asia region to develop and expand coast guard vessels. Morris explains that "this shift is driven in part by a perception among regional policymakers that coast guards offer a less militaristic face of state power in disputed maritime areas, as well as by a presumption that coast guards demonstrate that the dispute in question is under domestic civilian jurisdiction, subject to domestic laws and regulations."[63] Andrew S Erickson, Joshua Hickey, and Henry Holst revealed that China is aggressively increasing its maritime capability to be the world's largest coastguard and largest overall maritime law-enforcement forces in the world.[64] Dubbed as China's second sea force, CCG will continue to enhance its capacity so that the PLAN can focus more on its missions farther out to sea. With its formidable armaments, the CCG vessels are predominantly enforcing aggressive tactics as it carries out maritime law-enforcement activities over its claimed territory in the SCS. The Chinese Coast Guard will grow in size, but new platforms' acquisition will also emphasize speed rather than just size. With its disputed established territorial waters in the SCS region, China will be prioritizing these claims' security enforcement measures. CCG

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[62] Andrew S. Erickson and Ryan D. Martinson, eds., *China's Maritime Gray Zone Operations*, Studies in Chinese Maritime Development (Annapolis, Maryland: Naval Institute Press, 2019), 155.

[63] Lyle J. Morris, "The Era of Coast Guards in the Asia-Pacific Is Upon Us," RAND Corporation, March 8, 2017, https://www.rand.org/blog/2017/03/the-era-of-coast-guards-in-the-asia-pacific-is-upon.html.

[64] Erickson, Hickey, and Holst, "Surging Second Sea Force."

will be utilized regularly to perform enforcement surveillance operations throughout these maritime claims.[65]

c.   *Maritime Militias in Gray Zone Operations*

The addition of the Chinese Maritime Militia is challenging the existing rules of engagement in the maritime domain. It is also endangering the safety of all vessels navigating through international waters. The Director of Asia Maritime Transparency Initiative Gregory Poling said that "the next violent incident to take place in the South China Sea is far more likely to involve the Chinese militia than the PLA or China Coast Guard, and it will lack the mechanisms for communication and de-escalation that exist between those professional services and their counterparts in other nations."[66] Maritime militias have been a force to contend with in the disputed waters of SCS. They have been known to engage in several international sea incidents since 2009.

According to Morris, "Maritime militia characterizes fishermen and crew of civilian ships who receive military training or are under some type of military command and control arrangement and who carry out military support activities aboard fishing vessels when required."[67] Conor M. Kennedy and Andrew S. Erickson have branded these maritime militias as China's Third Sea Force and have referred to these irregular forces as the "People's Armed Forces Maritime Militia (PAFMM)."[68] Their extensive research from Chinese-language open sources reveals that significant maritime militias activities are coordinated by the People's Liberation Army (PLA). Conor M. Kennedy and Andrew S Erickson declared that "the militia has a military organizational structure and, despite being

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[65] Erickson and Martinson, *China's Maritime Gray Zone Operations,* 128–129.

[66] Gregory Poling, "China's Hidden Navy," *Foreign Policy,* accessed February 10, 2020, https://foreignpolicy.com/2019/06/25/chinas-secret-navy-spratlys-southchinasea-chinesenavy-maritimemilitia/.

[67] Lyle J. Morris, "The New 'Normal' in the East China Sea," RAND Corporation, February 27, 2017, https://www.rand.org/blog/2017/02/the-new-normal-in-the-east-china-sea.html.

[68] Conor M. Kennedy and Andrew S .Erickson, "China's Third Sea Force, The People's Armed Forces Maritime Militia: Tethered to the PLA" (Newport, RI: China Maritime Studies Institute, March 2017), 2.

a separate component of China's armed forces, is organized and commanded directly by the PLA's local military commands."[69]

Ganadillo posits that "gray zone maritime strategy employs hybrid warfare, in which the lines between military, economic, diplomatic, and intelligence means of aggression are blurred."[70] Ivy Ganadillo also found that "actors in grey zone strategy break, ignore, and diminish the rules-based international order and upend established rules of conventional conflict, making the rules of engagement (ROEs) unclear."[71] Brooks added that "gray-zone actors deliberately exploit these uncertainties to evade legal responsibility and minimize military, economic, and political consequences."[72] In the context of the SCS, the delineation separating civilians and the military are indistinct, making rules-of-engagement (ROE) ambiguous. This strategy is demonstrated by the CCG patrolling the reclaimed islands in the disputed water and the PAFMM vessels that utilize near-collision tactics to veer off unauthorized vessels. These PAFMM vessels present themselves as a commercial fishing fleet undertaking naval operations for the PLA while at the same time hiding under a civilian cover where the military can deny participation. This cover is an attribute of the gray zone operation that places other adversaries at a disadvantage. These fishing vessels are not gray hulls (color of military vessels), which is why PAFMM employment remains below the threshold of conflict.

With the Chinese regular force and irregular force employing irregular tactics in the disputed waters of SCS, a form of hybrid warfare comes to mind. Hybrid warfare blends all types of forces in a battlespace, a characteristic that is also present in gray zone

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[69] Kennedy and Erickson, 3.

[70] Ivy Marie L Ganadillo, "Understanding China's Gray Zone Maritime Operations: What Threat It Brings?," *Strat Journal*, April 2019, 3–5, https://navy.mil.ph/downloads/1557368365-ONSS%20-%20STRATJOURNAL%20(Mar-Apr).pdf#:~:text=Understanding%20China%E2%80%99s%20Gray%20Zone%20Maritime%20Operations%3A%20What%20Threats,China%E2%80%99s%20gray%20zone%20tactics%20enable%20China%20to%20challenge.

[71] Ganadillo, 3.

[72] "Rule of Law in the Gray Zone," Modern War Institute, July 2, 2018, https://mwi.usma.edu/rule-law-gray-zone/#:~:text=Rule%20of%20Law%20in%20the%20Gray%20Zone.%20Rosa,understanding%20of%20the%20concepts%20of%20%E2%80%9Cproperty%E2%80%9D%20and%20%E2%80%9Cownership.%E2%80%9D.

operations. However, the difference between the two is that they are located in different conflict spectrum positions (see Figure 3). Hybrid warfare holds a position on the spectrum within higher conflict levels, making it distinct from gray zone activities.[73] In the context of the SCS dispute, the distinction between hybrid warfare and gray zone operations can be surmised from the military's role in the conflict and how far a state actor is willing to utilize them. The operation of the military in gray zone scenarios is often relegated to a deterrence role. A classic example is during CCG and PAFMM operations in the SCS, where the PLAN is somewhere in the vicinity to ensure that any adversary will deeply evaluate the use of force against China's second and third sea forces. If this were to be a form of hybrid warfare, the PLAN would also be engaging, and the situation will have passed the threshold of armed conflict.

Phase 0, Phase 1: Shape and Deter			Phase 2–5: Seize the Initiative, Dominate, Stabilize, Enable Civilian Authority			
Peace	Grayzone	Irregular Warfare	Hybrid war	Conventional war	Theater conventional war with weapons of mass destruction	Global nuclear war

Figure 3.   The spectrum of warfare, overlaid with the U.S. Department of Defense Operational Planning Phases for Combat Operations.[74]

E.   RECOMMENDATIONS FOR COUNTERACTIONS

Several foreign and local experts have given their thoughts on how the Philippines can challenge China's gray zone operations in the WPS. The AMTI Director, Gregory

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[73] Erickson and Martinson, *China's Maritime Gray Zone Operations,* 22.

[74] Adapted from Erickson and Martinson, 22.

Poling, recommended strengthening the alliance between the U.S. and the Philippines for deterrence purposes.[75] Collin Koh of Nanyang Technological University in Singapore suggested that the Philippines should maintain a visible presence and reinforce its maritime forces in the area.[76] With these factors in place, the Philippines can monitor and record all Chinese activities, which would serve as evidence during a diplomatic protest.

Alexander Neil of the International Institute for Strategic Studies suggests the publication of Chinese activities in the WPS. This report includes coercion activities against Filipino fisherfolk and the broadcasts of Chinese maritime militia transmissions. Neil also suggested the placement of weapons systems in Pag-asa Island to deter Chinese encroachment. The Philippines' concern in this region should continuously be raised in international fora, backed up by figures and images. An informed international community can be united in emphasizing that China should adhere to a rules-based international system, especially with the Arbitration Ruling of 2016.[77]

Jay Batongbacal, a Philippine maritime expert, recommended for the continued protest to China's action. Batongbacal asserted that China "should be continuously monitored, and the government should always make public the number and activities of militia vessels, especially if they engage in illegitimate activities within Philippine waters."[78] It is anticipated that China's continuous pressure would lead to negotiations that can lay the ground rules for conduct in the region.

Another local analyst, Ganadillo, asserts that PAFMM's deceptive activities should be documented and exposed in various regional and international forums, emphasizing international law violations.[79] At the operational level, Ganadillo recommends the following: increase PCG patrols; reinforce troops in KIG detachments; utilize allies to

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[75] Frances Mangosing, "*Chinese Maritime Militia: What Can the Philippines Do?*," *Inquirer.net*, April 4, 2019, https://globalnation.inquirer.net/174138/chinese-maritime-militia-what-can-the-philippines-do.

[76] Mangosing.

[77] Mangosing.

[78] Mangosing.

[79] Ganadillo, "Understanding China's Gray Zone Maritime Operations"

improve maritime domain awareness, information sharing, and diplomatic coordination; and conduct joint patrols and exercises.

F.   SYNTHESIS

China sees the SCS as both a critical requirement and a critical vulnerability that needs to be managed. Given this, China's national interest drives them to employ both conventional and unconventional WPS measures, disregarding the international rules-based system. Such measures manifest themselves in gray zone operations by the PAFMM with the backing of CCG and PLAN. China has paved the way to exert authority on its territorial claim by using civilian vessels and personnel to avert a military confrontation. Because of the ambiguity of the PAFMM in its relation to a military organization, China can easily refute any insinuation of gray zone activities hurled at them. Through gray zone operations, China can continuously pursue its illegal reclamation of WPS features and allow its fishing fleet to overexploit marine resources in the surrounding waters.

The Philippines is aware that there is an ongoing great power competition in this contested region. That is why, under the current administration, the Philippines pursued an independent foreign policy that creates a new partnership with all nations.[80] According to its domestic laws and policies, the Philippines' policy points to resolving maritime disputes through peaceful means. However, the Philippines also views the gradual militarization of China's reclaimed features in the WPS as a severe strategic threat due to its potential striking proximity if a full-blown armed conflict occurs. Even if a full-scale armed conflict is doubtful in the future, China is more likely to continue to exploit gray zone operations to ensure that it retains its superiority over the region. As a deterrent measure, the Philippines started to build up its naval and coastguard capabilities to enforce its maritime sovereignty. With the apparent differences in military strength between the Philippines and China, most recommendations in addressing China's aggression do not point to a military approach. Instead, it has been dominantly recommended to expose China's gray zone tactics before international and regional fora. Some advocate the use of media to counter China's narrative

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[80] Philippine Information Agency, "*The National Security Situation in 2018, and Outlook for 2019*," *Philippine Information Agency*, December 31, 2018, https://pia.gov.ph/news/articles/1016616.

that it is only protecting its sovereignty. The establishment of the NCWS is an excellent start to integrate all maritime agencies for maritime security awareness. However, NCWS is yet to prove that it can rally all maritime law enforcement agencies toward a whole-of-government approach for Philippine maritime security.[81]

These recommendations and initiatives point to the Philippines' need to enhance its maritime situational awareness system to monitor and record Chinese activities in the WPS. The next chapter will now look into the PNMSAS to see its capabilities and how it can be enhanced.

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[81] Ellaine Joy Sanidad, "*Strengthening the Philippines' Approach to Maritime Security*," *East Asia Forum*, August 4, 2020, https://www.eastasiaforum.org/2020/08/04/strengthening-the-philippines-approach-to-maritime-security/.

III. PHILIPPINE NAVY MARITIME SITUATIONAL AWARENESS SYSTEM

The strategic goal of MSA is to ensure that real-time information is readily available to enable effective decision-making for maritime operations to support national and regional cooperation in the maritime domain. It can also support diplomatic initiatives. The PNMSAS is the organized or established procedure of collecting all source information through sensors and intelligence operations to establish and maintain a Common Operating Picture (COP) in the maritime environment.[82] It is a network of maritime surveillance platforms and observation posts installed at critical locations: sea lines of communication (SLOCS); maritime chokepoints, international and domestic shipping routes, terrorist and smuggling routes; and other strategic areas. Generally called Maritime Situational Awareness Platforms (MSAP), these observation posts can be categorized as follows: Littoral Monitoring Stations (LMS), Littoral Monitoring Detachment (LMD), Naval Airborne Intelligence Surveillance and Reconnaissance (NA-ISR), and Naval Surface Intelligence Surveillance Reconnaissance (NA-ISR). The PNMSAS provides 24-hour surveillance using sensors and visual monitoring aboard the different Littoral Monitoring Stations and PN ships and aircraft located or deployed in strategic areas throughout the country.

A. HISTORICAL OVERVIEW

Before the formal establishment of the PNMSAS, the Philippine Navy, through its intelligence units, had already formed a system of monitoring the nation's extensive coastline by getting information on watercraft and aircraft sightings from locals residing in the coastal areas. Collectively known as "Coast Watchers," this human intelligence (HUMINT) network laid the groundwork for developing the Philippine coast watch system. This HUMINT network, however, lacks a system that can verify, confirm, or establish patterns of reported sightings. As such, the information gathered cannot serve as

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[82] Besa, email message to author.

a basis for adopting national policies. Furthermore, sightings were relayed through an obsolete telegraphic system making it difficult to achieve timely and effective monitoring.

With the advent of the AFP Modernization program, the PN gradually shifted to external defense by focusing on higher security threats through selective sea control. To support this strategic shift, the PN launched the Project Coast Watch on March 22, 1995. The project was led by the Naval Intelligence and Security Force (NISF) with the initial activation of three Littoral Observation Stations (LOS) in Zamboanga, Palawan, and Samar. The PN activated two more LOS in Zambales and Batangas areas by 1998. From 2000 to 2005, PN started three more LOS in northern Palawan, the Spratly Islands, and Davao. Each of these eight LOS eventually formed the original Project Coast Watch.

The Coast Watch South (CWS) [83] project came into being under the Department of National Defense Orders Number 36, dated November 29, 2006. According to Angel Rabasa and Peter Chalk, the project is "intended to be an interagency effort involving the Philippine Navy (PN), Philippine National Police (PNP), Philippine Coast Guard (PCG), the National Anti-Terrorism Task Force, the National Intelligence Coordinating Agency, the Bureau of Customs, the Bureau of Immigration and Deportation, the Bureau of Fisheries and Aquatic Resources, the Bureau of Quarantine and Health Services, the Philippine Ports Authority, and the Maritime Industry Authority."[84] These agencies had directives to operationalize the CWS project towards a national maritime inter-agency surveillance system under the National Coast Watch Council. The United States and Australia gave support to this inter-agency collaboration. However, due to the level of maritime threats in the Southern Philippines and limited resources, the PN was directed to focus on Mindanao and Southern Palawan, which led to the term Coast Watch South.

On March 18, 2013, the PN renamed the Coast Watch project as the Philippine Navy Maritime Situational Awareness System. To align itself with the PN's operational

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[83] This was its original term, which focused on the coverage of southern and western part of the Philippines. It has been renamed the National Coast Watch System (NCWS) to showcase its role in overseeing the maritime domain of the whole archipelago.

[84] Angel Rabasa and Peter Chalk, *Non-Traditional Threats and Maritime Domain Awareness in the Tri-Border Area of Southeast Asia: The Coast Watch System of the Philippines*, Occasional Paper, OP-372-OSD (Santa Monica, CA: RAND, 2012), 21.

strategy, PNMSAS has integrated the capability of PN ships, aircraft, and marine units as a network of mobile sensors. With the PN serving as one of the National Coast Watch System's supporting agencies, PNMSAS also serves as the PN's link to the National Coast Watch Center (NCWC).

On March 3, 2016, the LOS were renamed Littoral Monitoring Stations (LMS). The PN also reactivated the LMSs in Ayungin, Tinaca, and Zamboanga, and LMDs in Bolinao, Batan, Likas, Lawak, Kota, Parola, Quezon, Taytay, and Surigao.

On July 14, 2016, the administration of all LMS communication, equipment, and information systems (CEIS), except for LMS Ayungin in the Spratly Islands, was transferred to the Naval Information and Communication Technology Center (NICTC). This transfer was executed to address the LMS's mounting technological requirements to sustain optimal performance. Moreover, the manning and training of LMS CEIS personnel have also been delegated to NICTC.

B.   ORGANIZATIONAL STRUCTURE

The Maritime Research Information Center (MRIC) was activated in December 2008 to "administer the Philippine Navy Maritime Situational Awareness System and provide maritime information to support the Philippine Navy in accomplishing its mission."[85] MRIC is the unit primarily responsible for collecting, processing, analyzing, and producing maritime intelligence to the headquarters of the Philippine Navy (HPN).

The functions of MRIC as the administrator of PNMSAS are as follows:

1.   Provide maritime intelligence to national, strategic, operational, tactical, and inter-agency end-users to support interception and subsequent operations;

2.   Develop, operate, and maintain a maritime-related information database; and

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[85] Jofel Besa, email message to author.

3.   Maintain linkages with local and international agencies and academic stakeholders on maritime-related concerns[86]

MRIC has administrative and operational control of five Maritime Situational Awareness Centers (MSAC), as shown in Figure 4. The MSAC also has operational control of the different information collection platforms manned by Maritime Surveillance Teams (MST) aboard LMS, PN ships, PN aircraft, other maritime agencies, and other assets, which are found in respective Maritime Reporting Areas (MRA) within a given area of operation. MRIC, through MSAC, has operational control of LMS. NICTC, on the other hand, has administrative control in terms of the manning, repair, maintenance, and sustainment of CEIS equipment aboard LMS. MSAC also provides personnel to augment the LMS.

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[86] Besa.

Figure 4. Disposition of MSACs in the different Naval Operating Force
(NOF) areas[87]

MRIC serves as an information fusion center by providing strategic and national assessments to national level agencies such as the National Task Force on the West Philippine Sea, the National Intelligence Coordinating Agency, and the Naval Operations Center. MSACs provide maritime domain information not only to MRIC but also to regional hubs such as the Naval Task Forces (NTF), Naval Operating Forces (NOF), and Unified Commands (UC). The core functions of MSACs are as follows:

1. Gather, consolidate and synthesize data from the different LMS, PN vessels, PN vessels, PN aircraft, and other sources of information for the use of NOFs;

2. Provide a common operating picture in the enhancement of maritime situational awareness;

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[87] Besa.

3.   Conduct periodic assessments of maritime security in its area of responsibility;

4.   Act as the regional hub for maritime data collection and the primary data reporting unit to the Naval Intelligence and Security Force (NISF) with timely and periodic intervals;

5.   Develop and maintain effective communication and information systems to enhance regional inter-agency coordination and cooperation;

6.   Assist the NOF in the planning, coordination, monitoring, evaluation, documentation, and reporting on the conduct of maritime security operations in its area of responsibility; and

7.   Disseminate information to NOF and other maritime stakeholders about the maritime security picture in its area of responsibility.[88]

C.   INFORMATION COLLECTION CAPABILITIES

The existing information collection capabilities of the PNMSAS are land-based/shore-based sensors composed of the Littoral Monitoring Stations spread throughout the archipelago, and mobile sensors consisting of the PN vessels, PN aircraft, a maritime unmanned aerial system, and a 28-meter tethered aerostat.

1.   Land-Based Sensors

The Littoral Monitoring Stations are the frontlines of operations in terms of MSA. They are equipped with the essential CEIS equipment such as RADAR (with or without an EO-IR camera), AIS Receiver, Radio Direction Finder (RDF), binoculars, high-frequency communications equipment, VHF marine band, and Very Small Aperture Terminal (VSAT) connectivity. The locations of each LMS are shown in Figure 5.

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[88] Besa.
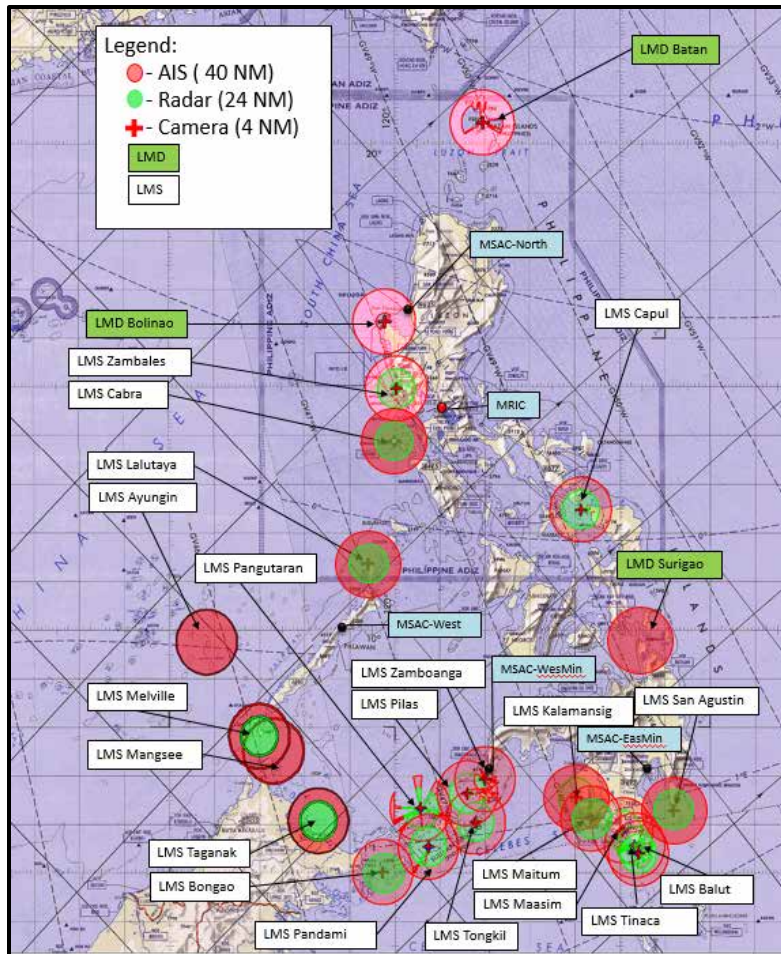
Figure 5.   Disposition of LMS with detection coverage.[89]

The LMS gathers information from two primary sources: sensors and human intelligence (HUMINT). The sensors refer to the CEIS equipment, while the HUMINT refers to PN assets, Filipino Fishing Boats (FFB), merchant vessels, pleasure craft, and assets of local government units (LGU).

2.   Mobile Sensors

These are the PN ships and PN aircraft that have the same CEIS equipment found in LMS. These mobile platforms enable the maximization of resources because they can operate in any location of the Philippines' EEZ. The advantage of these mobile platforms

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[89] Besa.

is that they can readily transform from information collection missions to maritime threat responders when the needs arise. Part of the aerial MSA platform inventory is a 28m Class Tethered Aerostat Radar System (TARS), provided by the U.S. government.[90] The aerostat can rise up to an altitude of 5,000 feet while anchored to the ground, and it can provide maritime surveillance of up to 90 miles from its position.

These land-based and mobile sensors contributed immensely to detecting foreign vessel incursion in the Philippines' EEZ in support of territorial defense operations. Figure 6 shows a summary of foreign vessel incursion in Philippine waters from 2016–2019. All vessels identified with Vietnam, Indonesia, and Malaysia are fishing boats. On the other hand, China and Taiwan have a mixture of research vessels, coastguard ships, and fishing boats.
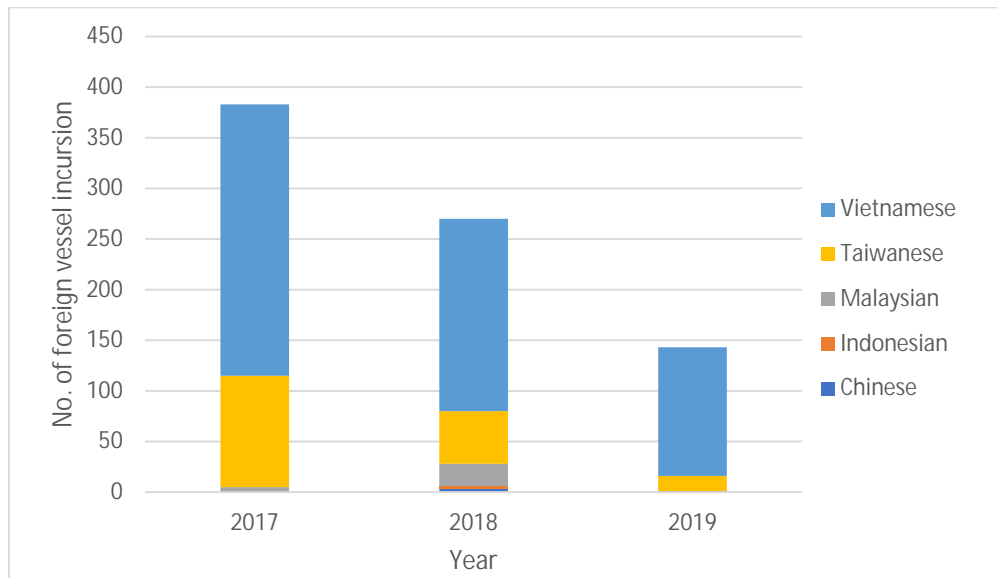

Figure 6.   Foreign vessel incursion 2016−2019.[91]

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[90] Allan Macatuno, "*Navy Gets Modern Radar System to Alert PH of Threats at Sea,*" *Inquirer.net*, August 25, 2017, https://newsinfo.inquirer.net/925438/navy-gets-modern-radar-system-to-alert-ph-of-threats-at-sea.

[91] Philippine Navy, email message to author, September 8, 2020. Data was transformed into graph.

D.   AIS SYSTEMS

MRIC is utilizing the U.S. SeaVision Satellite AIS monitoring systems. SeaVision "is a web-based maritime situational awareness tool that enables users to view and share a broad array of maritime information to improve maritime operations."[92] SeaVision has advanced filtering and search capabilities that can track multiple contacts to include slow-moving vessels in high-risk areas and vessels of interest. It is capable of recording data suitable for 90 days. This low-cost visualization and management tool can correlate multiple data sources "necessary for conducting risk assessments, highlight anomalies, and generate alerts and warnings that automatically notify users."[93]

MRIC is also using MarineTraffic as part of its AIS monitoring system. MarineTraffic is a popular online ship tracking system used around the globe. It offers real-time information on ships and ports worldwide via its website online. Data are collected from various AIS stations around the world through the service of satellite receivers. With the application of algorithms and other relevant data, the system provides useful information on shipping activities to concerned industries.[94] This open, community-based project "operates more than 2,000 AIS stations in over 165 countries and has over 600,000 registered users and around 20 million visits to its website every month."[95]

E.   LINKAGES WITH REGIONAL AND LOCAL PARTNERS

To augment its current monitoring systems, MRIC maintains collaborative efforts with international maritime partners and local maritime agencies for information sharing.

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[92] "Home - SeaVision," U.S. Department of Transportation, November 1, 2020, https://info.seavision.volpe.dot.gov/.

[93] U.S. Department of Transportation.

[94] "MarineTraffic," MarineTraffic, November 2, 2020, https://www.marinetraffic.com/en/p/company.

[95] Mohit Kaushik, "Top 8 Ship Tracking websites To Find Your Ship Accurately," *Marine Insight* (blog), September 18, 2019, https://www.marineinsight.com/know-more/top-8-websites-to-track-your-ship/.

1. Regional Partners

    a.   The Information Fusion Center (IFC) in Singapore acts as the regional maritime hub to enhance maritime situational awareness in Southeast Asia. The IFC was built to establish regional maritime domain awareness to cue timely responses by facilitating and catalyzing regional info-sharing cooperation and collective sense-making. To effectively deal with these maritime security threats, there is a need to share advanced maritime information for threat evaluation and anomaly detection. This hub enables greater awareness and understanding of the maritime domain to detect developing threat scenarios and trends and, ultimately, achieve early warning threats.[96] The PN assigns an infrastructure liaison officer (ILO) who will facilitate coordination between MIRC and IFC. Through the ASEAN Information Sharing Portal (AIP), the IFC-ILO connection in real-time with the MRIC provides regular maritime situational updates and other periodic maritime security reports. These maritime updates are consolidated and screened for inclusion in the periodic maritime reports submitted to higher levels of command.

    b.   MRIC also maintains a link with the Philippine Liaison Officer (PLO) in Manado and the Indonesian maritime security agency – BAKAMLA. Both sources provide support on maritime information between the Philippine Celebes sea and Indonesia's Laut Sulawesi. Critical concerns for both countries focus on smuggling, hijacking, intrusion, infiltration, illegal entry, illegal fishing, illicit firearms smuggling, human trafficking, piracy, and marine pollution.

    c.   The PN and Royal Thai Navy (RTN) agreed to enhance its defense cooperation to curb emerging threats and challenges in the Indo-Pacific region.[97] The Thailand-Maritime Enforcement Operations Command Center (Thai-MECC) has fostered deeper ties with the MIRC regarding maritime information sharing.

    d.   The United States Indo-Pacific Command (USINDOPACOM) has established a linkage with the MRIC via an Automated Merchant Reporting System (AMRS), Asia-Pacific Intelligence Information Network (APIIN), Field Information

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[96] Doorey, email message to author.

[97] Martin Sadongdong, "PH, Thai Navies Foster Deeper Ties," Manila Bulletin, February 4, 2020, https://mb.com.ph/2020/02/05/ph-thai-navies-foster-deeper-ties/.

Support Tool (FIST), and Combined Enterprise Regional Information Exchange System Cooperative Maritime Forces Pacific (CENTRIXS-CMFP). These communication platforms serve as the gateway for the exchange of real-time information between the United States and the Philippines

2.   Local partners

Aside from having a direct linkage with NCWC, the MRIC has a memorandum of understanding (MOU) on information sharing with the following government and non-government agencies: AFP, National Anti-Terrorism Task Force, National Intelligence Coordinating Agency (NICA), Maritime Industry Authority, PCG, Philippine Ports Authority (PPA), Philippine National Police (PNP), Bureau of Customs (BOC), Bureau of Immigration and Deportation (BID), BFAR, Bureau of Quarantine and Health Services, National Mapping and Resource Information Authority (NAMRIA), Department of Environment and Natural Resources(DENR), DOST-PAGASA, Philippine Drug Enforcement Agency (PDEA), International Seafarers Action Center, and Philippine Inter-Island Shipping Association. To facilitate this MOU, MIRC launched a website that serves as an information-sharing platform among the participants.

F.   DESIRED END STATE

The desired goal of the PNMSAS is its full implementation of providing a common operating picture for decision-makers in pursuit of a maritime mission. This process must be sufficiently funded by the government and is complemented by an effective and efficient inter-operability structure. Due to the delegation of administrative control to NICTC, the subsequent maintenance of CEIS equipment facilitated a 24/7 operation LMS. This transfer also paved the way for a leaner MRIC whose core competency is intelligence production and analysis. The MRIC will now be more focused on collaborating with the different PN units and other maritime agencies through multiplatform maritime connectivity. The MRIC will serve as the backbone of PNMSAS and eventually evolve as the central hub for providing an in-depth analysis of the maritime environment. The MRIC is also looking into capability development on information warfare in line with maritime situational awareness. PNMSAS shall fully integrate its system with the Philippine Navy C4ISTAR System

capability development plan to ensure secure and effective communications systems between sensors and operating units. PN C4ISTAR exists as an information infrastructure for the command and control of a full range of Naval and Maritime Operations utilizing the Fleet-Marine forces within the maritime domain.

G.   CHALLENGES

Since its establishment, PNMSAS has gradually developed a network of combined sensors, communication systems, and efficient workflow support of qualified operators to produce technologically-centered maritime surveillance platforms. During the early stage of PNMSAS, the MRIC has been the Philippine standard in vessel traffic monitoring, identification, and evaluating potential risky situations in the maritime domain. In the beginning, the MRIC had brand new advanced sensors such as RADARs, AIS, and high-resolution cameras, together with highly advanced software programs that collect, distribute, and display maritime information. Additionally, during its early stages, PNMSAS provided an outline for a PN vessel visual sensing system and shipping traffic monitoring. Another regular application of the system during its developmental phase was monitoring physical boundaries in coastal areas.

Currently, the PNMSAS is now confronting the rapid development of sensor technology, deteriorating equipment, and limited funding. The information processing system and the hardware used for extensive maritime surveillance are fast becoming obsolete due to increasing technological developments. With an ever-dynamic maritime environment and extensive data requirements, there is a need to acquire the latest maritime surveillance system. However, the acquisition of such technology is dependent on the availability of adequate financial resources. The PNMSAS detection system, due to obsolescence, limited fund source, and equipment wear and tear, currently has limited capacity to develop into a full-blown maritime surveillance system.[98] The following are identified gaps in the PNMSAS detection and identification system:

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[98] Besa, email message to author.

1.　　　Different MSA platforms are using AIS with 40 nautical mile detection coverage. The reception radius of 40 nautical miles is subject to various factors such as the transmission signal's power, the height of the transmitting ship's aerial and meteorological conditions. Further, since AIS is satellite-based, poor reception can only provide 20 nautical miles of detection coverage, or 350 nautical miles for powerful transmissions during appropriate atmospheric conditions.[99] Another limitation is that the AIS requires a cooperative target. Transponders are only required for ships that weigh 300 gross weight tons (GWT) or larger under the U.N.'s International Maritime Organization, or IMO. AIS is also vulnerable to spoofing, making the vessel appear far from its actual location. A vessel transmits a Maritime Mobile Service Identity (MMSI) code, which is supposed to be distinct from other vessels. Spoofing is being conducted when multiple vessels are simultaneously broadcasting the same MMSI number.[100] Another loophole is that AIS transmitters can also be turned off manually by the deck officers. This method is widely known as "going dark" or "dark activity." Thus, AIS can be manipulated easily. Lastly, the AIS receiver can be susceptible to technical malfunctions like any other computer system.[101]

2.　　　Various platforms are using "X" and "S" band marine radars, where the former is used for more accurate display due to its higher frequency while the latter is mainly used during inclement weather and for identification and tracking.[102] The "X" band radars are commonly installed in small vessels since it produces a 2.5 to 4 cm (8 to 12 GHz) wavelength. "S" band radars can produce 8 to 15 cm (2 to 5 GHz), or roughly a 24-NM detection overage, and is better fitted in larger vessels. Marine radars' limitations include

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[99] VT Explorer, "Limitations of AIS," *VT Explorer* (blog), accessed October 21, 2020, http://www.vtexplorer.com/limitations-of-ais/.

[100] Kimbra Cutlip, "Spoofing: One Identity Shared by Multiple Vessels," *Global Fishing Watch* (blog), July 26, 2016, https://globalfishingwatch.org/data/spoofing-one-identity-shared-by-multiple-vessels/.

[101] "Understanding AIS," Maritime Intelligence, March 10, 2017, https://maritimeintelligence.informa.com/resources/product-content/understanding-the-automatic-identification-system.

[102] Shilavadra Bhattacharjee, "Marine Radars and Their Use in the Shipping Industry," Marine Insight, April 30, 2020, https://www.marineinsight.com/marine-navigation/marine-radars-and-their-use-in-the-shipping-industry/.

the non-detection of small vessels, failure to display targets in the radars' shadow and blind sectors, range discrimination, bearing discrimination, and false echoes.[103]

3.   Cameras have four nautical miles of visual coverage only and cannot monitor those activities or incidents beyond their reach.

In terms of area coverage effectiveness, an assessment team from NICTC was activated in 2015 to conduct an in-depth study of LMS responsiveness.[104] It was found out that some LMS is not as responsive as what the navy was hoping for, and the proposed plans are to deactivate, downgrade, or turnover the LMS to other government maritime agencies. The parameters used for identifying the LMS's responsiveness are that they must be situated near sea lines of communication (SLOCs), maritime chokepoints, monitored routes of Chinese commercial vessels, critical maritime infrastructures, petroleum service contract areas, and known terrorist routes. Another parameter is the situational awareness coverage for the Kalayaan Group of Islands, Scarborough Shoal, and the Philippine rise.

PNMSAS has an insufficient number of research analysts required to consolidate and assess maritime information collected on the human resource aspect. Some of the MSACs utilize research analysts on a contractual basis to meet the demand for information assessment. The small number of analysts and the demands of their work prevent analysts from attending specialized training to advance their skills.

H.   INNOVATIONS

Despite the ongoing challenges, the PNMSAS has learned some management practices that enhance maritime situational awareness without relying on expensive technology. Given the expanse of the West Philippine Sea, the detection capability of LMS is insufficient. The LMS coastal radars' detection capability only has a maximum reach of 40 nautical miles, depending on its elevation. There is a need to employ other means to monitor the areas beyond the reach of the LMS. One innovation was to network with

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[103] Karan Chopra, "An Introduction to Radar Watchkeeping And SOLAS Requirements For Ships," An Introduction to Radar Watchkeeping And SOLAS Requirements For Radars Ships, October 16, 2020, https://www.marineinsight.com/marine-navigation/introduction-radar-watchkeeping/.

[104] Doorey, email message to author.

Filipino fishing boats in the WPS. In 2012, MSAC-West and LMS Zambales started a system with Filipino fishers plying the different areas of the WPS to include Scarborough Shoal and the Kalayaan Island Group (KIG). This networking resulted in an information-sharing mechanism that is mutually beneficial to both parties. Selected Filipino fishers monitor the area where they are fishing and report back to the nearest LMS, via H.F. radio, of any foreign vessel intrusion. These reports would include poaching activities of fishing vessels or harassment activities of military ships patrolling in the WPS. This network scheme also holds for fishing companies recruited as members of the PN Affiliated Reserve Units (PNARU).

The WPS is not the only area experiencing an increase in Chinese activity. During the last quarter of 2016, there have been sightings of Chinese research vessels in the Philippine Rise. MSAC-North deemed it necessary to expand its Filipino fishing boat network in early 2017 towards Luzon's eastern side. The Filipino fishermen report back to MSAC-North via secured channels on foreign vessels engaged in marine scientific research or poaching. In return for their cooperation, the MSACs provide radio equipment and weather information to the network of fishing boats. Filipino fishers have no access to weather information as these areas are often remote, and the only means of communication possible is through high-frequency radio. The MSAC was not only able to collect data, but it also supported the safety of the fisherfolks at sea.

This monitoring and reporting system with the fishing boat network showed an innovative way of maintaining situational awareness in areas where current maritime surveillance systems cannot reach. It also established an additional low-tech method of achieving maritime situational awareness. The downside in this setup is that MSA is dependent on the availability of the fishermen in the area as they perform their work. These force multipliers can only be utilized in passive information collection since their primary purpose is to earn a living. They cannot be directed to leave their fishing ground to proceed to another area of interest.

The PN also started planning out the establishment of a maritime Citizen Armed Forces Geographical Unit (CAFGU) for deployment in the KIG and Scarborough Shoal.[105] This planned fishing militia will be armed to protect Filipino fishers from the aggressive tactics of PAFMM. They will also be directed to conduct active information collection of foreign activities in their designated AOR. Furthermore, maritime CAFGU can be mobilized to support emergency response operations, humanitarian assistance, and disaster response operations. The navy militia members will be selected from the Philippine Army CAFGU from the same regional command and trained by the PN. However, the plan was suspended this November 5 to avoid actions that might be misinterpreted as a catalyst for war.[106]

I.   MARITIME SPECIAL OPERATIONS FORCE APPROACH

It has been deduced that direct military confrontation is not the Philippines' approach and is willing to take against China's gray zone operations in the WPS's disputed waters. While the AFP waits for an adequate deterrence posture in the WPS, through its modernization programs, and effective MSA must be in place to continually monitor and record Chinese activities that will serve as evidence for any legal actions in the future. With the deferment on the utilization of fishing militias as an additional approach to maritime situational awareness, there is no other recourse for the Philippine Navy but to utilize its forces to augment the MIRC in the MDA Situational awareness. According to Grimeland and Van der Veen, selecting a suitable force that can operate in the littorals must be able to react on short notice.[107] They must be able to operate effectively in areas where irregular forces abound. It should also be added that most governments would want a force that could conduct surgical insertion with a minimal footprint in a given maritime mission area. With these considerations, the top of mind force most suitable for MDA situational

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[105] Sebastian Strangio, "Philippines Shelves Plan for South China Sea Fishing Militia," The Diplomat, accessed November 9, 2020, https://thediplomat.com/2020/11/philippines-shelves-plan-for-south-china-sea-fishing-militia/.

[106] Strangio.

[107] Torbjorn Grimeland and Oscar van der Veen, "Maritime SOF in the Littorals: Theoretical Principles for Successful Littoral Special Operations" (master's thesis, Naval Postgraduate School, 2016), 10, http://hdl.handle.net/10945/49475.

awareness missions is the PN's maritime special operations forces (SOF). While it holds that conventional forces can also handle MDA situational awareness functions, maritime "SOF are often entrusted to perform missions that exceed the authority given to conventional military units, such as operating in politically sensitive environments or executing tasks that require special legal authorities."[108] According to Bucci, "Although they are not a substitute for other capabilities in the military, SOF can mitigate risk by helping to set the operating environment in the most advantageous manner possible."[109]

For more than a decade, the PN's maritime SOFs have been conducting counterterrorism and counterinsurgency operations on land-based missions. Most often, they are relegated to supporting roles for ground SOF operations. These maritime SOF have been dragged away from their maritime roots, so that their ability to perform in the maritime domain is dubious. With the external defense in mind, maritime SOFs should gradually shift back to their maritime niche, which is the foundation of their respective organization in the first place. The maritime threats emanating from Chinese gray zone operations in the WPS should be a compelling reason for Philippine maritime SOF to start focusing on their core competencies in the maritime domain.

J.   ROLE OF MARITIME SPECIAL OPERATION FORCE

In acquiring a more precise grasp on the possible role of SOFs in MDA Situational Awareness, it is essential to review the capabilities they can offer to the PNMSAS. The AFP Joint Special Operations Manual (interim) defines special operations (SO) as "operations conducted in hostile, denied, or politically sensitive environments to achieve military, diplomatic, informational, and/or economic, national objectives employing direct or indirect unique military capabilities as a scalable option (Land Maneuver Concept, Philippine Army) beyond the capability of conventional forces."[110] To elaborate more on the peculiarities of SOF, Joint Publication 3-05 added that "SO require unique modes of

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108 Steven P. Bucci, "The Importance of Special Operations Forces Today and Going Forward," The Heritage Foundation, October 7, 2014, https://www.heritage.org/military-strength-topical-essays/2015-essays/the-importance-special-operations-forces-today-and.

109 Bucci.

110 Marlon Salvador, email message to author, September 2, 2020.

employment, tactics, techniques, procedures, and equipment. They are characterized by one or more of the following: time sensitivity, clandestine or covert nature, low visibility, work with or through indigenous forces, greater requirements for regional orientation and cultural expertise, and a higher degree of risk."[111] SO also provides decision-makers with distinct and accurate tactical and operational alternatives to fit any interagency partners' related task. Other SOF characteristics include competence in operating advance military equipment, out-of-the-box thinking, and operating with a minimal support tail.[112]

Maritime SOFs have a plethora of capabilities that can be utilized in the maritime domain. These capabilities can be applied to different degrees and variations throughout the spectrum of warfare. However, this study has not encountered any concepts or doctrine specific to special operations for MDA situational awareness. With the Philippines' thrust for a peaceful means of settling the WPS disputes, a maritime SOF operating framework should be limited to the capabilities in the lower level of the spectrum of warfare, or SO activities that are way under the threshold of war. Naturally, MSA would involve indirect approaches of maritime SOF in the operating environment. The Naval Special Operations Command (NAVSOCOM) is the designated special operations unit of the Philippine Navy.[113] It is one of the most dependable strike forces in the maritime domain, yet its capabilities also fit the functions of a defensive MDA that does not involve armed confrontation.

K.   NAVAL SPECIAL OPERATIONS COMMAND

The mission of the NAVSOCOM is to organize, train, equip, maintain, and deploy Naval Special Operations Forces for the conduct of Naval, Joint, Combined, and Inter-Agency operations in support of the PN mission.[114] Among the operating units under NAVSOCOM is the Sea-Air-Land Group (SEALG), whose mission is to provide readily

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[111] James E Hayes III, "Beyond the Gray Zone: Special Operations in Multidomain Battle," *Joint Force Quarterly* (2018), 7, https://ndupress.ndu.edu/Portals/68/Documents/jfq/jfq-91/jfq-91_60-66_Hayes.pdf?ver=2018-11-06-094122-477.

[112] Bucci, "The Importance of SOF."

[113] NAVSOCOM, email message to author, July 29, 2020.

[114] NAVSOCOM.

deployable SEAL teams to the different Naval Special Operations Units (NAVSOUs) across the archipelago in support of NAVSOCOM mission. Among the SEAL operations capabilities that are applicable for MSA are:

      a. *Special reconnaissance.* It is being conducted by the SEAL or Sniper Teams "to obtain or verify, by visual observation or other collection methods, information concerning the capabilities, intentions, and activities of an actual potential enemy, or to secure data concerning meteorological, hydrographic, or geographic characteristics of a particular area." [115] Target acquisition, area assessment, and post-strike reconnaissance are also included in this function. This enabling capability supplements intelligence requirements provided by conventional intelligence units. It complements the evaluation of information to determine its accuracy, timeliness, usability, completeness, precision, and reliability.

      b. *Unconventional warfare.* "It includes guerrilla warfare and other direct-offensive, low visibility, covert, or clandestine operations and indirect subversion activities, sabotage, intelligence activities, and evasion and escapes…It is a spectrum of military and paramilitary operations, typically of long duration, predominately conducted by SEAL Teams organized, trained, equipped, supported and directed, by the larger forces."[116]

      Most of the time, these capabilities are intertwined to create a more robust situational awareness activity. Perhaps one of the best historical accounts of these capabilities being utilized for defensive MDA by an operating force is the coast-watchers during World War II. Under the code name FERDINAND, the Solomon Islands watchers were composed of plantation owners and managers explicitly recruited to monitor and observe Japanese activity.[117] The code name, derived from the storybook character that preferred smelling flowers to fighting, is a reminder that the watchers' primary role is as lookouts, not fighters. During that time, the region's intelligence gaps were filled with small teams armed with binoculars and radios. They played a significant role as an early

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[115] SEAL Group, email message to author, October 22, 2020.

[116] SEAL Group.

[117] Eric Augustus Feldt, *The Coast Watchers* (New York: Oxford Uinversity Press, 1946), 8–15.

warning network, especially during the Guadalcanal campaign. The SEAL team's role in the MDA situational awareness of the WPS is likened to this historical account. SEAL teams can establish a mass base of coastal community and fisherfolk watchers to gather information on Chinese and other foreign vessel activity in the WPS. If the government decides to push through with the implementation of fishing militias, the SEAL teams can play an active role in the militias' organization and training. This scheme will free up some of the MIRC responsibilities to focus on the analysis of the information gathered. What is revealing with the Coastwatcher account is they fully utilized low cost/low technology approach to maritime surveillance.

On the other hand, the SEAL team's advantage is that it simultaneously utilizes low and high technology. It can communicate with coast-watcher volunteers on the use of commercially available and low-cost radio communications. At the same time, it can utilize fishing vessels equipped with radars, night visions, signal intelligence (SIGINT) capabilities, and acoustic sensors when conducting SR. The use of unmanned aerial vehicles (UAV) for coastal surveillance is also available for the SEAL Teams.

The conduct of SR aboard fishing vessels is to gather as much information on Chinese aggressive gray zone tactics that can be used for counter-tactics planning. This method was observed in the fight of the Sri Lankan Navy against the Sea Tigers. According to Povlok, one factor that significantly contributed to the Sri Lankan Navy against the Liberation Tigers of Tamil Eelam (LTTE, also known as Tamil Tigers) was creating the Special Boat Squadron (SBS).[118] The U.S. SOF-trained SBS personnel were deployed to penetrate and conduct surveillance and reconnaissance activities in LTTE territory. Information was relayed to the Rapid Action Boat Squadrons to intercept the maritime insurgent force. For the SEAL teams, they can relay information to mobile sensors such as the vectoring of Maritime Patrol Aircraft to document a given contact's activities.

One other advantage in deploying the SEAL teams for MDA situational awareness is that they can quickly shift from passive defensive MDA posture to more aggressive gray

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[118] Paul A. Povlock, "A Guerilla War At Sea: The Sri Lankan Civil War," *Small Wars Journal*, accessed November 16, 2020, 31–32, https://smallwarsjournal.com/jrnl/art/a-guerilla-war-at-sea-the-sri-lankan-civil-war.

zone tactics when the needs arise. Although this will be highly unlikely soon, having front lines' forces with these capabilities give many options for decision-makers.

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IV.   CONCLUSION AND RECOMMENDATIONS

A.   CONCLUSION

As a sizeable archipelagic nation, the Philippines needs a comprehensive MDA capability to counter increased state and non-state maritime threats. For several decades, the Philippines' lack of focus on MDA has incapacitated its diplomatic and military response to China's maritime threats, undermining its sovereignty under international law. China's growing dominance has also forced the rapid development of defense capabilities among countries having interests and territorial claims in the region.

The Philippines is building up its defense posture through its modernization program, hoping that it will serve as a form of deterrence against China's aggressive behavior. However, given China's military strength, the formidable defense posture the Philippines is envisioning should be sufficient enough that it can serve as a tripwire in time for the Philippines and its allies to respond. This defense system should be established in case China pursue its claims in the WPS by force. Part of that defense system is the MDA situational awareness capability.

While it has developed its maritime surveillance system through available technology, there are still many challenges confronting PNMSAS. Obsolete equipment will continuously degrade the surveillance capability of different land-based and mobile platforms. While the modernization of the AFP pushes through with the acquisition of brand-new maritime surveillance systems, the quantity and quality would still not be enough in providing nation-wide coverage. Given the existing procurement process and budgetary constraints, it would also take some time before the equipment is delivered. With these limitations, it is appropriate to look for other means of enhancing maritime situational awareness while waiting to acquire modern surveillance systems. Among the innovations the PNMSAS has introduced, Human Intelligence (HUMINT) plays an essential role in filling in the ISR capabilities gap. Crucial insight can be provided through information collection by HUMINT. Other countries such as Vietnam, Indonesia, and China have recognized the importance of establishing a maritime HUMINT network on every coastal

community and marine sector. The Philippine Navy planned to launch its fishing militia this year, but the plan was shelved due to the avoidance of miscalculations. As a supplemental approach, the Philippine Navy should maximize its maritime special force to fill the MDA gaps. The maritime special operations force's utilization offers a low-cost and low-tech solution to plug in the numerous gaps. It also brings them back to the maritime niche, which they have neglected due to the land-based counterinsurgency and counter-terrorism operations. In collaboration with intelligence personnel, SEALs could operate portable coastal radars situated at a higher elevation to increase the range to fill LMS coverage gaps while onshore. On the water, the SEAL teams could also utilize innocuous-looking vessels such as fishing boats, tourism vessels, or small high-speed crafts to investigate suspicious contacts. Simultaneously, the SEAL teams could experiment on IR sensors with magnification, modest Electronic Intelligence (ELINT) to detect suspect the bearings of radar, Communication Intelligence (COMINT) to detect ship-to-ship or ship-to-shore conversations, and reporting procedures.

NAVSOCOM, through its SEAL teams, has the capability to conduct defensive MDA situational awareness. Their UW capability allows them to link with coastal and fisherfolk communities to establish a network of coast-watcher volunteers. In case the fishing militia gets national approval, the SEAL teams could spearhead the training process. In terms of SR, the SEAL team can utilize a mix of high and low technology to gather information on an adversary's activities. Information gathered can provide decision-makers with a complete operating picture of the situation. Counter-tactical procedures can also be produced from the information gathered.

The Philippine Navy should reorient and start integrating NAVSOCOM in MDA situational awareness roles as part of its territorial defense operations. The PN should also start to plan out the acquisition of emerging capabilities such as UAVs and acoustic sensors deployed by NAVSOCOM. With the fusion of these emerging collection capabilities and NAVSOCOMs' core competencies, near-real-time awareness will be maximized. Constant awareness and documentation will be the backbone for the Philippines' defense against a superior nation like China.

B.   RECOMMENDATIONS

1.   Doctrinal

NAVSOCOM should include MDA situational awareness in its SEAL manual as one of its core functions. It should develop tactics and procedures necessary in performing MDA situational awareness in a passive defensive mode and active offensive mode. The SEAL group should start enhancing its doctrines extending the scope of UW and SR for seaborne operations. It should not only be limited to inland or coastal operations.

The Philippine Navy should craft a standard operating procedure to facilitate the inter-unit collaboration between the SEAL team units and MSACs in their respective AOR.

2.   Training

The Naval Special Operations Training and Doctrine Center (NAVSOTDC) should incorporate in its training program the concepts of MDA and Command and Control. The development effort for this training should be to "Conduct effective persistent maritime surveillance operations, in support of Reconnaissance and Surveillance (RS) activities, for no less than 24 hours using multiple tactical and technical collection platforms within a maritime environment."[119]

NAVSOCOM should coordinate with Special Operations Command Pacific (SOCPAC) for future military exercises integrating UW and SR capabilities for MDA situational awareness. The Philippine Navy should also link NAVSOCOM with other maritime SOF from Australia, Japan, South Korea, India, and others. The objective in working closely with allies and partners is to experiment with various tactics, techniques, technologies, and procedures to see which work best at filling current gaps in the Philippines' MDA coverage.

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[119] Justin Valdengo, Eric LaChance, and Dee Andrews, "Training Special Operations Forces to Conduct Maritime Surveillance: A New Approach," *Special Operations Journal* 4, no. 2 (July 3, 2018): 202–12, https://doi.org/10.1080/23296151.2018.1519939.

3. Future Research

Future studies may include an in-depth analysis of the importance of maritime SOF in MDA through historical case studies of successful maritime SOF activities. The coast-watcher and the Sri Lanka Civil War cases are a good starting point. This research was limited only to email correspondence and secondary sources. Site visits and personal interviews could shed more light on the gaps of PNMSAS.

This study was also confined to the subject of the Philippine Navy. Future studies could focus on a higher national level, such as the interagency coordination of maritime operating units that fall under the National Coast Watch Stations. The AFPSOCOM could also be integrated into the system and bring to the table its various SOF for MDA roles.

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