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AREA MARITIME SECURITY COMMITTEES AND THE MARITIME TRANSPORTATION SYSTEM

by

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December 2018

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The purpose of this thesis was to explore the modern threats to the maritime homeland security environment and the effectiveness of Area Maritime Security Committees (AMSCs) in preventing and responding to transportation security incidents. AMSCs are deliberately designed to encompass senior representatives of numerous stakeholders in the maritime homeland security enterprise, such as law enforcement, fire, industry, and labor. There were two research questions used in this project: What are the strengths, weaknesses, opportunities, and threats to the effectiveness of AMSCs, and how can AMSCs improve their interagency collaboration to enhance the homeland security enterprise? Two rounds of Delphi surveys were conducted to evaluate the effectiveness of AMSCs. These were issued to 24 people from five Captain of the Port Zones across the West Coast of the United States. The survey answers were then evaluated against open-source reports produced by AMSCs. Between these research sources, AMSCs were shown to be positive collaboration and information-sharing mechanisms, but geography creates barriers to participation and effectiveness. In order to improve, AMSCs must increase funding, change policy to fund the travel and training of AMSC members, recruit and provide engaging training for new personnel, and establish metrics of performance. On the national level, all AMSCs should target and monitor common threats to better secure the maritime transportation system.

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AREA MARITIME SECURITY COMMITTEES AND THE MARITIME TRANSPORTATION SYSTEM

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ABSTRACT

The purpose of this thesis was to explore the modern threats to the maritime homeland security environment and the effectiveness of Area Maritime Security Committees (AMSCs) in preventing and responding to transportation security incidents. AMSCs are deliberately designed to encompass senior representatives of numerous stakeholders in the maritime homeland security enterprise, such as law enforcement, fire, industry, and labor. There were two research questions used in this project: What are the strengths, weaknesses, opportunities, and threats to the effectiveness of AMSCs, and how can AMSCs improve their interagency collaboration to enhance the homeland security enterprise? Two rounds of Delphi surveys were conducted to evaluate the effectiveness of AMSCs. These were issued to 24 people from five Captain of the Port Zones across the West Coast of the United States. The survey answers were then evaluated against open-source reports produced by AMSCs. Between these research sources, AMSCs were shown to be positive collaboration and information-sharing mechanisms, but geography creates barriers to participation and effectiveness. In order to improve, AMSCs must increase funding, change policy to fund the travel and training of AMSC members, recruit and provide engaging training for new personnel, and establish metrics of performance. On the national level, all AMSCs should target and monitor common threats to better secure the maritime transportation system.

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LIST OF ACRONYMS AND ABBREVIATIONS

AIS	automatic information system
AMSC	Area Maritime Security Committee
AQ	Al Qaeda
COTP	Captain of the Port
FMSC	federal maritime security coordinator
GPS	Global Positioning System
HCPV	high capacity passenger vessel
HLS	homeland security
ICC	inter-organizational collaborative capacity
ICS	industrial control system
MHS	maritime homeland security
MTS	maritime transportation system
MTSA	Maritime Transportation Security Act
P3	public–private partnership
PSGP	Port Security Grant Program
SME	subject-matter expert
TSI	transportation security incident
UN	United Nations
VBIED	vessel-borne improvised explosive device

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EXECUTIVE SUMMARY

Throughout the history of the United States, the country has been highly dependent upon the safe and secure transportation of goods and services on the world's oceans. As the shipping industry and the sophistication of national and international laws have developed, the complexity and challenges of maritime security have grown. Traditionally, the concept of maritime security has referred to the military actions that nations take to secure critical sea lines of communication against interference from other military or sub-national groups. Today, maritime security involves the military, police, legislative, and policy actions that nations take domestically and internationally to ensure the safety and security of the maritime domain.[1] These tools of government are used to combat six threats that the United Nations has identified as the most significant security concerns to the maritime domain: the trafficking of persons, drugs, and weapons; maritime terrorism; crime; and piracy.[2] The U.S. Coast Guard also identifies cybersecurity, active shooters, and the emergence of drones as threats. To address these issues, the maritime homeland security enterprise has evolved into a series of overlapping authorities and jurisdictions with each layer of government employing their legal and operational tools to tackle these challenges.

When evaluating these threats to the United States, maritime crime, terrorism, smuggling, and cybersecurity are the most pressing issues facing the maritime homeland security enterprise. To address these challenges following the attacks of 9/11, Congress passed the Maritime Transportation Security Act of 2002, which created regional Area Maritime Security Committees (AMSCs) led by the Coast Guard's Captain of the Port, who is designated as the federal maritime security coordinator.[3] AMSCs are voluntary, public–private partnerships composed of representatives from the security sector and

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[1] Natalie Klein, *Maritime Security and the Law of the Sea* (Oxford: Oxford University Press, 2011), 2.

[2] United Nations General Assembly, *Addendum to Oceans and the Law of the Sea: Report of the Secretary-General*, A/72/70 (New York: United Nations, September 6, 2017), 8, http://undocs.org/A/72/70/Add.1.

[3] Maritime Transportation Security Act of 2002, Pub. L. No. 107-295, 116 Stat. 2064 (2002), https://www.congress.gov/107/plaws/publ295/PLAW-107publ295.pdf.

private industry such as police, fire, maritime industry, labor, and academia.[4] The purpose of AMSCs is to identify natural and manmade threats to the maritime transportation system and build and exercise response plans to counter these challenges. Interestingly, there is very little academic research or evaluation of their effectiveness. To evaluate the impact of AMSCs, this thesis posed two research questions: 1) What are the strengths, weaknesses, opportunities, and threats surrounding AMSCs and the maritime homeland security environment? 2) How can AMSCs prioritize their efforts and improve the quality of their collaboration to achieve clear benchmarks of success? To answer these research questions, a two-round Delphi survey was administered to 24 maritime homeland security professionals across the five COTP zones along the West Coast of the United States. The data collected were then cross-referenced with the 2016 and 2017 annual reports for AMSCs.

The survey identified the strengths of AMSCs as networked collaboration and information sharing; the weaknesses included the geographic distance between port facilities, bureaucracy, and personnel turnover within the Coast Guard's leadership. The opportunities include improving information sharing, and the threats to effectiveness were a lack of participation from outlying ports, collaboration, and geography. Given that collaboration across disparate homeland security professionals is crucial for AMSC effectiveness, the inter-organizational collaboration capacity (ICC) model was selected to target opportunities for improvement. This model was chosen because of its simplicity and clarity—with five domains and 13 sub-factors that break down the means to enhance interagency performance. Following the application of the ICC model, several recommendations emerged for ways to improve the effectiveness of the committees: increase funding, remove the prohibition of funding for travel of committee members, develop a uniform method of recruiting and training new members, and build performance metrics for AMSCs. At the national level, many AMSCs face similar security threats. These issues should be identified as key security concerns with performance milestones attached to threat reduction.

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[4] Maritime Security: Area Maritime Security, 33 C.F.R. § 103 (2010), https://www.gpo.gov/fdsys/pkg/CFR-2010-title33-vol1/pdf/CFR-2010-title33-vol1-part103.pdf.

In summary, there is room for organizational improvement within the AMSC construct. Nevertheless, by conducting threat assessments and exercises with multiple organizations, AMSCs provide great value to the homeland security enterprise. These networked relationships and connections are the true strength of these partnerships, and AMSCs continue to build the security infrastructure surrounding the maritime transportation system.

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I. INTRODUCTION

The United States is a maritime nation, highly dependent on the safe and secure movement of goods and services across the oceans and through U.S. territorial seas. To support the global supply chain, the maritime industry has grown into a complex system of systems. Likewise, to protect U.S. security interests, the maritime homeland security (MHS) enterprise has evolved into a complex system of overlapping agencies, legal authorities, jurisdictions, and resources. This development of the MHS environment has created significant gaps across the various agencies governing the maritime domain. Recognizing these challenges, Congress directed the formation of Area Maritime Security Committees (AMSCs) in the Maritime Transportation Security Act of 2002.[1] These voluntary public–private partnerships have several mandated missions that the Coast Guard is directed to oversee and administer. Writ large, AMSCs are supposed to plan for and try to prevent maritime transportation security incidents. Like many other large government programs, the AMSC's performance objectives, outcomes, and accountability are ill-defined, and independent assessments are rarely used to evaluate effectiveness. Each local committee provides an annual report to Coast Guard headquarters, which in turn releases a summary of self-reported—and anecdotal—challenges, suggestions, accomplishments, and best practices.[2]

The Coast Guard does a good job of collecting and consolidating feedback from AMSCs, and the annual AMSC reports identify threats and suggest solutions to enhance the safety and security of the maritime domain.[3] But the absence of explicit definitions and metrics of "success"—beyond the sweeping goal of preventing terrorist attacks—has resulted in somewhat circular and meaningless accounting. As mentioned previously,

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[1] Maritime Transportation Security Act of 2002, Pub. L. No. 107-295, 116 Stat. 2064 (2002), https://www.congress.gov/107/plaws/publ295/PLAW-107publ295.pdf.

[2] U.S. Coast Guard, *Area Maritime Security Committees 2017 Annual Report: Challenges, Suggestions, Accomplishments, and Best Practices* (Washington, DC: U.S. Coast Guard, 2018), https://www.dco.uscg.mil/Portals/9/CG-FAC/Documents/AMSC%20Consolidated%20reports/2017/2017%20Consolidated%20AMSC%20Report.pdf?ver=2018-07-20-081358-730.

[3] U.S. Coast Guard.

AMSCs are collaborative bodies, but because the mere act of collaborating is conflated with purpose (and success), the annual reports are an accounting of meetings, exercises, training, and operations.[4] Collaboration is not an end unto itself; rather, it is a process undertaken in service to an outcome, purpose, or goal. Until more tangible, intermediate, and quantifiable (or verifiable) goals are set, neither the Coast Guard nor the participants in AMSCs can have a precise sense of how well they are collaborating. Because AMSCs are voluntary, it is reasonable to assume they are in some way, or to some degree, beneficial for all parties. It would seem prudent to know with greater certainty, though, exactly how beneficial and in what ways and to which participants. This information would allow both the Coast Guard and the participants in AMSCs to ensure the best use of time and resources, to identify opportunities for improvement, and to prioritize their areas of effort. Finally, it would enable the stakeholders to leverage existing, useful models for successful collaboration toward a clear purpose.

A. RESEARCH QUESTION

What are the strengths, weaknesses, opportunities, and threats surrounding area maritime security committees and the maritime homeland security environment? How can AMSCs prioritize their efforts and improve the quality of their collaboration to achieve clear benchmarks of success?

B. SIGNIFICANCE TO THE FIELD

There are several reasons this research is significant to the field of homeland security. AMSCs are a unique concept in the homeland security (HLS) enterprise; there are other public–private partnerships (P3s), but none are similarly structured, nor are they as localized as AMSCs. There are two relevant examples of P3s that the HLS enterprise has created to communicate threats and generate policy. The TSA has the Aviation Security Advisory Committee, which is a national-level policy advisory committee.[5] Another national security industry intelligence P3 is the Information Sharing and Analysis Center

[4] U.S. Coast Guard.

[5] "Aviation Security Advisory Committee," Transportation Security Administration, accessed December 7, 2018, https://www.tsa.gov/for-industry/aviation-security.

(ISAC).[6] These are information and intelligence diffusion tools for specific industries, but they do not conduct operational planning or exercises. The key difference between these two types of advisory committees and AMSCs is that AMSCs are regional or local P3s that conduct threat assessments, build plans, and conduct operational exercises to enhance the maritime security within their Captain of the Port (COTP) Zone.

Because of their uniqueness and the narrow scope of MHS, there is little research on or understanding of how well AMSCs are performing their mandated roles and objectives. Therefore, this research project is an attempt to provide an independent assessment of AMSCs by surveying subject-matter experts across five COTP zones. A strengths, weaknesses, opportunities, and threats (SWOT) analysis model of AMSCs was completed using data from the surveys. The SWOT method is a common organizational assessment tool used across business and government to identify internal strengths and weaknesses and external opportunities and threats. The benefit of this analytic tool is that it is widely understood and can be easily applied to facilitate organizational improvement.[7] The SWOT data was then coded and applied to the inter-organizational collaboration capacity (ICC) model to identify ways for AMSCs to enhance their performance.

C. LITERATURE REVIEW

This literature review provides an overview of relevant written work surrounding the roles and responsibilities of AMSCs in securing the maritime domain. The literature is categorized into three general topics: policy, law, and maritime security. The known information in these fields comes from policy documents from the Bush and Obama administrations, think tanks, non-profit organizations, AMSC open-source reports, federal law, and academic research.

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[6] "Home Page," National Council of ISACs, accessed December 7, 2018, https://www.nationalisacs.org/.

[7] Harald A. Friedl, *The SAGE International Encyclopedia of Travel and Tourism* (Thousand Oaks, CA: SAGE, 2017) 1204–1206.

1. Policy and Law

Following the attacks of September 11, 2001, elements of the U.S. government recognized significant gaps in the security of the maritime domain. As a result, Congress passed the Maritime Transportation Security Act (MTSA) of 2002.[8] The MTSA directed improvements in the prevention and response to the threats of maritime terrorism. Additionally, § 70102 requires that the secretary of the Department of Homeland Security conduct vulnerability assessments of every port complex.[9] With these assessments, the secretary must build a national maritime transportation security plan and establish the role of the federal maritime security coordinator (FMSC).[10] This person is functionally responsible for all maritime security response operations within the Sector or COTP zone and generates area maritime security plans.[11] The MTSA also establishes a mechanism for federal funding to develop the MHS enterprise through the Port Security Grant Program (PSGP).[12] In 2006 Congress passed the Security and Accountability for Every (SAFE) Port Act.[13] This law amended the MTSA by changing the distribution method for grant funding from "a fair and equitable" manner to "the allocation of funds based on risk."[14] Today, the PSGP is a $100 million initiative administered by the Federal Emergency Management Agency, and local AMSCs are awarding and distributing the funds.[15] Captain Paul Arnett identified several recommendations to improve the management of the PSGP in his 2016 Naval Postgraduate School thesis.[16] He also did an excellent job of summarizing the interplay among the various laws, regulations, and agency policy memos that applies to the

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[8] Maritime Transportation Security Act.

[9] Maritime Transportation Security Act, § 70104.

[10] Maritime Transportation Security Act, § 70104.

[11] Maritime Transportation Security Act, § 70103.

[12] Maritime Transportation Security Act, § 70107.

[13] Security and Accountability for Every (SAFE) Port Act of 2006, Pub. L. No. 109-347 (2006), https://www.congress.gov/109/plaws/publ347/PLAW-109publ347.pdf.

[14] SAFE Port Act, § 112.

[15] "Fiscal Year 2017 Port Security Grant Program," Federal Emergency Management Agency, last modified June 2, 2017, https://www.fema.gov/fiscal-year-2017-port-security-grant-program.

[16] Paul D. J. Arnett, "The Port Security Grant Program: Good Enough, or Can It Be Made Better?," (master's thesis, Naval Postgraduate School, June 2016), xvi–xix, https://calhoun.nps.edu/handle/10945/49476.

MHS enterprise. However, his research focused on reducing risk through better management of the PSGP.[17] Because of Captain Arnett's specific focus on risk reduction and the grant process, his research is not relevant to the effectiveness of AMSC but rather a discussion on improving the MHS environment through better grant administration.

Following the passage of the MTSA, President Bush signed Homeland Security Presidential Directive (HSPD)-13.[18] This policy document directed the establishment of the Maritime Security Policy Coordinating Committee, formed from the President's cabinet-level executives.[19] HSPD-13 also directed the writing of several national strategy documents including the *National Strategy for Maritime Security*.[20] The Department of Homeland Security in concert with multiple agencies produced five policy documents that compose this national strategy.[21] Two elements of the *National Strategy* provide relevant policy guidance and strategic goals worth exploring. The first is the *Maritime Transportation System Security Recommendations*.[22] This document seeks to "Create a coordinated network of stakeholders who: (1) understand and accept their role/responsibility for ensuring maritime security, [and] (2) are actively engaged in collaborative efforts to reduce security risks in the Maritime Domain."[23] The second relevant policy document is the *Maritime Commerce Security Plan*.[24] This is one of the only federal documents that clearly articulates an objective for securing the MTS: "To improve the security of the maritime supply chain, to lower the risk that it will be used to

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[17] Arnett, 19–36.

[18] George Bush, Homeland Security Presidential Directive (HSPD) 13, "Maritime Security Policy" (Washington, DC: Office of the President, 2004), https://fas.org/irp/offdocs/nspd/nspd41.pdf.

[19] Bush, 4.

[20] Bush, 5.

[21] "National Strategy for Maritime Security," Department of Homeland Security, accessed December 7, 2018, https://www.dhs.gov/national-plan-achieve-maritime-domain-awareness.

[22] Department of Homeland Security, *Maritime Transportation System Security Recommendations for the National Strategy for Maritime Security* (Washington, DC: Department of Homeland Security, October 2005), https://www.dhs.gov/sites/default/files/publications/HSPD_MTSSPlan_0.pdf.

[23] Department of Homeland Security, *Maritime Transportation System Security Recommendations*.

[24] Department of Homeland Security, *The Maritime Commerce Security Plan for the National Strategy for Maritime Security* (Washington, DC: Department of Homeland Security, October 2005), https://www.dhs.gov/sites/default/files/publications/HSPD_MCSPlan_0.pdf.

support terrorism, criminal or other unlawful or hostile acts, reduce the vulnerability of the Maritime Domain, and protect and facilitate lawful maritime commerce."[25]

Another series of regulations that govern the technical security standards for facilities, vessels, and the conduct of AMSCs is 33 C.F.R. § 101–105.[26] Further guidance on the conduct and management of AMSCs comes from the USCG's Navigation and Vessel Inspection Circular (NVIC) 09-02.[27] This document provides specific doctrine and detailed instructions for things such as assigning committee members and the format of the area maritime security plan.[28] This NVIC also provides uniformity for the structure, management, and conduct of AMSCs throughout the nation.[29] To document performance, the U.S. Coast Guard produces an annual report on the "challenges, suggestions, accomplishments, and best practices" of AMSCs across the country.[30] This report and its appendices provide a consolidated list of feedback and input from every AMSC. This document shows clear points of concern and numerous opportunities for improvement in MHS operations, legislation, and management. However, there is not a clear methodology to evaluate what is presented. This report contains over 125 individual challenges that each AMSC is facing, some with clear recommendations, others with no recommendation or proposed solution.[31] This paints a picture of the good effort and intentions but sub-optimal performance measurements of success or effectiveness.

In summary, the MTSA of 2002 directed the creation of P3s in the form of AMSCs, led by the FMSC.[32] This law was further reinforced by agency rulemaking in 33 C.F.R. § 103, which provides some level of technical guidance on how AMSCs are to be organized

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[25] Department of Homeland Security, *Maritime Commerce Security Plan.*

[26] Maritime Security, 33 C.F.R. §§ 101–105 (2010).

[27] U.S. Coast Guard, *Guidelines for Port Security Committees, and Port Security Plans Required for U.S. Ports*, NVIC 09-02 (Washington, DC: Department of Transportation, 2002), https://media.defense.gov/2017/Jul/14/2001777940/-1/-1/0/9-02.PDF.

[28] U.S. Coast Guard, *Guidelines for Port Security Committees*.

[29] U.S. Coast Guard, *Guidelines for Port Security Committees*.

[30] U.S. Coast Guard, *2017 Annual Report*.

[31] U.S. Coast Guard, *2017 Annual Report.*

[32] Maritime Transportation Security Act, § 70104.

and what they are expected to accomplish.[33] Because of the broad interpretation of 33 C.F.R. § 103, the Coast Guard issued NVIC 09-02 to standardize the plans and general administration of AMSCs across the country.[34] As the laws and regulations were being created, the implementation was guided by strategic-level policy such as the *National Strategy for Maritime Security* and HSPD-13.[35]

2. Maritime Security

Historically, maritime security has referred to nation-state control of the oceans through formal naval sea power.[36] However, the definition and idea of maritime security have grown substantially over the last 30 years. In 1999, the U.S. Navy and the U.S. Coast Guard attempted to forecast the political and strategic environment of the world's oceans by 2020.[37] In their future assessment, the U.S. naval intelligence community identified multiple elements that compose the modern principle of maritime security "broadly in a national security context to include the protection of all of the nation's interests on the seas."[38] The 2020 analysis also has several categorizations of threats to the safety of life at sea.[39] This is important as safety risks pose significant security threats to the nation-state as well. Taking a more focused view, security author David Sloggett describes seven components of maritime security in his book *The Anarchic Sea*.[40] Much like the threat estimate for 2020, Sloggett identifies the key role of nation-states in the maritime domain: "Maritime security is all about trying to bring governance to these potentially anarchic

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[33] Maritime Security: Area Maritime Security, 33 C.F.R. § 103 (2010), https://www.gpo.gov/fdsys/pkg/CFR-2010-title33-vol1/pdf/CFR-2010-title33-vol1-part103.pdf.

[34] U.S. Coast Guard, *Guidelines for Port Security Committees*.

[35] Bush, HSPD-13.

[36] Basil Germond, "The Geopolitical Dimension of Maritime Security," *Marine Policy* 54 (December 2014): 138.

[37] Office of Naval Intelligence and U.S. Coast Guard Intelligence Coordination Center, *Threats and Challenges to Maritime Security 2020* (Washington, DC: Department of Defense, March 1999), i, https://fas.org/irp/threat/maritime2020/TITLE.htm.

[38] Office of Naval Intelligence and U.S. Coast Guard, i.

[39] Office of Naval Intelligence and U.S. Coast Guard, i.

[40] David Sloggett, *The Anarchic Sea* (London: C. Hurst, 2013), 36–38.

situations, so that their impact can be controlled."[41] Where Slogged falls short from a more contemporary perspective is in the role of preventive legislation and administrative controls placed on the maritime industry. He does not reference the regulations enacted by the international community used to minimize threats to vessels, crews, and ports. Sloggett's central theme is the geopolitical and military security of the maritime domain.[42]

Applying a holistic approach, the MHS enterprise includes enhanced ship and cargo security standards, stewardship of the environment, and significantly improved crew-training and security capabilities. Merging these ideas of sea power and regulatory action, maritime policy researcher and lecturer Basil Germond describes maritime security as "as a set of policies, regulations, measures and operations" taken to ensure the security of the transportation system and the maritime domain.[43] Bueger, another security policy researcher adds factors that enhance economic development, national security, human security, marine safety, and environmental protection of the maritime domain.[44] This is an altruistic approach to the use of the oceans and one that requires all players to adopt a uniform set of standards that equally offset the costs of safety and security across the maritime industry.[45] On the other hand, Marlow makes the point that voluntary compliance with security regulations imposes a cost only on those who "volunteer" to follow a higher standard of safety and security.[46] Thus, Marlow's work implies that regulation is good for the industry because it mandates best practices that reduce risk and enforces a uniform cost of security and safety across the maritime industry.

One of the more recent and relevant research papers to address maritime security threats is a Naval Postgraduate School thesis by Eng Hoch Tng. [47] Eng defines the history

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[41] Sloggett, 35.

[42] Sloggett, xvii–xxvi.

[43] Germond, "The Geopolitical Dimension of Maritime Security," 137–142.

[44] Christian Bueger, "What is Maritime Security?," *Marine Policy* 53 (October 2014): 159–164.

[45] Peter B. Marlow, "Maritime Security: An Update of Key Issues," *Maritime Policy & Management* 37, no. 7 (November 2010): 675.

[46] Marlow, 675.

[47] Eng Hock Tng, "Terrorism in the Maritime Domain" (master's thesis, Naval Postgraduate School, 2013), 8–31, https://calhoun.nps.edu/handle/10945/32910.

of various maritime terrorist organizations and outlines the motives and targets for maritime terrorism and piracy.[48] He also paints a picture of the permissive operational environment that enables maritime terrorism and piracy to flourish.[49] In a 2008 study of maritime terrorism, Peter Chalk with the RAND Corporation defines seven factors that facilitate maritime piracy and five similar factors that enable or encourage maritime terrorism.[50] Chalk also provides a review of the various actions the U.S. government and the international community have taken to counter these geopolitical security issues.[51] Chalk concludes his study with several positive suggestions for U.S. policymakers to enhance the maritime security environment. However, the assumption he makes is that governments exist in a world of unlimited budgets and human resources to tackle all known security problems in the maritime domain.[52] Eng and Chalk align on the factors that enable successful maritime terrorist activities. A lack of governmental control or maritime enforcement over the land and territorial seas surrounding their operating area enables bad actors to flourish.[53] However, Eng makes a stronger argument for the success of maritime terrorism, specifically that having a "maritime tradition" is a factor in the effective exploitation of the maritime domain.[54] Chalk discusses how increased access to recreational sporting equipment and minimal crew staffing allow terrorists access to targets.[55] While recreational sports gear certainly can give more access, such equipment does not readily translate into effective tactics.

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[48] Eng, 8–31.

[49] Eng, 26.

[50] Peter Chalk, *The Maritime Dimension of International Security, Terrorism, Piracy and Challenges for the United States* (Santa Monica, CA: RAND Corporation, 2008), xi.

[51] Chalk, 38–42.

[52] Chalk, 43–46.

[53] Chalk, *Maritime Dimensions of International Security*, 43; and Eng, "Terrorism in the Maritime Domain," 25–28.

[54] Eng, "Terrorism in the Maritime Domain," 47.

[55] Chalk, *Maritime Dimensions of International Security*, 43–46.

A second study by the RAND Corporation focuses on the liability associated with a terrorist attack on high-capacity passenger vessels and container ships.[56] This is one of the few documents to look at the threats to high-capacity passenger vessels and discuss container ships as a means to introduce weapons of mass destruction into the United States.[57] One significant shortfall in the 2006 RAND study, much like with Eng's work, is the failure to consider the possibility of a mass-shooting or lone-wolf attack on these vessels.[58] Although a relatively new tactic in the Western world, at the time of Eng's thesis, such attacks were a known threat that could easily be applied to the maritime environment.

Because of the international nature of the maritime industry, the United Nations (UN) has long held a key role in the safety and security of the oceans. Based on the need for global acknowledgment of common concerns, the UN General Assembly produces the annual *Oceans and the Law of the Sea* report.[59] This report documents the broad spectrum of international problem areas from year to year. In some instances, the UN provides an itemized list of threats and challenges, but in other years, it limits its views of maritime security, focusing more on environmental issues such as the impact of man-made acoustic noise on the marine habitat.[60] These reports are beneficial to the maritime community because they speak to the concerns of the global community. However, the challenge with any democratic process is that not all voices are equal, and key themes can be suppressed by political coalitions with a vested interest in the status quo. A nearly universal concept among all the authors is the importance to understand maritime security as a "transnational

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[56] Michael D. Greenberg et al., *Maritime Terrorism: Risk and Liability* (Santa Monica, CA: RAND Corporation, 2006), 6.

[57] Greenberg et al., 139–141.

[58] Chalk, *Maritime Dimension of International Security*, 44–46.

[59] United Nations General Assembly, *Addendum to Oceans and the Law of the Sea: Report of the Secretary-General*, A/72/70 (New York: United Nations, September 6, 2017), http://undocs.org/A/72/70/Add.1.

[60] United Nations General Assembly, *Addendum to Oceans and the Law of the Sea*, A/72/70; and United Nations General Assembly, *Oceans and the Law of the Sea: Report of the Secretary-General*, A/73/68 (New York: United Nations, March 20, 2018), http://undocs.org/a/73/68.

task."[61] This requires a collective effort across militaries, governments, and the private sector to achieve a true state of security in the maritime domain.

3. Conclusion

There are several thousand legal, policy, and historical documents on the various aspects of maritime security. The written works surveyed for this literature review represent a small portion of the potential readings in the field. These documents were chosen due to their relevance to AMSCs, the field of maritime homeland security, and their recent publication. There is ample written work on the legislation and policy surrounding AMSCs, and there is substantial research on maritime security and terrorism. Of significant note, there was not substantial academic or written work on the roles and successes of P3s in securing the maritime domain, and virtually nothing was written on the performance of AMSCs. Therefore, further research is warranted on this topic.

D. RESEARCH DESIGN

In order to assess the effectiveness of AMSCs, a qualitative Delphi survey of subject-matter experts (SMEs) was conducted in the late summer and early fall of 2018. The purpose of a Delphi panel is to query SMEs on a particular topic and gather collective feedback through multiple survey rounds.[62] Through each subsequent round, the participants were given previous survey answers that were thematically focused or represented a specific point of interest to the researcher.[63] Thus, the collaborative answers from each subsequent round of SMEs provided the opportunity to reflect and comment on the answers provided by others.[64]

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[61] Bueger, "What is Maritime Security?," 163.

[62] Chitu Okoli and Suzane D. Pawlowski, "The Delphi Method as a Research Tool: An Example, Design Considerations and Applications," *Information and Management* 42 (2004): 15–29.

[63] Gregory J. Skulmoski, Francis T. Hartman, and Jennifer Krahn, "The Delphi Method for Graduate Research," *Journal of Information Technology Education* 6 (2007): 2.

[64] Skulmoski, Hartman, and Krahn, 3.

The literature on Delphi surveys recommends limiting the survey size to 10–18 individuals.[65] In order to restrict the size of the SME candidate pool, a geographic range of the West Coast of the United States was selected. This allowed for the recruitment of personnel involved in the security and operations of large, medium, and small port facilities. The individuals recruited for the survey spanned the full spectrum of private industry, public sector, and security services such as police and fire departments. Upon completion of each round of surveys, the data were segregated by question and then coded by specific theme. These themes were then evaluated against the SWOT model to identify opportunities for organizational improvement in the function and execution of AMSCs. SWOT provided a snapshot of the current state of the committees, which can be used to plan and prioritize tasks while the ICC Model highlighted clear opportunities to enhance interagency collaboration. Using both of these tools allowed the research to identify key opportunities for organizational improvement of AMSCs across the country.

E. CHAPTER OVERVIEW

Chapter II provides a summary of the evolution of maritime security from formal naval sea power to the legislative creation of AMSCs to secure the maritime domain. This chapter discusses the threats of maritime crime, terrorism, and smuggling and recent examples of targeted attacks domestically and abroad with actions taken by AMSCs to address these threats.

Chapter III reviews the research methods that were employed to evaluate the effectiveness of AMSCs. This section also provides a brief explanation of the ports along the West Coast from which individuals were selected for participation in this project. Then, the survey results are broken into strengths, weaknesses, opportunities, and threats. Using the SWOT model, the survey answers were cross-referenced with the 2016 and 2017 annual reports of the AMSCs to identify key themes and takeaways.

Chapter IV discusses the totality of the project, revisiting the thesis statement and research question. The chapter then articulates the implementation of the ICC Model and

[65] Okoli and Pawlowski, "The Delphi Method as a Research Tool," 15–29.

its relevance to AMSCs. Using this as a baseline, the AMSC survey feedback and the annual reports are consolidated to formulate recommendations and targeted areas of improvement. The chapter then discusses findings that were not reported in great depth but were recurrent themes, such as Port Security Grant funding and geography.

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II. THE MARITIME THREAT LANDSCAPE AND THE ROLE OF THE AMSC

This thesis focuses on the actions that the U.S. Coast Guard is taking to strengthen the MHS enterprise. To provide context for AMSCs, this chapter discusses their formation, recent and relevant maritime security threats, and the ways in which AMSCs are working to strengthen the MHS environment.

A. MARITIME THREATS AND MARITIME SECURITY

U.S. naval forces define maritime security as "tasks and operations conducted to protect sovereignty and maritime resources, support free and open seaborne commerce, and to counter piracy, crime, environmental destruction, and illegal seaborne immigration."[66] These operational concepts are echoed by the UN in its 2017 report on *Oceans and the Law of the Sea*.[67] This report outlines six threats to international maritime security: trafficking in persons, drugs, and weapons; maritime terrorism; crime; and piracy.[68] In order to counter these threats, the international community and the United States have taken significant regulatory, legal, military, and police actions to mitigate these challenges. Because of the layers of security and regulatory oversight, not all of the threats identified by the UN are of immediate concern to the United States. For instance, this thesis does not discuss maritime piracy because it is a low probability incident in U.S. waters, and AMSCs do not spend significant time or effort on counterpiracy planning or exercises. Therefore, the threat evaluations in this chapter focus on crime; terrorism; the smuggling of people, narcotics, and weapons; and cybersecurity.

1. Maritime Crime

In recent years, the most prevalent forms of maritime crime have involved armed boarding parties climbing onto vessels in transit through areas of narrow sea lines of

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[66] Department of the Navy and U.S. Coast Guard, *Naval Operations Concept 2010: Implementing the Maritime Strategy* (Washington, DC: Department of Defense, 2010), 35.

[67] United Nations General Assembly, *Addendum to Oceans and the Law of the Sea*, 8.

[68] United Nations General Assembly, 8.

communication, such as the Malacca Strait, or while at anchorage in underdeveloped nations. These types of robberies have generally focused on stealing small items that can be readily sold or consumed such as food, alcohol, and tobacco. From 2014 to June 2018 in the Gulf of Guinea, there were 532 reported attempted or successful attacks on merchant ships.[69] During the same period, there were 716 attacks that occurred against merchant vessels in Southeast Asia.[70] Many of these events were documented and reported to authorities as unsuccessful or attempted attacks. The number of unsuccessful attacks is interesting to note because it suggests the difficulty of successful maritime robbery. The oceans are a volatile workplace, and the primary target generally takes active measures to counter bad actors. The second principle evidenced by these numbers is that there is a lively criminal element in the maritime domain seeking to exploit the largely unarmed commercial shipping industry. Despite the fact that most of these issues occur in far-flung regions of the world, attacking the maritime industry compromises the security of the MTS as a whole. A security issue on a vessel in West Africa can be easily transported to the East Coast of the United States and should not be ignored.

AMSCs are not actively working toward maritime security in the Gulf of Guinea or the Malacca Strait per se. They are, however, building plans and conducting security exercises throughout the territorial seas of the United States to ensure the safe and secure movement of people, vessels, and cargo within the territorial seas. These preventive, preparatory activities are essential to ensuring the whole-of-government response to a broad spectrum of threats to the MTS.

2. Terrorism

Unlike robbery and piracy, terrorism in the maritime domain is a relatively new phenomenon. One of the reasons for this is that the marine environment is not an easy place to make a name for oneself as a terrorist. In general, it is a hostile operating area, which requires some experience with boats in order to be remotely effective. An example of this

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[69] Office of Naval Intelligence, *Horn of Africa/Gulf of Guinea/Southeast Asia: Piracy Analysis and Warning Weekly (PAWW) Report for 5–11 July 2018* (Washington, DC: Department of the Navy, July 12, 2018).

[70] Office of Naval Intelligence.

is the first attempt to attack a U.S. naval vessel in the port of Aiden, Yemen. In January 2000, Al Qaeda (AQ) operatives tried to target *USS The Sullivans* with a vessel-borne improvised explosive device (VBIED).[71] This attempt failed because of operator inexperience: the VBIED sank at the boat launch because the terrorists had grossly overloaded it.[72] Despite their initial failure, AQ pressed ahead and carried out a successful attack on *USS Cole* 10 months later, killing 17 Sailors and crippling a U.S. naval warship.[73]

An additional challenge with maritime terrorism is the lack of media access. Terrorists are generally seeking an audience for their actions. When their events occur miles out to sea, far away from media outlets, even a successful attack will likely have minimal coverage due to the challenges of getting to the incident. An example of this is the attack on the French oil tanker, *MV Limburg*. In this instance, it is believed that AQ operatives successfully assaulted the ship with a VBIED off the coast of Yemen.[74] The vessel was set afire, and one crewmember was killed. The ship, however, was salvaged, and little media interest was given despite the vessel being successfully attacked.[75] This event highlights another problem with targeting large ships: they are built with redundant safety systems and manned with crews trained to respond to a wide variety of emergencies. Although not difficult to find and hit, large merchant ships are engineered for safety and resiliency. This reduces the likely success and minimizes the impact of an attack.

Despite these deterrent factors, maritime terrorism is still a legitimate concern for governments and industries around the world. Boats are inherently dangerous, and there is a significant potential to weaponize the cargo or the vessel. In recent history, there are multiple examples of ships that have exploded and caused major damage to the surrounding areas. One of the most significant accidents in maritime history occurred in Halifax,

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[71] Frank Richter, "Al Qaida's Pattern of Attack," *Baltimore Sun,* January 22, 2015, http://www.baltimoresun.com/news/opinion/oped/bs-ed-al-qaida-timing-20150122-story.html.

[72] Steven Lee Myers, "Failed Plan to Bomb a U.S. Ship Is Reported," *New York Times*, November 10, 2000, https://www.nytimes.com/2000/11/10/world/failed-plan-to-bomb-a-us-ship-is-reported.html.

[73] "USS Cole Bombing Fast Facts," CNN, September 20, 2017, https://www.cnn.com/2013/09/18/world/meast/uss-cole-bombing-fast-facts/index.html.

[74] "Yemen Says Tanker Blast Was Terrorism," BBC, October 16, 2002, http://news.bbc.co.uk/2/hi/middle_east/2334865.stm.

[75] BBC.

Canada, in 1916.[76] A military munitions ship collided with another vessel, caught fire, and quickly exploded, instantly killing more than 1,900 people and severely wounding an additional 9,000.[77] This incident caused port authorities around the world to reassess the management and handling of certain dangerous cargoes.[78] The Houston-Galveston AMSC, in fact, listed the movement and tracking of especially hazardous cargoes in and out of U.S. ports as a major security challenge.[79] This issue highlights a lack of maritime domain awareness as these highly volatile industrial chemicals are transported into and out of U.S. ports. Houston is not alone in this challenge; there are dozens of highly explosive or toxic industrial chemicals shipped in bulk quantities into U.S. ports, and significant accidents with these cargoes continue to occur.[80] Another possible means of weaponizing commercial vessels is to use the ship as a ramming weapon against other vessels. No relevant example of this type of attack exists, and there are some significant challenges for the attacker using this tactic. A person would have to get control of the bridge and the engine room of the vessel and be competent enough to pilot the ship into another target. On the surface, this scenario seems far-fetched and unlikely. However, the 9/11 hijackers overcame similar obstacles successfully; therefore, the potential to use a ship for this purpose should not be ignored or discounted.

One of the most likely terrorist targets is high-capacity passenger vessels (HCPVs). Modern cruise ships can carry over 8,800 people in a highly confined environment, which presents a tempting target of opportunity.[81] There are a few recent historical examples of attacks on HCPVs. In 2004, Abu Sayyaf militants successfully bombed a Philippine ferry

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[76] Canadian Encyclopedia, s.v. "Halifax explosion," accessed May 10, 2018, http://www.thecanadianencyclopedia.ca/en/article/halifax-explosion/.

[77] Canadian Encyclopedia.

[78] Notification of Arrival, Hazardous Conditions, and Certain Dangerous Cargos, 33 C.F.R. § 160C.

[79] U.S. Coast Guard, *2017 Annual Report.*

[80] "6 Shocking Ship Explosions Caught on Tape," Marine Insight, October 26, 2017, https://www.marineinsight.com/videos/top-ship-explosions-caught-on-tape/.

[81] Kate Springer, "Symphony of the Seas: World's Largest Cruise Ship Sets Sail," CNN, April 12, 2018, https://www.cnn.com/travel/article/symphony-of-the-seas-world-largest-cruise-ship/index.html.

that caused a fire and killed 100 people.[82] Recently, an explosion on board a ferry in Mexico injured 25 people including several American tourists.[83] One of the most significant threats to HCPVs is an active-shooter scenario. In the United States from 2016 through 2017, there were 50 mass shootings resulting in 221 people killed and 722 wounded.[84] This troubling trend has yet to transition to the maritime world. However, this type of attack seems imminent given the number of public and private HCPVs, the ready access to military grade weapons, and some of the successes of homegrown extremists. In order to address this threat, numerous AMSCs have built and exercised interagency response plans for a variety of terrorist scenarios such as active-shooter or multi-pronged attacks.[85] One of the reasons that this type of event has the potential to be so catastrophic is that once a vessel is underway, getting first responders to the vessel to mitigate the threat can be quite difficult. This time delay would allow attackers to carry out their assault longer than they would in a land-based environment.

Despite the low number of actual incidents, the opportunity for terrorism in the maritime environment remains high. The volatile nature of the cargo, the significant environmental and economic impact, and the large number of people on HCPVs create a broad range of targets for a willing attacker to exploit. AMSCs are taking active measures to address several of the known terrorist threats such as active-shooter scenarios and radiation detection.

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[82] "Bomb Caused Philippine Ferry Fire," BBC, October 11, 2004, http://news.bbc.co.uk/2/hi/asia-pacific/3732356.stm.

[83] Christopher Woody, "US Issues Travel Alert in Mexico after Explosives Were Found on a Ferry in a Tourist Hotspot," Business Insider, March 2, 2015, https://www.businessinsider.com/us-mexico-travel-alert-explosives-found-on-tourist-ferry-2018-3.

[84] Federal Bureau of Investigation, *Active Shooter Incidents in the United States in 2016 and 2017* (Washington, DC: Department of Justice, April 2018), https://www.fbi.gov/file-repository/active-shooter-incidents-us-2016-2017.pdf/view.

[85] U.S. Coast Guard, *2017 Annual Report.*

3. Smuggling

In 1790, the U.S. Congress passed the Revenue Marine Act, a law that established the Revenue Cutter Service as one of the country's first maritime security forces.[86] This agency was established to enforce customs taxes and prevent smuggling by vessels bringing goods into the newly formed nation. As was the case in 1790, today, maritime smuggling of people, narcotics, and weapons remains a major concern for governments around the world. According to the UN, of the approximately 170,000 people who attempted to migrate to Europe by sea in 2017, more than 3,000 lost their lives in the journey.[87] In 2016, the U.S. Coast Guard interdicted 6,346 people attempting to enter the United States illegally across maritime borders.[88] During the same period, it also interdicted 201 metric tons, or 201,000 kg, of cocaine.[89] As opposed to people and drugs, the smuggling of weapons into the United States is not a common phenomenon but is a significant security concern. To reduce the risk of weapons of mass destruction entering the United States, the U.S. government has established electronic monitoring at the ports of entry and along the borders for nuclear materials. This increases the probability of finding these materials, and it is likely that groups intent on this action are aware of U.S. detection capabilities. Because of the seriousness of this issue and the threat to the nation, AMSCs have continued to harden the maritime border. In 2017, several AMSCs conducted extensive outreach, exercises, and equipment purchases for local law enforcement to increase the chances of finding radiological materials before they make landfall.[90] In summary, the smuggling of drugs and people into the country is an ongoing security

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[86] "Timeline: 1700's-1800's," U.S. Coast Guard, accessed December 7, 2018, https://www.history.uscg.mil/Complete-Time-Line/Time-Line-1700-1800/.

[87] "Refugee Crisis in Europe," United Nations, accessed December 7, 2018, https://www.unrefugees.org/emergencies/refugee-crisis-in-europe/.

[88] U.S. Coast Guard, *2018 Budget Overview* (Washington, DC: U.S. Coast Guard, 2018), https://www.uscg.mil/Portals/0/documents/budget/FY%202018%20Budget%20Overview_WEB%20FINAL.pdf.

[89] Department of Homeland Security, *Review of U.S. Coast Guard's Fiscal Year 2016 Drug Control Performance: Summary Report* (Washington, DC: Office of Inspector General, 2017), https://www.oig.dhs.gov/sites/default/files/assets/2017/OIG-17-33-Feb17.pdf.

[90] U.S. Coast Guard, *2017 Annual Report*.

concern, and AMSCs are taking active measures to prevent the importation of nuclear materials.[91]

4. Cybersecurity

The last relevant threat to the maritime transportation system involves cybersecurity. Based on the recent number of cyberattacks in the maritime domain, this is one of the most emergent and significant threats to the MTS. Within the modern maritime industry, there are three electronic systems, each with significant vulnerabilities: the automatic information system (AIS)/Global Positioning System (GPS), the internal control system (ICS), and the cargo management systems. The global supply chain, on both land and sea, largely depends on the Global Navigation Satellite System. The GPS signal is sent from 31 medium earth orbit satellites in an un-coded radio signal across the surface of the planet.[92] The problem with this radio signal is that the GPS transmissions can be jammed or spoofed. In 2017, over 20 vessels operating on the Black Sea reported receiving a GPS vessel position vastly different from their actual physical locations.[93] What is interesting about this incident is the proximity of the vessels to Russia and the final input signal placing all the ships at an airport inside Russian territory.[94] Because of the large area of sea that was impacted by this event, it appears to have been a land-based, state spoofing attack or exercise by a sophisticated actor. It is likely this attack involved military-grade jamming technology. However, this does not preclude terrorist organizations from performing something similar on a much smaller level. For example, groups could target a single vessel and convince the operator to take a deliberate action that would unknowingly place the ship in danger.

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[91] U.S. Coast Guard, *2017 Annual Report.*

[92] "Space Segment," National Coordination Office for Space-Based Positioning, Navigation, and Timing, accessed July 12, 2018, https://www.gps.gov/systems/gps/space/#generations.

[93] David Hambling, "Ships Fooled in GPS Spoofing Attack Suggest Russian Cyberweapon," *New Scientist*, August 10, 2017, https://www.newscientist.com/article/2143499-ships-fooled-in-gps-spoofing-attack-suggest-russian-cyberweapon/.

[94] Dana Goward, "Mass GPS Spoofing Attack in Black Sea?," *Maritime Executive,* July 11, 2017, https://maritime-executive.com/editorials/mass-gps-spoofing-attack-in-black-sea#gs.oJFiy0Y.

In 2013, researchers from the University of Texas were able to hack the GPS signal of a 65m yacht on the Mediterranean Sea.[95] Once they established control of the signal, they altered the digital inputs to the vessel and convinced the operator to adjust the vessel's course to a fictional navigational track line and steer the vessel away from its intended location.[96] This simulated event demonstrates that the signal can be hijacked, causing vessel operators to take actions that put their ships and crews in danger. The apparent GPS spoofing by the Russian government and the hacking of a single underway vessel indicate an overreliance on these systems as well as their vulnerability.

Along with the GPS, the AIS system is a key navigational component to merchant vessels as it provides a position, speed, and closest point of approach to all vessels using AIS in the immediate area.[97] While the GPS system is vulnerable only through the radio signal, AIS is vulnerable through the World Wide Web and the radio signal.[98] Because of the interconnection of the AIS with GPS and RADAR, a hacker can paint targets on the vessel operator's chart display or produce false positioning information for a vessel or the ships around it. This combination of disinformation may cause the master to make maneuvers that lead to a collision or grounding.[99]

Today, modern vessels depend almost entirely on electronic navigational systems; they are also highly reliant on logistics management software. Because of the complexity of the global supply chain, logistics companies have converted their entire systems of cargo management to interconnected databases. As with all electronic systems, these can be manipulated. In 2017, Maersk Shipping Lines was hacked by a NotPetya ransomware

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[95] Jahshan Bhatti and Todd Humphreys, "Hostile Control of Ships via False GPS Signals: Demonstration and Detection," *Navigation* 64, no. 1 (March 2017): 51–66.

[96] Bhatti and Humphreys.

[97] "How AIS Works," U.S. Coast Guard Navigation Center, accessed December 24, 2017, https://www.navcen.uscg.gov/?pageName=AISworks.

[98] Marco Balduzzi, Kyle Wilhoit, and Alessandro Pasta, *A Security Evaluation of AIS* (Irving, TX: Trend Micro, December 16, 2014), 6, https://www.trendmicro.de/cloud-content/us/pdfs/security-intelligence/white-papers/wp-a-security-evaluation-of-ais.pdf.

[99] Balduzzi, Wilhoit, and Pasta, 7.

attack, resulting in a total shutdown of all of their cargo tracking systems.[100] This attack caused the company to completely replace all of its IT infrastructure, which remarkably resulted in only a 20 percent reduction in operating capacity.[101] This seems contradictory to the information contained in the 2017 AMSC report, wherein the Central California AMSC reported a nearly complete shut-down of the Maersk/APM Terminal for five days and limited operations for 14 days.[102] In September 2018, the Port of San Diego was also the target of a ransomware attack.[103] Although apparently not as crippling as the Maersk incident, at the time of this writing, impacts to the governance and operation of this port have persisted.[104] In a different spin on the use of technology, drug-trafficking organizations hacked into the cargo management computers in the port of Antwerp to monitor and control the movement of containerized drug shipments into Europe.[105] These examples of cyberattacks are clearly for-profit ventures, and it is highly probable that the number and variety of attacks on the maritime industry will increase in the future.

While ransomware continues to provide a clear profit motive for criminal acts in the cyber domain, an additional threat exists for industrial sabotage. There are significant vulnerabilities in the ICS operating in ports and on ships around the world. In this scenario, a hacker could remotely take control of a large merchant vessel and ram the ship into other

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[100] Richard Chirgwin, "IT 'Heroes' Saved Maersk from NotPetya with Ten-Day Reinstallation Bliz," Register, January 25, 2018, https://www.theregister.co.uk/2018/01/25/after_notpetya_maersk_replaced_everything/.

[101] Chirgwin.

[102] U.S. Coast Guard, *2017 Annual Report*; and U.S. Coast Guard, *Area Maritime Security Committees 2016 Annual Report: Challenges, Suggestions, Accomplishments, and Best Practices* (Washington, DC: U.S. Coast Guard, 2017), https://www.dco.uscg.mil/Portals/9/CG-FAC/Documents/AMSC%20Consolidated%20reports/2016/AMSC%202016%20Annual%20Report%20(signed).pdf?ver=2017-11-08-084656-947.

[103] Mike Freeman, "Port of San Diego Continues Recovery from Cyberattack," *San Diego Union-Tribune*, October 4, 2018, http://www.sandiegouniontribune.com/business/technology/sd-fi-port-update-20181004-story.html.

[104] Freeman.

[105] Tom Bateman, "Police Warning after Drug Traffickers' Cyber-Attack," BBC, October 16, 2013, https://www.bbc.com/news/world-europe-24539417.

vessels or run it aground to endanger the personnel and cargo on board. There is research on this topic identifying the vulnerability of these electronic systems.[106]

In both the 2016 and 2017 annual AMSC reports, the Coast Guard lists cybersecurity as one of its top concerns.[107] In Enclosure 1 of each of these documents, the feedback is consistent from year to year with extensive comments that suggest AMSCs are ill-prepared to deal with the quickly evolving cyber-security threat: "The rapid progression of software development and the technical aspects of thwarting cyber-incidents or attacks presents serious constraints to the maritime industry and Coast Guard personnel who have limited knowledge of computer systems and cyber technology."[108] The Coast Guard's *Cyber Strategy* describes the organization's cyber domain concept: "We will ensure the security of our cyberspace, maintain superiority over our adversaries, and safeguard our Nation's critical maritime infrastructure."[109] While the stated vision is well-intentioned, there is a clear gap between it and the actual capability of securing and protecting the cyber-reliant environment of the maritime transportation system.

B. CONCLUSION

Maritime security has evolved from being a concept of naval ships and national security to include an overarching set of policies, laws, and actions by the government, police, and military forces to secure the seas, maritime borders, and ports against criminal actors.[110] The UN has collectively put forth a list of six significant threats to the maritime community and identified cybersecurity as a growing concern while the Coast Guard identifies cybersecurity, unmanned aerial systems, and active-shooter events as emergent threats.[111] Following the attacks of 9/11, the United States initiated a series of policy and

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[106] "ICS Security in Maritime Transportation," Department of Transportation, July 2013, https://www.hsdl.org/?view&did=743534.

[107] U.S. Coast Guard, *2017 Annual Report*; and U.S. Coast Guard, *2016 Annual Report*.

[108] U.S. Coast Guard, *2017 Annual Report.*

[109] U.S. Coast Guard, *United States Coast Guard Cyber Strategy* (Washington, DC: U.S. Coast Guard, June 2015), https://www.overview.uscg.mil/Portals/6/Documents/PDF/CG_Cyber_Strategy.pdf.

[110] Natalie Klein, *Maritime Security and the Law of the Sea* (Oxford: Oxford University Press, 2011).

[111] U.S. Coast Guard, *2017 Annual Report*.

legislative actions to bolster the MHS enterprise, beginning with the Maritime Transportation Security Act of 2002.[112] This law was a major leap forward in attempting to address several known weaknesses in the U.S. maritime security posture. The first problem the law addressed was a lack of systematic port and maritime facility security planning.[113] Until the passage of the MTSA, there were minimal requirements for ports as a whole or individual facility operators to have established emergency action plans.[114] Congress recognized the need for a coordinated effort between the government and the private sector in strengthening the MHS enterprise. Therefore, the MTSA directed the formation of Maritime Security Advisory Committees at the national level.[115] The law further authorizes lower echelons of Coast Guard commands to establish an "Area Maritime Security Advisory Committee for any port area of the United States."[116] To ensure that the private sector has had an appropriate and balanced role in these committees, the MTSA and subsequent federal regulations have required equal representation from both the public and private sector interests.[117] Therefore membership on local- and national-level Maritime Security Committees must be composed of Coast Guard personnel, the maritime industry, law enforcement, labor, trade representatives, the academic community, and state or local government.[118] In theory, this broad, collaborative foundation creates the opportunity to identify threats and address concerns from all corners of the MTS. The MTSA of 2002 also authorized the administration of grants to strengthen and advance the MHS enterprise throughout the ports of America.[119] The role of grant administration is a significant tool in strengthening the HLS enterprise and also an incentive for active

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[112] Maritime Transportation Security Act.

[113] Maritime Transportation Security Act.

[114] Maritime Transportation Security Act, § 70103.

[115] Maritime Transportation Security Act, § 70112.

[116] Maritime Transportation Security Act, § 70112.

[117] Maritime Transportation Security Act, § 70112.

[118] SAFE Port Act.

[119] Maritime Transportation Security Act, § 70107.

participation in AMSCs. In 2018, the Department of Homeland Security made $100 million of Port Security Grant Program funding available to

> owners or operators of Federally-regulated terminals, facilities, U.S. inspected passenger vessels or ferries, . . . [and] members of an AMSC. Specifically, eligible applicants include port authorities, port police, local law enforcement agencies, port and local fire departments, and facility fire brigades that have jurisdictional authority to respond to incidents in the port.[120]

Congress followed the passage of the MTSA in 2002 with the Secure Accountability for Every (SAFE) Port Act in 2006.[121] This law subtly changed how the PSGP was administered, modifying the text of the MTSA from an "equitable allocation of funds" to an "allocation of funds based on risk."[122] This change was meant to prevent a misallocation of HLS resources but has had the unintended consequence of providing more resources to organizations and communities that already have a significant economic advantage. One example is New York City. This port complex has a higher risk factor based on vessel traffic and the surrounding population, yet it also has one of the most robust maritime security apparatuses in the country. In 2017, the NYPD received $10.8 million and the FDNY $5.2 million in PSGP funding; two agencies in the same city received 16 percent of all PSGP funding for the entire nation.[123] Arguably, this funding model hardens the already strong and resilient while doing little for the small and weak in the MHS enterprise. The SAFE Ports Act also clarified the expectations of drills, exercises, and emergency response plans that AMSCs and individual facility operators are required to develop.[124] The specific purpose of AMSCs and the legislation and policy surrounding them is to prevent or enhance the response to a transportation security incident. By

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[120] Department of Homeland Security, Fiscal Year 2018 Port Security Grant Program (fact sheet, Department of Homeland Security, 2018), https://www.fema.gov/media-library-data/1526580515356-859bc5bd6c2f0019ee2fe4c0e322f8db/FY_2018_PSGP_Fact_Sheet_FINAL_508.pdf.

[121] SAFE Port Act.

[122] SAFE Port Act.

[123] Hailey Desormeaux, "FEMA Unveils FY 2017 Port Security Grant Program Recipients," *American Shipper*, September 6, 2017, https://www.americanshipper.com/main/news/fema-unveils-fy-2017-port-security-grant-program-r-68903.aspx.

[124] SAFE Port Act, §§ 101 et seq.

providing this overarching legislation and policy guidance, in theory, the Coast Guard and its partner agencies are preparing for and responding to a broad spectrum of homeland security threats within the maritime domain.

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III. RESEARCH DESIGN: DELPHI PANEL

The goal of this research project was to assess the perceived effectiveness of AMSCs, generate SWOT analysis to prioritize efforts, and then to leverage collaboration models for more concrete, measurable performance. The first stage of this research was to confirm and understand the actual value of AMSC membership to its participants. As noted previously, collaboration is not an end unto itself; in this case, it is conducted ostensibly to enable the participants—either individually or together—to prevent terrorism. The constituent or intermediate goals in achieving the overarching purpose have never been articulated, much less benchmarked and measured. With no data available to analyze AMSCs deductively, the only way to identify possible improvements was to capture the status quo and to work inductively to what is possible, feasible, and preferable.

Therefore a qualitative Delphi survey of SMEs from diverse stakeholder groups at maritime port facilities across the western United States was conducted. The survey was sent in two consecutive rounds to 24 personnel who hold management roles in maritime transportation or maritime safety and security. The first round was designed to elicit broad feedback on the performance of AMSCs, with open-ended questions regarding their purpose, effectiveness, benefits of membership, and successes. Responses from the first round were consolidated, and key words derived from the responses representing "effectiveness" and "collaboration" were used to code the responses. The second round of survey questions focused on unusual or outlier answers from the first round and on issues for which concrete proposals for improvement might be possible.[125] The second round allowed participants to validate, disagree with, or elaborate on previous answers given by other participants in the previous round.[126] In addition to the two rounds of surveys, the common issues and responses were then cross-referenced with the 2016 and 2017 annual reports for AMSCs to validate common opinions.

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[125] See Appendix B.

[126] Okoli and Pawlowski, "The Delphi Method as a Research Tool," 15–29.

A. PORT SELECTION

According to the methodological literature, the ideal Delphi survey size is 10–18 respondents.[127] To meet this criterion but preserve diversity in the port size and individual organizational role, the respondent pool was limited to ports along the West Coast of the continental United States. Of the 35 AMSCs in the United States, five fall within the self-imposed geographic boundaries of the West Coast. From these five COTP zones, 24 maritime homeland security professionals were recruited to participate in the survey. Of those, 27 percent of survey respondents self-identified as working at small port facilities, 27 percent self-identified as medium port facilities, and 45 percent identified as large port facilities. It would have been desirable to have an even distribution from each size of port complex. Despite efforts to recruit representationally across port facility size and role in the homeland security enterprise (e.g., private sector or security sector), the distribution of participants favored the larger port complexes.

[127] Okoli and Pawlowski, "The Delphi Method as a Research Tool," 15–29.

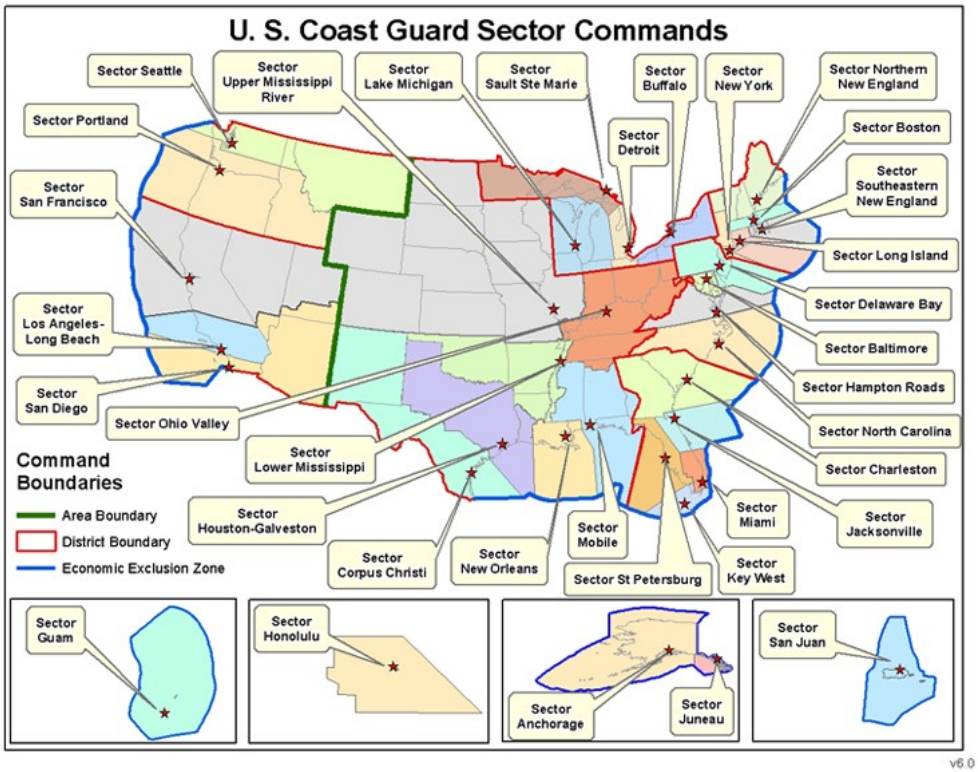

Figure 1. Coast Guard Captain of the Port/AMSC Zones[128]

B. SURVEY RESPONSES, FINDINGS, AND ANALYSIS

Eight coding categories emerged from round one responses, which were then split into two groups. The first group of words was associated with the concepts of effectiveness such as communication, collaboration, and relationships. The second group of coded terms appeared frequently and were affiliated with measures of effectiveness as well, such as planning, participation, and geography. The purpose of the coding and categorizing was to "sort" the responses into issue-specific sets that could be analyzed individually and to observe patterns, themes, and areas of consensus or dissent. The second round of questions focused on those areas of consensus and divergence, in the latter case, for example, might mean asking for a comment on outlier or "extreme" responses from round one, such as "I would rate all AMSCs that we work with as marginal . . . and have almost left out

[128] Source: Wikipedia, s.v. "United States Coast Guard Sector," accessed October 8, 2018, https://en.wikipedia.org/wiki/United_States_Coast_Guard_Sector.

industry."[129] The purpose of following up on these issues was to confirm, correct, or reconcile contradictions in the responses and to explore causal factors, important variables, and possible solutions and improvements.

Once responses were assigned to an issue category, they were further coded as either a strength, weakness, opportunity, or threat using the SWOT analysis. This was a simple way to break problems down and categorize them for internal strengths and weaknesses and external threats and opportunities. The SWOT model was chosen because the Delphi survey tends to yield qualitative data that can be difficult to prioritize or operationalize. Therefore, by applying the coded data to these categories, the information is turned into actionable information in a familiar strategic analytical model. As relevant answers were placed in SWOT categories, patterns began to emerge (see Table 1). Several of the coded terms appeared in more than one SWOT quadrant. The reason was that they could be considered both a weakness and a threat, or an opportunity and a threat, to the effectiveness of AMSCs and the security of the maritime domain.

Table 1. Survey Data Coded by Theme and SWOT

Internal To AMSC	**Internal and External To AMSC**
Strengths	**Opportunities**
Collaboration Effectiveness Information	Information Sharing Communications Participation
Weaknesses	**Threats**
Geography Personnel Turnover Bureaucracy	Participation Collaboration Geography

[129] See Appendix A.

1. Strengths

These are considered the "positive attributes, tangible and intangible internal to your organization."[130] Examples of strengths might be internal resources, assets, and intangible advantages such as staff or technical skills.[131] As noted in Table 1, the key strengths that emerged in the answers were collaboration, effectiveness, and information sharing. The majority of participants had a positive opinion of the AMSC for their COTP zone, with 70 percent reporting a favorable view; 20 percent were neutral, and only 10 percent were dissatisfied with the performance of AMSCs.[132] The dissatisfaction with the committees is centered on the perceived composition because the majority of members came from security services, such as police and fire, and there was a lack of industry representation.[133] In the second round survey, clarification was sought on this point, with 70 percent of respondents stating that private-sector engagement was very important and the remaining 30 percent recognizing the importance but preferring balance across all stakeholders.[134] Thus, when evaluating the original 10 percent who were dissatisfied, in subsequent queries, 100 percent of respondents felt that private-sector engagement was very important, or important. When asked the purpose of AMSCs, 91 percent of respondents referenced information sharing or collaboration as key functions of these committees.[135] This high figure indicates a strong acknowledgment of the requirement to share law enforcement or threat intelligence across the MHS community.[136] However, acknowledging the requirement does not constitute actual completion or effectiveness but does help to shape the personal behavior and effort of those involved.

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[130] Tim Berry, "What Is a SWOT Analysis?" B Plans, accessed October 10, 2018, https://articles.bplans.com/how-to-perform-swot-analysis/.

[131] Berry.

[132] See Appendix A.

[133] See Appendix A.

[134] See Appendix B.

[135] See Appendix A.

[136] Responsibilities of the Area Maritime Security (AMS) Committee, 33 C.F.R. § 103.310 (2010).

Findings from the two surveys are substantiated in the 2016 and 2017 annual reports for AMSCs.[137] These two documents cite numerous best practices employed by AMSCs to address the threats outlined in Chapter II of this thesis and highlight the strengths of collaboration and information sharing identified above. The overarching theme of these best practices in the reports is the value of the whole-of-government and private-sector approach to solving multi-agency and jurisdictional homeland security problems. While surveys and reports indicate positive findings, the Coast Guard has not applied any formal performance measures to gauge the level of collaboration or effectiveness.

2. Weaknesses

According to the literature, weaknesses are (usually internal) factors that reduce the effectiveness or value of an organization.[138] In this case, geography, personnel turnover, bureaucracy, and finances are all examples of noted deficiencies in AMSCs.[139] Geography refers to the distance people are required to travel to attend meetings or exercises. Having 35 AMSCs to cover the entire United States coastline yields a ratio of approximately 10 ports to every one AMSC to oversee. In the 2017 annual report, 10 out of 35 Sectors identified geography as impacting their organizational effectiveness.[140] An example of this is a comment made in the first round of surveys: "Generating and maintaining participation from maritime stakeholders outside of the major port areas remains an ongoing challenge due to travel and meeting venue funding constraints."[141] The first round survey asked about the disadvantages or challenges with participation in the AMSC.[142] Without specific prompting or initially targeting this issue, 45 percent of respondents mentioned geography

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[137] U.S. Coast Guard, *2016 Annual Report*; and U.S. Coast Guard, *2017 Annual* Report.

[138] Berry, "What Is a SWOT Analysis?"

[139] Berry.

[140] U.S. Coast Guard, "Enclosure 1: AMSC Challenges," in *Area Maritime Security Committees 2017 Annual Report: Challenges, Suggestions, Accomplishments, and Best Practices* (Washington, DC: U.S. Coast Guard, 2018), https://www.dco.uscg.mil/Portals/9/CG-FAC/Documents/AMSC%20Consolidated%20reports/2017/Enclosure%20(1)%20Challenges%20encountered%20by%20the%20AMSCs.pdf?ver=2018-07-20-080110-980&timestamp=1532088205500.

[141] U.S. Coast Guard.

[142] See Appendix A, Q5.

or travel time as barriers to participation.[143] This issue was referenced in the second round of surveys to validate the first round and gather feedback for improvement.[144] In the second round, 50 percent of respondents agreed that the time and distance between meeting locations was a significant challenge.[145] The cost and consequence of geography is the time and effort required to travel to attend the meetings and participate on sub-committees. In order to overcome the burden of travel time, 50 percent of participants suggested the use of virtual meeting tools such as calling-in, email communications, or diversified meeting locations.[146] These are useful, but with 45–50 percent of respondents describing this as an issue, it seems unlikely that electronic communications alone will overcome geographic distance. Personal connection and human interactions are vital to collaboration and the networked connection that makes the homeland security enterprise strong.

There are three ways to address the challenge of distance between port facilities and AMSCs. The first option is to fund the travel of the outlying port partners. This would certainly incentivize their participation in the meetings and sub-committees. The second is to relocate the meetings to outlying port facilities and, again, to fund the travel of those agencies that are willing to attend. The third way to overcome the geographic distance is to enhance the virtual meeting tools such as video conferencing. When evaluating these three choices, the most expensive options are also likely to yield the best results; however, it is foreseeable that a combination of all three options would be needed.

The first round yielded three comments that discussed the challenges of government bureaucracy. The first two comments were related to routine turnover of Coast Guard personnel.[147] One participant responded, "The challenges of the AMSC are most apparent in the turnover of USCG personnel every 3–4 years (sometimes sooner). The structure can be rigid and at times confusing to those unfamiliar with the Coast Guard."[148] Another

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[143] See Appendix A.

[144] See Appendix B.

[145] See Appendix B.

[146] See Appendix B.

[147] See Appendix A.

[148] See Appendix A, Q5.

participant noted, "Change[s] in local USCG personnel every couple years. Since our port is 275 miles north of our AMSC, we deal with our local USCG who in turn discusses issues with the AMSC."[149] As a leadership development tool, the Coast Guard rotates its officers every two or three years to different operational and staff assignments. This creates a system of constant re-learning and cross-training of the leadership cadre for AMSCs. These professional assignment rotations are highly beneficial for the individual leader working within an international organization. The problem is that every new person who rotates into the AMSC must become familiarized with the key players and re-establish the networked connections and relationships that make the committees effective. The Coast Guard has taken active measures to mitigate these transitions by hiring civilian port security specialists who provide some semblance of continuity. Unfortunately, the fact remains there is a lot of intentional turnover at senior levels within the Coast Guard, and this has a negative impact outside the organization.

The third comment on bureaucracy was targeted at senior AMSC leaders:

> The effectiveness of the AMSC is limited by the bureaucracy. These agencies are supposed to work together as part of their jobs . . . and protecting the public and marine industry. Now when Police chiefs and Fire Chiefs and other senior officials come, the level of decorum is extremely high and becomes just another public meeting. The vast majority of "presentations" go to patting each other on the back for some small effort made to accommodate a past issue.[150]

There are two ways to read this statement. The statement could mean there is much camaraderie but little in the way of taking on some of the tougher security challenges facing the maritime industry.[151] It could also mean that because this is a public forum, it becomes more about social and political value rather than productivity. Throughout the first round of surveys, this same individual generally took a critical view of AMSCs and their engagement with the private sector.[152] One of the answers provided in the first round of

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[149] See Appendix A, Q5.

[150] See Appendix A.

[151] See Appendix A.

[152] See Appendix A, Q3, A3; Q5, A3; Q6, A3; and Q7, A3.

surveys was used in the second round to gather more feedback on the role of private industry in AMSCs.[153] Despite the connotation from the quote above, this comment largely stood alone: 90 percent of survey participants stated that industry engagement on AMSCs was a key component to their success, and no other participants made comments along these lines.[154]

The last significant weakness that was not documented in the survey but was captured in the annual reports for AMSCs was the lack of financing. AMSCs operate on a minimal annual budget that is used for administrative costs such as office supplies. While the laws surrounding AMSCs allow for members to be compensated for their time, travel, and training at the GS-15 pay scale, the Coast Guard has prohibited the use of headquarters funding for AMSC members.[155] The policy does allow local Coast Guard commands to pay for the travel of AMSC members out of their own unit funds. However, it is unlikely Sector commanders would use their budgets to pay for the travel of private industry personnel, when higher operational funding priorities exist. Thus, this ruling and subsequent funding posture by the Coast Guard creates a disincentive for participation from remote locations or for any other training or networking opportunities. The lack of funding also has a direct impact on the engagement of outlying port facilities as previously noted. If AMSC staff could fund the travel of participating executive committee members or remote sub-committee members, there would be a likely uptick in engagement across the Captain of the Port Zones. Another incentive is to provide a systematic method of on-boarding new AMSC members across the country. As one participant responded, "The structure can be rigid and at times confusing to those unfamiliar with the Coast Guard—perhaps a familiarization training/class for new members?"[156] This course would enhance the members' understanding of the organization, the history, and legislative requirements, thereby improving organizational performance.

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[153] See Appendix B, Q1.

[154] See Appendix B.

[155] U.S. Coast Guard, *Guidelines for Port Security Committees*.

[156] See Appendix A, Q5.

In summary, AMSCs continue to add significant value to the MHS enterprise. However, that does not mean there is no room for organizational improvement. The Delphi panelists identified several weaknesses that the Coast Guard can address to enhance organizational performance and some that are unlikely to change, such as the senior officer assignment process. The Coast Guard has internally restricted the funding for travel and training of AMSC members. It is recommended that this policy be reevaluated to determine the true impact of that decision on organizational behavior and incentivizing participation.

3. Opportunities

In the business environment, opportunities are viewed largely as external options that are "reasons your business is likely to prosper" or things an organization can capitalize on for profit.[157] In the case of AMSCs, the Delphi panelists identified internal opportunities, i.e., people or resources that could be capitalized on for the betterment of the group or the security of the COTP zone. Opportunities emerged in the form of criticism of areas that can be targeted for improved organizational performance. The three opportunities identified in the coded data include information sharing, communications, and participation levels.

AMSCs are, by design, collaborative enterprises, dependent on the collective effort of voluntary members for success. A critical component of that collaboration is information sharing between stakeholder agencies and homeland security professionals.[158] Because of the importance of information sharing and communications, the need to constantly stress this in the operational environment cannot be overstated. The majority of AMSC members are highly connected and networked individuals. Their sphere of influence and information-sharing capacity is broad; for these reasons, AMSCs present an excellent communications venue when properly managed. In the first round survey, 81 percent of respondents discussed some form of collaboration on homeland security issues as a key purpose of these bodies.[159] While awareness and action are two separate principles, the

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[157] Berry, "What Is a SWOT Analysis?"

[158] 33 C.F.R. § 103.

[159] See Appendix A.

acknowledgment of the need to communicate and collaborate by the vast majority of survey participants is an indicator of their willingness to engage with fellow HLS professionals. Directly linked to this network and the information-sharing piece is the opportunity to enhance participation in AMSCs.

In all voluntary organizations, participation and leadership are essential in keeping the members engaged. AMSCs have identified this issue as well; in 2016, nine out of the 35 AMSCs, or approximately 25 percent, reported issues with participation from various groups.[160] As one member put it, "We need to incentivize private sector participation better. We have done outreach to industry and requested their participation on the AMSC, but their attendance/participation remains low. This is despite topics which should be of interest to them."[161] This comment touches on the other factors of value and incentives. AMSCs are an excellent communication and outreach tool, and incentivizing the ideally networked/connected candidates can act as the force multiplier these committees were intended to be. Along this line, one of the survey participants stated, "Topics need to have a direct correlation to their facility/segment of the maritime domain to justify attendance."[162] This is statement seems to portray a circular logic loop in that the agenda and content of the meetings can drive or suppress participation and thereby increase or decrease effectiveness.[163] To address this challenge, AMSCs must show relevance to their members and the constituents of the maritime homeland security environment. One idea presented in the second round of surveys was routine briefings on the who, what, when, where, why, and how of AMSCs and their role in the MHS construct.[164] This is certainly one possible course of action. True organizational improvement likely involves a combination of professional, personal, and—to some extent—financial incentives such as more access to grant funding.

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[160] U.S. Coast Guard, "Enclosure 1," 29.

[161] See Appendix B.

[162] See Appendix B.

[163] See Appendix A.

[164] See Appendix B.

Within the homeland security environment, the concept and design of the AMSC are somewhat rare because of the intentional recruitment of different members of the MHS community. There are other public–private partnerships in the HLS enterprise; some are similar to AMSCs, such as the Transportation Security Administration's Aviation Security Committee, and others serve as private-sector intelligence collection and distribution points—like ISACs. Nevertheless, neither of these is regional or local in nature but rather national-level organizations working across broad industries. The AMSCs' unique composition offers an opportunity to work collectively on known threats and hazards to the HLS enterprise on a regional and local level through information sharing and collaboration. It is incumbent upon the leaders of these committees to focus on how they can leverage these two factors to enhance participation and engagement, capitalizing on the strengths to address significant threats or known weaknesses to the MHS enterprise.

4. Threats

These are generally considered external factors beyond the organization's control. However, one can take preventive measures to minimize the exposure to threats—in this context, anything that can result in a transportation security incident or externally influence the behavior or effectiveness of AMSCs. The Delphi surveys identified three significant threats to effectiveness: participation, collaboration, and geography. Again, the three issues are largely interlinked and greatly influence the effectiveness of AMSCs in planning for, communicating about, and responding to a transportation security incident (TSI).[165] The key to the success of AMSCs is active participation across a broad spectrum of business, labor, government, and security sectors. In the discussion on opportunities, the concept of participation was presented as a value-added proposition, but in this case, a lack of participation presents a significant threat to the HLS environment. The survey responses yielded three themes associated with the challenges of participation: a general lack of interest, a lack of collaboration by government agencies and industry, and a perceived lack of engagement by the Coast Guard. The general lack of interest was discussed in the opportunities section of this chapter; this section focuses on collaboration and leadership.

[165] See Appendix A.

Responses in the first round highlighted both the lack of industry engagement and the involvement of other federal agencies.[166] These were used for a follow-up question in the second round survey. The feedback on federal engagement was largely neutral, with 60 percent of participants agreeing to some extent with the statement "I question the collaboration from other federal partners both working with the Coast Guard and other federal agencies, and collaborating with state/local agencies."[167] Twenty percent of participants reported that agency mission priorities and AMSC goals are misaligned.[168] When asked what to do to improve collaboration, one respondent cynically suggested, "Need another '9/11' or another event that will refocus attention with presidential guidance to get all agencies on the same page."[169] A devastating attack would certainly focus the efforts of the first-responder community and increase collaboration across all federal agencies. However, the purpose of AMSCs is to prevent such an event from occurring, and leaders within the HLS and maritime industries should take every opportunity to work toward that end.

The second issue with collaboration is tied to the Coast Guard's role in facilitating a positive and engaged relationship with the maritime community. Two respondents highlighted challenges with geography and individual experience, respectively. When questioned on ways to improve outreach to more remote port facilities, one participant stated, "I also tend to believe that certain ports in a COTP Sector are more in reach and in common with the COTP and therefore garner the required attention that outlying ports need and want. This comes into play when PSGP funds are on the line."[170] Another survey participant responded that his agency had tried to engage with the Coast Guard but was unsuccessful in their effort to build a stronger relationship.[171] Unfortunately, such responses provided little context from which to propose a solution. Although only 10

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[166] See Appendix A.

[167] See Appendix B.

[168] See Appendix B.

[169] See Appendix B.

[170] See Appendix B.

[171] See Appendix B.

percent of participants made these comments, it is important to acknowledge their feedback and take active measures to engage with those disaffected parties.

The last significant threat to the effectiveness of AMSCs is the challenge of geography. This topic has been discussed in other sections of this thesis. The vastness of the U.S. maritime borders and coastline creates significant challenges for maritime domain awareness and the enforcement of U.S. laws. Likewise, the geographic remoteness of many of the port facilities presents a vulnerability to U.S. border controls and a lack of government resources to respond in the event of an emergency. The consequence of a TSI at a remote facility may be less significant from an economic standpoint than an incident in a large urban area. However, because of the distance and time it may take to respond, the outcome of any event would likely grow to its greatest potential because of the delay in a full-scale response.

The threats to the effectiveness of AMSCs include failures of participation and collaboration and the challenge of geography. The first two issues are interlinked in that an organization cannot be highly collaborative without active participation from its membership. The Coast Guard needs to take a more proactive role in incentivizing participation whether it be through grant funding, paying for individual AMSC member travel, or funding training opportunities. Additionally, a small number of survey participants noted a lack of external engagement from the Coast Guard proper; AMSC leadership must seek such feedback, address it quickly to ensure all participants feel acknowledged, and seize opportunities. AMSCs have a vital role in the maritime domain, but they need to be responsive and flexible and demonstrate value to remain relevant.

C. CONCLUSION

This project was initiated to enhance the understanding of the modern threat to the maritime homeland security environment and to evaluate how effective AMSCs have been at addressing those threats. To achieve this end, a two-round Delphi survey was conducted to evaluate AMSCs and to determine their strengths, weaknesses, opportunities, and threats. These themes were validated against the 2016 and 2017 annual reports for AMSCs. The key limiting factor was the survey size and level of participation. Round one of the

survey was completed and returned by 11 respondents—round two, by 10. This is an adequate number to meet the standards of Delphi survey validity, but a broader perspective would have added depth to the content and feedback.[172]

The information from the surveys and the annual reports suggests that AMSCs are having a positive impact on the MHS environment. The key strength of AMSCs is their network of maritime professionals who can validate and provide immediate feedback on response plans and operations. Additionally, the individuals who are recruited for participation on AMSCs typically have substantial authority over personnel and resources. This networked system of empowered people is the strength behind the homeland security enterprise. The weaknesses that were identified include geography, bureaucracy, and personnel turnover. The opportunities include the ability to improve information sharing and garner greater participation across the MHS enterprise. Lastly, the threats to the AMSCs' performance and effectiveness are the issues of participation, collaboration, and geography. In summary, AMSCs must leverage their networks to improve and engage with all of the maritime community, or they will quickly become irrelevant.

[172] Okoli and Pawlowski, "The Delphi Method as a Research Tool," 15–29.

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IV. ADOPTING A COLLABORATION MODEL

The maritime domain is a complex system of users with a broad spectrum of individual interests. The homeland security enterprise is similar to a variety of regulatory and enforcement agencies, all with overlapping authorities, jurisdictions, and resources. To respond to the myriad of threats to the maritime community, the HLS system has become highly reliant on collaboration between the various stakeholders. In recognition of this integrated response among the government, labor, and the private sector, the Coast Guard has implemented regional security committees. Very little academic or government research has been conducted on how well these public–private partnerships have performed in achieving their mandates. The purpose of this research was to identify the strengths, weaknesses, opportunities, and threats of AMSCs to begin to benchmark the level and quality of collaboration and performance and to suggest measures to improve both.

Because of the complexity of the maritime homeland security environment, integrated response planning is essential, and the cost of failing to collaborate effectively could be catastrophic. Therefore, AMSC leadership must recognize the importance of deliberate collaboration to achieve specific goals within the MHS enterprise. Effective collaboration does not happen automatically, nor as a result of ad hoc effort. It is complex and must be undertaken in a systematic, informed, and dedicated way. The literature on collaboration is vast: theories, principles, studies, and best practices abound. There are many collaboration models, each with its own variations, but they mostly share the same basic structure and purpose. The inter-organizational collaboration capacity (ICC) model was selected because of its simplicity and clarity and because it employs the domains and factors most relevant and applicable to AMSCs.[173] This chapter introduces the ICC model, applies it to the AMSC.

[173] Susan Page Hocevar, Erik Jansen, and Gail Fann Thomas, "Inter-Organizational Collaboration: Addressing the Challenge," *Homeland Security Affairs* 7 (2011).

A. CAPITALIZING ON STRENGTHS AND OPPORTUNITIES

In the previous chapter of this thesis coded data was applied to a SWOT model, an effective and simple tool to evaluate organizations. The challenge with SWOT is in operationalizing the findings. When looking at the attributes of AMSCs, the ICC Model is applicable because of the interdependent evolution of the maritime security system in the United States.[174] ICC is "the capability of organizations (or a set of organizations) to enter into, develop, and sustain inter-organizational systems in pursuit of collective outcomes."[175] To do this, the ICC Model employs five domains, each with a series of sub-factors that organizations should apply when conducting interagency operations (see Figure 2).[176]

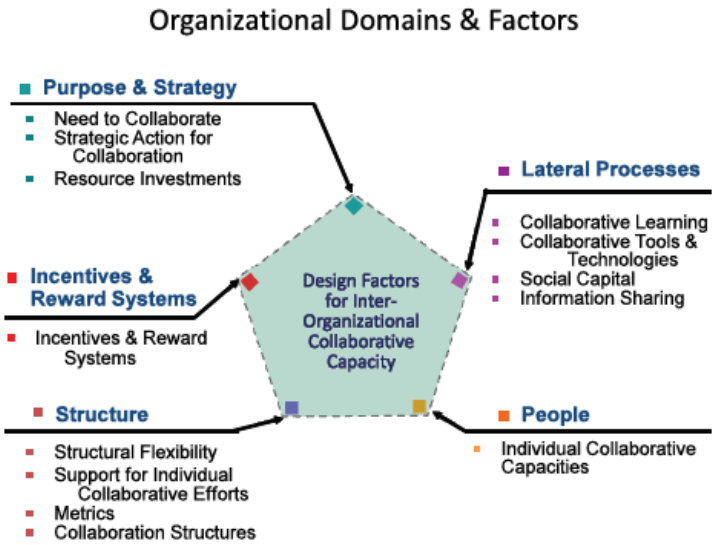

Figure 2. Organizational Factors in Successful Collaboration[177]

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[174] Hocevar, Jansen, and Thomas.

[175] Eric Jansen et al., *Interorganizational Collaborative Capacity: Development of a Database to Refine Instrumentation and Explore Patterns* (Monterey, CA: Naval Postgraduate School, November 24, 2008), https://calhoun.nps.edu/bitstream/handle/10945/445/NPS-AM-08-148.pdf?sequence=1&isAllowed=y.

[176] Hocevar, Jansen, and Thomas, "Inter-Organizational Collaboration."

[177] Source: Hocevar, Jansen, and Thomas, "Inter-Organizational Collaboration."

Because of the inherent complexity of the maritime environment, no single agency can solve the myriad of TSIs that might occur. Thus, AMSCs must advertise and advocate for their purpose and strategies. In this case, the collective outcome for AMSCs is to prevent, respond to, and mitigate the full spectrum of law enforcement and environmental incidents that might occur on federal waters. In the more robust and sophisticated port complexes, the potential economic impact or loss of life from a TSI can inspire the need for collaboration. Regardless of the motivation, when staffed and supported correctly, AMSCs create a positive network of first responders.[178] With regard to the private sector, there are several instances in which the annual reports and the surveys both indicate that better outreach is needed to improve industry engagement and participation. Where the barriers to effectiveness exist, there are "divergent goals" or mission priorities within those agencies and businesses.[179] Although not explicitly proven, several survey participants identified divergent goals as a barrier to better collaboration with both the maritime industry and unnamed federal agencies.[180] A simple example of this is when the private sector may be reluctant to expend funds on anything not required by regulation whereas the first-responder community is much more inclined to take an all-hazards approach to HLS capabilities.

The strategic actions required for effective inter-organizational collaboration include "demonstrated senior leadership commitment, and the willingness to consider other organizations' interests in planning."[181] While the Coast Guard is heavily invested in the AMSC construct, others do not have this level of obligation. Two survey participants provided relevant examples of how strategic actions can and have enhanced participation. In one AMSC, the chief of police is the co-chair of the AMSC, and "this role gives continuity of committee leadership and visibility within the AMSC for [the] agency."[182] By appointing this person to a key leadership role on the AMSC, the entire agency has a

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[178] See Appendix A and B.

[179] Jansen et al., *Interorganizational Collaborative Capacity*, 4.

[180] See Appendix A and B.

[181] Hocevar, Jansen, and Thomas, "Inter-Organizational Collaboration."

[182] See Appendix A.

vested interest in the security of the maritime domain surrounding this city. Another participant suggested appointing maritime industry partners to AMSCs. Provided the appointee is willing, this selected participation has the potential to be a positive means of outreach and engagement. These types of appointment benefit the AMSC by networking the organization's leaders and exposing them to response plans and exercises. This exposure and experience stays with leaders and further strengthens the HLS network.

1. Recommendation for Purpose and Strategy

Although the purpose and strategy are well understood by those within the Coast Guard and affiliated with AMSCs, this may not be the case for others within the MHS community. Several responses in the surveys and in the annual reports identified issues with participation and a lack of collaboration with the private sector and other federal agencies. In order to improve, the Government Accountability Office outlined eight elements that greatly enhance the effectiveness of intergovernmental operations.[183] Two of the eight guidelines can be applied in this instance to ensure a collective effort: "define and articulate a common outcome" and "identify and address needs by leveraging resources."[184] These directly correlate with the comment of one respondent: "Regular meetings, presentations on WWWWH [presumably this means who, what, when, why, how] their business impacts the maritime environment, commerce, safety and security."[185] Therefore, AMSCs need to identify their value proposition, translate it into goals and objectives, and provide a clear understanding of shared responsibility for success.

The second domain of the ICC model is structural flexibility.[186] There are four sub-factors to this domain, all of which have relevance to the success of AMSCs. The first factor is collaboration structures, which "can include liaison roles, participation in

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[183] Government Accountability Office, *Results-Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies*, GAO-06-15 (Washington, DC: Government Accountability Office, October 2005), https://www.gao.gov/assets/250/248219.pdf.

[184] Government Accountability Office.

[185] See Appendix B.

[186] Hocevar, Jansen, and Thomas, "Inter-Organizational Collaboration."

interagency teams and task forces." [187] AMSCs already leverage these structures to advance the MHS environment, for example, by using sub-committees for a myriad of organizational tasks such as tactical law enforcement responses. Some ports have used sub-committees to represent remote port facilities although this practice is not widely done, nor has it been met with universal success.[188] To address the threats posed by the geographic distance between AMSCs and outlying ports, there should be some consideration given to setting up sub-committees in remote areas where commuting to the AMSC meetings creates an undue burden. This provides access to the larger AMSC and advertises needed support from the Coast Guard for emergency planning. As noted previously, this is not a panacea but rather an option, and further research is warranted to truly correct this issue.

The second factor in this domain is metrics.[189] The Coast Guard and AMSCs are required to conduct approximately eight specific activities. The challenge with evaluating the performance or effectiveness of AMSCs is that no external performance metrics demonstrate how well they have executed their responsibilities or how well they have planned for the threats outlined in Chapter II. The act of collecting and reporting performance data further strains an under-resourced government committee. Additionally, establishing a report card is likely to be met with resistance. However, a clear evaluation system against known threats and requirements would undoubtedly increase performance.

2. Recommendation for Structural Flexibility

The structure of AMSCs is highly flexible depending on regional needs and the varying subcommittees that the FMSC elects to establish. This is generally a good thing because no one-size-fits-all model will work due to variances in geography, maritime traffic, and port size, to name a few. However, it is clear from the reports and surveys that 31 percent of AMSCs have a problem with the geographic span of control.[190] AMSC leadership must figure out a way to fund, incentivize, and build remote participation.

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[187] Hocevar, Jansen, and Thomas.

[188] U.S. Coast Guard, "Enclosure 1."

[189] Hocevar, Jansen, and Thomas, "Inter-Organizational Collaboration."

[190] U.S. Coast Guard, *2017 Annual Report*.

Second, the Coast Guard should establish a formal system of evaluation metrics linked to local, national, and international safety and security threats. This finding is supported by two recommendations in the Government Accountability Office's report, to "develop mechanisms to monitor, evaluate, and report on results; [and] reinforce agency accountability for collaborative efforts through agency plans and reports."[191] Yearly, each COTP conducts a risk assessment of one's zone and provides that information in an SSI/FOUO format to the chain of command. However, because of the access constraints associated with such classification of these documents, it is organizationally unclear how these metrics are benchmarked against known threats to the MTS and what is being done about them. The UN has identified several collective issues relating to the security of the oceans and seas. The closest thing to this overall assessment in the United States is the annual report for AMSCs with 35 individual parties describing their challenges, suggestions, accomplishments, and best practices.[192] The annual reports indicate common trends and actions that the committees are taking on their own initiative. However, what is not shown or measured is the action vis-à-vis the threat environment. The Maritime Security Risk Assessment Model should provide some of this data. Because of the security classification of this system and the accompanying threat information, there is no transparency across the port infrastructure community or trend analysis that local and national users are applying operationally.

The second challenge with metrics is that little in the way of consolidated worklists or prioritization of projects are being generated from the annual reports. These documents provide hundreds of challenges, best practices, and accomplishments across the spectrum of MHS threats and operations yet no consolidated plan. Therefore, this thesis recommends developing a metrics system that measures AMSC performance against stated performance requirements per the various legislative actions and known security threats to the MTS. From these metrics, a prioritized work plan could be developed at the regional and national levels.

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[191] Government Accountability Office, *Results Oriented Government*.

[192] U.S. Coast Guard, *2017 Annual Report*.

The third domain of the ICC model is the incentives and rewards system.[193] This refers to the tangible or intangible value that personnel or agencies experience from participating in collaborative groups.[194] In the case of AMSCs, there are several examples of benefits from organizational participation, such as networking or the opportunity to lead local committees. However, the Coast Guard has failed to capitalize on the value of money and opportunity. The Coast Guard has unilaterally imposed the restriction not to pay AMSC members nor fund their travel or training.[195] This policy is rather short-sighted and implies that people should be intrinsically patriotic to serve on these committees and receive no professional reward. The rule also discourages travel for participants from outlying ports to visit their parent AMSCs. The intention of this restriction seems to be to avoid the appearance of government-funded boondoggles for people in the private sector.

3. Recommendation for Incentives and Rewards

AMSCs are not adequately funded and resourced for their mission. The Coast Guard is authorized to pay AMSC members at the GS-15 level for travel and training.[196] However, the organization has chosen to prohibit the expenditure of funds in this manner.[197] While government personnel can generally travel to outlying port facilities and file travel claims, private-sector members of the AMSC cannot. Nor can outlying partner organizations be funded for travel to participate in events that occur at the primary location of the AMSC meetings. This prohibition is obstructionist and limits organizational effectiveness when developing response plans and exercises. Therefore, it is recommended that the Coast Guard remove this prohibition and allocate a dedicated funding stream to each Captain of the Port for travel and training of AMSC members. This fund would be administered by the FMSC. As these are senior Coast Guard officers with oversight of million-dollar budgets, there is a low probability of waste, fraud, or abuse. Additional

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[193] Hocevar, Jansen, and Thomas, "Inter-Organizational Collaboration."

[194] Hocevar, Jansen, and Thomas.

[195] U.S. Coast Guard, *Guidelines for Port Security Committees*, 1–9.

[196] Maritime Security Advisory Committees, 46 U.S.C. § 70112 (2002), https://www.gpo.gov/fdsys/pkg/USCODE-2009-title46/pdf/USCODE-2009-title46-subtitleVII-chap701-sec70112.pdf.

[197] U.S. Coast Guard, *Guidelines for Port Security Committees*.

funding for training and exercise coordination should also be provided. Survey respondents discussed the management of the Port Security Grant Funding; though the PSGP was not within the scope of this thesis, significant concerns were raised in AMSC documents across the nation on how this program is administered. If done correctly, the PSGP could be used as a strong participatory incentive across the MHS environment.

The fourth domain is lateral mechanisms. These are both "the 'hard' and 'soft' aspects of lateral coordination" with four sub-parts that are all relevant to AMSCs.[198] The first element is social capital, the trust factor between participants that must exist for successful collaboration.[199] The power of social networks emerged clearly in the survey responses as a value-added proposition of these committees: "The purpose is to effectively collaborate with federal, state, local and the private sector in San Diego. Sharing opportunities, ideas, and innovation in our area better helps us protect our own area from wrong doers."[200] This comment represents the optimal state of communications among AMSC members and the MHS community, which leads to the second factor of information Sharing; 81 percent of the survey respondents in the first round identified this as a key benefit of participation on the committees and rated their level of collaboration as above average or high.[201] This principle was a clearly identified strength of AMSCs.

The two factors for which AMSCs have both sought improvement and improvement is needed are the use of collaborative tools and opportunities for collaborative learning.[202] These are technical systems such as data or communications systems that facilitate interagency effectiveness.[203] Several local committees reported issues with interagency communications while others continue to perform exercises and drills to enhance interoperability and establish a common operating picture among first-responder

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[198] Hocevar, Jansen, and Thomas, "Inter-Organizational Collaboration."

[199] Hocevar, Jansen, and Thomas.

[200] See Appendix A.

[201] See Appendix A.

[202] Hocevar, Jansen, and Thomas, "Inter-Organizational Collaboration."

[203] Hocevar, Jansen, and Thomas.

agencies.[204] These are beneficial activities that undoubtedly yield positive results. However, the challenge of interagency communication continues across the MHS enterprise.

4. Recommendation for Lateral Mechanisms

With regard to collaborative learning, the committees are performing interagency drills and exercises, but no formal recruiting or indoctrination process exists for new participants in AMSCs. Although problematic, this also presents an opportunity. Those within the Coast Guard generally understand the purpose of AMSCs, but external partners may not. As recommended previously, ensuring total visibility of the essential functions of AMSCs to stakeholders and the maritime community has the potential to yield increased participation and relevance.

The final domain of the ICC model is people—simply put, the ability to work well with others.[205] As with all organizations, having high-performing people who are engaged and have a stake in the outcome of the operation is the key to success. AMSCs are a people-driven enterprise, and as previously stated, this is the greatest strength of the committees.

5. Recommendation for Individual Collaborative Capacities

The strongest attribute of the AMSC is participation and collaboration from the security sector, maritime labor, and maritime industry. The Coast Guard and members of AMSCs should expand their outreach efforts to recruit and foster the participation of people who can make a difference within their discipline and the maritime environment. Every COTP and AMSC member must focus on the vision and long-term strategy of the organization to ensure relevance and the response capability.

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[204] U.S. Coast Guard, "Enclosure 3: AMSC Accomplishments," in *Area Maritime Security Committees 2017 Annual Report: Challenges, Suggestions, Accomplishments, and Best Practices* (Washington, DC: U.S. Coast Guard, 2018), https://www.dco.uscg.mil/Portals/9/CG-FAC/Documents/AMSC%20Consolidated%20reports/2017/Enclosure%20(3)%20Accomplishments%20as%20reported%20by%20the%20AMSCs.pdf?ver=2018-07-20-080110-947&timestamp=1532088264177.

[205] Hocevar, Jansen, and Thomas, "Inter-Organizational Collaboration."

B. UNREPORTED CHALLENGES

1. Port Security Grant Program

Several issues were reported by survey respondents as threats or issues that require greater engagement. The first of these concerns was the Port Security Grant Program. It appears from the most recent annual report that the PSGP is a key incentive for first responders and private industry alike, though plagued by a lack of feedback on grant submissions and concerns about the reduction in grant funding.[206] This lack of information or transparency in the review process virtually eliminates any performance improvement or accountability within the grant administration system. This finding is supported in Captain Paul Arnett's NPS Thesis in 2016 as well.[207]

2. Cuts to Homeland Security Funding

The second concern expressed by several AMSCs is the potential cut in homeland security grant funding, signaled in 2018 by the president's proposed 52 percent reduction in funding for this program, which was ultimately rejected by Congress.[208] The feedback is clear in the annual reports that the PSGP is an incentive tool that facilitates participation in AMSCs and the MHS enterprise. Although not a perfect program, this should continue to be supported and funded at the highest levels.

3. Port Security Specialists

Staffing and tasking of port security specialists and associated support staff are inadequate. In the 2017 annual report, approximately 15 AMSCs reported a variety of issues with the employment of port security specialists, position gaps, supporting position gaps, the elimination of positions, or the transfer of billets.[209] Such issues create a sub-optimal performance environment for AMSCs. The factors varied among AMSCs, but

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[206] U.S. Coast Guard, *2017 Annual Report*.

[207] Arnett, "Port Security Grant Program."

[208] "Trumps Budget Request Cuts Port Funding," *Maritime Executive*, May 23, 2017, https://www.maritime-executive.com/article/trumps-budget-request-cuts-port-funding.

[209] U.S. Coast Guard, *2017 Annual Report*.

staffing and personnel management issues were widely reported as organizational challenges. With 42 percent of the committees reporting problems in this arena, the Coast Guard should conduct a holistic review to evaluate and prioritize the expectations for personnel filling roles that support AMSCs.

4. Geography

Geography is negatively impacting the effectiveness of AMSCs. This finding is based on comments in the surveys and the feedback in the 2016 and 2017 annual reports for AMSCs. As noted previously, the U.S. shoreline is over 10,000 miles long with 361 maritime ports and 35 AMSCs to plan for any natural or man-made disasters. This creates a span of control of approximately 10 port facilities spread over 285 miles of coastline per each AMSC. This extended span of control creates barriers to communication, relationships, and network building. The Coast Guard has recognized this and attempted to mitigate the challenge of distance by establishing local sub-committees. However, based on mixed feedback in the annual reports, sub-committees can have challenges as well and are not necessarily a silver bullet to this problem. Nevertheless, this effort to establish sub-committees should be aggressively pursued to ensure that these remote maritime enterprises are being represented and given access to the full benefits of their AMSCs. Several survey responses further suggested expanding participation into other areas such as video teleconferencing and the appointment of industry personnel to leadership roles on AMSCs. The Coast Guard and the COTP/FMSC must show a value to the key stakeholders and participants within their zones. Therefore, aggressive recruiting, training exercises, and outreach must be pursued well outside the primary location of the FMSC. For instance, members of AMSCs and port security specialists should host meetings in the farthest outlying ports to ensure they are networked into the facilities and security agencies within that local region.

5. Cybersecurity

Although touched on briefly as a known threat to the MTS, cybersecurity continues to be a significant challenge for both the public and private sector. The speed of technological development and a lack of threat awareness create a permissive environment

for criminal behavior. Recognizing this weakness, many AMSCs are actively working to build organizational knowledge and strengthen the MTS against the cyber threat. Despite these efforts, the Coast Guard has not provided the training and policy to counter this challenge.

C. RECOMMENDATIONS FOR FUTURE RESEARCH

It is recommended that the Coast Guard undergo an evaluation of each AMSC. The surveys conducted for this project were deliberately narrow in focus; a broader series of surveys across each Coast Guard COTP, District, and Area would provide a much wider spectrum of feedback, wherein regional and national issues would likely be identified as organizational trends. The implementation of the ICC model using the priorities yielded in the SWOT analysis would allow this kind of comprehensive evaluation to include benchmarked and quantifiable data and metrics.

The Coast Guard participates in other committees at the local, regional, and national levels, such as Harbor Safety Committees and ISACs. There is little research on what these organizations do and how effective they are in enhancing the safety and security of the nation and maritime community. The maritime security community would benefit from the kind of baseline inquiry and data collection conducted in this thesis.

D. CONCLUSION

With the rapid growth of maritime commerce, a complex system of overlapping authorities and jurisdictions have evolved to secure the world's oceans and ships. Because of the expanded use of the seas, the concept of maritime security has evolved as well. This concept has largely focused on naval control of the oceans and sea lines of communication. To address this complex system of state and non-state actors, today's maritime security includes the full scope of government, military and police operations, laws, and policies employed to facilitate the safety and security of the maritime domain. Applying these principles after the attacks on 9/11, the U.S. government passed a series of laws and executive actions that mandated the creation of AMSCs, whose purpose is to use these public–private partnerships to address and minimize the threats to the MTS and the maritime domain.

This thesis was meant to be a first step in identifying the overall value and effectiveness of AMSCs; their strengths, weaknesses, opportunities, and threats; and their role in protecting the maritime transportation system, particularly as it relates to collaboration. There was little reason to suspect at the outset of this thesis that AMSCs are *not* a reasonably effective collaboration mechanism. Equally, there were no data or processes by which to know this with certainty and in detail. Nor any formal and robust collaboration best practices in place to guide and enable optimal performance. Likewise, the Delphi responses confirmed many readily predictable issues, such as the disadvantage of distance from the physical location of the AMSC, rather than revealed mysterious or surprising ones. Still, the process of building a measurably effective and universally valuable collaboration is one of stages, the first of which was the purpose of this research and the next of which should be undertaken by the Coast Guard itself.

Key recommendations for the organizational improvement of AMSCs include increasing funding, modifying funding rules to allow AMSCs to pay for travel and training of non–Coast Guard members, developing a standard method to train new AMSC personnel, and developing performance metrics tied to known threats and operational requirements. Additionally, at the national level, a prioritization of threat-based tasking should be established for regional and national oversight.

Through the process of regular meetings and exercises, AMSCs are reinforcing positive network connections of MHS professionals from a variety of agencies and occupations. These interactions represent the true strength of the homeland security enterprise. The ability to build relationships and employ those connections to enhance the security of the nation is the true benefit of AMSCs.

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APPENDIX A. ROUND ONE SURVEY DATA

A. SURVEY QUESTIONS

1. What is the purpose of the AMSC?
2. How do you define or recognize "success" with regard to the AMSC?
3. How would you rate the performance of the AMSC you belong to?
4. What are the benefits to you or your organization for AMSC Participation?
5. Are there disadvantages to or challenges with participation on the AMSC?
6. How would you rate the quality of collaboration on your AMSC?
7. What limits the effectiveness of the AMSC?
8. What is the size of your port facility: Small, Medium, Large.

B. SURVEY ANSWERS

Q.1. What is the purpose of the AMSC in your Captain of the Port Zone?

A1.1. To facilitate communication between port interests.

A1.2. The purpose is to effectively collaborate with federal, state, local and the private sector in San Diego. Sharing opportunities, ideas and innovation in our area better helps us protect our own area from wrong doers.

A1.3. We work in multiple AMSC zones. The purpose of the AMSC is supposed to be improving maritime security in port areas. This would be general areas of the port, the movement of vessels into and departing the port, and integration of Facility Security Plans.

A1.4. To bring stakeholders in the domain together to share, collaborate and be forward thinking and moving based on current events. Being a small port in the COTP zone containing large ports, we are able to glean information, get

exposure and attention as well as utilize lessons from others. We can network and get recognized for more than just incidents that a COTP normally would.

A1.5. I do not have one COTP Zone, My position is at the Coast Guard Area Level which provides operational planning and policy guidance to the Districts and Sectors. Primarily the AMSC purpose is to provide advice in AMS assessments and planning for the port. Be a vital comms link for the COTP and the port partners. The AMSC is an advisory committee to the COTP

A1.6. to serve a medium of communication and provide leadership in problem solving within the region.

A1.7. To address maritime security issues that may arise. Review and update security plans for facilities, security zones and port closures. Assist facility owners with questions and concerns.

A1.8. Bring together federal, state, local and industry maritime stakeholders to discuss and address issues of common interest in the maritime security realm.

A1.9. To ensure effective government and private sector security measures are being coordinated in a manner that allows all responding entities to implement plans and procedures designed to deter, detect, disrupt, respond to, and recover from a Transportation Security Incident (TSI) or the threat thereof.

A1.10. The AMSC is a mechanism of the Coast Guard's COTP to bring together federal, state, local, and private partners who have a stake or concern in maritime/port security. Through this committee, the functions of these various stakeholders are coordinated to promote executive level strategy and decision making, to enhance and promote port security, to disseminate information/intelligence, to coordinate training/exercises/drills/grants, and to collaborate during operations.

A1.11. The AMSC is a means for industry leaders to collaborate and share ideas in a symposium style format. It also acts as a sounding board for major issues facing operations and security. The committee helps create partnerships within the maritime community.

Q2. How do you define or recognize "success" with regard to the AMSC?

A2.1. By having an impact on things that are important to my area of operations, and a general advancement of safety and security of my region.

A2.2. Continuous collaboration, networking and participants effectively working together as a team for the common goal.

A2.3. The means to define or recoginze success of the AMSC is to conduct a risk assessment and then to re-evaluate after changes have been made and implemented. This should not be done by assuming or guessing the impact. All AMSC's conducted risk assessments in the very beginning. These were conducted using USCG support. These risk assessments should be revisited to determine what security improvements have actually been made.

A2.4. Success of an AMSC is a good turn out, active involvement and a good agenda. Bringing industry stakeholders and partners together to be productive and open about real threats, industry issues, concerns, incident review, etc. leads to focus and change or implementation of processes or regulations that can make for a safer domain. Small ports can benefit from the lessons learned of their bigger partners in the zone and gain/glean information and exposure with the COTP to aid in grants and overall support.

A2.5. Proper, timely, information sharing. Jointly and successfully address port vulnerabilities. Identify and mitigate capabilities gaps.

A2.6. when issues come up and the group discusses options and finds an effective response.

A2.7. Communication. We are able to communicate with local representatives 24/7.

A2.8. Conduct fruitful meetings, discussions and exercises which address maritime security issues and advance collective preparedness and cooperation for any potential event.

A2.9. Holistic and inclusive engagement from all aspects of the maritime industry throughout the entire FMSC's AOR that shows an understanding of intermodal and interlinking threats that can impact our AOR.

A2.10. The success of the AMSC should be measured both by the participation in the AMSC - do we have all relevant stakeholders represented? Do the represented stakeholders comprising the AMSC produce products that support and improve maritime security? For my port, the AMSC has been a good foundational mechanism for creating other operational and training components. Participants in the AMSC are also represented in the Regional Coordinating Mechanism (RECOM), Exercise Bay Shield (annual maritime security exercise program), Maritime Regional Rad/Nuc Detection Program and others. Each of the above listed successes collected the appropriate AMSC stakeholders and provided a product that enhanced maritime security for federal, state, local, and private entities.

A2.11. Success is measured in the amount of incidences or lack thereof. The less you hear about maritime security the (arguably) more effective it is.

Q3. How would you rate the performance of the AMSC you belong to?

A3.1. Fair

A3.2. I would rate the performance and collaboration to be outstanding.

A3.3. I wouuld rate all AMSC's that we work with as marginal. AMSC's have become more political in nature and bureaucratic. They are comprised almost entirely of federal, state, and local agencies (police/fire) and have almost left out industry.

A3.4. I really rate the AMSC events near me as high. As already mentioned, we are able to glean/gain information and contact with the COTP and other big port domain stakeholders that otherwise we may never have. We also have implemented a local AMSC for just our area and invite those from the COTP zone to join in. it helps other ports see what a smaller port complex deals with on a much slimmer budget.

A3.5. NA

A3.6. Outstanding, the COPT has always provided clear communication and direction.

A3.7. Above average.

A3.8. Good. Regular meetings held, with good attendance. Exercises are objectives-oriented and well received by industry as well as other agencies.

A3.9. Moderate. Needs more inclusion from remote ports and encouragement for participation.

A3.10. Overall, if I were to give our AMSC a "letter grade," I would rate it as a B+.

A3.11. I think the AMSC in the Port of SF is really strong. That having been said I firmly believe there is a large room for improvement based on the high level of exposure many ferry and transit operators. Greater training and collaborative sessions between the USCG and vessel operators would allow for unified and more predictable response to hazards, and emergencies.

Q4. What are the benefits to you or your organization for AMSC participation?

A4.1. A voice at the table.

A4.2. To be kept up to date with our neighbors and collaborate in keeping our zones safe.

A4.3. The benefits are to merely know the players and for them to be familiar with our organization.

A4.4. exposure, lessons learned, communication and collaboration.

A4.5. Information sharing

A4.6. problem solving, chance to communicate with regional stakeholders, share insights, situational awareness.

A4.7. Keeping on top of current information.

A4.8. Stakeholder input to DHS and other maritime security requirements and initiatives. Increased stakeholder buy-in to USCG and DHS security programs.

A4.9. Better awareness of emerging threats and understanding of how they impact the entire AOR.

A4.10. Our Chief of Police serves as the Co-Chair of the AMSC. This role gives continuity of committee leadership and visibility within the AMSC for our agency.

A4.11. Peace of mind for our ridership, customers and employees knowing highly trained professionals and resources can be deployed at a moments notice. The backing of a firmly rooted and established training regimen helps also.

Q5. Are there disadvantages to or challenges with participation on the AMSC?

A5.1. Yes, the meetings are four and a half hours away.

A5.2. N/A

A5.3. The AMSC's do not appear to regard the marine industry inputs as they do their own self-needs. The AMSC's have become magnets for agencies wanting money to support individual desires.

A5.4. Travel time, frequency and still being the outlier from the north.

A5.5. N/A

A5.6. At times travelling to the location for the meetings can be an issue depending on where the meeting is being held. But if we could teleconference it would help.

A5.7. Change in local USCG personnel every couple years. Since our port is 275 miles north of our AMSC, we deal with our local USCG who in turn discusses issues with the AMSC.

A5.8. Biggest challenge is geographic reach of the AOR and distance between ports. Most industry and largest ports are concentrated in the Portland/Vancouver area, and meetings here are well attended by local industry and agencies. However, other ports (Astoria, Pasco/tri-cities, Coos Bay, Grays Harbor) are between 2 and 4 hours away and cannot regularly attend meetings. Security concerns and cargo are also widely disparate between river and coastal ports, defeating most attempts at a "one size fits all" approach to addressing maritime issues.

A5.9. yes. We have a large AOR with the concentration of industry in Portland, which oftentimes limits participation for outlying ports like Grays Harbor, Coos Bay, and the Tri-Cities area.

A5.10. The challenges of the AMSC are most apparent in the turnover of USCG personnel every 3-4 years (sometimes sooner). The structure can be rigid and at times confusing to those unfamiliar with the Coast Guard - perhaps a familiarization training/class for new members? Some of the efforts of the AMSC can overlap with other non-Coast Guard, regional efforts. This can created conflicts and redundancies that need to be identified, considered and resolved.

A5.11. No

Q.6. How would you rate the quality of collaboration on your AMSC?

A6.1. Typically the administrator is just a phone call away and always willing to listen. So, good.

A6.2. Excellent - Ideal.

A6.3. On a ten point scale, I would rate them all about a 4.

A6.4. high. i have seen offshoot groups and events spawn from AMSCs and have to think that the Rolodex created from the meetings can make for quick and active response.

A6.5. N/A

A6.6. Very high

A6.7. Above average.

A6.8. Good.

A6.9. Moderate

A6.10. The Coast Guard's collaboration with my agency and with regional partners has been very good. I question the collaboration from other federal partners both working with the Coast Guard and other federal agencies, and collaborating with state/local agencies.

A6.11. It takes a lot of follow through but there is plenty of opportunity for new partnerships and the strengthening of existing relationships.

Q7. What limits the effectiveness of the AMSC?

A7.1. It is hard to push out goals and then follow up outcomes with so large of an AOR. Everyone who sits at the table is competing for limited resources.

A7.2. N/A

A7.3. The effectiveness of the AMSC is limited by the bureaucracy. These agencies are supposed to work together as part of their jobs and protecting the public and marine industry. Now when Police chiefs, Fire Chiefs and other senior officials come, the level of decorum is extremely high and becomes just another public meeting. The vast majority of "presentations" go to patting each other on the back for some small effort made to accommodate a past issue.

A7.4. attendance and agenda. If there is a weak agenda it turns into a less valuable time spent with stakeholders. I think that if attandance is weak, a good

agenda suffers, and if agendas are weak, attandance suffers in relation. As long as they bring people together with goals and forums to work then they will always be valuable.

A7.5. lack of participation and enthusiasm

A7.6. really has no limits, meets it goals for communication

A7.7. Again the change in local personnel.

A7.8. Geography and the resulting limits on attendance, see above.

A7.9. Geography.

A7.10. The AMSC is only as strong as the participation, the information sharing, and support of the willing. As mentioned above, changes in USCG staff can limit, delay or reduce the effectiveness of the AMSC.

A7.11. The operators' consistency in regards to follow through and policy enforcement.

Q8. Please rank your estimated port size in relation to other maritime ports within the United States.

A8.1. Small

A8.2. Large

A8.3. Large

A8.4. Small

A8.5. Large

A8.6. Large

A8.7. Small

A8.8. Medium

A8.9. Medium

A8.10. Medium

A8.11. Large

C. SURVEY ANSWERS CODED BY THEME

Effective

- The purpose is to effectively collaborate
- To ensure effective government and private sector security measures are being coordinated
- participants effectively working together
- group discusses options and finds an effective response.
- The less you hear about maritime security the (arguably) more effective it is.
  effectiveness of the AMSC is limited by the bureaucracy
  changes in USCG staff can limit, delay or reduce the effectiveness of the AMSC.
- Needs more inclusion from remote ports and encouragement for participation
- The challenges of the AMSC are most apparent in the turnover of USCG personnel every 3-4 years (sometimes sooner).
- The structure can be rigid and at times confusing to those unfamiliar with the Coast Guard - perhaps a familiarization training/class for new members?
- Some of the efforts of the AMSC can overlap with other non-Coast Guard, regional efforts. This can created conflicts and redundancies that need to be identified, considered and resolved.
- I question the collaboration from other federal partners both working with the Coast Guard and other federal agencies, and collaborating with state/local agencies.
- If there is a weak agenda it turns into a less valuable time spent with stakeholders. I think that if attandance is weak, a good agenda suffers, and if agendas are weak, attandance suffers in relation.
- Again the change in local personnel.

Communication

- To facilitate communication between port interests
- to serve a medium of communication and provide leadership in problem solving within the region.

- Communication. We are able to communicate with local representatives 24/7.
- really has no limits, meets it goals for communication
- Stakeholder input to DHS and other maritime security requirements and initiatives
- The structure can be rigid and at times confusing to those unfamiliar with the Coast Guard - perhaps a familiarization training/class for new members?
- Some of the efforts of the AMSC can overlap with other non-Coast Guard, regional efforts. This can created conflicts and redundancies that need to be identified, considered and resolved.
- The AMSC's do not appear to regard the marine industry inputs as they do their own self-needs.

Collaborate

- To bring stakeholders in the domain together to share, collaborate and be forward thinking and moving based on current events.
- The purpose is to effectively collaborate with federal, state, local and the private sector
- To bring stakeholders in the domain together to share, collaborate and be forward thinking and moving based on current events
- to coordinate training/exercises/drills/grants, and to collaborate during operations.
- The AMSC is a means for industry leaders to collaborate and share ideas in a symposium style format.
- To be kept up to date with our neighbors and collaborate in keeping our zones safe.
- Sharing opportunities, ideas and innovation in our area better helps us protect our own area from wrong doers.
- Assist facility owners with questions and concerns.
- Bring together federal, state, local and industry maritime stakeholders to discuss and address issues of common interest in the maritime security realm.
- The AMSC is a mechanism of the Coast Guard's COTP to bring together federal, state, local, and private partners who have a stake or concern in maritime/port security.

- The committee helps create partnerships within the maritime community.
- Jointly and successfully address port vulnerabilities. Identify and mitigate capabilities gaps.
- The AMSC's do not appear to regard the marine industry inputs as they do their own self-needs.
- The challenges of the AMSC are most apparent in the turnover of USCG personnel every 3-4 years (sometimes sooner).
- The structure can be rigid and at times confusing to those unfamiliar with the Coast Guard - perhaps a familiarization training/class for new members?
- Some of the efforts of the AMSC can overlap with other non-Coast Guard, regional efforts. This can created conflicts and redundancies that need to be identified, considered and resolved.
- I question the collaboration from other federal partners both working with the Coast Guard and other federal agencies, and collaborating with state/local agencies.
- Again the change in local personnel.

Information

- we are able to glean information, get exposure and attention as well as utilize lessons from others.
- to disseminate information/intelligence, to coordinate training/exercises/drills/grants, and to collaborate during operations.
- gain/glean information and exposure with the COTP to aid in grants and overall support.
- Proper, timely, information sharing.
- Proper and timely information sharing across the maritime domain.
- As already mentioned, we are able to glean/gain information
- Information sharing
- Keeping on top of current information.
- The AMSC is only as strong as the participation, the information sharing, and support of the willing

- Sharing opportunities, ideas and innovation in our area better helps us protect our own area from wrong doers.
- Bring together federal, state, local and industry maritime stakeholders to discuss and address issues of common interest in the maritime security realm.
- Better awareness of emerging threats and understanding of how they impact the entire AOR.

Plan

- the movement of vessels into and departing the port, and integration of Facility Security Plans.
- provides operational planning and policy guidance to the Districts and Sectors.
- Primarily the AMSC purpose is to provide advice in AMS assessments and planning for the port
- implement plans and procedures designed to deter, detect, disrupt, respond to, and recover from a Transportation Security Incident (TSI)
- Review and update security plans for facilities, security zones and port closures.

Participation/Participate

- networking and participants effectively working together
- The success of the AMSC should be measured both by the participation
- Participants in the AMSC are also represented in the Regional Coordinating Mechanism (RECOM)
- Needs more inclusion from remote ports and encouragement for participation
- We have a large AOR with the concentration of industry in Portland, which oftentimes limits participation for outlying ports like Grays Harbor, Coos Bay, and the Tri-Cities area.
- lack of participation and enthusiasm
- Success of an AMSC is a good turn out, active involvement and a good agenda. Bringing industry stakeholders and partners together to be productive and open about real threats, industry issues, concerns, incident review, etc. leads to focus and

change or implementation of processes or regulations that can make for a safer domain

- Stakeholder input to DHS and other maritime security requirements and initiatives
- Some of the efforts of the AMSC can overlap with other non-Coast Guard, regional efforts. This can created conflicts and redundancies that need to be identified, considered and resolved.

Relationship

- It takes a lot of follow through but there is plenty of opportunity for new partnerships and the strengthening of existing relationships.
- We can network and get recognized for more than just incidents that a COTP normally would.
- Bring together federal, state, local and industry maritime stakeholders to discuss and address issues of common interest in the maritime security realm.
- The committee helps create partnerships within the maritime community.
- At times travelling to the location for the meetings can be an issue depending on where the meeting is being held.
- I question the collaboration from other federal partners both working with the Coast Guard and other federal agencies, and collaborating with state/local agencies.

Geography

- Geography and the resulting limits on attendance, see above.
- Needs more inclusion from remote ports and encouragement for participation
- Yes, the meetings are four and a half hours away.
- Travel time, frequency and still being the outlier from the north.
- Since our port is 275 miles north of our AMSC, we deal with our local USCG who in turn discusses issues with the AMSC.
- We have a large AOR with the concentration of industry in Portland, which oftentimes limits participation

D. SURVEY ANSWERS CODED BY SWOT

1. Strengths

These are considered the "positive attributes, tangible and intangible internal to your organization."[210] Examples of strengths are internal resources, assets, advantages such as staff or technical skill, etc. Key terms: collaboration, effectiveness, planning, networking, relationships

- The Coast Guard's collaboration with my agency and with regional partners has been very
- good. I question the collaboration from other federal partners both working with the Coast Guard and other federal agencies, and collaborating with state/local agencies.
- The purpose is to effectively collaborate with federal, state, local and the private sector in San Diego. Sharing opportunities, ideas and innovation in our area better helps us protect our own area from wrong doers.
- To bring stakeholders in the domain together to share, collaborate and be forward thinking and moving based on current events. Being a small port in the COTP zone containing large ports, we are able to glean information, get exposure and attention as well as utilize lessons from others. We can network and get recognized for more than just incidents that a COTP normally would.
- to serve a medium of communication and provide leadership in problem solving within the region.
- Bring together federal, state, local and industry maritime stakeholders to discuss and address issues of common interest in the maritime security realm.
- To ensure effective government and private sector security measures are being coordinated in a manner that allows all responding entities to implement plans and procedures designed to deter, detect, disrupt, respond to, and recover from a Transportation Security Incident (TSI) or the threat thereof.

[210] Berry, "What Is a SWOT Analysis?"

- The AMSC is a means for industry leaders to collaborate and share ideas in a symposium style format. It also acts as a sounding board for major issues facing operations and security. The committee helps create partnerships within the maritime community.
- Continuous collaboration, networking and participants effectively working together as a team for the common goal.

2. Weaknesses

These are things that reduce the effectiveness or value of an organization; these are usually internal factors.[211] In this case, finances, geography, and leadership are all examples. Key terms: geography, personnel turnover, bureaucracy, participation

- the meetings are four and a half hours away.
- The AMSC's do not appear to regard the marine industry inputs as they do their own self-needs. The AMSC's have become magnets for agencies wanting money to support individual desires.
- At times travelling to the location for the meetings can be an issue depending on where the meeting is being held. But if we could teleconference it would help.
- Change in local USCG personnel every couple years. Since our port is 275 miles north of our AMSC, we deal with our local USCG who in turn discusses issues with the AMSC.
- Biggest challenge is geographic reach of the AOR and distance between ports. Most industry and largest ports are concentrated in the Portland/Vancouver area, and meetings here are well attended by local industry and agencies. However, other ports (Astoria, Pasco/tri-cities, Coos Bay, Grays Harbor) are between 2 and 4 hours away and cannot regularly attend meetings. Security concerns and cargo are also widely disparate between river and coastal ports, defeating most attempts at a "one size fits all" approach to addressing maritime issues.

[211] Berry.

- We have a large AOR with the concentration of industry in Portland, which oftentimes limits participation for outlying ports like Grays Harbor, Coos Bay, and the Tri-Cities area.
- The challenges of the AMSC are most apparent in the turnover of USCG personnel every 3-4 years (sometimes sooner). The structure can be rigid and at times confusing to those unfamiliar with the Coast Guard - perhaps a familiarization training/class for new members? Some of the efforts of the AMSC can overlap with other non-Coast Guard, regional efforts. This can created conflicts and redundancies that need to be identified, considered and resolved.
- The effectiveness of the AMSC is limited by the bureaucracy. These agencies are supposed to work together as part of their jobs and protecting the public and marine industry. Now when Police chiefs, Fire Chiefs and other senior officials come, the level of decorum is extremely high and becomes just another public meeting. The vast majority of "presentations" go to patting each other on the back for some small effort made to accommodate a past issue.
- lack of participation and enthusiasm

3. Opportunities

In the business environment, opportunities are viewed largely as external options that are "reasons your business is likely to prosper" or things an organization can capitalize on for profit.[212] In the case of AMSCs, several factors were internal opportunities, i.e., people or internal resources that could be capitalized on for the betterment of the group. Key terms: inputs, effectiveness, bureaucracy, information sharing, participation, communications

- The AMSC's do not appear to regard the marine industry inputs as they do their own self-needs. The AMSC's have become magnets for agencies wanting money to support individual desires.

[212] Berry.

- The effectiveness of the AMSC is limited by the bureaucracy. These agencies are supposed to work together as part of their jobs and protecting the public and marine industry. Now when Police chiefs, Fire Chiefs and other senior officials come, the level of decorum is extremely high and becomes just another public meeting. The vast majority of "presentations" go to patting each other on the back for some small effort made to accommodate a past issue.
- attendance and agenda. If there is a weak agenda it turns into a less valuable time spent with stakeholders. I think that if attandance is weak, a good agenda suffers, and if agendas are weak, attandance suffers in relation. As long as they bring people together with goals and forums to work then they will always be valuable.
- The AMSC is only as strong as the participation, the information sharing, and support of the willing. As mentioned above, changes in USCG staff can limit, delay or reduce the effectiveness of the AMSC.
- Success of an AMSC is a good turn out, active involvement and a good agenda. Bringing industry stakeholders and partners together to be productive and open about real threats, industry issues, concerns, incident review, etc. leads to focus and change or implementation of processes or regulations that can make for a safer domain. Small ports can benefit from the lessons learned of their bigger partners in the zone and gain/glean information and exposure with the COTP to aid in grants and overall support.
- Proper, timely, information sharing. Jointly and successfully address port vulnerabilities. Identify and mitigate capabilities gaps.
- when issues come up and the group discusses options and finds an effective response.
- Communication. We are able to communicate with local representatives 24/7.
- The success of the AMSC should be measured both by the participation in the AMSC - do we have all relevant stakeholders represented? Do the represented stakeholders comprising the AMSC produce products that support and improve maritime security? For my port, the AMSC has been a good foundational mechanism for creating other operational and training components. Participants in

the AMSC are also represented in the Regional Coordinating Mechanism (RECOM), Exercise Bay Shield (annual maritime security exercise program), Maritime Regional Rad/Nuc Detection Program and others. Each of the above listed successes collected the appropriate AMSC stakeholders and provided a product that enhanced maritime security for federal, state, local, and private entities.

4. Threats

These are generally considered external factors beyond the organization's control. However, one can take preventive measures to minimize the exposure to threats. Threats have been interpreted as anything that can lead up to a transportation security incident or externally influence the behavior or effectiveness of AMSCs. Key terms: participation, collaboration, geography

- lack of participation and enthusiasm
- I wouuld rate all AMSC's that we work with as marginal. AMSC's have become more political in nature and bureaucratic. They are comprised almost entirely of federal, state, and local agencies (police/fire) and have almost left out industry.
- I firmly believe there is a large room for improvement based on the high level of exposure many ferry and transit operators. Greater training and collaborative sessions between the USCG and vessel operators would allow for unified and more predictable response to hazards, and emergencies.
- Yes, the meetings are four and a half hours away.
- Change in local USCG personnel every couple years. Since our port is 275 miles north of our AMSC, we deal with our local USCG who in turn discusses issues with the AMSC.
- yes. We have a large AOR with the concentration of industry in Portland, which oftentimes limits participation for outlying ports like Grays Harbor, Coos Bay, and the Tri-Cities area.
- The challenges of the AMSC are most apparent in the turnover of USCG personnel every 3-4 years (sometimes sooner). The structure can be rigid and at times confusing to those unfamiliar with the Coast Guard - perhaps a familiarization

training/class for new members? Some of the efforts of the AMSC can overlap with other non-Coast Guard, regional efforts. This can created conflicts and redundancies that need to be identified, considered and resolved.

- Low collaboration: On a ten point scale, I would rate them all about a 4.
- The Coast Guard's collaboration with my agency and with regional partners has been very good. I question the collaboration from other federal partners both working with the Coast Guard and other federal agencies, and collaborating with state/local agencies.
- It is hard to push out goals and then follow up outcomes with so large of an AOR. Everyone who sits at the table is competing for limited resources.
- Geography and the resulting limits on attendance, see above.

APPENDIX B. ROUND TWO SURVEY DATA

A. SURVEY QUESTIONS

1. "I would rate all AMSC's that we work with as marginal. AMSC's have become more political in nature and bureaucratic. They are comprised almost entirely of federal, state, and local agencies (police/fire) and have almost left out industry." Based on the response above, how important is private sector participation in the AMSCs?

2. Based on the previous question, how can AMSCs improve private sector engagement?

3. "The Coast Guard's collaboration with my agency and with regional partners has been very good. I question the collaboration from other federal partners both working with the Coast Guard and other federal agencies, and collaborating with state/local agencies." Based on the response above, do you agree, and if so, why do you think this is?

4. Based on the previous question, how can AMSCs get better collaboration with other federal partners?

5. "Biggest challenge is geographic reach of the AOR and distance between ports. Most industry and largest ports are concentrated in the .... area, and meetings here are well attended by local industry and agencies. However, other ports... are between 2 and 4 hours away and cannot regularly attend meetings. Security concerns and cargo are also widely disparate between river and coastal ports, defeating most attempts at a "one size fits all" approach to addressing maritime issues." Do you agree with the response above? If so, how can AMSCs incentivize participation for remote ports or overcome their barriers to participation?

6. "The AMSC's do not appear to regard the marine industry inputs…" Do you agree with the response above? If so why, and what can be done to increase collaboration with the private sector?

7. If you could make any changes to AMSCs, what would they be?

B. SURVEY ANSWERS

Q1. I would rate all AMSC's that we work with as marginal. AMSC's have become more political in nature and bureaucratic. They are comprised almost entirely of federal, state, and local agencies (police/fire) and have almost left out industry." Based on the response above, how important is private sector participation in the AMSCs?

A1.1. Bigger Ports may see this as an issue, but with smaller ports, getting industry involved is not as challenging. With smaller scope, the presence of all stakeholders are usually present and have topics to share. Private sector is important in that port security grant funds are often obtained via a collaborative project with the private sector to enhance terminals and facilities. In the domain, we all play a part in security, not just LEO.

A1.2. Private industry is instrumental. As a government agency, we need to realize that private industry has "right sized" therefore, the topics need to have a direct correlation to their facility/ segment of the maritime domain to justify attendance.

A1.3. Private sector participation is very important. They control the vast majority of high risk and critical maritime infrastructure, and they are the primary target of programs like cyber security and port security grants. They are a natural participant and should be highly involved in the AMSC.

A1.4. Just as important as the other sectors. Although the local, state and federal agencies are going to be the first responders it is our duty as the daily operators to prevent or mitigate potential risks. The industry can also provide intel not normally available to the other agencies

A1.5. Private sector participation is critical to the success of the AMSC; they are the end users. Because of our location, the Port does not participate in many meetings. "Political and Bureaucratic" is a broad statement. Without specific examples, it is hard to address this statement.

A1.6. It's best to have a balance make-up Responders and industry

A1.7. Varies, consultants can help do the heavy lifting on special projects/ and studies. Private sector companies that can impact maritime/port safety and security should be involved, For example if there are business that store hazardous materials/wastes in and around a port district, that if released would have an offsite consequence and impact the port or maritime environment thy should be involved. Also involvement by contractors that have cleanup response contracts along the maritime or port areas.

A1.8. In order for the private sector to support our local law enforcement agencies, it is critical that we are involved

A1.9. It is perceived to be marginal but in fact it is very important.

A1.10. Private sector participation is extremely important in the AMSC; from major tenants to small and big business. The "area" is nothing without the participation of the organizations in the area. From a recovery standpoint, if the area organizations and businesses are not on board from the beginning, during the planning and exercise phase, response and recovery will be hamstrung.

Q2. Based on the previous question, how can AMSCs improve private sector engagement?

A2.1. In my experience, AMSCs have had good public/private sector turnout and involvement.

A2.2. Topics need to have a direct correlation to their facility/ segment of the maritime domain to justify attendance.

A2.3. We need to incentivize private sector participation better. We have done outreach to industry and requested their participation on the AMSC, but their attendance/participation remains low. This is despite topics which should be of interest to them, such as Port Security Grant program and cyber resilience.

A2.4. Provide an opportunity for the industry to act as a sounding board for new ideas and legislation. That would provide the framework for a system of continual revision and improvement.

A2.5. Stakeholder meeting and surveys

A2.6. Ensure their contributions are heard and taken serious. Can't pay them so need to make them feel their efforts manner.

A2.7. Regular meetings, presentation on WWWWH their business impacts the maritime environment, commerce, safety and security.

A2.8. AMSCs is doing a great job in inviting the private sector; I have nothing negative or suggestions at this time.

A2.9. By providing value. Perhaps training, or regulation mitigation. If you are active with the AMSC your facility is inspected less.

A2.10. Appoint some to AMSC and invite others to participate, especially representatives from tenant organizations.

Q3. The Coast Guard's collaboration with my agency and with regional partners has been very good. I question the collaboration from other federal partners both working with the Coast Guard and other federal agencies, and collaborating with state/local agencies." Based on the response above, do you agree, and if so, why do you think this is?

A3.1. I don't have insight into this. I think the interaction with Captain of the Port and stakeholders that interct to improve maritime domain awareness is most important.

A3.2. Agree. The bottom line is each agency has it marching orders IRT mission and focus that do not line up with CG, for example cyber security and reporting.

A3.3. As a USCG employee I can't speak for other federal agencies and their collaboration with state/local agencies. However, the AMSC is a good venue to make those connections and improve that engagement.

A3.4. Neutral - personally I have tried to make connections with the local USCG agencies and have not been successful. The local agencies have been quick to respond and eager to participate. I unfortunately believe that the overall reactionary nature of Homeland Security causes this disconnect.

A3.5. No response

A3.6. Differing priorities I guess

A3.7. In San Diego we have good opportunities for collaboration we lack dedicated funding at the local level for sustained involvement.

A3.8. USCG is an amazing partner and is constantly communicating with the private sector

A3.9. Federal agencies have agendas that don't support local issues.

A3.10. I agree in part. It all depends on the relationships within the AMSC and how hard the leadership of the AMSC is reaching out to federal partners. A strong AMSC can survive a weak COTP.

Q4. Based on the previous question, how can AMSCs get better collaboration with other federal partners?

A4.1. It stems with the site host and the familiarity with the domain. Perhaps mixing up hosts and locations. Getting smaller ports or other stakeholders more involved with agencies other than USCG will occur then.

A4.2. Need another "9/11" or another event that will refocus attention with presidential guidance to get all agencies on the same page

A4.3. I feel the USCG has good collaboration with other federal agencies as well as state/local partners, and this is reflected in our strong AMSC engagement from these agencies.

A4.4. Essentially the same response as to private sector engagement.

A4.5. No response

A4.6. Support from the top. Agency leaders need to stress their support. CG should be required to support other fed agency's efforts as well.

A4.7. No Comment

A4.8. (No Answer provided.)

A4.9. Once again by insuring value

A4.10. Regular exercises and information sessions outside the regularly scheduled meetings. It requires a significant amount of reaching out to those federal organizations to 'sell' the value of the AMSC and the PARTNERS within it.

Q5. "Biggest challenge is geographic reach of the AOR and distance between ports. Most industry and largest ports are concentrated in the .... area, and meetings here are well attended by local industry and agencies. However, other ports... are between 2 and 4 hours away and cannot regularly attend meetings. Security concerns and cargo are also widely disparate between river and coastal ports, defeating most attempts at a "one size fits all" approach to addressing maritime issues." Do you agree with the response above? If so, how can AMSCs incentivize participation for remote ports or overcome their barriers to participation?

A5.1. I tend to agree with this. There are certainly issues with AOR and distance between host ports. I also tend to believe that certain ports in a COTP sector are more in reach and in common with the COTP and therefore garner the required attention that outlying ports need and want. This comes into play when PSGP funds are on the line.

A5.2. yes, rotate meeting locations.

A5.3. This was my quote and if I had a good answer I'd have done it. I'd love to hear what others say to this.

A5.4. No, this day and age of modern technology bridges the distance gap. Offer distance participation through video conferencing and webinars.

A5.5. I agree, but most of the larger Ports are concentrated around the Colombia river. Consider regional visits to Ports like Coos Bay. I understand there will not be the same participation, but it will show that there involvement and participation is valued.

A5.6. We don't have that as a problem

A5.7. Have regional meetings to address the needs of that region.

A5.8. I am in San Diego and we do not have that problem. We are widely connected to many federal and private sectors.

A5.9. I agree. Better utilization of the harbor Safety Committee is a good answer. Make sure that grant dollars get to the outlying ports. They will be the staging areas for the bad guys.

A5.10. There has NEVER been a "one size fits all" approach to Port management. Too many variables. And, this is not the 19th century; distance should not detract from establishing communication and arranging regular meetings.

Q6. “The AMSC's do not appear to regard the marine industry inputs…” Do you agree with the response above? If so why, and what can be done to increase collaboration with the private sector?

A6.1. No.

A6.2. Yes and no...depends on the topic, I.E TWIC cards (industry input is one thing, regulations is different).

A6.3. No I don't agree; I'm curious what the context was or any details from the above response (industry inputs to what?). See above for improving collaboration with industry.

A6.4. No, but I do think there is great room for improvement in the marine sector. Personal bias aside there is a lot of risk involved and we have been very fortunate to avoid an incident so far.

A6.5. I have not experienced this.

A6.6. No I don't agree

A6.7. No Comment

A6.8. (No answer provided.)

A6.9. No.

A6.10. Tough one. Some marine industry input is narrow minded and self-serving. Commercial fishermen, for example, seem to care little about the port, preparation and partnerships, only on profits and getting as much for as little as they can. So, their input tends to only deal with what is in their best interest and has little value for the region.

Q7. If you could make any changes to AMSCs, what would they be?

A7.1. Perhaps mixing up hosts and locations.

A7.2. Good question. Legacy program are hard to get active participation.

A7.3. No great ideas for changing AMSCs, but it would be helpful to have better guidance and resources re: USCG responsibilities for maritime cyber security/resilience. This is the area we get the most questions and have the fewest good answers. I suspect the recent national cyber strategy promulgation will only increase these questions.

A7.4. Encourage participation and feedback from marine industry operators and include them on changes in AOR policies and interagency training opportunities.

A7.5. No response

A7.6. Sectors should provide an appropriate budget to manage the AMSC.

A7.7. No comment

A7.8. Partnership certifications and or more frequent in person meetings

A7.9. Closer. More productive

A7.10. Educate the Coast Guard on the value and the need to reach out. Some AMSCs seem to put the onus of effort on other partners, participating, but not actually doing anything beyond that. Some of the above questions about the value of the AMSC relate directly to USCG units which pay lip service only, without providing assets, personnel etc.

C. SURVEY ANSWERS CODED BY THEME

Effective

- Private industry is instrumental. As a government agency, we need to realize that private industry has "right sized" therefore, the topics need to have a direct correlation to their facility/ segment of the maritime domain to justify attendance.
- Some marine industry input is narrow minded and self-serving. Commercial fishermen, for example, seem to care little about the port, preparation and partnerships, only on profits and getting as much for as little as they can. So, their input tends to only deal with what is in their best interest and has little value for the region.

Communication

- Ensure their contributions are heard and taken serious. Can't pay them so need to make them feel their efforts manner.
- USCG is an amazing partner and is constantly communicating with the private sector

Collaborate

- In order for the private sector to support our local law enforcement agencies, it is critical that we are involved
- Federal agencies have agendas that don't support local issues.

- By providing value. Perhaps training, or regulation mitigation. If you are active with the AMSC your facility is inspected less.

Information

- Topics need to have a direct correlation to their facility/ segment of the maritime domain to justify attendance.
- Regular meetings, presentation on WWWWH their business impacts the maritime environment, commerce, safety and security.
- I feel the USCG has good collaboration with other federal agencies as well as state/local partners, and this is reflected in our strong AMSC engagement from these agencies.
- No great ideas for changing AMSCs, but it would be helpful to have better guidance and resources re: USCG responsibilities for maritime cyber security/resilience. This is the area we get the most questions and have the fewest good answers. I suspect the recent national cyber strategy promulgation will only increase these questions.

Participate

- With smaller scope, the presence of all stakeholders are usually present and have topics to share. Private sector is important in that port security grant funds are often obtained via a collaborative project with the private sector to enhance terminals and facilities. In the domain, we all play a part in security, not just LEO.
- Private industry is instrumental. As a government agency, we need to realize that private industry has "right sized" therefore, the topics need to have a direct correlation to their facility/ segment of the maritime domain to justify attendance.
- Private sector participation is very important. They control the vast majority of high risk and critical maritime infrastructure, and they are the primary target of programs like cyber security and port security grants. They are a natural participant and should be highly involved in the AMSC.
- Private sector participation is critical to the success of the AMSC; they are the end users. Because of our location, the Port does not participate in many meetings.

"Political and Bureaucratic" is a broad statement. Without specific examples, it is hard to address this statement.

- Private sector participation is extremely important in the AMSC; from major tenants to small and big business. The "area" is nothing without the participation of the organizations in the area. From a recovery standpoint, if the area organizations and businesses are not on board from the beginning, during the planning and exercise phase, response and recovery will be hamstrung.
- Encourage participation and feedback from marine industry operators and include them on changes in AOR policies and interagency training opportunities.

Relationship

- We need to incentivize private sector participation better. We have done outreach to industry and requested their participation on the AMSC, but their attendance/participation remains low. This is despite topics which should be of interest to them, such as Port Security Grant program and cyber resilience.
- AMSCs is doing a great job in inviting the private sector; I have nothing negative or suggestions at this time.
- The bottom line is each agency has it marching orders IRT mission and focus that do not line up with CG, for example cyber security and reporting.
- As a USCG employee I can't speak for other federal agencies and their collaboration with state/local agencies. However, the AMSC is a good venue to make those connections and improve that engagement.
- Neutral - personally I have tried to make connections with the local USCG agencies and have not been successful. The local agencies have been quick to respond and eager to participate. I unfortunately believe that the overall reactionary nature of Homeland Security causes this disconnect.
- USCG is an amazing partner and is constantly communicating with the private sector
- Educate the Coast Guard on the value and the need to reach out. Some AMSCs seem to put the onus of effort on other partners, participating, but not actually doing anything beyond that. Some of the above questions about the value of the

AMSC relate directly to USCG units which pay lip service only, without providing assets, personnel etc.

Geography

- There are certainly issues with AOR and distance between host ports. I also tend to believe that certain ports in a COTP sector are more in reach and in common with the COTP and therefore garner the required attention that outlying ports need and want. This comes into play when PSGP funds are on the line.
- No, this day and age of modern technology bridges the distance gap. Offer distance participation through video conferencing and webinars.
- Have regional meetings to address the needs of that region.
- I agree. Better utilization of the harbor Safety Committee is a good answer. Make sure that grant dollars get to the outlying ports. They will be the staging areas for the bad guys.
- There has NEVER been a "one size fits all" approach to Port management. Too many variables. And, this is not the 19th century; distance should not detract from establishing communication and arranging regular meetings.
- Closer. More productive

Incentive

- Appoint some to AMSC and invite others to participate, especially representatives from tenant organizations.
- In San Diego we have good opportunities for collaboration we lack dedicated funding at the local level for sustained involvement.
- It stems with the site host and the familiarity with the domain. Perhaps mixing up hosts and locations. Getting smaller ports or other stakeholders more involved with agencies other than USCG will occur then.
- Need another “9/11” or another event that will refocus attention with presidential guidance to get all agencies on the same page
- Support from the top. Agency leaders need to stress their support. CG should be required to support other fed agency's efforts as well.

- Once again by insuring value
- Regular exercises and information sessions outside the regularly scheduled meetings. It requires a significant amount of reaching out to those federal organizations to 'sell' the value of the AMSC and the PARTNERS within it.
- I agree. Better utilization of the harbor Safety Committee is a good answer. Make sure that grant dollars get to the outlying ports. They will be the staging areas for the bad guys.
- Perhaps mixing up hosts and locations.
- Encourage participation and feedback from marine industry operators and include them on changes in AOR policies and interagency training opportunities.
- Sectors should provide an appropriate budget to manage the AMSC.
- Partnership certifications and or more frequent in person meetings
- Private industry is instrumental. As a government agency, we need to realize that private industry has "right sized" therefore, the topics need to have a direct correlation to their facility/ segment of the maritime domain to justify attendance.

D. SURVEY ANSWERS CODED BY SWOT

1. Strengths

These are considered the "positive attributes, tangible and intangible internal to your organization."[213] Examples of strengths are internal resources, assets, advantages such as staff or technical skill, etc.

- USCG is an amazing partner and is constantly communicating with the private sector
- With smaller scope, the presence of all stakeholders are usually present and have topics to share. Private sector is important in that port security grant funds are often obtained via a collaborative project with the private sector to enhance terminals and facilities. In the domain, we all play a part in security, not just LEO.

[213] Berry.

- Private sector participation is very important. They control the vast majority of high risk and critical maritime infrastructure, and they are the primary target of programs like cyber security and port security grants. They are a natural participant and should be highly involved in the AMSC.
- Private sector participation is critical to the success of the AMSC; they are the end users. Because of our location, the Port does not participate in many meetings. "Political and Bureaucratic" is a broad statement. Without specific examples, it is hard to address this statement.
- AMSCs is doing a great job in inviting the private sector; I have nothing negative or suggestions at this time.
- As a USCG employee I can't speak for other federal agencies and their collaboration with state/local agencies. However, the AMSC is a good venue to make those connections and improve that engagement.

2. Weaknesses

These are things that reduce the effectiveness or value of an organization; these are usually internal factors.[214] In this case, finances, geography, and leadership are all examples.

- Some marine industry input is narrow minded and self-serving. Commercial fishermen, for example, seem to care little about the port, preparation and partnerships, only on profits and getting as much for as little as they can. So, their input tends to only deal with what is in their best interest and has little value for the region.
- Ensure their contributions are heard and taken serious. Can't pay them so need to make them feel their efforts manner.
- Federal agencies have agendas that don't support local issues.
- No great ideas for changing AMSCs, but it would be helpful to have better guidance and resources re: USCG responsibilities for maritime cyber

[214] Berry.

security/resilience. This is the area we get the most questions and have the fewest good answers. I suspect the recent national cyber strategy promulgation will only increase these questions.

- We need to incentivize private sector participation better. We have done outreach to industry and requested their participation on the AMSC, but their attendance/participation remains low. This is despite topics which should be of interest to them, such as Port Security Grant program and cyber resilience.
- Neutral - personally I have tried to make connections with the local USCG agencies and have not been successful. The local agencies have been quick to respond and eager to participate. I unfortunately believe that the overall reactionary nature of Homeland Security causes this disconnect.

3. Opportunities

In the business environment, opportunities are viewed largely as external options that are "reasons your business is likely to prosper" or things an organization can capitalize on for profit.[215] In the case of AMSCs, there were several factors that were internal opportunities, i.e., people or internal resources that could be capitalized on for the betterment of the group.

- Private industry is instrumental. As a government agency, we need to realize that private industry has "right sized" therefore, the topics need to have a direct correlation to their facility/ segment of the maritime domain to justify attendance.
- By providing value. Perhaps training, or regulation mitigation. If you are active with the AMSC your facility is inspected less.
- Topics need to have a direct correlation to their facility/ segment of the maritime domain to justify attendance.
- Regular meetings, presentation on WWWWH their business impacts the maritime environment, commerce, safety and security.

[215] Berry.

- Encourage participation and feedback from marine industry operators and include them on changes in AOR policies and interagency training opportunities.
- We need to incentivize private sector participation better. We have done outreach to industry and requested their participation on the AMSC, but their attendance/participation remains low. This is despite topics which should be of interest to them, such as Port Security Grant program and cyber resilience.
- Educate the Coast Guard on the value and the need to reach out. Some AMSCs seem to put the onus of effort on other partners, participating, but not actually doing anything beyond that. Some of the above questions about the value of the AMSC relate directly to USCG units which pay lip service only, without providing assets, personnel etc.
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- Have regional meetings to address the needs of that region.
- Appoint some to AMSC and invite others to participate, especially representatives from tenant organizations.
- It stems with the site host and the familiarity with the domain. Perhaps mixing up hosts and locations. Getting smaller ports or other stakeholders more involved with agencies other than USCG will occur then.
- Support from the top. Agency leaders need to stress their support. CG should be required to support other fed agency's efforts as well.
- Regular exercises and information sessions outside the regularly scheduled meetings. It requires a significant amount of reaching out to those federal organizations to 'sell' the value of the AMSC and the PARTNERS within it.
- Perhaps mixing up hosts and locations.
- Encourage participation and feedback from marine industry operators and include them on changes in AOR policies and interagency training opportunities.
- Sectors should provide an appropriate budget to manage the AMSC.

- Private industry is instrumental. As a government agency, we need to realize that private industry has "right sized" therefore, the topics need to have a direct correlation to their facility/ segment of the maritime domain to justify attendance.

4. Threats

These are generally considered external factors beyond the organization's control. However, one can take preventive measures to minimize the exposure to threats. Threats have been interpreted as anything that can lead up to a transportation security incident or externally influence the behavior or effectiveness of AMSCs.

- There are certainly issues with AOR and distance between host ports. I also tend to believe that certain ports in a COTP sector are more in reach and in common with the COTP and therefore garner the required attention that outlying ports need and want. This comes into play when PSGP funds are on the line.
- In San Diego we have good opportunities for collaboration we lack dedicated funding at the local level for sustained involvement.
- Need another "9/11" or another event that will refocus attention with presidential guidance to get all agencies on the same page

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