

VIRTUAL SEA BORDER

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Establishing a Virtual Sea Border by performing a real-time, satellite-accessible Internet-based bio-metric supported threat assessment of arriving foreign-flagged cargo ships, their management and ownership, their arrival terminal operator and owner, and rewarding proven legitimate operators with an economic incentive for their transparency will simultaneously improve port security and maritime transportation efficiencies.

1 Introduction

U.S. regulatory and maritime law enforcement efforts to screen foreign cargo ships and improve their understanding about foreign-owned marine terminal operations are improving. Despite these improvement and in reference to “respecting the mariner”, which was an essential part of the US Coast Guard’s “Prevention Thru People Program”, many legitimate foreign-owned marine companies and their employees are unfairly targeted as security threats. When considering that eighty to ninety percent of all shipping found in an U.S. port at any time is foreign owned and managed, in lieu of building bridges with the international shipping community, in many cases animosity, contempt, and, in some cases, anger is how the shipping industry’s current relationship with U.S. port security authorities is defined. For instance, General Accounting Office critics of Department of Homeland Security policies continue to emphasize the lack of inclusiveness from international shipping companies and internationally-owned terminal operators with how U.S. port security is addressed. And, very few Area Maritime Security (AMS) Committees include as their membership representatives from the internationally owned and managed blue-water cargo ships found operating within the U.S. seaport that the respective AMS Committee represents.

What the industry sees, however, is current US Coast Guard policy requiring at sea law enforcement sweeps performed of arriving foreign cargo ships and their crews. If targeted then these foreign cargo ships are temporarily detained, which includes mustering the non-watch-standing seafarers into a general area such as the mess deck where an armed watch is maintained over them while other law enforcement teams

sweep the ship looking for contraband and stowaways. The at sea law enforcement sweep may seem to provide an effective deterrent, but it also greatly increases the cost to import strategic energy cargoes. Using the following metric, the policy and program is shown to be very wasteful: Contrast the amount of contraband actually discovered on a national level from law enforcement sweeps with the estimated economic impact caused by delays incurred, which is an estimated tens of millions of dollars per day negative impact on the U.S. Gross Domestic Product [1, 2, 3].

Additionally, international political reaction from the Dubai Ports World (DPW) incident showed how certain politicians and policy-maker need to develop a greater understanding about how large of a role international ownership plays in U.S. maritime transportation infrastructure and U.S. marine terminal operations. The reaction by several congresspersons to the DPW controversy sent a negative worldwide signal to the international business community that the United States is unwilling to allow non-American ownership of marine terminal operations and port infrastructure. The DPW controversy also clearly emphasized the need for greater interactivity between foreign owners of U.S. based marine terminal operators and U.S. Port Security Officials.

Consequently, in lieu of building a culture of cooperation where international ship managers and foreign-owned marine terminal operators are considered partners in their collective efforts to prevent acts of terrorism against U.S. maritime infrastructure, US reaction to DPW has likely created a long-lasting, negative impact. And, from an economic perspective, may have made it more difficult for American businesses to operate abroad.

With this paper we present and analyze a technological model linking an arriving foreign flagged cargo ship, their management and ownership with the arriving ship's terminal operators and with local port safety and port security agents. The model includes two communication mechanisms: electronic near real-time documentation flow and Internet based interactive voice/video communication. The combination of these communication mechanisms enables not only a more efficient threat assessment tool, but an automatic way of documentation oversight as well. Finally, the Virtual Sea Border concept will help officials target likely threats prior to a foreign ships arrival into U.S. territorial waters while also minimizing delays and losses of revenue for shipping companies and terminal operators proven to be legitimate and non-threatening.

2 Defining the challenge

As part of the cargo ship's pre-arrival process, at the national targeting center a static risk assessment about the arriving foreign-flagged cargo ship is completed by inputting arrival information data onto a spreadsheet and assigning numeric weights to each category. The static risk assessment is completed for the U.S. Port Security Officer to determine whether or not to embark the foreign cargo ship at sea for the purpose of performing a maritime law enforcement sweep. For example, in accordance with U.S. regulations the Master of an arriving foreign-flagged cargo ship is required to submit a 96-hour pre-arrival notice, which includes information about the ship's flag state administration, owner, operator, cargo type, classification society, last port of call, next

port of call, and port state control boarding history. From the time when the notice of arrival report is received by a centralized data base, Ship Arrival Notification System (SANS) and its electronic equivalent e-NOAD (electronic notice of arrival / departure), information about the ship is distributed to the arrival port's US Coast Guard Captain of the Port's office for assessment. Other agencies, such as US Customs and Border Patrol, US Immigration and Customs Enforcement, and the National Vessel Movement Center, are also separately interpreting and assessing risk from the ship's notice of arrival information. None of these security oversights, however, are provided with an opportunity to interactively validate the ship's (Master's) pre-arrival information with key behind-scenes shipping and chartering company representatives.

Frequently, cargo ships lifting energy cargoes (e.g., petroleum products, crude oil, liquefied natural gas, and liquefied petroleum gas) are characterized as "high interest vessels", or HIVs, solely because of the volatile nature of their cargoes. Because of their HIV status these cargo ships are subjected to an extensive at sea law enforcement sweep. During these port security assessments the consequence aspect of risk (because of the volatile cargo) apparently overrides all other considerations despite ships, crews and management for energy-based cargoes are the highest quality found within the maritime industry. Most unfortunate is the fact that never in this process is the cargo ship's management given an opportunity to prove that their ship, seafarers and organization are non-threatening and fully compliant with the U.S. Maritime Transportation Security Act and International Ship and Port Facility Security Code.

U.S. Port Officials insular approach of sweeping the energy-laden cargo ship with weapons ready does not afford them with an interactive process to gain critical information about the entire commercial shipping enterprise (e.g., how well the ship is managed, how well the ship is crewed, how well the ship is maintained, what is the regulatory compliance culture of the shipping company, what is the company's screening process for newly hired seafarers and their potential link to terrorist organizations, how is the ship chartered and how is the ship financed). Port Security Officials lack of understanding about the comprehensive relationships between foreign owners and managers of arriving cargo ships, or the foreign ownership of an U.S. based marine terminal to where the foreign cargo ship delivers its cargo, continues to be a recognized port and cargo security vulnerability.

3 Proposed solution (VIRUTAL SEA BORDER)

U.S. port security threat assessment capabilities could be greatly improved by interacting with international ship managers (Company Security Officer), their owners (financial backing for the ship), the cargo owner, and the associated marine terminal operation. It is well documented that eighty to ninety percent of all shipping found within U.S. waters are internationally managed. Similarly, General Accounting Office critics of US port security policy identify that international ship managers are not given an opportunity to be part of the port security solution; and, therefore, because of lack of opportunity for transparency, are frequently treated with contempt.

A comprehensive port security threat assessment should, in addition to assessing specific pre-arrival information about the ship, its cargo and its crew, also provide an opportunity for the international management of the ship to be interactively engaged with the threat assessment process. By leveraging developing technologies whereby two, three, four and five-way audio-visual communications are possible via Internet and satellite connectivity (see Figure 1), prior to the ship's entry into U.S. waters, port security officials would be able to determine how well the foreign ship and multicultural crew are managed, the status of the foreign ship's financial management, and the commercial relationship with the cargo owner (see Figure 3). There is absolutely no reason, in the post 9/11 world, for a foreign flagged commercial ship and its multicultural crew to be stranded and eventually arrested because its owner and management are unable to pay associated port fees. By making all aspects of the international maritime industry transparent (ship, crew, cargo, ship management, technical management, financial management,, cargo ownership, and terminal operations), port security and port safety would be greatly improved. Lastly, this concept endeavors to build upon recently USCG announced concept to develop two-way communications (between arriving ship and shore) using AIS technology.

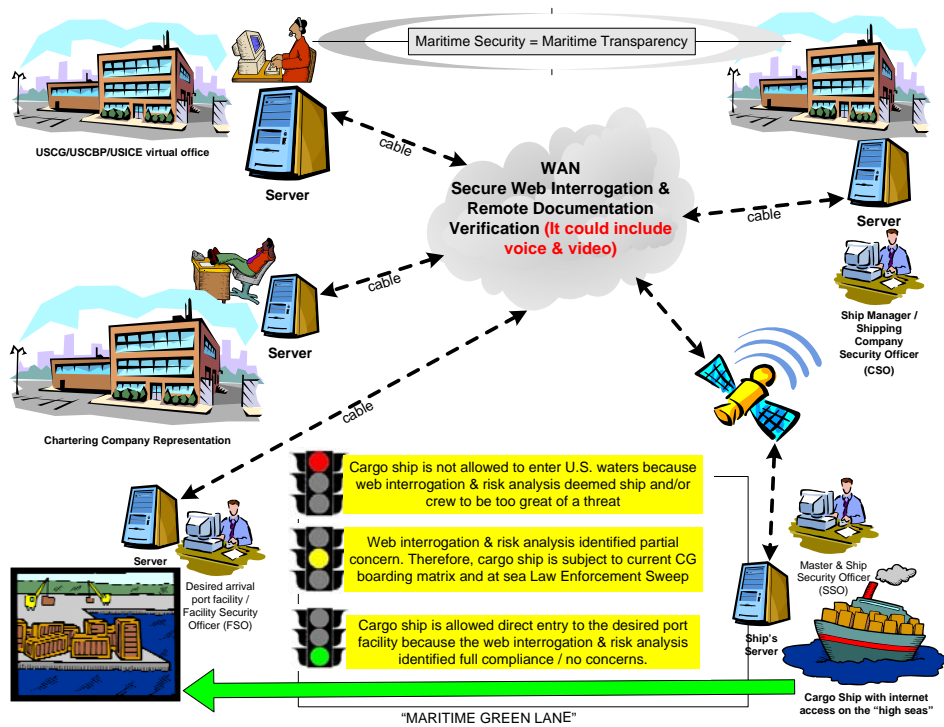


Figure 1. Virtual Sea Border Schematic

By leveraging INTERNET and BIOMETRIC technologies and having ready a detailed list of audit questions from which key behind-the-scenes shipping and marine

terminal representatives would voluntarily be asked to answer a comprehensive port security threat assessment process could be established (see figure 2).

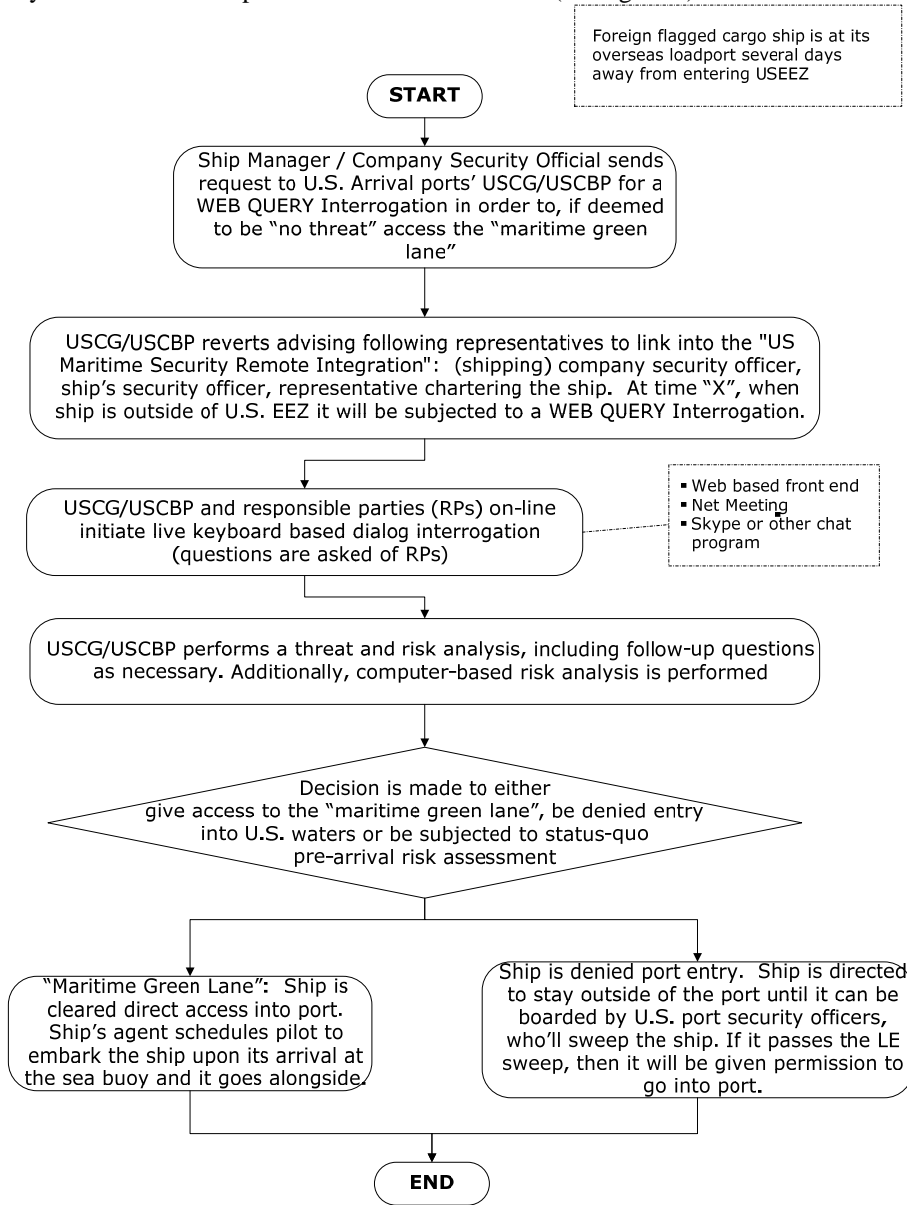


Figure 2. Virtual Sea Border flowchart

The proposed Virtual Sea Border threat assessment process would create an opportunity for the ownership and management of an arriving foreign flagged cargo

ship, the cargo owner, and marine terminal operator to prove their legitimacy and willingness to work with U.S. port officials

Web-based Threat Assessment Questionnaire
<p>Preamble: Participation in the “GREEN LANE” audit is voluntary. Successful completion of this questionnaire authorizes the ship to transit into port unencumbered by any further U.S. port security oversight. If anyone of the parties participating in this audit fails to successfully, accurately, and truthfully complete any part of it, the ship will be subjected to traditional threat assessments and, as necessary, an at sea law enforcement sweep. For everyone’s understanding, being transparent and straightforward with each answer is critical because any incomplete, inaccurate, or evasive answer could be construed as falsifying information to a U.S. Federal Maritime agency and a U.S. Federal Official. Also, each answer is subject to a bio-metric analysis. Those found to be intentionally falsifying information may be subject to criminal penalties in accordance with 18 US Code Sec 1001. Do required parties to this audit questionnaire (e.g., Ships Security Officer, Company Security Officer and Chartering Representative), fully understand the conditions outlined by the above statement? (Yes or No)</p>
<p>Web-Based Threat-Assessment Questions (Q1 = Ship Master and Ships Security Officer; Q2 = Ship’s Management Representative, Designated Person Ashore and Company Security Officer; and, Q3 = Ship’s Charter Representative):</p>
<p>Q1: Master and Ships Security Officer</p> <ol style="list-style-type: none"> 1. What is the name of the shipping company to which you are employed? 2. What is the name of the manning (crewing) agency from which you receive your shipboard assignments? 3. Does the shipping company use an exclusive manning (crewing) agency? If not, then explain the relationship between the shipping company and the agency used to crew the ships. 4. What is the name of the organization that provides the ship with its technical and ship management? 5. What is the name of the organization that provides the ship with its commercial orders? 6. Explain the management relationship between ship management, commercial management and crew management. 7. Have you inspected all related documentation to verify that the officers and crew are fit for duty e.g., marine certificates, medical certificates, passports, visas, etc.? Were there any deficiencies? 8. What is the ship’s flag state? 9. What is the ship’s classification society? 10. Are there any outstanding recommendations or deficiencies from classification society surveys? 11. What are the officers’ and crews’ nationality? Does anyone hold more than one passport, and/or more than one marine certificate? Is anyone holding a national license that is of a different rank than their flag state license? 12. What type of cargo is the ship lifting (carrying)? 13. If it is a volatile cargo, are all members of ships staff aware of its hazards? 14. Since the ship was built has there been any changes in ownership, changes in ship management, or changes in classification society occurred? If so, what were the reasons for these changes? 15. As the Ship Security Officer are you an exclusive employee of the shipping

<p>company, or are you hired through a third-party?</p> <ol style="list-style-type: none">16. Is the organization managing the ship different from the organization financing the ship?17. Explain the management relationship between ship management and the organization financing the ship.18. In preparation for entry into U.S. waters, have you had the ship internally inspected for the presence of contraband?19. In preparation for entry into U.S. waters, has an internal security inspection been performed to ensure compliance with MTSA and ISPS Code?20. What were the results of the inspection for contraband?21. Are there any security-related deficiencies that could lead to a potential security breach while the ship is in U.S. waters?22. Are there any stowaways onboard?23. During the current voyage has any member from the crew and/or supernumeraries demonstrated abnormal behavior (e.g., violence, unauthorized use of drugs or alcohol, abuse of prescription drugs, etc.) disruptive to good order and discipline?24. Does the ship allow for the consumption of alcohol while in U.S. waters?25. Are all navigation equipment, propulsion machinery, electrical-power-generation machinery, and steering gear in good working order?26. Are all firefighting equipment, fixed firefighting systems, fire and foam pumps and storage tanks, and lifesaving equipment and machinery in good working order?27. Are the cargo handling and control equipment and machinery in good working condition?28. Are the pollution control equipment and machinery in good working order?29. Are prior to employment background checks performed for potential new-hires and if so, as the Ship Security Officer, when new hires have been assigned to your ship are you made aware of the results of these background checks?30. Are you or any member of your crew affiliated with or sympathetic to a terrorist organization (i.e., Al Queda, Hamas, Abu Sayeef, etc.)?31. Are you or any member of your crew sympathetic to the publicly stated objectives of any U.S. recognized terrorist organization?32. Has any member of the crew made mention about their hatred for the U.S.?33. Through use of satellite surveillance we are prepared to monitor a security exercise – are you ready to perform an exercise?34. Are there any shipboard deficiencies or crew related incompetence preventing the safe and secure operation of the ship while in the U.S. waters?
<p>Q2: Ship Management Representative (Company Security Officer)</p> <ol style="list-style-type: none">1. When hiring seafarers to crew and operate company ship(s) is this management process and those assigned to execute this process exclusive to the referenced shipping company?2. Explain the relationship between ship management and crew management3. Is the performance of shore-based management functions such as overseeing planned maintenance, safety and environmental management, security auditing and management, training and commercial operations exclusive to the referenced ship owner?4. If not, then explain the relationship between ship management and ownership.5. When hiring seafarers and shore-based personnel does the hiring process include any type of screening or background check to ensure candidates are

<p>not affiliated with any terrorist organization? How is this documented? Could you down-load an example for our review?</p> <ol style="list-style-type: none">6. As a member of the ship management team, are you or any of your co-workers, including those either assigned to shipboard positions or those assigned to ashore positions, including part-time and/or contracted personnel, affiliated with a terrorist organization?7. As the shipping company's designated person ashore, company security officer and/or management representative, are you able to verify that the shipping company's senior management is committed to the strict compliance with International Ship and Post Facility (ISPS) Code and its U.S. counterpart, Maritime Transportation Security Act (MTSA)? How is this documented? Could you down-load samples of the shipping company's policy statements8. As a member of the management team, are you aware of any company ships having been detained by a recognized port state control organization for violations of either ISPS Code or U.S. MTSA?9. While at an U.S. port, will the management have the financial capacity to execute payment for all of the ship's incurred fees for port services such as pilots, stores, anchorage, crew changes, etc.?10. Is there any crew changes scheduled when the ship is at a U.S. port?11. If so, are there adequate controls in place with the locally designated ship agent to ensure company personnel don't go missing into the U.S. while either waiting for their ship or waiting for their departure flight? Provide a brief description about assurances that on-signing and off-signing seafarers are controlled and accounted for.
<p>Q3: Representative from the firm chartering the ship:</p> <ol style="list-style-type: none">1. In the process of chartering the ship, does the chartering or brokering organization make an effort to determine if there are adequately trained and competent personnel assigned to the ship and in sufficient number as required by the Safe Manning Certificate to execute routine and crucial shipboard operations, including activities necessary to comply with heightened MARSEC (Security) levels?2. Does your firm, prior to chartering a ship, have a commercial ship vetting process3. Does your firm, prior to chartering a ship from this shipping company, require the shipping company to be subjected to periodic external audits4. Was the ship vetted within the past twelve months, and as charterer, have you accepted the ship based on a recent vetting inspection report5. As the organization representing the legal charter, aligning the ships cargo with the ship, are you or any members or your organization affiliated with a terrorist organization?

Figure 3: Web-based threat questionnaire to which screen-scanned biometrics are applied.

3 Conclusion

If implemented, the Virtual Sea Border process could make the marine transport of goods more efficient and transparent. Similar to an international airliner receiving clearance to enter U.S. air space, the participating foreign flagged ship would be given clearance to enter directly into a U.S. Port ("Green Lane"). Surveys of the international maritime industry strongly suggest that legitimate ship managers and cargo consignees

would be willing to voluntarily participate, answer and be subject to bio-metrical assessments by U.S. Port Officials, especially while the cargo ship is still at sea rather than it being subjected to port entry delays and having their seafarers subjected to armed inspections. In essence, the entire commercial shipping enterprise (ship, management, ownership, charter, terminal operator and owner) could be more-acutely screened by port officials, and a more comprehensive data base about the marine industry created. The Virtual Sea Border would permit ships from participating legitimate shipping companies to be distinguished, and be given access to a “maritime green lane”, enabling them to optimize their in port cargo operations.

Instead of being viewed as potential threats, the Virtual Sea Border offers foreign owners of marine terminals and merchant ships with a much needed opportunity to be part of the port security solution. More importantly, this process makes the entire international commercial maritime industry enterprise completely transparent.

4 Summary

The U.S. Department of Homeland Security’s ongoing practice of using static risk assessments when determining whether or not to deploy a finite set of maritime law enforcement assets for at sea sweeps of foreign cargo ships managed and chartered by proven legitimate foreign-based shipping and chartering corporations creates unnecessary and expensive delays. Although this approach offers a deterrent, it does not effectively address the overall actual threat presented by an arriving foreign-flagged ship and the marine terminal to where it moors. To improve port security capabilities, regulators and port officials should take a holistic approach to all of the potential hazards presented by an arriving foreign flagged merchant ship and the marine terminal operation by using commercial off-the-shelf technologies to interact with key behind-scenes parties intimately involved with that marine industry enterprise. By implementing an at-sea web-threat assessment of these key behind-scenes parties, and creating an incentive for transparency by rewarding those who are screened and deemed to be legitimate and non-threatening with direct access to the maritime green lane, the opportunity to improve port security and simultaneously enhance maritime commerce is at hand.

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