

Final Report

Maritime Security Program Impact Evaluation

Contract No.:
GS-10F-0269K

Order No.:
DTMA1F08157

Project No.:
1025-000

Submitted To:

U.S. Department of Transportation Maritime Administration

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July 2009

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Executive Summary

The purpose of this evaluation of the Maritime Security Program (MSP) is to assess the impact of the program in supporting U.S. Department of Defense (DOD) mobility requirements and ensuring an ongoing presence of U.S. flag ships in international trade. The MSP is a national defense program that provides financial assistance to oceangoing ship owners and operators in return for making their ships and crews—and the intermodal transportation and communication network of the ship operator—available to the Department of Defense for *sealift* operations during times of war or national emergency.

Introduction

This evaluation of the MSP was designed and conducted under contract GS-10F-0269K issued by the Maritime Administration on September 25, 2008. The data collection and analytic activities associated with development of this report were conducted from October 2008 through January 2009.

The research objectives set by the Maritime Administration for this evaluation were to conduct an analysis of existing quantitative data to develop estimates of the MSP's impact on:

- U.S. flag shipping presence in international commercial waters.
- Number, types, and capacities of U.S. flag oceangoing ships available for military use.
- Number of U.S. crewmembers available to serve on such ships.

In addition to these direct impact indicators, the Maritime Administration also specified that the research team should ascertain whether or not the program design is free of major flaws that would limit the program's effectiveness or efficiency. The project team would also evaluate the program's effectiveness in complying with the regulations set forth in 46 CFR Part 296. If appropriate, the project team was also to provide recommendations for program improvement.

Data collection for this study focused on the two primary stakeholder communities for the MSP. The first group consists of vessel owners and operators and other affected parties in the maritime and transportation industries, including maritime labor. The second stakeholder is the U.S. Department of Defense, which shares a joint responsibility with the Department of Transportation (DOT) for implementing the MSP. DOT acts through the Maritime Administration to carry out these responsibilities, while the DOD acts through its U.S. Transportation Command (USTRANSCOM).

Methods and Data Sources

The study's primary research objective was to conduct an analysis of existing quantitative data, as well as qualitative data, to develop estimates of the impact of MSP on the three impact indicators indicated above.

For each of these indicators, the objective was to estimate the quantitative change directly resulting from MSP financial payments. The study team determined that the most valid way to develop such estimates was to generate a counterfactual baseline comparison, i.e., an informed

estimate of the merchant marine capacities and numbers of U.S. citizen crewmembers that would be available today without the existence of the MSP. This approach required supplementing a review of past research and quantitative data with information from interviews of experts knowledgeable about trends, past and current, in DOD sealift and international commercial shipping.

Key Findings

Military Impact: The MSP clearly has a positive impact on the number of U.S. commercial oceangoing cargo vessels available for military use. Currently, the MSP makes available 60 ships and related intermodal infrastructure that support the sealift mission of DOD. Commercial logistics capacity in the Middle East has been crucial for execution of Operations Enduring Freedom and Iraqi Freedom.

- Reducing or eliminating MSP financial payments would have significant adverse impacts on the nation's ability to respond to military or humanitarian crises. Without the MSP, there would very likely be a significant reduction in the number of U.S. flag ships—perhaps a reduction of half of the vessels currently in the MSP fleet (30 vessels). As a result, DOD would need to build or charter additional ships at significantly greater expense than at present. DOD would also need to lease access to intermodal infrastructure.
- The authorization for MSP outlays in fiscal year (FY) 2008 was \$156 million. Without the MSP, the costs to DOD would be orders of magnitude greater than the current MSP costs. By one estimate, replicating only the RO/RO and containership¹ capacity of the current MSP, without taking into account the intermodal infrastructure, would require a capital expenditure of \$13 billion.²

Impact on the U.S. Flag Fleet: Since the program's implementation in 1997, the existence of MSP has not produced any lasting increase in tonnage of the U.S. flag, oceangoing commercial fleet engaged in foreign trade. However, MSP has become a critical part of the Federal Government's approach to stabilizing and retaining the existing fleet and maintaining a commercial presence in foreign trade.

- Without the financial assistance provided by MSP, an important source of carrier income would no longer exist. A loss of thirty or more oceangoing vessels would be very substantial, given that there were only 120 such vessels engaged in foreign trade in 2007.
- If the United States were to discontinue both the MSP and cargo preference—a closely interconnected program that also is intended to help maintain a U.S. flag fleet presence in international trade—the experts that we interviewed were unanimous in indicating that there would no longer be an economic reason for operating a privately-owned, U.S. flag fleet of ocean going vessels engaged in foreign trade. In this case, the owners of most of

¹ That is, the commercial liner trade vessels used to transport containerized goods and wheeled or tracked vehicles. These terms are further defined in the text of the report.

² Reeve and Associates, "The Role of the United States Commercial Shipping Industry in Military Sealift," prepared for Military Sealift Committee, National Defense Transportation Association, Yarmouthport, MA, August 2006.

these ships would scrap or sell their vessels, or would reflag to foreign registries, where operating costs are significantly less expensive than in the United States.

Impact on Mariners: By law, U.S. flag fleet vessels are required to be operated by crews composed primarily of U.S. mariners. In order to maintain a merchant marine engaged in U.S. foreign trade, and to support military ocean transport during times of war or humanitarian crisis, there must be a labor supply of U.S. mariners ready to operate the ships.

- The MSP effectively places a floor under the number of U.S. crewmembers certified and available to serve as mariners on U.S. merchant vessels. The 60 ship MSP fleet provides 1,200 billets and employment for 2,400 U.S. mariners.
- The labor pool of U.S. mariners engaged in oceangoing, merchant marine activities is at most 20,500, including 6,400 officers and 14,100 others. Thus, the loss of employment for 2,400 U.S. mariners would represent a very significant reduction relative to the size of the U.S. mariner labor pool.

One of the main benefits of the MSP is that it helps maintain a cohort of U.S. mariners actively engaged in oceangoing shipping, knowledgeable about current technology used on a variety of types of cargo vessels and available for U.S.-defined military contingency and humanitarian missions.

- Military sources emphasize the need for U.S. mariners in contingency operations. Officers who have graduated from the maritime academies are effectively a branch of the military service, along with the Army, Navy, Air Force, Marines, and Coast Guard.
- The loss of some 2,400 U.S. mariner positions would throw into doubt the ability of the United States Government to find sufficient numbers of mariners to maintain the 51 vessels in the Ready Reserve Force or to operate approximately 100 ships for the Military Sealift Command.

Key Findings from Organizational Assessment

The project team found that current management procedures and processes used by the Maritime Administration are generally appropriate and effective for carrying out the objectives of the MSP.

- Resources devoted to the program by the Maritime Administration appear adequate to manage the program and coordinate its various activities
- In both expanding the MSP fleet in 2005 and in selecting replacement vessels, the Maritime Administration has adhered to statutory and regulatory requirements, including all relevant sections of 46 CFR Part 296.
- The Maritime Administration's Office of Sealift Support has adopted "forward looking" management practices and has established effective linkages with representatives of the Department of Defense, primarily at USTRANSCOM. As a result, the MSP program has

become more effective in addressing emerging DOD mobility requirements, particularly since implementation of the reauthorized program in 2005.

- During interviews with commercial carriers and the DOD/military community, the project team received positive feedback regarding the effectiveness, communications, and responsiveness of Maritime Administration staff who administer the program.
- In the judgment of the project team, there are no significant problems in the operations of the MSP that limit the program's effectiveness or efficiency as currently managed.

Recommendations

This report concludes with key findings and recommendations for MSP and for other programs and policies that have a bearing on MSP. A brief summary of these recommendations follows.

Staffing—While the current staff personnel are performing effectively in carrying out MSP program requirements, it would be reasonable to allocate one or two additional full-time equivalent staff positions to the management of the program.

Data Availability—While conducting this evaluation the project team encountered a number of data limitations that could be addressed in the future through better interagency cooperation. In each case, the Maritime Administration is not responsible for producing the information, but has a role in using the data or disseminating the data to outside groups. Recommendations are provided regarding the need for the Maritime Administration to advocate for better production, maintenance or dissemination of specified types of data that are under the jurisdiction of USTRANSCOM, the U.S. Coast Guard, the Bureau of Transportation Statistics, and the U.S. Army Corps of Engineers.

Alternative Selection Procedures—The Maritime Administration may want to consider alternative methods for selecting ships to fill MSP slots. This could include approaches such as complete or limited competitive bidding. Any analysis of options for competitive pricing should be done prior to work on the next reauthorization of the MSP.

Maritime Policy—The project team identified a need for review of maritime policy more broadly. The long-term decline of the U.S. flag fleet has reached a point where the continued existence of a privately owned, commercial fleet engaged in foreign trade is not certain. In 2009, other sectors of the U.S. economy are being reviewed to assess infrastructure needs and to determine potential for long-term job creation. Oceanborne transport is taken for granted by the American public and often overlooked in government and academic circles, and yet maintaining a viable maritime sector is vital for the nation's commercial and security needs.

I. Introduction

The purpose of this evaluation of the Maritime Security Program (MSP) is to assess the impact of the program in supporting U.S. Department of Defense (DOD) mobility requirements and ensuring an ongoing presence of U.S. flag ships in the movement of international trade. The MSP is a national defense program intended to ensure military access to commercial shipping during times of war or national emergency. The MSP has been designed to provide annual financial payments to commercial ship owners and operators to keep their ships under United States flag, in exchange for the commitment to provide sealift support to DOD in times of war or national emergency.

This evaluation of the MSP was designed and conducted under contract GS-10F-0269K issued by the Maritime Administration on September 25, 2008. The data collection and analytic activities associated with development of this report were conducted from October 2008 through January 2009.

Econometrica, Inc. is a research and consulting firm headquartered in Bethesda, Maryland. Since Econometrica's founding in 1998, the firm has been conducting program evaluations and related studies for a wide range of Federal agencies.

The Econometrica study team consisted of four research professionals, all of whom had previous experience in the design and implementation of evaluation studies comparable to this current effort. A description of Econometrica's previous experience in conducting studies comparable to this one appears in Appendix C. Also appearing in Appendix C are descriptions of the relevant qualifications and experience of the project team members.

Neither Econometrica as a corporate entity nor any member of the project team had previously worked with the Maritime Administration or any of the key stakeholder groups, including U.S. Transportation Command (USTRANSCOM), ship owners and operators, or maritime-related unions.

The research objectives set by the Maritime Administration for this evaluation were to conduct an analysis of existing quantitative data to develop estimates of the MSP's impact on:

- U.S. flag shipping presence in international commercial waters.
- Number, types, and capacities of U.S. flag oceangoing ships available for military use.
- Number of U.S. crewmembers available to serve on such ships.

In addition to these direct impact indicators, the Maritime Administration also specified that the research team should ascertain whether or not the program design is free of major flaws that would limit the program's effectiveness or efficiency. The project team would also evaluate the program's effectiveness in complying with the regulations set forth in 46 CFR Part 296. If appropriate the project team was also to provide recommendations for program improvement.

Organization of the Report

The remainder of this report is organized as follows:

- Section I.* A description of the MSP and its operational context.
- Section II.* The research objectives that the Maritime Administration set for this study and the research methodology employed by the Econometrica project team.
- Section III.* Impact Evaluation
 - A:* Analysis of the data relating to the assessment of the MSP's success in providing a militarily useful and readily available resource to the U.S. military.
 - B:* Analysis of the data relating to the assessment of the MSP's success in enhancing the size of the commercial oceangoing fleet under U.S. flag.
 - C:* Analysis of the data relating to the assessment of the MSP's success in increasing the number of U.S. citizen mariners available to serve on oceangoing cargo vessels.
- Section IV.* The project team's assessment of the appropriateness and effectiveness of the organizational structure currently in place to manage the MSP.
- Section V.* The description and summary of all of the project team's key findings. This section also contains recommendations the project team has made regarding possible program enhancements.

In addition, Appendices A and B contain the discussion guides employed in key informant interviews. Appendix C presents Econometrica's corporate qualifications to conduct this study, as well as the directly relevant qualifications and experience of each member of the project team. Finally, Appendix D includes the list of references.

Background

The MSP is a national defense program that provides financial assistance to a limited number of U.S. flag oceangoing ship owners and operators in return for making their ships and crews—and intermodal transportation and communication networks—available to the Department of Defense for sealift operations during times of war or national emergency. Under a Voluntary Intermodal Sealift Agreement (VISA), each ship owner and operator participating in the MSP is required to commit 100 percent of a ship's capacity as sealift support to the Department of Defense, upon request, to be compensated at commercial rates. (See "Glossary of Selected Technical Terms Used in this Report" in Figure 1.)

Current national maritime policies, and in particular the designs of the MSP and VISA program, were shaped by experience gained during Operations Desert Shield and Desert Storm in the early 1990s. The National Security Sealift Policy of October 5, 1989, which remains in force today, states that a vital objective is to ensure that sufficient military and civilian maritime resources

will be available to meet defense deployment needs and essential economic requirements. In his 1991 Maritime Day proclamation, President George H.W. Bush said the victory in the Persian Gulf “demonstrated, once again, the importance of the American merchant marine to maintaining an adequate and reliable sealift capacity for the United States.”³

Under the Maritime Security Act of 2003 (MSA 2003), the MSP is authorized for 10 years, from 2006 to 2015. The MSP, which was first authorized by legislation in 1996, replaced a more expensive and restrictive Operating Differential Subsidy (ODS) program that had been in effect since 1936. MSP funding is made available through annual appropriations, with Federal outlays capped annually—per ship—at \$2.6 million/year during Federal fiscal years (FY) 2006 to 2008; \$2.9 million/year for FY 2009 to 2011; and \$3.1 million/year for FY 2012 to 2015. These payments help offset the generally higher operating costs faced by U.S. flag carriers, when compared to their foreign flag competitors. Under current authorizations, long-term contracts (MSP operating agreements) can be executed with owners or operators (contractors) for up to 60 ships.

There are two primary stakeholder communities for the MSP. The first group consists of vessel operators and other affected parties in the maritime and transportation industries, including commercial carriers and maritime labor. The second stakeholder is the U.S. Department of Defense, which shares a joint responsibility with the Department of Transportation (DOT) for implementing MSA 2003 and the MSP. DOT acts through the Maritime Administration to carry out these responsibilities, while DOD acts through its U.S. Transportation Command.

The Maritime Administration’s role in administering the MSP includes fostering effective communications between DOD and the maritime transportation industry. DOD regularly informs the Maritime Administration about its changing needs for cargo transport, while the Maritime Administration (in consultation with USTRANSCOM) is sometimes able to make adjustments to sealift capacity within the authorized 60 slots. The Maritime Administration issued an advertisement for an open slot in the MSP fleet in October 2008, providing an opportunity to better position the MSP fleet to meet emerging DOD sealift needs. Besides helping to address national defense needs, the Maritime Administration also plays a key role in international trade discussions and carries out a strategic objective, authorized under the MSA 2003, to ensure a continuing presence of U.S. flag ships in the nation’s import/export commerce.

One of the challenges of this research is to separate out the impacts of MSP payments from those of other U.S. government incentives that attempt to maintain a U.S. flag shipping presence. These are principally provided under “cargo preference,” authorized by the Cargo Preference Act of 1904 and other laws. These laws are intended to offset the potential disincentives to ship owners and operators as they maintain vessels under U.S. flag, including higher wage, maintenance, repair, and insurance costs; increased regulatory burden; and tax implications.

³ Matthews, James K. and Holt, Cora J., *So Many, So Much, So Far, So Fast: United States Transportation Command and Strategic Deployment for Operation Desert Shield/Desert Storm*, Joint History Office, Office of the Chairman of the Joint Chiefs of Staff, and the Research Center, USTRANSCOM, U.S. Government Printing Office: Washington, DC, 1996, p. 128.

Figure 1. Glossary of Selected Technical Terms Used in this Report

Types of Vessels

Cargo Ship: A self-propelled, oceangoing vessel engaged in foreign waterborne trade; includes breakbulks, containerships, roll on/roll offs, tankers, and any other type of ship used for transporting cargo.

Breakbulk: A vessel transporting loose, non-containerized products, such as steel products, machinery, bagged cement, or ammunition.

Bulker: A vessel transporting loose homogenous products such as wheat, coal, or cement.

Containership: A vessel transporting containerized products. Containers are standardized boxes that can be loaded into a vessel or railcar or stacked in a container depot. Containers may be ventilated, insulated, refrigerated, flat rack, vehicle rack, open top, bulk liquid, or equipped with interior devices.

Geared Container: A containership with cranes and other equipment designed to load and unload cargo without the need for shore cranes.

Heavy Lift Breakbulk: A specialized type of breakbulk vessel with strengthened decks and cranes or ramps that can transport rolling vehicles or any heavy cargo that does not fit in containers.

Lighter Aboard Ship (LASH): These ships carry ammunition or rations in barges that are off-loaded by the ship's crane and towed ashore by small tugs that are part of the LASH ship's deck cargo. These vessels no longer operate commercially.

Partial Containerships: Multipurpose containerships with one or more, but not all, cargo compartments fitted with permanent container cells. The remaining compartments are used for non-containerized cargo.

Roll on/Roll off (RO/RO): A method of ocean cargo service using a vessel with ramps, which allow wheeled containers, trailers, or vehicles to be loaded and unloaded without the use of cranes.

Tanker: Ships fitted with tanks for storage of liquid cargo, such as crude petroleum and petroleum products.

Measures of Vessel Capacity

Deadweight Tonnage (DWT): A measure of vessel carrying capacity in the number of long tons (2,240 pounds).

Gross Weight: The entire weight of goods, packaging, container and freight car, ready for shipment.

Metric Ton: A metric ton is equal in weight to 2,204.62 pounds or 1,000 kilograms.

Revenue Ton: A ton measurement on which shipments are freighted. If cargo is rated as weight or measure (W/M), whichever produces the higher revenue will be considered the revenue ton. Weights are based on metric tons and measures are based on cubic meters.

Short Ton: A short ton is equal in weight to 2,000 pounds or 0.91 metric tons.

TEU: Maritime abbreviation for "20-foot equivalent unit," which refers to containers that are 20 feet (6.1 meters) in length.

Figure 1. Glossary of Selected Technical Terms Used in this Report (continued)**Other Terms**

Cabotage: Laws that reserve U.S. domestic marine transportation of freight and passengers to U.S. built, maintained, documented, owned and crewed vessels.

Cargo Preference: U.S. maritime laws require that U.S.-registered ships be used to carry cargoes owned or financed in any way by the U.S. government. Cargo preference applies to all of DOD's freight shipments, to nearly all of Export-Import Bank financed cargoes, to seventy-five percent of government food aid shipments, and to fifty percent of any other government financed cargoes.

Domestic Trade: Includes cargoes moved along the coasts and on the oceans (including trade between the 48 contiguous States and Alaska, Hawaii, Puerto Rico, and Guam, the inland waterways, and the Great Lakes.

Foreign Trade: Includes cargoes moved on the oceans for waterborne trade (imports and exports) with U.S. trading partners; includes all DOD and other government-impelled shipment under cargo preference.

Jones Act Vessel: A ship built and owned in the U.S. and used for domestic trade.

Intermodal: A shipping term denoting the interchangeable movement of cargo containers between different modes of transportation, primarily ship, truck, and train, where the equipment is compatible with the multiple transport systems.

Oceangoing Vessel: A ship used for ocean transport, including on the deep seas or in coastal areas.

Sealift: Waterborne transport performed in response to military mobility requirements in peace, crisis, and/or war. Sealift can be categorized in different ways, but includes afloat pre-positioning, surge, and sustainment.

Sources: (1) Port of Houston Authority, TX. See: <http://www.portofhouston.com/geninfo/glossary.html>.
(2) Information provided by staff of the Maritime Administration. (3) Stopford, Martin, *Maritime Economics, Second Edition*, Routledge: UK, 1997.

II. Conceptual Framework for Research Design

The research objectives set by the Maritime Administration for this evaluation were to conduct an analysis of existing quantitative data to develop estimates of the MSP's impact on:

1. U.S. flag shipping presence in international commercial waters.
2. Number, types, and capacities of U.S. flag oceangoing ships available for military use.
3. Number of U.S. crewmembers available to serve on such ships.

For each of these areas, the objective was to estimate the quantitative change directly resulting from MSP financial payments. The baseline comparison is counterfactual—an informed estimate of the number of ships and U.S. crewmembers that would be available today without the existence of the MSP. This approach required supplementing a review of past research and quantitative data with information from interviews of experts knowledgeable about trends, past and current, in DOD sealift and international commercial shipping.

It should be noted that finding impact does not necessarily require a positive or negative, post-1997 trend line (i.e., after MSP implementation) for one or more indicators. The impact may still exist if the presence of MSP effectively altered trends after 1997 (e.g., “flattening” a negatively-sloped trend line). Such a finding would be based on the counterfactual estimate of what the numbers would currently be if pre-MSP trends had continued.

As part of this evaluation, Econometrica conducted three sets of stakeholder discussions, with the military/DOD community,⁴ the maritime industry, and academic experts familiar with DOD sealift requirements or maritime policy. For the first two sets of interviews, Econometrica began with suggested contacts provided by the Maritime Administration, principally consisting of entities participating in the MSP. Econometrica employed a “snowball sample” technique to talk with a few others in the industry who we thought might add critical information to the discussion.

The first set of interviews was undertaken with USTRANSCOM and other stakeholders in the military/DOD community. The objective of these interviews was to better understand the nature of DOD's mobility requirements and sealift operations, to find out about actual use of the MSP and VISA fleets, and to gain feedback on the effectiveness of MSP in addressing DOD's sealift needs. The second set of interviews was with the maritime and transportation industries, principally including ship owners and operators but also including one interview with representatives of maritime labor. The objectives of these interviews were to get a first-hand account of the past and current trend in the U.S. merchant marine; on the nature and costs of commercial shipping in today's market; on the adequacy of the supply of mariners; on the perception of stakeholders on the effectiveness of MSP; and also to gather any recommendations for possible improvements in the program.

⁴ “Military/DOD community” refers to the military, civilian, and contractor staff personnel who participate (or have participated) in mobility requirements planning or carrying out the USTRANSCOM mission, including activities of the Military Sealift Command.

The third set of interviews was with academic experts on sealift or maritime policy. We identified these experts from our own research, and used the academic interviews to verify and update our information on global maritime shipping, including the supply of mariners.

For all three sets of interviews, Econometrica attempted to identify factors other than the MSP that have influenced trends in the U.S. commercial shipping industry. These factors included global economic conditions, changes in the market for international shipping, and foreign and domestic government policies that aid shipping, such as tax and cargo preference policies.

Econometrica also conducted an organizational assessment of the current program and its operations. This assessment examined the extent to which the current MSP management configuration is well-suited to achieve the program's statutory and regulatory objectives, and also whether organizational operational patterns are congruent with statutory mission objectives and the guiding regulation, 46 CFR Part 296. This was done primarily through use of a logic model, supplemented with information from completed reports and reviews by the Government Accountability Office (GAO) and DOT's Office of Inspector General (OIG), and by information obtained through interviews with Maritime Administration personnel. Discussions with the military/DOD community and maritime industry representatives also provided information that helped to assess effectiveness and identify options for improvement in the MSP's organizational structure.

Principal Data and Information Sources

The analysis was performed primarily using existing documents and data files. An important component of the research was the information gained through discussions with stakeholders, industry experts, and Maritime Administration staff members.

Internal Maritime Administration materials and other government reports were used as a starting point for understanding the program's processes, outputs, and outcomes. These included a Program Assessment Rating Tool (PART) evaluation completed by the Office of Management and Budget (OMB) in 2004,⁵ an internal evaluation completed by the Maritime Administration in 2002,⁶ and a report by the Congressional Research Service in 1998.⁷

Much of the statistical information presented in this report comes from data maintained by the Maritime Administration and posted on their "Data and Statistics" Web page on the Internet. These data are supplemented by information from DOT's Bureau of Transportation Statistics (BTS), the United Nations Conference on Trade and Development (UNCTAD), and other sources. Information on the labor supply of mariners was derived primarily from a survey conducted every 5 years by BIMCO and the International Shipping Federation (BIMCO/ISF); as well as Mariner Surveys conducted by BTS for the Maritime Administration in 2001 and 2002.

⁵ U.S. OMB, "PART Program Evaluation, Maritime Security Program," Washington DC, 2004. See: <http://www.whitehouse.gov/omb/expectmore/detail/10002256.2004.html>.

⁶ U.S. DOT, Maritime Administration, "Maritime Security Program and Voluntary Intermodal Sealift Agreement Program Evaluation," Washington, DC, March 2002.

⁷ Thompson, Stephen J., "The Maritime Security Program (MSP) in an International Commercial Context: A Discussion," Congressional Research Service, October 28, 1998.

Finally, at the request of Econometrica, the Maritime Administration obtained from USTRANSCOM data on the military use of commercial ships in the VISA fleet (including all MSP vessels), to supplement information collected in interviews with the military/DOD community.

Econometrica completed interviews with the following maritime industry contacts:

- Leo Bonser, Patriot Shipping.
- Bill Kenwell, Maersk Lines Ltd.
- John Raggio, Sealift, Inc.
- Eric Mensing, APL Marine Services, Ltd.
- Eric Ebeling, American Roll-on Roll-off Carrier (ARC).
- Augustine Tellez and George Tricker, Seafarers International Union.

This sample provided a relatively complete picture of participants in the MSP program. As of October 1, 2008, three of the companies listed above (Maersk, APL, and ARC) accounted for 61 percent of the vessels and more than 70 percent of the carrying capacity in the MSP fleet. One of the companies (Sealift) was not participating in MSP, but was a participant in the competition for the open slot that was advertised by the Maritime Administration in October 2008. The Seafarers Union provides mariners to fill billets on all of the vessels participating in the MSP, and it is the maritime labor representative on the VISA Executive Working Group.

The study team completed interviews with the following contacts in the military/DOD community:

- Ken Mills, USTRANSCOM.
- Will Macht, Navy Contractor.
- John Kaskin, Office of the Chief of Naval Operations.
- James Henry, Chair, Military Sealift Committee, National Defense Transportation Association.

The study team completed interviews with the following academic contacts.

- Dr. William Lovett, Tulane University.
- Dr. Shashi Kumar, U.S. Maritime Merchant Marine Academy.

III. Impact Evaluation

III-A. Impact on DOD Sealift

Under the Maritime Security Act of 2003 (MSA 2003), the purpose of the Maritime Security Program (MSP) is to create a fleet of active, commercially viable, militarily useful, privately owned vessels to meet national defense and other security requirements and maintain a United States presence in international commercial shipping.⁸ The Maritime Administration carries out this objective by providing the Department of Defense with access to a fleet of 60 ships, crewed by U.S. mariners, as well as intermodal infrastructure, communications, and other related services.⁹

This section of the report estimates the impact of MSP on DOD sealift. We begin the discussion with a review of the MSP program timeline and the number and types of ships made available to DOD through the MSP. We review ownership of the MSP vessels and any changes that have occurred in charter or ownership of the participating carriers and the vessels they provide. We review other benefits of the MSP, such as access to intermodal resources. We then explain how DOD conducts sealift—through an “organic fleet” that includes government-owned or privately-owned/government-chartered vessels combined with MSP and VISA fleets. We explain how the cargo preference applies to the cargo shipments of the DOD. We then review DOD’s actual use of vessels in the MSP and VISA fleets to support sealift operations, and discuss whether the mix of vessels provided by MSP was “optimal” from a military standpoint. Throughout the discussion, we rely extensively on information obtained during interviews with military, commercial, and academic experts. We conclude with a quantitative estimate of the impact of MSP on DOD sealift and make recommendations that might assist program operations and maritime policy.

MSP Program Timeline

The MSP replaced the Operating Differential Subsidy (ODS) program, which was enacted in 1936 and provided operating assistance to commercial ship operators so that both a naval and military auxiliary and U.S. merchant marine presence in international trade could be sustained. The ODS program provided 20-year contracts and required vessels to be operated on specific trade routes that were approved by the Maritime Administration. A moratorium on new contract awards was instituted in 1982, which led to a winding down under the terms of existing contracts. A total of 47 vessels exited the ODS program between 1990 and 1999.¹⁰ Under ODS, final payments to operators were made in FY 2003.

⁸ This law took effect on October 1, 2004, pursuant to Section 3537(a) of Public Law 108-136, approved November 24, 2003. MSA 2003 extended the MSP for 10 years, from 2006 through 2015. The original MSP was established in the Maritime Security Act of 1996 in Public Law 104-239, approved on October 8, 1996.

⁹ For a description of the methods and procedures used to implement the MSP, see the section entitled Organizational Assessment.

¹⁰ U.S. DOT, Maritime Administration, (2002), op. cit.

In 1996, Congress authorized the Maritime Security Program for 10 years, from FY 1996 through 2005. Vessels began entering the new program in FY 1997, and the MSP fleet reached a full complement of 47 ships during 1999.

The MSP was reauthorized in November 2003. The new law increased the size of the Maritime Security Fleet from 47 to 60 vessels. The Maritime Administration issued interim rules for the updated program on July 20, 2004. Under the statutory language of MSA 2003, the 47 participating fleet vessels received a priority for selection in the new program. The Maritime Administration requested applications for the reauthorized MSP and issued notifications regarding these selections on January 12, 2005, which included all 47 participating fleet vessels and 13 additional vessels.

Because newer vessels offer improved capabilities, efficiency, and reliability, MSA 2003 included a requirement that vessels generally could not be more than 15 years old on the date the vessels were included in the MSP fleet. Vessels must be replaced when they reach 25 years of age. For the 47 participating fleet vessels, vessel operators were given 30 months to replace vessels over 15 years of age as of October 1, 2005, the first date that payments were made under MSA 2003. The Maritime Administration and USTRANSCOM are able to waive the age restrictions based on a finding that such action is in the national interest, is appropriate for commercial viability, and is necessary due to the lack of other vessels and operators that comply with the requirements of MSA 2003.

The operating agreements that the Maritime Administration executed with ship owners/operators in 2005 have terms of up to 10 years. There are opportunities to make changes to ships that are part of the fleet under a process that is described below. As of late 2008, there was one open slot in the program, as a result of a shipping operator opting out. The slot was filled in January 2009.

Description of the MSP Fleet

As of May 2008, the MSP fleet consisted of 60 oceangoing vessels (Table 1), the amount allowed by statute. The predominant category of vessel in 2008 was containerships, which are large vessels that transport cargo in standardized containers. Containerization has revolutionized the shipping trade in the past 30 years. In 2008, 29 containerships in the MSP fleet provided 99,594 TEUs (20-foot equivalent [container] units) of capacity; and an additional 15,702 TEUs of capacity were provided by 9 geared containerships, which are equipped with special cranes and other equipment that allow for transport of unusually heavy cargo.

In 2008, the MSP fleet also included 17 RO/ROs, which are roll-on, roll-off vessels capable of carrying automobiles, tanks, or other types of tracked or wheeled vehicles or military cargo.¹¹ RO/RO capacity is measured not only in weight, but also in square footage. RO/ROs included in the MSP in 2008 provided 2,618,990 square feet of carrying capacity. Heavy lift breakbulks, a specialized vessel type that can transport rolling vehicles or any heavy cargo that does not fit in containers, provided an additional 66,238 square feet of carrying capacity in 2008. The above

¹¹ A RO/RO in the MSP fleet might stand 13 stories high and have a carrying capacity of 5,000 automobiles when fully loaded.

categories are considered dry cargo ships. In 2008, the MSP fleet also included three tankers that provided up to 48,000 DWT (deadweight tons) each in carrying capacity for liquids.

Table 1. MSP Fleet by Capacity and Type of Vessel

Type of Vessel	12/2/2003	10/1/2005	5/1/2008
Container	38	35	29
Geared Container	0	5	9
RO/RO	8	14	17
Heavy Lift	0	2	2
LASH	1	1	0
Tanker	0	3	3
Total	47	60	60
TEUs	115,854	117,988	115,296
Sq. Ft.	1,151,097	2,253,300	2,685,228
DWT* (tankers only)	0	105,000 to 144,000	105,000 to 144,000

* Tankers have capacity of 35,000 to 48,000 DWT.

Source: Maritime Administration

Between 2005 and 2008, there were significant changes in the types and capacities of vessels made available to DOD through the MSP. During this time, the number of geared containerships increased (from 5 to 9), and the number of RO/ROs increased (from 14 to 17). Most often, change in the composition of the MSP fleet has occurred when a vessel reaches a statutorily determined maximum age, at which time, the shipping operator “swaps out” the vessel for another commercially viable vessel that meets military requirements. Vessels can also be swapped out or replaced for other reasons that are discussed in more detail below.

Since the current number of slots in MSP is statutorily set at 60 vessels, the increases described above were accomplished through reductions in the number of containerships.¹² Between 2005 and 2008, the square footage capacity on RO/ROs increased by 19.2 percent. The size of containerships in the MSP fleet increased between 2005 and 2008. Although there was a 17.1 percent decline in the number of containerships in the MSP fleet between 2005 and 2008, this resulted in only a 2.4 percent reduction in containership capacity (TEUs include geared containerships). The shift toward RO/ROs and geared or heavy lift ships during the past 3 years is part of a long-term trend designed to increase the military usefulness of the fleet.¹³

Prior to implementation of MSA 2003, the MSP fleet did not include any tankers. Three tankers were added to the program in 2005, and a fourth tanker was approved for inclusion as a replacement vessel in early 2009. Vessels participating in the MSP must be registered under the U.S. flag, but there has been a very large decline in the number of these tankers since 2000. In response to the Exxon-Valdez disaster, Congress enacted the Oil Pollution Act of 1990 (OPA-90), which required the renovation or replacement of all single-hull tankers with double hulled vessels. The effective date required for replacements depended on the size and age of the vessel.

¹² One LASH vessel was replaced by a RO/RO.

¹³ DOD defines “militarily useful” ships in terms of speed, cargo capacity, and capability of carrying specialized equipment and supplies without significant modification.

The MSA 2003 intended that five of the slots in the MSP fleet would be used for tankers. Funds were authorized for the construction of up to five tankers, and the Maritime Administration published a Federal Register notice requesting proposals to build these tankers. However, this program went into abeyance when Congress did not provide appropriations to build the ships.

Ownership of MSP Vessels

Thirteen ship owner/operator companies participated in the MSP program on October 1, 2008 (Figure 2). Two large companies, Maersk Line, Ltd. (Maersk) and APL Marine Services, Inc. (APL) operated most of the containerships in the program. Four companies provided only RO/ROs, and there were also companies that provided only tankers, or only heavy lift breakbulks. Of the 59 ships in the MSP fleet on October 1, 2008 (there was one open slot at that time). Maersk and APL operated almost half the vessels. In addition, Farrell Lines, Inc., a Maersk subsidiary, provided five other vessels. Waterman Steamship Corporation operates two geared containerships in the MSP, which they charter from Maersk.

Figure 2. MSP Fleet by Ship Owner/Operator as of October 1, 2008

Owner/Operator	Vessel Name	Type	Size	Units	Build Year
American International Shipping, LLC*	Independence II	RO/RO	131,807	sq. ft.	1994
APL Marine Services, Ltd	APL China	Container	5,108	TEU	1995
	APL Korea	Container	5,108	TEU	1995
	APL Philippines	Container	5,108	TEU	1996
	APL Singapore	Container	5,108	TEU	1995
	APL Thailand	Container	5,108	TEU	1995
	President Adams	Container	4,804	TEU	1988
	President Jackson	Container	4,804	TEU	1988
	President Polk	Container	4,804	TEU	1988
	President Truman	Container	4,804	TEU	1988
Central Gulf Lines, Inc.	Green Cove	RO/RO	131,998	sq. ft.	1994
	Green Lake	RO/RO	150,828	sq. ft.	1998
	Green Point	RO/RO	128,328	sq. ft.	1994
	Green Ridge	RO/RO	213,189	sq. ft.	1998
Farrell Lines Incorporated	Alliance Norfolk	RO/RO	115,470	sq. ft.	2007
	Alliance St. Louis	RO/RO	115,470	sq. ft.	2005
	Maersk Iowa	Container	3,634	TEU	2006
	Maersk Montana	Container	3,634	TEU	2006
	Maersk Ohio	Container	3,634	TEU	2006
Fidelio Limited Partnership*	Courage	RO/RO	395,123	sq. ft.	1991
	Freedom	RO/RO	320,538	sq. ft.	1997
	Honor	RO/RO	320,538	sq. ft.	1996
	Integrity	RO/RO	395,799	sq. ft.	1992
	Liberty	RO/RO	330,581	sq. ft.	1985
	Patriot	RO/RO	345,618	sq. ft.	1987
	Resolve	RO/RO	312,002	sq. ft.	1994

Figure 2. MSP Fleet by Ship Owner/Operator as of October 1, 2008 (continued)

Owner/Operator	Vessel Name	Type	Size	Units	Build Year
Hapag-Lloyd USA, LLC	Charleston Express	Gearied Container	2,334	TEU	2002
	Philadelphia Express	Gearied Container	2,334	TEU	2003
	St. Louis Express	Gearied Container	2,334	TEU	2002
	Washington Express	Gearied Container	2,334	TEU	2003
	Yorktown Express	Gearied Container	2,334	TEU	2002
Liberty Global Logistics, LLC	Alliance New York	RO/RO	115,470	sq. ft.	2005
Luxmar Tanker LLC	Overseas Luxmar	Tanker	45,999	DWT	1998
Maersk Line, Limited	Maersk Arizona	Gearied Container	844	TEU	1998
	Maersk California	Gearied Container	1,500	TEU	1994
	Maersk Carolina	Container	4,332	TEU	1998
	Maersk Georgia	Container	4,332	TEU	1997
	Maersk Missouri	Container	4,332	TEU	1998
	Maersk Virginia	Container	4,332	TEU	2002
	Sealand Achiever	Container	4,614	TEU	1984
	Sea-Land Atlantic	Container	4,614	TEU	1985
	Sea-Land Charger	Container	4,292	TEU	1997
	Sea-Land Comet	Container	4,292	TEU	1995
	Sealand Commitment	Container	4,614	TEU	1985
	Sealand Florida	Container	4,614	TEU	1984
	Sea-Land Intrepid	Container	4,292	TEU	1997
	Sea-Land Lightning	Container	4,292	TEU	1997
	Sea-Land Meteor	Container	4,292	TEU	1996
	Sealand Motivator	Container	3,918	TEU	1985
	Sea-Land Performance	Container	4,614	TEU	1985
Sealand Pride	Container	3,918	TEU	1985	
Sea-Land Quality	Container	4,614	TEU	1985	
Maremar Tanker LLC	Overseas Maremar	Tanker	47,225	DWT	1998
Patriot Shipping LLC	M/V Ocean Atlas	Heavy Lift	506	TEU	2000
Patriot Titan LLC	M/V Ocean Titan	Heavy Lift	506	TEU	2000
Waterman Steamship Corporation	Green Bay	RO/RO	170,143	sq. ft.	2007
	Green Dale	RO/RO	131,998	sq. ft.	1999
	Maersk Alabama	Gearied Container	844	TEU	1998
	Maersk Arkansas	Gearied Container	844	TEU	1998

* American International Shipping, LLC and Fidelio Limited Partnership operate together under the name American Roll-on Roll-off Carrier (ARC).

Sources: (1) Maritime Administration; "Maritime Security Fleet: Many Factors Determine Impact of Potential Limits on Food Aid Shipments," GAO, September 2004;

(2) GlobalSecurity.org; www.seafarers.org; owner/operator Web sites.

Companies entering into MSP operating agreements must be owned and controlled by U.S. citizens. This is documented in one of two manners:

1. “Section 2 Citizen” as defined under the Shipping Act of 1916, or
2. “Documentation Citizen,” which is a company located in the United States and operated by U.S. citizens, with a “foreign parent.” Documentation Citizens are U.S. subsidiaries of foreign companies.¹⁴

Since the beginning of the MSP, there has been an increased concentration of the MSP and VISA fleets among documentation citizen companies, in part because of mergers that occurred in the late 1990s. Three large Documentation Citizen companies (Maersk, APL, and ARC) provide most of the MSP fleet’s capacity for liner transport to the Middle East, Africa, and Asia. International shipping firms have access to investment capital that allows for creation of intermodal infrastructure and logistics systems that make it possible to carry out origin to destination shipping on a global basis.

As of October 1, 2008, fourteen MSP vessels were owned and/or operated by seven U.S. Citizen companies. The remaining 45 vessels were owned and operated by six companies participating as Documentation Citizens. The Documentation Citizen companies, working in partnership with major international carriers, transported nearly all (by weight) of the containerized cargo and 78 percent of the breakbulk and roll-on, roll-off cargo included in military shipments to the Middle East under Operations Enduring Freedom and Iraqi Freedom during 2002–2008.¹⁵

Changes in Composition of the MSP Fleet since 1997

Between October 2005 and April 2009, 20 vessels will have been replaced in the MSP fleet. An additional ten vessels are scheduled for replacement between April 2009 and September 2013. No vessels are scheduled for replacement between September 2013 and September 2015. Changes to the MSP fleet between October 2005 and May 2008 are indicated in Figure 3. Changes can occur because:

- A vessel is approaching the age limit (as described above).
- As a result of one company transferring its contract to another company, with approval of the Maritime Administration.
- At the request of the company; for example, if the carrier wants to charter the vessel to DOD for a specified period of time.
- Because a company reaches the end of its agreement or decides to opt out (in which case the Maritime Administration may advertise the open slot and seek a replacement carrier).

As noted in Figure 3, four containerships were replaced with four geared containerships. In three cases—CP Discover, CP Liberator, and CP Navigator—the original MSP vessel’s age exceeded the statutory limit and did not receive an age-related waiver. Each replacement vessel was agreed to by the Maritime Administration and by USTRANSCOM, and each addressed a military mobility requirement and strategic objective. For each of three containerships that were

¹⁴ The regulatory requirements that must be met by a Documentation Citizen are found at 46 CFR 296.10.

¹⁵ These statistics are based on information provided by USTRANSCOM in 2008.

replaced by other containerships during this period, the replacement vessel had nearly twice the capacity of the original vessel.

Figure 3. Recent Changes to the MSP Fleet

Ship October 1, 2005	Replacement May 1, 2008	Type (old)	Type (new)	Capacity (old)	Capacity (new)
CP Discover	St. Louis Express	Container	Geared Container	2,698 TEU	2,334 TEU
CP Liberator	Washington Express	Container	Geared Container	2,698 TEU	2,334 TEU
Livorno Express	Yorktown Express	Container	Geared Container	2,500 TEU	2,334 TEU
CP Navigator	Charleston Express	Container	Geared Container	2,698 TEU	2,334 TEU
Maersk Maryland	Maersk Montana	Container	Container	1,834 TEU	3,634 TEU
Maersk Vermont	Maersk Ohio	Container	Container	1,834 TEU	3,634 TEU
Maersk Maine	Maersk Iowa	Container	Container	1,834 TEU	3,634 TEU
Atlantic Forest	Green Bay	LASH	RO/RO	1,148 TEU	170,143 sq. ft.
Maersk Nebraska	Alliance Norfolk	Container	RO/RO	2,409 TEU	115,470 sq. ft.
Maersk Nevada	Alliance St. Louis	Container	RO/RO	2,409 TEU	115,470 sq. ft.
Overseas Joyce*	Independence II	RO/RO	RO/RO	100,965 sq. ft.	131,807 sq. ft.

* The MSP contract for Overseas Joyce/Independence II was transferred from OSG to American International Shipping on October 26, 2007.

Figure 4 provides detailed examples of the changes that can occur within a given MSP slot, as defined by a specific MSP contract number. The MSP fleet is not static over time, although most changes are fairly straightforward involving vessel name changes or retirement and replacement. Consolidation in the industry, combined with the 14 scheduled vessel replacements before FY 2014, will likely lead to additional name changes and vessel swaps.

Figure 4. Examples of Changes in Vessels for Specific MSP Contracts

No Change

Vessels such as Green Cove (Contract Nos. MA/MSP-10 and MA/MSP-58) and Green Lake (Contract Nos. MA/MSP-12 and MA/MSP-60) have been in MSP since the program's inception.

Simple Name Change

On November 17, 2003, the Fidelio (Contract No. MA/MSP-14) changed its name to the Patriot. The same vessel continues to occupy that MSP slot (Contract Nos. MA/MSP-14 and MA/MSP-67), only the name has changed.

Simple Replacement

On October 29, 2003, the Tanabata (Contract No. MA/MSP-15) was replaced by the Freedom. The Freedom continues to occupy that MSP slot (Contract Nos. MA/MSP-15 and MA/MSP-68).

Name Change and Replacement

On March 25, 2006, the Enterprise (Contract No. MA/MSP-20 and MA/MSP-66) changed its name to the Maersk Maine. On August 21, 2007, Maersk Maine was then replaced by the Maersk Iowa, which continues to occupy that MSP slot (Contract No. MA/MSP-66). Note that the name change occurred when Farrell Lines Incorporated joined Maersk Line, Limited, although Farrell Lines continues to operate Maersk Iowa and four other MSP ships.

Contract Transfer and Replacement

On October 26, 2007, Contract No. MA/MSP-98 (the Overseas Joyce) was transferred from Overseas Shipholding Group to American International Shipping, LLC. American International Shipping then replaced the Overseas Joyce with the Independence II on March 15, 2008. The Independence II continues to occupy that MSP slot (Contract No. MA/MSP-98).

Contract and Vessel Transfer and Replacement

Prior to March 2008, Maersk ALABAMA (Contract No. MA/MSP-96) and the Santa Cruz (Contract No. MA/MSP-106) both occupied MSP slots. On March 25, 2008, Maersk Alabama replaced the Santa Cruz, and on April 17, 2008, Maersk California filled the MSP slot previously occupied by Maersk Alabama. After April 2008, Maersk California (Contract No. MA/MSP-96), operated by Maersk Line, occupied an MSP slot and Maersk Alabama (Contract No. MA/MSP-106), now operated by Waterman Steamship Corporation, occupied a different MSP slot.

Notes: Since FY 1996, the vessels filling many of the MSP slots, as defined by specific MSP contract numbers, have not changed. Those slots experiencing change range from a simple renaming to a complicated swap with another MSP vessel. Additionally, in conjunction with program reauthorization, all MSP slots were given new contract numbers in FY 2006.

The Maritime Administration uses a performance measurement process to assure that the potential for sealift represented by the 60 MSP slots is actually achieved. Under the Office of Management and Budget (OMB) Program Assessment and Rating Tool (PART) process, the Maritime Administration has established ongoing output performance measures for the MSP program. The established goal is to provide at least 110,000 TEUs of capacity and 1.8 million square feet of capacity on MSP fleet. The Maritime Administration has met these goals each year since 2006, and currently provides 115,296 TEUs and 2.7 million square feet. The MSP accounts for 77 percent of VISA's capacity. The Maritime Administration has successfully kept MSP slots filled as a result of swaps for replaced vessels and the 2008 advertisement for an open slot. There can be little doubt that there is an ongoing capacity of commercially viable and militarily useful vessels that has been made available to the DOD to support sealift.

Other Benefits Provided by MSP

The introduction of MSP and VISA represented an attempt to adapt DOD sealift requirements to emerging realities in the commercial liner industry, seeking to replace a "contract-for-ships" mentality with a "contract-for-logistics" approach. Rather than just calling on specific ships, MSP and VISA enable DOD to bring the whole origin-to-destination system into play by

accessing services common in the commercial liner industry. This system of integrated services includes freight consolidation, truck and rail services, 24-hour monitoring and intransit visibility, customs clearances, and flexible routing and scheduling options.¹⁶

An additional benefit for which the MSP incurs no additional cost is the availability of trained mariners. Maritime Labor Unions, including the Seafarers International Union, the Masters, Mates and Pilots, and the Marine Engineers Beneficial Association, provide specialized training to mariners and assure the availability of qualified mariners in numbers adequate to meet the needs of DOD. The nature of this process is described in Section III-C.

Finally, the MSP and VISA have provided a management and communications process for tapping into the capacity of the commercial merchant marine and refining the resources over time. This has been done through a Joint Planning Advisory Group (JPAG), organized under authority provided in the Defense Production Act of 1950 (DPA), and including DOD and participants from MSP and VISA carriers and labor unions. The purposes of JPAG meetings include: identifying and discussing DOD requirements versus industry capabilities; recommending Concept of Operations to meet DOD and commercial requirements; and testing and exercising program arrangements.

Participants in the JPAG that we interviewed indicated that the strategic partnership formed through this process has been very effective. The statutory authority provided in DPA grants some protection from antitrust rules that would normally prevent such teaming arrangements. The Departments of Justice and Commerce closely monitor the JPAG process because of the antitrust aspects of such close collaboration between competitors in the shipping business.

The substance of JPAG sessions is classified, and usually focused on a particular subject or problem that needs to be addressed. There is a separate, public forum maintained by the Department of Defense in collaboration with the National Defense Transportation Association (NDTA). The NDTA is a nonprofit association of government, military, and industry professionals interested in an efficient global transportation system in support of national security. The board of directors includes industry members and senior government liaison representatives, including the Commander of USTRANSCOM. The Military Sealift Committee of NDTA chairs regular meetings of an Executive Working Group (EWG) that works to create a better alignment between the requirements and emerging direction of DOD and the capacities and plans of commercial interests. At these meetings, the military representatives provide information on the upcoming needs of DOD, and the extent to which these needs are currently being met in the MSP and VISA fleets. The meetings are attended by carriers in MSP and VISA, maritime labor unions, and representatives of the Maritime Administration.

Components of Strategic Sealift

A long-established DOD policy, known as “Commercial First,” has been to rely on the commercial maritime industries to the maximum extent possible for sealift. The policy was first articulated in the Wilson-Weeks Agreement of 1954 between the Department of Commerce and

¹⁶ Lewis, Ira and Coulter, Daniel Y., “The Voluntary Intermodal Sealift Agreement: Strategic Transportation for National Defense,” *Transportation Journal*, Fall 2000.

the Department of Defense and then reinforced in the still-applicable Presidential Directive 28 on national security sealift policy in 1989: "...the U.S.-owned commercial ocean carrier industry, to the extent that it is capable, will be relied on to provide sealift in peace, crisis, and war. This capability will be augmented during crisis and war by reserve fleets comprised of ships with national defense features that are not available in sufficient numbers or types in the active U.S.-owned commercial industry."¹⁷ The DOD relied extensively on the commercial oceangoing fleet during the Persian Gulf War; in Bosnia, Kosovo, and Somalia; and during Operations Enduring Freedom and Iraqi Freedom. This section documents the contribution of the MSP fleet in sealift, providing context on the role of the MSP within DOD's overall sealift mission.

USTRANSCOM is responsible for a defense transportation system that consists of airlift, sealift, land lift, and prepositioning. These programs transport the forces necessary to successfully and swiftly defeat enemy forces in a projected time period.¹⁸ Within USTRANSCOM, The Military Sealift Command (MSC) is responsible for a sealift program that provides ocean transportation for DOD during peacetime and war. More than 90 percent of U.S. war fighters' equipment and supplies travels by sea. The program manages a mix of government-owned and long-term-chartered dry cargo ships and tankers, as well as additional short-term or voyage-chartered ships. By DOD policy, MSC must first look to the U.S. flag commercial market to meet its sealift requirements. Government-owned ships are used when suitable U.S. flag commercial ships are unavailable or cannot meet DOD requirements.¹⁹

Most containerized cargo for DOD is booked on U.S. flag vessels by the Military Surface Deployment and Distribution Command (SDDC), which provides various DOD shipping services under the Defense Transportation System (DTS). Shipping via DTS allows DOD to use the pre-negotiated ocean shipping contracts under the Universal Service Contract (USC), providing cost and convenience benefits.²⁰ These "voluntary rates" are less expensive than the rates that would be applicable under VISA activation. According to our interviews with MSP carriers, the voluntary rates fluctuate with the market, but with less volatility than international shipping rates.

In both peacetime and contingency situations, rates for shipment of military cargo on commercial liner vessels are negotiated by DOD and the carriers and established in the USC. Rates for the VISA program are also negotiated between DOD and the carriers for both the "voluntary stage" and Stages I, II, and III, as described above. The rates are determined through competition among the VISA carriers and are very specific as to routes and types of cargo that may be transported by an individual carrier.

Strategic sealift needs can be categorized as prepositioned, surge, and sustainment.²¹ "Afloat prepositioning" strategically places military equipment and supplies aboard ships located in key

¹⁷ Memorandum for distribution, unclassified summary of the national security sealift policy, as reported in U.S. DOT, Maritime Administration, (2002), op. cit.

¹⁸ Macht, William A. "Sizing the Maritime Security Fleet," prepared for Maritime Administration by AT&T Government Solutions, Inc., undated.

¹⁹ For a description of the MSC's sealift program, see: <http://www.msc.navy.mil/pm5/>.

²⁰ See "military cargo" at the Maritime Administration Web page, under Cargo Preference.

²¹ Reed, Wallace S., "U.S. Sealift and National Security," in Lovett, William A. (Ed.), *United States Shipping Policies and the World Market*, Quorum Books: Westport, CT, 1996, p. 266.

ocean areas to ensure rapid availability during a major theater war, a humanitarian operation, or other contingency. These ships give U.S. soldiers, who are flown into a theater of operations the assurance that they will have what they need to quickly respond in a crisis. USTRANSCOM may use commercial shipping assets, including U.S. and foreign flag vessels, to support surge missions. Often, the timing necessary for the rapid movement of forces and cargo is usually faster than can be supported by the commercial industry, and USTRANSCOM via its MSC component must rely on government-owned or chartered vessels.²² The MSP fleet of commercial, U.S. flag vessels is used primarily to support and sustain combat forces.

Organic Fleet

The MSC performs much of its sealift through use of an “organic fleet” that consists of vessels that are either government-owned or under charter to the U.S. government. The government-owned ships include tankers, large medium-speed RO/ROs (LMSRs), and fast sealift ships (FSS). LMSRs and FSS vessels are used to move U.S. forces and military equipment quickly during a surge operation. Both the LMSRs and the FSS vessels are operated by private companies under contract to MSC. Both are ordinarily kept pierside in reduced operating status (ROS), with small crews aboard to maintain the ships in the highest state of readiness, capable of being fully activated, crewed, and ready to depart their U.S. layberths in four days. In 2007, the FSS vessels began transferring to the auspices of Maritime Administration, becoming a part of the Ready Reserve Force (RRF), a fleet of 51 ships that is owned and maintained by the Maritime Administration. The RRF provides approximately half of the capacity of the organic fleet.²³

The RRF provides an important surge resource to offset any shortage of U.S. flag ships that qualify as militarily useful. The RRF consists of FSS vessels, RO/ROs, LASH (lighter aboard ship) vessels, modular cargo delivery system ships, heavy lift ships, government-owned tankers, and crane ships. Of the 51 vessels, 35 are RO/ROs. Maintained in 4-, 5-, 10-, or 20-day readiness status, RRF ships are activated when needed, fully crewed, and placed under the operational control of MSC in support of U.S. wartime, humanitarian, and/or disaster relief operations. RRF ships are also used for military exercises.²⁴

Vessels in the RRF are significantly older than those in the MSP fleet. While vessels in the MSP can be no more than 15 years old upon entering the program, and must exit the program at 25 years, the average age of RRF vessels at the end of calendar year 2008 was 34.5 years. The median year built for RRF ships was 1973. The newest ships in the RRF were built in the mid-1980s.²⁵

The MSC uses short- and long-term charters of foreign flag commercial vessels, as needed, to supplement the organic fleet and commercial vessels operating under U.S. flag. Most DOD cargo is transported aboard regularly scheduled U.S. flag commercial liners, under USTRANSCOM contracts. Cargoes include items that are moved in containers and items too

²² MSC sealift program Web page, op. cit.

²³ U.S. DOT, Maritime Administration, “Leading the Future: 2008–2013 Strategic Plan,” Washington DC, August 2008.

²⁴ MSC sealift program Web page, op. cit.

²⁵ Original tabulations based on information from the Maritime Administration and MSC Web sites.

large to fit in containers, such as engineering and construction equipment, military vehicles, aircraft, and ammunition. These items might be moved on MSP or VISA vessels, or on government-chartered vessels. While USTRANSCOM's organic chartered and commercial liner dry cargo ships continue to deploy and redeploy large volumes of equipment used by U.S. armed forces for Operations Iraqi Freedom and Enduring Freedom, the ships also carry supplies and equipment for various military operations worldwide. The MSC also charters tankers to move liquid cargo.²⁶

For all of the types of sealift described above, U.S. mariners are required for maintenance and operations. A final category of sealift, used only in times of war when other resources have been exhausted, is that vessels can be requisitioned. A requisitioned vessel is provided to DOD without a crew. Requisitioned vessels may be either domestic trade (Jones Act) vessels under U.S. flag or U.S.-owned vessels sailing under foreign flag of an ally of the United States. The open registries of some other nations include ships considered to be under effective U.S. control (EUSC). The registries commonly associated with the EUSC concept are Liberia, Panama, Honduras, the Bahamas, and the Marshall Islands. These ships are majority-owned by U.S. citizens and are subject to requisition pursuant to Section 902 of the Merchant Marine Act of 1936. The core of the EUSC is the assumption that the concerned nations will not interpose any objection to the exercise by the United States of its power of requisition over ships on their registries. There are no agreements, formal or otherwise, underlying the EUSC, which originated in the Department of Defense as a way to avoid the Neutrality Act prior to World War II.²⁷ There has been a very substantial, long-term decline in the military usefulness of the EUSC fleet.²⁸

Voluntary Intermodal Sealift Agreement (VISA)

During Operations Desert Shield and Desert Storm, DOD successfully implemented temporary airlift and sealift agreements that allowed for the transport of materials needed to support the war effort. The Maritime Security Act of 1996 (MSA 1996) was enacted in response to the decline of the U.S. flag general cargo fleet, but also reflected lessons learned during the Persian Gulf War. MSA 1996 created the MSP and required MSP vessels to enroll in a DOD-approved Emergency Preparedness Program (EPP). VISA is an EPP that provides DOD with assured, emergency access to intermodal sealift capacity. The vessels committed to the MSP and VISA program serve as an insurance policy that provides the necessary shipping required to swiftly defeat the efforts of an enemy in one theater while allowing deployment to another. By having pre-negotiated contracts in place with participating carriers, the agreement then allows for military and industry to plan together how best to execute the military's transportation requirements for a contingency.²⁹

VISA participants, except those also participating in MSP, do not receive direct financial support from the U.S. government. However, they obtain priority consideration in the award of DOD

²⁶ MSC sealift program Web page, op. cit.

²⁷ Statement of William Schubert, DOT Maritime Administrator, before the House Armed Services Committee, Special Oversight Panel on the Merchant Marine, Vessel Operations under "Flags of Convenience" and National Security Implications, June 13, 2002.

²⁸ Reed, in Lovett, W. (1996), op. cit., p. 267.

²⁹ Macht, (undated), op.cit.

peacetime cargoes (explained more fully below). Commercial sealift support for major military contingencies are carried out through VISA Stages I, II, and III. Each stage represents a higher level of commitment by the carriers, which allows DOD to transition from peace to war by selecting vessels that comply with military requirements, while minimizing impact on the domestic economy.³⁰ In Stage III, participants must commit at least 50 percent of their capacity. Dry cargo vessels enrolled in the MSP must commit 100 percent under Stage III.³¹

To obtain the sealift capacity needed to support military operations, DOD first solicits volunteers (U.S. flag, and then foreign flag, if necessary). If DOD determines that sealift capacity volunteered is insufficient, then VISA is activated. However, since enactment of MSA 1996, this has never happened.³² Volunteer commercial resources provided through VISA participants (including MSP carriers) and charters have always provided enough capacity to meet the military's mobility requirements needs, such that VISA did not need to be activated.

The October 1, 2008 composition of the VISA fleet is indicated in Table 2. At that time, the VISA fleet consisted of 130 vessels. These included 57 dry cargo vessels enrolled in MSP (note that the three MSP tankers shown in Table 1 are not part of VISA) and 44 other vessels engaged in oceangoing commercial transport. Finally, there were 27 VISA vessels that were involved only in domestic trade, covered under the Jones Act. The MSP fleet accounted for 42 percent of the containerships, 90 percent of the geared containerships, and 65 percent of the RO/ROs included in the VISA fleet. Vessels capable of carrying both containers and wheeled or tracked equipment, most of the heavy lift vessels, and all of the breakbulk vessels were provided only by the International and Jones Act fleets. MSP provided about three-fourths of the overall capacity of the VISA fleet.

Table 2. Composition of the VISA Fleet, October 1, 2008

Vessel Type	Source Commitment					Total
	MSP	International	Jones Act	Mixed*	DOD	
Container	29	17	16	6	1	69
Geared Container	9	1	0	0	0	10
RO/RO	17	2	6	0	1	26
Container RO/RO	0	4	2	0	0	6
Heavy Lift and Breakbulk	2	4	2	0	0	8
Bulk	0	8	0	0	0	8
Integrated Tug Barge	0	2	0	0	0	2
Ferry	0	0	1	0	0	1
Total	57	38	27	6	2	130

* Mixed vessels have a source commitment of International with a Jones Act Endorsement.

Note: The VISA program is limited to dry cargo vessels. Tankers are enrolled in the Voluntary Tanker Agreement Program.

Source: Maritime Administration

³⁰ Ibid.

³¹ VISA Brochure. See: http://www.marad.dot.gov/documents/VISA_BROCHURE.pdf.

³² The stages of VISA are similar to those used in DOD's Civil Reserve Air Fleet (CRAF), which began in 1952. CRAF operated for almost 40 years before being activated during the Persian Gulf War, when only Stages I and II were called up. See: Lewis et al, (2000), op. cit.

Cargo Preference

Under DOD rules, U.S. flag operators participating in VISA receive a preference in bidding on military “cargo preference” shipments. There is considerable evidence (including but not limited to our interviews with carriers) that preference cargoes provide an important source of revenue to VISA operators.

The Cargo Preference Act of 1904 and other laws³³ require that ships registered in the United States be used to carry certain government-owned or government-financed cargo that is shipped internationally. DOD, the Agency for International Development (AID), and the Department of Agriculture (USDA) account for most of the tonnage shipped under cargo preference laws. The preference applies to all of DOD’s freight shipments and to 75 percent of shipments of food aid, and in varying percentages to shipments associated with programs sponsored by other Federal agencies. Of the 47 vessels participating in the MSP during 1999 to 2003, 37 vessels participated in cargo preference food aid shipments. MSP vessels shipped about 45 percent of all the bagged food aid cargo during that time period.³⁴

Between FYs 1999 and 2007, the annual tonnage of dry cargo preference shipments averaged 6.4 million metric tons (Table 3). Annual dry cargo preference shipments have decreased by more than 3 million metric tons from FY 1999 to FY 2007. In FY 2007, dry cargo shipment tonnage was only 5.2 million metric tons. Military shipments accounted for about 50 percent of the tonnage in FY 2007, and food aid shipments accounted for another 41 percent. Approximately 120 U.S. flag vessels carry this cargo in any given year.³⁵

Table 3. U.S. Dry Cargo Preference Shipments, Metric Tons, FYs 1999 to 2007

Fiscal Year	DOD	Food Aid	Other	Total
1999	1,154,432	6,420,112	1,243,840	8,818,384
2000	933,317	4,741,404	1,565,210	7,239,931
2001	964,285	4,344,013	1,223,346	6,531,644
2002	1,484,361	4,367,439	1,212,512	7,064,312
2003	1,552,339	3,730,002	1,062,414	6,344,755
2004	1,585,844	3,198,031	927,894	5,711,769
2005	1,817,505	2,561,765	868,508	5,247,778
2006	1,963,447	2,671,324	476,287	5,111,058
2007	2,609,325	2,143,363	443,554	5,196,242
Total	14,064,855	34,177,453	9,023,565	57,265,873
Average	1,562,762	3,797,495	1,002,618	6,362,875

Source: Maritime Administration

The ocean freight revenue associated with dry cargo preference shipments made on U.S. flag ships has averaged about \$1.2 billion during the period of FY 1999 to 2007 (Table 4). Cargo preference revenue has remained fairly steady in the five years ending in FY 2007, ranging between \$1.2 and \$1.4 billion. High levels of revenue of military shipments offset a general decline in the revenue generated by food aid and other shipments. The increase in the ocean

³³ See the Cargo Preference page at the Maritime Administration Web site.

³⁴ U.S. GAO, “Maritime Security Fleet: Many Factors Determine Impact of Potential Limits on Food Aid Shipments,” GAO-04-1065, Washington, DC, September 2004.

³⁵ Data provided by the Office of Cargo Preference, Maritime Administration.

freight revenue of cargo preference shipments since 2002 is largely due to military operations in Iraq and Afghanistan. In FY 2007, military cargo accounted for 68 percent of the ocean freight revenue of all cargo preference shipments. Food aid comprised about 25 percent.

Table 4. U.S. Dry Cargo Preference Shipments, U.S. Flag Revenue in Millions of Dollars, FY 1999 to 2007³⁶

Fiscal Year	DOD	Food Aid	Other	Total
1999	497.7	727.2	96.9	1,321.8
2000	402.4	508.7	91.6	1,002.7
2001	415.7	406.4	79.9	902.0
2002	639.9	444.9	99.3	1,184.1
2003	669.2	455.0	92.8	1,217.0
2004	853.4	455.1	80.5	1,389.0
2005	818.7	380.0	88.4	1,287.1
2006	784.8	418.4	110.6	1,313.8
2007	878.6	323.5	81.5	1,283.6
Total	5,960.4	4,119.1	821.7	10,901.2
Average	662.3	457.7	91.3	1,211.2

Source: Maritime Administration

Carriers engaged in liner shipping are able to include government-impelled cargoes such as food aid or military cargo in containerships or RO/ROs that are part of regularly scheduled service, and carrying this cargo allows the vessels to be more fully utilized. Carriers interviewed for this evaluation indicated that these cargoes are considered valuable “backhaul.” The United States imports more than it exports, and as a result the vessels are more fully loaded when arriving at U.S. ports. Transporting food aid and military cargo on the return trip helps to balance out the load.

The preference for military shipments afforded to VISA carriers is made on the basis of the ship owner/operator, not on the basis of each ship. While each of the vessels available under VISA has (or could have) some military utility, not all of the vessels owned by the carrier are militarily useful. Some MSP operators who were interviewed for this evaluation noted that it would be more appropriate to assign priority to participate in military cargo preference on the basis of the vessel. They believe that allowing operators to go outside of the VISA fleet to arrange for transport gives those operators an unfair advantage. Their argument is that the vessels actually included in VISA represent a significant investment made by the carriers, and these vessels should receive priority to move military cargo over vessels not participating in VISA.

Share of Commercial Carriers in Military Shipments

The commercial shipping and intermodal capacity provided through the MSP and VISA has had a significant impact on sealift operations in support of Operations Enduring Freedom (OEF), beginning in late 2001, and Iraqi Freedom (OIF), beginning in 2003. Information provided to the Maritime Administration by USTRANSCOM indicates that between FYs 2002 and 2008, U.S.

³⁶ Note that data in Tables 3 and 4 are limited to dry cargoes. In 2004, MSC shifted the transport of petroleum to MSC tankers.

commercial carriers delivered military dry cargo to ports in 12 countries in the Middle East.³⁷ Data provided by USTRANSCOM/SDDC indicate that during this time period U.S. commercial shipping companies delivered 600,584 TEUs of military cargo on containerships and 15.2 million tons of cargo on RO/ROs and other dry cargo ships engaged in liner trade. In 2008, there were 145,366 total shipments to these ports. Eight companies participating in these shipments were carriers that owned or operated ships in the MSP fleet.³⁸ Information on the tonnage or destination is not available separately for MSP or VISA ships. However, the Maritime Administration has indicated that during Operation Iraqi Freedom, 78 VISA vessels (including 65 different vessels participating in the MSP) were utilized by SDDC shipments in liner service. In addition, 20 VISA vessels (including 3 MSP vessels) were chartered by the Military Sealift Command.³⁹

The fact that commercial shipping participated in so many military operations is consistent with DOD policy to use commercial resources whenever possible. Since the time of the Persian Gulf War, DOD has increased its reliance on commercial shipping. During the 1990-1991 Persian Gulf conflict, only about 21 percent of dry cargo shipped to and from the theater was through U.S. commercial liner service. About 38 percent was shipped on DOD-chartered vessels (23 percent on foreign flag vessels); and the rest was shipped on government-owned vessels.⁴⁰ By the time of OEF/OIF, the share of shipments on U.S. commercial liner service had increased to 49.3 percent, while the share on charters shrunk to 8.7 percent (3.4 percent on foreign charter). The Ready Reserve Force (RRF) accounted for 21.9 percent of shipping during the Persian Gulf War, but only 10.2 percent during OEF/OIF. The trend toward military use of liner services has continued—the commercial liner share of military shipments to discharge ports serving OEF/OIF increased to 68 percent in 2006, and to over 80 percent since that time.⁴¹

Several factors have contributed to the increased use of commercial capability for military uses in recent years. First, the nature of the missions has changed. Government-owned vessels are more likely to be used during the prepositioning and surge phases, while commercial assets are more likely to be used during the sustainment phase. However, the creation and expansion of MSP and VISA fleets in 1996 and 2003 have also clearly contributed to this result. In particular, there has been an increase in the number of RO/ROs in the MSP fleet, from 9 in the original fleet created under MSA 1996; to 14 in the fleet created under MSA 2003; to 17 in the current MSP fleet.

³⁷ These countries are Bahrain, Egypt, Iraq, Jordan, Qatar, Lebanon, Oman, Pakistan, Saudi Arabia, United Arab Emirates, and Yemen.

³⁸ During our evaluation, it was not possible to obtain information on the use of individual MSP or VISA vessels participating in this transport. Information was available from USTRANSCOM on transport by the organic fleet by individual vessel, but was available only by name of company for liner transport. We are therefore unable to separately identify the non-MSP transport done by U.S. or foreign flag vessels owned by these same U.S. companies. Further, the spreadsheets provided by USTRANSCOM describe only commercial transport performed in liner shipment. Some MSP and VISA vessels were used for ocean transport outside of the liner trade.

³⁹ Maritime Administration Fact Sheet, Maritime Security Program and Voluntary Intermodal Sealift Agreement, (VISA). See the “Library” page of the Maritime Administration Web site.

⁴⁰ Mercogliano, Salvatore R., “United States Merchant Marine in the Persian Gulf War,” Adjunct Professor of History, Campbell University and U.S. Maritime Academy.

⁴¹ Based on statistics from USTRANSCOM and interviews with the MSP carriers and military/DOD community.

Relative Importance of MSP in Overall DOD Sealift Capability

It is generally acknowledged that a strong U.S. maritime sector is needed in order for the U.S. to be able to carry out its long term strategic security interests. Carriers participating in MSP and VISA understand that their ships may be put in harm's way in support of a particular mission. U.S. mariners also understand that they are expected to be willing to operate vessels in war zones as needed. DOD has relied on charters of foreign vessels to transport military cargo, with generally good results, but there are documented instances where cargoes were delayed or delivered with unusual difficulty, during both the Persian Gulf War⁴² and OEF/OIF⁴³.

There is a consensus view that, for security reasons, a U.S. commercial maritime capacity is needed to support military sealift. Absent this capacity, the United States would need to commit significant resources to developing a parallel military capacity. The Military Sealift Command within USTRANSCOM would need to develop other means of meeting DOD's mobility requirements. This would likely involve some combination of acquiring (building or purchasing) ships, chartering U.S.-owned, foreign flag ships, and shipping materials on liner service procured on the international shipping market.

Building ships is an expensive proposition—the cost of a newly built RO/RO suitable for use in the Ready Reserve Force has been estimated at \$300 million, and the cost of a 4,300 TEU containership has been estimated at \$220 million. Taking into account the square footage of RO/ROs available in the MSP fleet in 2006, Reeve and Associates estimated that the capital cost of replicating this capacity would be about \$6 billion. If DOD needed to replicate both the RO/RO and containership capacity of the MSP fleet, as of 2006, the capital cost alone would be \$13 billion (or \$865 million annually, financed over 30 years).⁴⁴

As already noted, the MSP provides access to intermodal capacity as well as ships. Due to cost and diversity of the intermodal infrastructure it is not practical for DOD to replicate the needed capacity. The existing intermodal infrastructure supports an ongoing commercial purpose, not intermittent military needs. Even so, USTRANSCOM has estimated that it would cost the U.S. government \$52 billion to replicate the intermodal system that has been developed, maintained, and continuously upgraded by MSP participants.⁴⁵

It might be argued that acquiring vessels and leasing intermodal infrastructure might be done less expensively than indicated above. Particularly in the 2008 international shipping market, when rates were falling and ships were being taken out of service due to lack of demand. However, government-acquired ships are required by law to be U.S. built, and this reduces the potential for cost savings. Also, an acquisition program necessarily causes the Government to incur both capital and operating costs, while the current MSP provides a payment towards a portion of operating cost only. Charter costs reflect both capital and operating costs to the owner of the chartered vessel. We estimate that during the fourth quarter of FY 2008, DOD sealift charter costs for the types of vessels provided through the MSP averaged \$32,619 per day, per ship.

⁴² Mathews et al, 1996, op. cit., pp. 136-137.

⁴³ Based on interviews with the MSP carriers and military/DOD community.

⁴⁴ Reeve and Associates, 2006, op. cit.

⁴⁵ Transportation Institute, "Commercial First: the Foundation of U.S. National Defense Policy," January 2006; as quoted in Reeve and Associates, 2006, op. cit.

This is based on current daily charter rates posted by MSC on the Procurement page of their Web site. We found charter rates for six vessels including containerships, one RO/RO, one heavy lift ship, and one combination RO/RO-heavy lift and container. The rates for these vessels ranged from \$26,150 to \$41,000.⁴⁶ In contrast, the daily cost of the MSP financial payment in 2008 was about \$8,125 per day per ship (based on the minimum required 320 days of service in foreign trade).

In an update to their 1996 report to the Military Sealift Committee, Reeve and Associates compared the cost of moving one measurement ton (equivalent to 40 cubic feet) of cargo to the Middle East through various means. The commercial freight rate, reflecting recovery of capital and operating costs, was estimated at \$144 per measurement ton. The cost on a commercial time-charter was \$212 (47 percent higher). The cost on a LMSR vessel, the type that might be made available through the RRF, was estimated at \$348 (141 percent higher). No matter how measured, the commercial capability offered through MSP seems to be orders of magnitude less expensive than the alternatives.

Getting the Mix Right—Program Trade-Offs

The MSP has clearly made a significant contribution to the nation's overall sealift capacity. At the same time, the MSP may not have provided an "ideal" mix of vessel types and capacities to meet the military's sealift requirements. Other factors, including the needs of the maritime commercial sector, have shaped the mix. Over time, the program mix has clearly improved. Also, program stakeholders in the maritime industry and in the military community have become more adept at aligning MSP and VISA resources to address the nation's strategic security needs.

DOD determines the proper mix of vessels and capacities in part on the basis of Mobility Requirements Studies (MRS). These are classified documents that are developed by DOD on approximately 5-year intervals. The current mobility requirement study is MRS05, and a new MRS is under development. Actual mobility requirements are constantly changing. The MRS documents make projections of mobility requirements, based on likely scenarios, and in terms of "weekly throughput." Generally, the MRS documents do not specify how many ships are needed by DOD. It is the job of both the Maritime Administration and USTRANSCOM to determine how best to meet identified needs, including how many and what types of ships are needed.

When the MSP was created in authorizing legislation in 1996, the number and mix of ships supported by that legislation was only indirectly related to actual military requirements at that time. Instead, the U.S. Congress was seeking to replace the Operating Differential Subsidy program and created a target regarding the amount of money that they were willing to commit to that purpose. Based on the amount of money considered feasible at the time, Congress then determined how many ships could be supported at that level of funding. While DOD had some input in the awards of operating agreements for particular ships, their participation was less direct than in the present MSP.⁴⁷

⁴⁶ These rates are offered for illustrative purposes. We picked vessels that seemed most comparable, by size, type and age of ship, to vessels in the MSP fleet. However, such comparisons are problematic because many ships on MSC's list have specific roles that likely affect price. For example, the container ships included in our estimate are all used for prepositioning. Containerships in the MSP are used only in liner trade.

⁴⁷ These comments are based on interviews with persons who participated in creation of the 1996 legislation.

The 47 vessels that were selected for the original MSP fleet did provide a militarily useful resource to the DOD. In comments provided to the Maritime Administration on October 24, 2000, USTRANSCOM stated that the capacity provided was adequate, and that the MSP/VISA fleet met all of the intermodal sealift requirements established in the 1995 Mobility Requirements Study. However, USTRANSCOM encouraged the Maritime Administration to begin expressing capacity requirements in terms of square footage, as well as in TEUs.⁴⁸ This was consistent with their ongoing need to establish a greater RO/RO capacity in the MSP fleet.⁴⁹

At reauthorization of the MSP in 2003, commercial and military interests again played a role. The authorization language, for example, provided a priority for selection of the 47 ships participating in the MSP fleet at that time. The legislative language was more a product of the give-and-take nature of Congressional lawmaking than a pure reflection of DOD mobility requirements. However, the legislation did a better job of addressing DOD's concerns than it did in 1996. First, the number of ships supported by the authorization was increased from 47 to 60, allowing the Maritime Administration to increase the number of RO/ROs, tankers, geared, heavy lift, and other specialized ships that met particular DOD mobility requirements needs. Second, the legislation set a priority for providing MSP payments to up to five tankers and authorized funding to build these tankers. The funds for building tankers were never appropriated, but would have reduced the need for DOD to charter tankers for transport of oil and petroleum products needed during surge and sustainment phases. Third, the 2003 legislation created a more co-equal role for USTRANSCOM and the Maritime Administration in making decisions on selecting vessels. In 2005 and 2008 (when a slot became available), USTRANSCOM did not just comment on the proposed selection, but actively participated in the selection process.

Interview comments made by stakeholders in the military/DOD community, while highly supportive of the current MSP, also indicate that it makes little sense for MSP legislation to mandate a fixed number of ships, or use a fixed payment schedule (e.g., \$2.6 million per ship in FY 2008), regardless of military utility. From a military standpoint, it would be better to base payments on degree of risk and/or military usefulness—such as by taking a given amount of money and conducting an auction. Using an auction or some other variable pricing arrangement, DOD could take into account both the military utility of the ship and its cost. DOD would then be able to pay a premium for ships with additional military capability. Heavy lift ships are sometimes valuable to DOD, so they might command a higher price than, for example, containerships.

Using the MSP is less expensive to the U.S. government for its overall sealift, because providing a financial payment for a portion of a ship's operating cost is less expensive than owning or chartering a ship. Particularly when the age of the RRF fleet is taken into account, it seems very likely that the commercial fleet could replace some of the capacity of the existing organic fleet through MSP or a similar program. There is a growing recognition that commercial vessels can work well, not just during sustainment, but also during some aspects of surges. The argument against relying more heavily on the commercial fleet is that the response during a surge is slower

⁴⁸ U.S. DOT, Maritime Administration, (2002), op. cit.

⁴⁹ The Maritime Administration did adopt these recommendations and currently expresses capacity goals for the MSP in terms of both TEUs and square footage.

than the organic fleet. However, the difference between response times—10-12 days by commercial vessels and the 8-10 days under the organic fleet—may be manageable.

The idea that payments to MSP carriers should be competitively determined rather than set on a fixed-payment basis is not new. There are reasons why fixed-payment methods continue. In 1997, GAO found that opening up the MSP to competitive bidding would not increase the pool of qualified applicants or the number of eligible vessels, and might raise program costs because the (then) current \$2.1 million annual payment does not cover the extra costs of maintaining a U.S. flag vessel.⁵⁰

Competitive payments would also interfere with one of the most important features of the MSP from the point of view of the carriers. The recurring, predictable annual payment provided by the MSP, and the operating agreement contract term of 10 years, subject to annual appropriation, helps to partially offset the highly volatile nature of the international shipping business. Ship owners use the MSP operating agreements as collateral to acquire or build ships.

Because there is a trade-off between military usefulness and commercial viability, the organic fleet and use of charters will always be part of the sealift mix. Most VISA transport is performed through liner service, with long strings of ships used to guarantee regularly scheduled service. For any given vessel, there are multiple customers, and multiple ports to be visited. Conversely, the military uses charter service to go from military port to military port. Each year a certain number of shipments will need to be put into charter service due to the nature of the cargo. Ammunition, for example, is more likely to be sent through unscheduled or charter service than through liner service. RO/ROs, while frequently operated in liner service, may sometimes need to be used in dedicated service, again depending on the nature of the cargo. The liner shippers cannot afford to have their networks disrupted, and the military has mobility requirements that cannot always be met in time by commercial carriers.

Conclusions on Sealift Impact

A key objective of this evaluation is to analyze the effectiveness of the MSP in supporting a fleet of commercially viable U.S. flag oceangoing ships that are available for military use. The preceding analysis has indicated the number, types, and capacities of U.S. flag oceangoing vessels available for military use through the MSP.

Clearly, the current MSP provides 60 ships and their related intermodal infrastructure to support DOD's sealift mission. On October 24, 2000, based on performance of the MSP and VISA programs through that date, USTRANSCOM indicated to the Maritime Administration that these programs offered a significant advantage to DOD in meeting its contingency sealift requirements, assuring access to the U.S. flag commercial sealift and intermodal capacities. This statement remains true today. In fact, statistics presented above indicate that the DOD has relied on commercial shipping to a greater extent than in the past during Operations Enduring Freedom and Iraqi Freedom. Commercial logistics capacity in the Middle East has been crucial for execution of these operations. Future military or humanitarian operations may occur in Africa or

⁵⁰ U.S. GAO, "Maritime Security Fleet: Factors to Consider Before Deciding to Select Participants Competitively," U.S. Government Printing Office, Washington DC, September 1997.

Asia, and carriers participating in the MSP provide the logistics capacity necessary to reach these areas.

To remain commercially viable, the current fleet of MSP vessels depends on MSP annual financial payments, revenues from cargo preference shipments, and revenues from private commercial trade in the international market. Our interviews with industry, military, and academic experts indicate that in the absence of the MSP, there would very likely be a significant reduction in the number of ships operating under U.S. flag—perhaps a reduction by half of the vessels currently in the MSP fleet (30 vessels). Absent both the MSP and cargo preference, the experts we interviewed were unanimous in indicating there would no be U.S. flag presence in commercial foreign trade. Without MSP and cargo preference, owners of U.S.-registered ships would scrap or sell their vessels or would reflag to foreign registries, under which operating costs are significantly less.

In order to overcome a significant reduction in the MSP fleet, DOD would need to build or charter more ships at significantly greater expense than at present (through the MSP). DOD would also need to lease access to intermodal infrastructure. Under the current MSP and VISA, DOD pays the freight for military cargo shipments, but pays nothing for access to infrastructure. The annual financial payments to MSP carriers cover only a small portion of the operating costs of the 60 ships. Without the MSP, the costs to DOD would be orders of magnitude greater than the current MSP costs (the authorization for MSP outlays in FY 2008 was \$156 million). By one estimate, replicating only the RO/RO and containership capacity of the current MSP, without taking into account the intermodal infrastructure, would require a capital expenditure of \$13 billion.⁵¹

The MSP and VISA programs provide significant benefits that go beyond just the vessels. Access to intermodal infrastructure allows the DOD to get cargo moved, in a seamless fashion, between any two points on the globe. For example, a cargo transported to a port in the Middle East will be carried by truck or rail to the destination hundreds of miles inland where it is needed by American troops engaged in a contingency operation. Carriers participating in MSP maintain extensive, worldwide supply chains that make point-to-point transport of military shipments possible.

MSP and VISA also offer DOD a more flexible and technologically superior way of transporting goods than was possible prior to enactment of MSP in 1996. MSP and VISA program participants work in a partnership with DOD to meet the nation's sealift needs. Through the JPAG meetings and the more frequent EWG meetings, USTRANSCOM and the Maritime Administration work with ship owners and operators and maritime labor unions to better manage existing resources and determine the best ways to improve the mix and responsiveness of sealift resources over time.

Finally, the MSP creates a steady number of berths on U.S. ships that provide employment for U.S. mariners. These are strategic and economic benefits, because the pool of mariners who operate the MSP vessels also performs maintenance and operates the chartered vessels, RRF vessels, and other government-owned vessels in the organic fleet. Approximately two mariners

⁵¹ Reeve and Associates, 2006, op. cit.

are needed for every berth provided on an MSP ship. The MSP vessels are used primarily during the sustainment phases of military operations, but the same U.S. mariners are used to man the prepositioning and surge phases of military operations. Most of our interview respondents indicated that one of the most significant benefits of MSP has been the supply of mariners available to operate ships performing sealift. We will present separate estimates of the impact of the MSP on mariners in Section III-C.

III-B. Impact on U.S. Flag Fleet

The Maritime Security Program is a national defense program intended to assure military access to commercial shipping during times of war or national emergency. A secondary purpose of MSP is to maintain a United States presence in international commercial shipping. This section estimates the impact of MSP on the numbers and capacities of vessels in the U.S. flag fleet. We begin by reviewing past trends and current status of the registry, ownership, and construction of commercial, oceangoing vessels in the United States and other countries. This is followed by a discussion of the U.S. flag presence in commercial shipping, including factors that cause operating costs of U.S. flag vessels to exceed those of ships in foreign registries. Our discussion of the cost differential includes results from interviews with MSP participants and other maritime experts. We review expenditures associated with past and present U.S. programs and policies intended to reduce the cost differential, contrasting these policies with those of other countries, and briefly review pros and cons of government shipping policies. This section concludes with a quantitative estimate of the impact of MSP on the U.S. flag presence.

Registry, Ownership, and Construction of Commercial, Oceangoing Vessels

Many maritime experts have commented on the long-term decline in the size of the U.S. flag fleet.⁵² In 1939, the U.S. fleet ranked second in the world, with 13.9 percent of gross registered tonnage.⁵³ During the Second World War, the United States quadrupled the size of its merchant marine, emerging from the war with 50.6 percent of the world's tonnage.⁵⁴ The size of the U.S. merchant marine has declined substantially since that time.

As of 2006, the U.S. flag fleet ranked 13th among the world's oceangoing merchant fleets, with 286 vessels and 12.3 million in registered deadweight tonnage (Table 5). In 2006, the U.S. fleet contained only 1.3 percent of deadweight tonnage among 127 countries with maritime fleets.

When a ship is registered under the flag of a particular country, the ship and its owner become subject to the laws of that state. Registration makes the ship an extension of its national territory while at sea. Principal consequences of choosing to register in one state include:

1. The company becomes subject to that country's tax, corporate, and financial laws.
2. The ship must comply with any safety regulations on construction and operation of ships, and any maritime conventions ratified by that country.
3. The company is subject to flag state regulations concerning the selection of crew and their terms of employment.
4. The ship benefits from naval protection provided by the flag state.⁵⁵

⁵² Stopford, Martin, *Maritime Economics*, Second Edition, Routledge: UK, 1997; pp. 262-263; Lovett, William A. (Ed.), *United States Shipping Policies and the World Market*, Quorum Books: CT, 1996; and Kumar, Shashi and Hoffman, Jan, "Globalization: The Maritime Nexus," in Grammenos, Costas (Ed.), *The Handbook of Maritime Economics and Business*, Informa Professional: UK, 2002; and Jantscher, Gerald R., *Bread upon the Waters: Federal Aids to the Maritime Industries*, Brookings Institution: Washington, DC, 1975.

⁵³ Stopford, (1997), op. cit.

⁵⁴ Jantscher, (1975), op. cit.

⁵⁵ Stopford, (1997), op. cit., pp. 431-432.

Many countries have adopted maritime policies that create open registries (also sometimes referred to as “flags of convenience”) or second registries. These policies are designed to increase their share of the international shipping market by attracting vessels owned by companies located in other countries. A typical open registry imposes far fewer restrictions and allows for significantly lower costs of operation than a traditional registry country, such as the United States.⁵⁶

Since the 1950s, vessels being “reflagged” to open and second registries have caused a significant reduction in U.S.-registered tonnage. During the 1970s and 1980s, this was also true for many major maritime nations, including Greece, the United Kingdom, and Japan.⁵⁷ By 2003, over 60 percent of the total tonnage of the world’s merchant fleet was registered outside the country of ownership.⁵⁸ In 2006, four of the top five registries (all but China) were open registries (Table 5).

In 2006, United States companies owned 684 oceangoing merchant vessels with 39.6 million deadweight tons. The United States ranked sixth among 108 countries with companies owning oceangoing vessels in 2006 (Table 6).⁵⁹ In terms of ownership, the world’s largest fleets of containerships were in Japan, China, and Greece; these 3 countries accounted for 21.3 percent of the ownership of total tonnage in containerships. The largest fleets of RO/ROs are owned by companies in Japan, the United States, and Norway, with a combined 58.8 percent of tonnage in such vessels. Companies in Greece and Japan own the largest tanker fleets, with a combined 33.3 percent of total tonnage in tankers.

In 2006, two countries, Japan and South Korea, accounted for an astonishing 73.5 percent of deadweight tonnage in newly built, oceangoing merchant vessels. In new vessel construction, eight other countries accounted for an additional 18.9 percent of the tonnage. Of countries where oceangoing ships were built, the United States ranked 10th. In 2006, shipyards in South Korea, Japan, and Germany accounted for a combined 76.4 percent, by tonnage, of construction in containerships. Other leading countries in the construction of containerships were China, Poland, Taiwan, and Denmark. Japan and South Korea were the leading countries in two categories of ship construction. Among RO/ROs, the two nations accounted for 59.1 percent of deadweight tonnage, and in tankers, 79.1 percent.

⁵⁶ Marcopoulos, Alexander J., *Flags of Terror: An Argument for Rethinking Maritime Security Policy Regarding Flags of Convenience*, Comment in *Tulane Maritime Law Journal*, Vol. 21, No. 1, Winter 2007.

⁵⁷ Lovett, (1996), op. cit.

⁵⁸ Marcopoulos, (2007), op. cit.

⁵⁹ Determining the nationality of a shipping firm’s controlling interests can be extremely difficult. DOT publishes annual reports listing vessels flagged abroad that are owned by U.S. companies. These reports are acknowledged to be somewhat incomplete, but for the most part accurate. See: Marcopoulos, (2007), op. cit.

Table 5. Top-25 World Oceangoing Merchant Fleet by Flag of Registry and Type, 2006

Flag of Registry	Containership			RO/RO		Tanker		Other		Total	
	No.	Deadweight	TEUs	No.	Deadweight	No.	Deadweight	No.	Deadweight	No.	Deadweight
Panama	588	25,324,473	1,860,833	261	4,328,791	616	59,016,192	2,203	132,547,023	3,668	221,216,479
Liberia	537	22,974,787	1,739,966	35	527,349	585	52,269,833	463	24,557,009	1,620	100,328,978
People's Republic of China	89	3,374,454	242,756	7	95,225	133	7,143,422	583	18,248,976	812	28,862,077
Hong Kong	112	5,168,320	392,092	5	87,464	88	11,839,002	572	34,755,537	777	51,850,323
Bahamas	70	2,560,909	180,559	38	743,177	235	26,085,285	429	20,365,134	772	49,754,505
Singapore	194	5,455,688	381,804	33	642,048	304	26,948,602	229	14,364,640	760	47,410,978
Malta	49	1,316,427	86,968	10	127,968	187	13,782,286	513	22,873,335	759	38,100,016
Marshall Islands	148	4,890,448	376,358	5	77,182	341	32,510,890	244	13,836,862	738	51,315,382
Cyprus	148	4,431,319	329,684	5	84,666	98	6,520,075	424	19,751,232	675	30,787,292
Greece	47	2,755,085	206,993	1	10,270	247	32,293,697	272	19,906,971	567	54,966,023
Norwegian International Ship Registry	4	164,556	11,883	52	1,095,233	158	8,868,702	175	10,060,643	389	20,189,134
Antigua & Barbuda	233	4,919,372	372,653	1	22,447	1	35,000	70	1,758,109	305	6,734,928
United States	70	2,922,463	214,789	54	1,351,946	94	5,493,608	68	2,500,614	286	12,268,631
Germany	239	10,985,892	833,716	3	36,200	19	791,387	10	554,668	271	12,368,147
Italy	27	1,017,428	74,655	55	1,097,770	124	5,180,344	65	3,823,305	271	11,118,847
St. Vincent & the Grenadines	4	50,173	3,374	2	40,929	10	648,665	211	7,017,734	227	7,757,501
United Kingdom	112	5,105,053	396,702	25	355,370	43	1,575,449	46	2,490,375	226	9,526,247
India	4	101,156	6,773	-	-	101	8,442,637	92	4,069,147	197	12,612,940
Isle of Man	16	566,284	40,467	-	-	108	9,400,440	69	4,265,211	193	14,231,935
South Korea	37	1,150,186	80,594	4	80,641	17	1,231,250	135	8,935,857	193	11,397,934
Total (Top 20)	2,728	105,234,473	7,833,619	596	10,804,676	3,509	310,076,766	6,873	366,682,382	13,706	792,798,297
Total (127 Countries)	3,162	122,462,410	9,062,253	750	13,434,360	4,282	364,548,777	8,555	429,434,269	16,749	929,879,816

Source: Maritime Administration, citing Clarkson Research Studies, Vessel Registers, London, UK: Clarkson Shipbrokers, (www.clarksonresearch.com).

Table 6. Top-25 World Oceangoing Merchant Fleet by Country of Owner and Type, 2006

Country Owner	Containership			RO/RO		Tanker		Other		Total	
	No.	Deadweight	TEU's	No.	Deadweight	No.	Deadweight	No.	Deadweight	No.	Deadweight
Greece	174	7,499,243	532,354	20	313,877	795	76,864,735	1,517	86,421,389	2,506	171,099,244
Japan	225	10,118,173	750,390	274	4,491,621	428	44,368,349	1,332	91,329,963	2,259	150,308,106
People's Republic of China	214	8,748,928	643,649	10	140,797	220	18,424,196	1,354	60,420,361	1,798	87,734,282
Germany	1,152	41,983,552	3,187,654	5	83,979	148	8,343,223	317	14,329,198	1,622	64,739,952
Norway	10	361,404	22,870	79	1,658,176	287	19,390,773	317	14,530,834	693	35,941,187
United States	52	1,736,271	127,834	69	1,753,841	301	23,930,681	262	12,210,732	684	39,631,525
Singapore	110	3,144,720	213,844	4	70,911	235	22,967,384	238	12,236,268	587	38,419,283
United Kingdom	68	2,635,994	198,810	19	263,152	167	18,184,460	246	14,499,631	500	35,583,237
Taiwan	201	7,331,735	546,509	1	16,600	42	5,387,718	238	15,449,656	482	28,185,709
South Korea	75	2,640,948	191,693	25	431,735	63	8,188,424	265	17,699,808	428	28,960,915
Denmark	191	11,273,648	815,007	22	278,234	102	6,650,655	70	2,452,190	385	20,654,727
Italy	19	728,258	55,287	55	1,109,552	153	7,034,686	107	5,678,652	334	14,551,148
Cyprus	50	1,247,376	93,497	6	98,011	86	6,729,398	117	3,896,894	259	11,971,679
Turkey	26	374,703	30,246	11	145,196	45	2,030,277	167	6,188,701	249	8,738,877
Switzerland	173	8,079,551	584,559	3	56,476	13	352,137	53	1,710,164	242	10,198,328
India	3	86,814	5,607	-	-	103	8,795,352	133	5,857,391	239	14,739,557
Russia	21	419,001	29,891	-	-	102	7,505,722	99	2,136,228	222	10,060,951
Canada	22	1,243,469	103,704	1	15,175	50	4,585,213	104	3,468,001	177	9,311,858
Monaco	43	2,270,877	172,530	3	35,164	42	3,821,816	83	5,460,763	171	11,588,620
Thailand	29	521,422	37,878	-	-	2	128,949	126	3,180,448	157	3,830,819
Total (Top 20)	2,858	112,446,087	8,343,813	607	10,962,497	3,384	293,684,148	7,145	379,157,272	13,994	796,250,004
Total (108 Countries)	3,162	122,462,410	9,062,253	750	13,434,360	4,282	364,548,777	8,555	429,434,269	16,749	929,879,816

Source: Maritime Administration, citing Clarkson Research Studies, Vessel Registers, London, UK: Clarkson Shipbrokers, (www.clarksonresearch.com).

Table 7. Top-25 World Oceangoing Merchant Fleet by Build Country and Type, 2006

Build Country	Containership			RO/RO		Tanker		Other		Total	
	No.	Deadweight	TEUs	No.	Deadweight	No.	Deadweight	No.	Deadweight	No.	Deadweight
Japan	706	26,017,787	1,862,298	394	6,529,750	1,369	130,531,798	4,681	240,592,914	7,150	403,672,249
South Korea	885	50,211,479	3,898,732	88	1,684,687	1,384	157,697,992	839	70,164,946	3,196	279,759,104
People's Republic of China	232	5,769,512	445,893	12	155,815	342	20,966,952	738	33,381,041	1,324	60,273,320
Germany	644	17,302,247	1,204,869	34	467,246	68	1,463,875	394	7,778,771	1,140	27,012,139
Poland	229	6,016,630	432,145	36	675,134	51	2,404,084	170	5,193,138	486	14,288,986
Croatia	9	256,982	18,012	21	268,145	203	10,053,878	95	2,972,808	328	13,551,813
Taiwan	160	5,693,083	420,242	-	-	23	2,105,016	140	14,741,562	323	22,539,661
Denmark	86	6,424,979	453,083	10	208,353	57	5,145,581	106	4,670,511	259	16,449,424
Spain	14	288,735	18,450	6	130,354	104	5,908,887	134	4,769,740	258	11,097,716
United States	28	788,490	59,130	30	835,958	98	5,936,234	69	2,878,042	225	10,438,724
Italy	18	523,258	34,464	36	675,395	76	2,684,593	65	3,835,033	195	7,718,279
United Kingdom	4	132,479	7,512	4	89,552	34	2,067,702	153	4,648,627	195	6,938,360
Brazil	6	173,340	10,952	6	130,272	50	2,838,724	130	5,790,042	192	8,932,378
Norway	2	50,014	2,436	10	208,161	74	2,348,465	76	1,711,769	162	4,318,409
Ukraine	2	25,820	2,196	-	-	61	2,520,398	72	2,187,385	135	4,733,603
Netherlands	25	527,392	37,522	6	90,509	20	439,136	74	1,075,988	125	2,133,025
France	17	655,821	37,358	12	285,163	24	640,140	68	3,159,083	121	4,740,207
Romania	16	290,258	22,151	2	24,000	28	1,726,240	64	3,128,470	110	5,168,968
Bulgaria	8	97,760	5,605	-	-	6	160,806	94	2,746,913	108	3,005,479
Sweden	1	25,078	1,218	23	671,997	37	1,729,549	46	1,809,112	107	4,235,736
Total (Top 20)	3,092	121,271,144	8,974,268	730	13,130,491	4,109	359,370,050	8,208	417,235,895	16,139	911,007,580
Total (42 Countries)	3,162	122,462,410	9,062,253	750	13,434,360	4,282	364,548,777	8,555	429,434,269	16,749	929,879,816

Source: Maritime Administration, citing Clarkson Research Studies, Vessel Registers, London, UK: Clarkson Shipbrokers, (www.clarksonresearch.com).

In 2006, the United States ranked tenth in construction of oceangoing merchant vessels. There were 89 shipyards in the United States capable of building, repairing, or altering ships that are more than 122 meters (400 feet) in length in 2004. These shipyards built a variety of ships, tugs, and barges for domestic trade; vessels for the U.S. Coast Guard or Navy; and oceangoing ships used for foreign trade. Six shipyards built ships primarily for the U.S. Navy. Most shipyards that build ships can also repair them, but some smaller shipyards only perform ship repair work. Shipyards are located on the Atlantic, Gulf, and Pacific Coasts, and on the Great Lakes. In 2006, they employed 85,300 persons, about half the number employed in 1975.^{60 61}

U.S. Flag Presence in International Commercial Shipping

MSP and VISA vessels are deployed primarily on key U.S. trade routes—the transatlantic, transpacific, and United States-Mediterranean routes. U.S. flag vessels engaged in foreign trade, and particularly the liner fleet, represent an economic security asset for the United States. When originally enacting the MSP in 1996, Congress recognized that a program was needed to assure the availability of a privately-owned, U.S. flag merchant fleet to conduct foreign commerce, and to ensure fair ocean transportation rates for American businesses and consumers.⁶²

Bilateral and multilateral treaties governed by admiralty and international law direct that the national flag of commercial vessels engaged in merchant trade and in military supporting roles determines the resolution of maritime disputes. Therefore, the continued presence of MSP and VISA vessels in foreign trade provides legal standing for the U.S. government to protect the interests of American businesses and consumers. As a result, the U.S. government may directly intervene in disputes with foreign countries that regulate or otherwise restrict the operation of U.S. flag ships, carriers, ports, or connecting intermodal operators abroad to assure that U.S. interests are protected.⁶³

While bilateral treaty rights could be upheld with the presence of a single ship in each major U.S. foreign trade with an individual country, the “credible” presence of a U.S. flag fleet of vessels in larger numbers in international trade provides the U.S. government with greater influence in international bodies that create standards of conduct with respect to shipping safety and commerce. As flag-state members of international organizations, agencies of the U.S. government are able to initiate and negotiate the international rules, regulations, and guidelines that affect U.S. foreign trade, public safety, and environmental protection. These organizations include: the United Nations (UN); International Maritime Organization (IMO); World Trade Organization (WTO); Organization for Economic Cooperation and Development (OECD); as well as a number of regional groups.⁶⁴

⁶⁰ IHS Global Insight, “An Evaluation of Maritime Policy in Meeting the Commercial and Security Needs of the United States,” prepared for the U.S. DOT, Maritime Administration, Washington, DC, January 7, 2009.

⁶¹ Environmental Protection Agency, “Shipbuilding and Ship Repair at a Glance, 1996–2005,” in the 2008 Sector Performance Report. See: <http://www.epa.gov/ispd/pdf/2008/shipbuilding.pdf>.

⁶² Congressional Record, September 19, 1996, p. S10963. The following discussion of what it means to maintain a “presence” in international shipping is taken almost verbatim from the 2002 internal evaluation of the MSP by the Maritime Administration. See: U.S. DOT, Maritime Administration, (2002), *op. cit.*, pp. 12-13, 25-26.

⁶³ U.S. DOT, Maritime Administration, (2002), *op. cit.*

⁶⁴ *Ibid.*

Table 8 indicates the size and composition of the privately owned, commercial fleet that is registered under U.S. flag. In 2007, there were 189 vessels engaged in oceangoing trade, including 100 Jones Act vessels and 89 vessels exclusively engaged in foreign trade.⁶⁵ The Jones Act vessels are commercial oceangoing ships, but they are involved almost entirely in noncontiguous coastwise trade. For example, such vessels might transport goods between the contiguous 48 States and Puerto Rico, Alaska, or Hawaii. Maritime Administration officials indicate that about 30 Jones Act vessels, primarily containerships, also participate in foreign trade, and that including these vessels, there are about 120 vessels in the U.S. commercial, oceangoing fleet. Note that of these 120 vessels, 60 were participating in the MSP as of 2007.

Table 8. U.S. Flag, Privately Owned, Oceangoing Fleet, 2007

Vessel Type	Ships	Deadweight (DWT)
<i>Jones Act</i>	100	4,968,639
Tanker	51	3,690,890
RO/RO	15	304,105
General Cargo	2	45,100
Containership	28	785,859
Dry Bulk	4	142,685
<i>Foreign Trade Only</i>	89	3,624,604
Tanker	4	164,020
RO-RO	24	512,263
General Cargo	5	100,492
Containership	47	2,409,492
Dry Bulk	9	438,337
<i>U.S. Flag</i>	189	8,593,243
Tanker	55	3,854,910
RO/RO	39	816,368
General Cargo	7	145,592
Containership	75	3,195,351
Dry Bulk	13	581,022

Source: Maritime Administration, citing Clarkson Research Studies, Vessel Registers, London, UK: Clarkson Shipbrokers, (www.clarksonresearch.com).

Shipping is often described as the world's first truly global business. Trade between countries in merchandise and unfinished goods has increased more or less steadily in the past 30 years, along with demand for maritime transport services. These services form part of the global logistics chain that in part determines a good's competitiveness. Thus maritime services are one of the drivers in the trend towards globalization, but they also are strongly affected by globalization. The components of maritime transport services, including vessels, flag registration, class inspections, insurance, and the work of seafarers, are purchased globally.⁶⁶

Consumers are mostly unaware of the huge impact of maritime transport on their incomes and lifestyles. By volume, seaborne trade accounts for about 90 percent of the global freight moving

⁶⁵ The 286 oceangoing vessels in the U.S. flag fleet as of 2006 (see Table 5) included government-owned cargo vessels and certain other ships that are not engaged in foreign or coastwise trade, such as the Great Lakes fleet.

⁶⁶ Kumar et al, in Grammenos (2002), op. cit., p. 35.

in international commerce. Oceangoing trade accounts for 48 percent of the value and 78 percent of the weight of total U.S. imports and exports.⁶⁷ Yet the process has become so sophisticated and efficient that “a cargo movement from Argentina to Zimbabwe or Mumbai to Marseilles is as predictable as a commute to the suburbs.”⁶⁸

As Table 9 indicates, waterborne trade between the United States and its trading partners grew by 72 percent between 2003 and 2007. Among the top 25 waterborne trading partners of the United States, trade increased with every single country during these years. In 2007, China and Japan were by far the largest waterborne trading partners of the United States. Between 2003 and 2007, U.S. waterborne trade increased by 98 percent with China, and increased by 24 percent with Japan.

Table 9. Waterborne Trade by U.S. Trading Partners, Top 25 in 2007

Trading Partner (Country)	Total Value in \$ Millions (Exports and Imports)				
	2003	2004	2005	2006	2007
China	138,215	169,923	204,765	241,097	274,276
Japan	108,470	116,126	124,300	136,133	134,714
Germany	40,767	45,036	50,368	52,305	53,497
Mexico	27,032	32,287	40,254	49,006	49,325
South Korea	32,597	38,980	40,289	44,470	48,140
Venezuela	18,972	27,839	38,356	43,716	47,522
Saudi Arabia	21,233	24,792	32,227	37,149	43,104
United Kingdom	29,880	33,491	37,808	37,502	38,693
Nigeria	10,949	16,862	25,249	29,362	34,253
Brazil	18,710	23,244	27,469	31,740	33,667
Taiwan	24,904	28,274	29,179	31,189	32,666
Italy	17,440	19,259	21,457	23,677	26,071
Netherlands	13,166	15,266	18,843	23,732	25,746
Canada	10,958	13,601	18,247	21,057	24,823
Russia	9,515	12,915	17,016	21,487	22,742
France	13,880	15,824	18,620	20,081	22,264
Belgium	11,954	14,058	15,526	17,663	20,145
India	8,888	11,330	14,611	16,864	19,925
Algeria	5,105	8,257	11,219	16,259	19,172
Germany	10,540	11,169	11,641	14,841	18,359
Australia	10,956	13,390	14,134	15,475	16,982
Thailand	12,527	13,626	14,067	15,885	16,096
Indonesia	10,064	11,401	12,559	13,869	15,315
Chile	4,694	6,431	9,223	12,500	13,254
Colombia	7,024	8,321	10,659	11,769	13,195
Total (Top 25)	618,439	731,703	858,086	978,830	1,063,944
Total (235 Countries)	810,990	958,606	1,122,257	1,278,694	1,398,653

Source: Maritime Administration, citing Census Bureau's Foreign Trade Division

⁶⁷ IHS Global Insight, (2009), op. cit.

⁶⁸ Kumar et al, in Grammenos (2002), op. cit, p. 51.

For most countries in today's increasingly global economy, there is no longer a connection between a country's national shipping business and its national external trade. Historically, and largely as a result of protectionist government policies, a country's national trade was mainly moved by vessels registered and owned by companies of the trading partners themselves, which employed national seafarers and nationally constructed vessels. Today, however, most carriers earn their income carrying other countries' trade, and the trade of most countries is moved by foreign shipping companies.⁶⁹

Table 10. World Merchant Fleet by Flag of Registration in Millions of DWT

Region or Country	1982	1987	1992	1997	2002	2007
World	686.1	632.2	674.4	746.0	815.0	1,042.3
Developed Economies	361.0	275.3	284.1	278.0	272.3	291.3
Economies in Transition	30.2	32.7	30.3	19.2	12.9	13.1
Developing Economies	294.9	324.3	360.1	448.8	529.8	733.2
Major 10 Open and International Registries*	197.4	205.3	266.4	351.1	447.8	559.9
United States of America, including Puerto Rico	23.0	23.0	24.6	23.5	11.7	12.4

* The following 10 economies appear in the group for this table: Antigua and Barbuda, Bahamas, Bermuda, Cyprus, Isle of Man, Liberia, Malta, Marshall Islands, Panama, and Saint Vincent and Grenadines.

Source: UNCTAD Handbook of Statistics, 2008

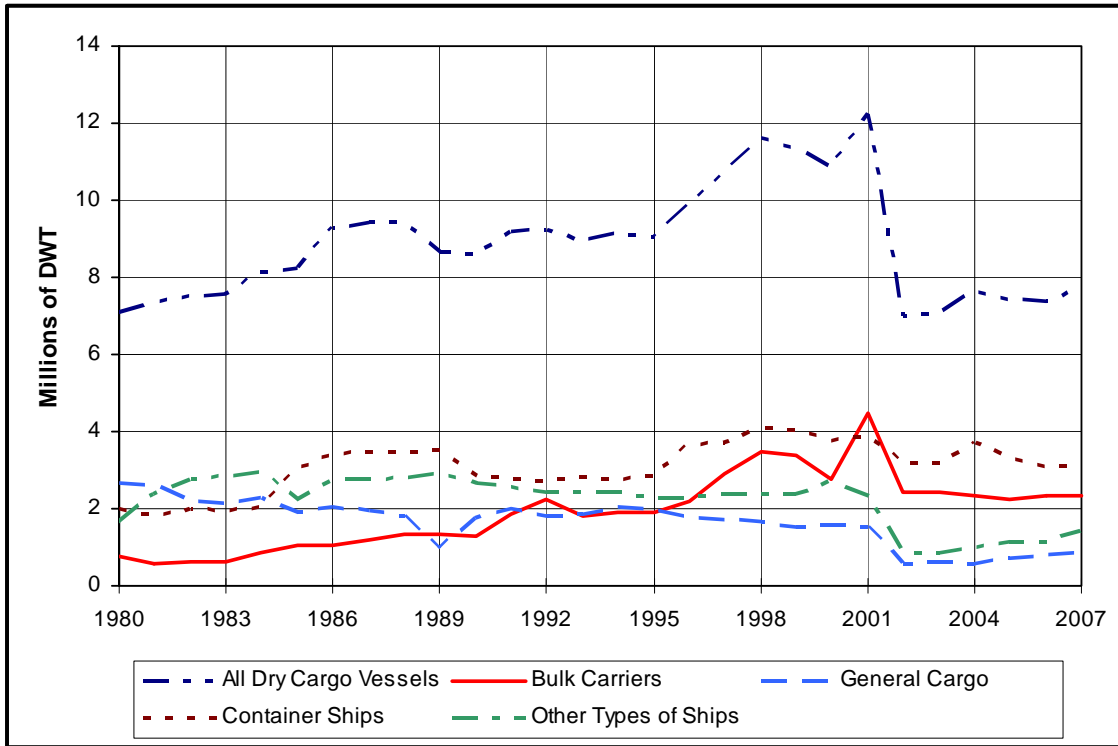
While U.S. trade has increased dramatically over the years, the size of the U.S. flag fleet has not. Table 10 shows the trend in tonnage of the U.S. flag merchant fleet since 1980. Total capacity of U.S. flag fleet vessels was 12.4 million DWT in 2007, compared with 23.0 million DWT in 1982. Results need to be examined separately for tankers and other types of vessels—there has been a precipitous decline in tonnage of tankers registered in the U.S. merchant fleet as a result of phased-in implementation of the OPA-90 legislation (Figure 5). For dry cargo vessels, total tonnage was 7.7 million DWT in 2007, compared with 7.5 million DWT in 1982 (Figure 5). It is important to note that there is a break in the time series at 2002. From 2002 onwards, ships registered under the flag of the Marshall Islands are shown separately; before 2002, they were included by UNCTAD in the U.S. flag fleet statistics.

Between 1982 and 2007, tonnage for the world's merchant fleet increased from 686.1 million DWT to 1,042.3 million DWT, an increase of 51.9 percent. Tonnage declined by about 19.3 percent in developed market economies (compared with the 46.0 percent decline that occurred in the U.S. flag fleet). However, there was an increase of 148.6 percent in tonnage for developing economies, and tonnage for the major 10 open registries nearly tripled, from 197.4 million DWT in 1982 to 559.9 million DWT in 2007.⁷⁰

⁶⁹ Ibid.

⁷⁰ UNCTAD Handbook of Statistics, 2008.

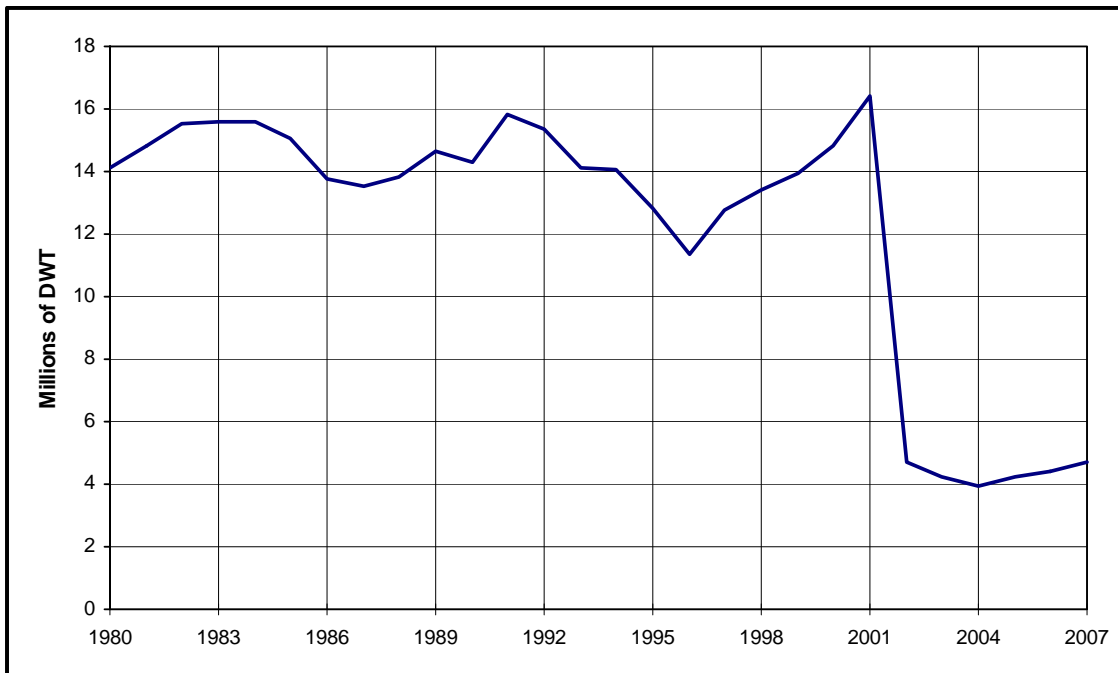
Figure 5. U.S. Flag Merchant Fleet, Dry Cargo Vessels in Millions of DWT



Note: Includes the Marshall Islands from 1980 through 2001.

Source: UNCTAD Handbook of Statistics, 2008

Figure 6. U.S. Flag Merchant Fleet Tanker Vessels in Millions of DWT



Note: Includes the Marshall Islands from 1980 through 2001.

Source: UNCTAD Handbook of Statistics, 2008

The U.S. fleet tonnage in containerships, the dominant type of ship in the MSP, generally increased over the period of 1982 to 2007. Tonnage averaged around 2.0 million DWT between 1980 and 1985, but increased to an average of 3.4 million DWT during 1985 to 1989. This was followed by six years of relative stability between 1990 and 1995, with an average of 2.8 million DWT during these years. This was followed by six expansive years, with containership tonnage averaging 3.9 million DWT between 1996 and 2001. As already noted, there is a break in our statistical series between 2001 and 2002. After 2002, containership tonnage has been relatively steady, averaging 3.3 million DWT yearly.

For all types of dry cargo vessels combined, the tonnage in the U.S. fleet averaged 8.4 million DWT from 1980 to 1991, 10.6 million DWT from 1992 to 2001, and 7.4 million DWT after 2002. There was a large decrease in the number of ships registered under the U.S. flag during this period, but the size and productivity of ships increased enormously during this time. The more modern vessels carry more cargo with lower fuel and crew costs than older vessels.⁷¹ Thus the decline in deadweight tonnage in the dry cargo fleet of U.S. flag vessels has probably been offset to some extent by increased productivity in this fleet.

With U.S. international trade growing rapidly since 1980, and U.S. flag fleet tonnage declining, the percentage share of revenue and cargo tonnage carried by flag fleet vessels in the U.S. foreign trade has continued its long-term decline. U.S. flag fleet vessels had carried more than half (57.6 percent) of the tonnage by weight of U.S. foreign trade in 1947, but underwent a steady decline thereafter, to 39.8 percent in 1951, and to 9.7 percent in 1961.⁷² By 1971, only 5.3 percent of U.S. trade was carried on U.S. flag vessels. At the present time, between 1.5 and 2.0 percent of the tonnage by weight of U.S. foreign trade is carried on U.S. flag vessels.⁷³

Of the foreign trade currently carried by U.S. flag fleet ships, a significant share is attributable to cargo preference. In FY 2007, 118 U.S. flag vessels carried over 5 million metric tons of preference cargoes that generated \$1.28 billion of ocean freight revenue (see Tables 3 and 4). These cargoes accounted for between 7 percent and more than 50 percent of U.S. carriers' annual revenues.⁷⁴ Preference cargo moves predominantly along a few trade routes, and comprises an unusually large share of the cargo carried by the lines that serve these routes.⁷⁵ Since 2003, a sizeable volume of military cargo has moved from the United States to the Middle East. The carriers that provide liner service to ports in the Middle East have participated extensively in this shipment.

For decades, U.S. carriers have relied on a combination of cargo preference and operating assistance (through the MSP or its predecessor, ODS) to remain commercially viable. While U.S. carriers can accept ordinary commercial cargo orders, they are unable to generate sufficient revenue from these cargoes to cover the high cost of their operations under the U.S. flag.⁷⁶ In 2008, the rates applicable to Jones Act transport for U.S. oceangoing vessels engaged in

⁷¹ U.S. DOT, Maritime Administration, (2002), op. cit.

⁷² Statistics for 1947–1971 are from Jantscher, (1975), op. cit., p. 28.

⁷³ Discussion with Maritime Administration personnel, January, 2009.

⁷⁴ U.S. DOT, Maritime Administration, "Annual Report to Congress 2007," Washington, DC, 2007.

⁷⁵ Jantscher, (1975), op. cit., pp. 70-73.

⁷⁶ Ibid.

noncontiguous intercoastal trade were at least three times the rates that U.S. carriers could charge for foreign trade.⁷⁷

Cost Differential Involved in Operating Vessels in the U.S. Flag Fleet

The higher costs of transporting cargo on U.S. flag vessels is due to differentials in wages, maintenance and repair, regulatory costs, insurance, and taxes.⁷⁸ Industry and academic interviews conducted for this evaluation suggest that while the overall cost differential still exists, it has been narrowing in recent years.

Wage costs are higher in the United States than in other countries providing mariners. Differences in training and level of certification have historically contributed to this differential. Companies hiring U.S. mariners pay the cost of medical, pension, and other benefits. These are generally paid through government policies and programs in other countries. Wages paid to mariners engaged in foreign trade are subject to income taxation in the United States but are often exempt from taxation in other countries. In recent years, the differential in wage cost has been narrowing, particularly for officers and engineers. Foreign currency exchange rates also impact this differential.

Maintenance and repair costs are reported to be much higher when done in U.S. shipyards. Carriers participating in interviews for this evaluation indicated that it can be difficult to get work done on-time and within budget. There are two types of delay involved—delay getting into the yards, and then delay getting the work done. U.S. carriers are able to mitigate this cost to a certain extent if they can perform some of their maintenance and repair work in foreign yards. An added contributor to the cost difference is that in other countries, repair and maintenance work is not subject to an ad valorem tax, which reduces cost to the carrier. U.S. flag vessels are subject to ad valorem taxes for repairs performed in foreign countries.

Regulatory costs: The United States maintains a higher standard of safety and environmental protection than many other nations. U.S. flag ships must comply with U.S. Coast Guard and other regulations that do not apply to the flag fleets of other countries. U.S. flag vessels are subject to an annual inspection by the Coast Guard that can result in significant costs and delays. Carriers interviewed for this evaluation indicated that the Coast Guard had made some improvements in procedures in recent years, helping to reduce unnecessary costs. Also, the carriers clearly considered the differentials in wage costs and in maintenance and repair costs to be more important than the differential in regulatory cost.

Insurance costs: Insurance costs are generally higher for U.S. flag than for most foreign flag operators. Both hull and machinery and protection and indemnity costs are higher. The nature of the U.S. tort system is also a factor. Vessel operators are required by law to provide a “seaworthy” vessel for employment that has been properly constructed, inspected, and

⁷⁷ Discussion with Maritime Administration staff, January 2009.

⁷⁸ These same factors were identified in U.S. DOT, Maritime Administration, (2002), op. cit., Appendix D. For a historical view of these cost differentials, see: Jantscher, (1975), op. cit., and Lovett (1996), op. cit.

maintained. Failure to do so that results in an injury can lead to the vessel owner or operator being found negligent.⁷⁹

The United States tort system provides substantive liability rules that favor injured workers; allows for the possibility of recovering a wide range of damages; provides an incentive to lawyers to win large verdicts engendered by contingent fees; and allows for resolution of disputes, including the award of damages, by a jury of ordinary citizens. This has produced a large caseload of tort claims, including maritime personal injury and death claims. Many of these result in an award of substantial damages.⁸⁰ Ship operators are sued very frequently by mariners on personal injury cases. Carriers interviewed for this evaluation emphasized the high cost of personal injury claims, including settlement costs prior to judicial hearings.

Taxes: The current tax structure for the U.S. maritime industry is not supportive of the participation of U.S. flag carriers in foreign trade. The fact that many foreign governments provide more or better-targeted support for their fleets has often been argued to be one of the causes of the relative decline of the U.S. foreign trade shipping industry.⁸¹

U.S. shipping companies operate in a high tax environment relative to their foreign competitors. U.S.-owned vessels registered in the open registries of other nations are often able to benefit from favorable depreciation rules or other tax incentives that reduce or eliminate tax exposure. U.S. operators are subject to corporate tax, and U.S. mariners are subject to income tax, deductions for Social Security and Medicare, and other kinds of taxes.

The tax differential for U.S. flag vessels was reduced in 2004 when the United States introduced a tonnage tax as an alternative to the corporate income tax. Prior to this date, U.S. carriers paid taxes based on the profits earned by their vessels. Under the tonnage tax, owners of large ships (10,000 or more DWT) engaged in foreign trade can elect to pay a lower tax rate. This was intended to put the U.S. ship operators on a “more level playing field” with foreign carriers. An additional benefit was that the tonnage tax offered more predictability and stability as the annual tax no longer rises and falls with business cycles. Instead of being an unknown variable, the tax is now a known, fixed cost that facilitates financial planning.⁸²

U.S. Programs and Policies Intended to Reduce the Cost Differential

For decades, the United States government has used construction and operating assistance programs, reduced cost financing, cargo preference, tax policy, and other government policies to reduce the cost differential with other countries and encourage ship owners to remain in the U.S. flag fleet.⁸³ These government policies attempt to reduce cost and to improve predictability. The financial payments made to operators under MSP are predictable, annual payments made under 10-year contracts. The volume of cargo preference shipments varies from year to year, and rates payable for cargo preference shipments also vary, but the opportunity to compete for

⁷⁹ IHS Global Insight, (2009), op. cit.

⁸⁰ Force, Robert, “U.S. Tort Law Problems,” in Lovett (1996), op. cit.

⁸¹ IHS Global Insight, (2009), op. cit.

⁸² Ibid.

⁸³ The “Buy America” program is an example of a policy that also indirectly supports maritime business. Shipments of many routine items to military personnel stationed overseas are made in the United States and then transported overseas on U.S. flag fleet ships rather than purchased in the countries where the personnel are located.

these shipments puts a floor under the carriers' overall business prospects and aids in business planning.

The international shipping business undergoes constantly fluctuating market conditions. As a result of changes in the rates of growth in national incomes and in international trade, and subject to wide variation in such factors as interest rates, capital availability and the supply of ships, there are very large short-term and long-term swings in the shipping market cycle that produce proportional swings in freight rates and prices of new and used vessels. The highly volatile nature of this business underscores the importance of stability provided by a government policy of long-term support.

Current market conditions in the shipping business offer an example of the volatile nature of international shipping. In 2008, global economic recession has led to a sharp reduction in the volume of international trade at a time when a large number of newly built containerships were entering the market. Around the world, some companies are suspending routes, and several hundred ships have been laid up (taken out of the market) or scrapped. Freight rates for international shipping have plunged within a very short period of time.⁸⁴

Historically, U.S. government outlays supporting the maritime sector of the economy have been much greater than they are now. Beginning in the 1930s, the Maritime Administration provided subsidies under the Construction Differential Subsidy (CDS) program and under the Operating Differential Subsidy (ODS) program. The CDS program was used extensively to provide financial support for ship construction during the 1950s. Outlays increased in the 1970s under a Nixon Administration policy to revive the maritime industries. CDS outlays average \$198 million per year from 1971 through 1982, the year that the Reagan Administration placed a moratorium on new commitments.

The ODS program provided much larger financial payments, both per ship and in aggregate, than are available under the current MSP. ODS outlays averaged \$277 million during the 1970s, \$314 million during the 1980s, and were still running at \$165 to \$231 million annually from 1990 to 1996. New commitments for ODS also ended in the 1982 moratorium, but, due to the length of the ODS contracts, final payments to vessel owners and operators were not concluded until FY 2003.⁸⁵

Table 11. U.S. Maritime Subsidy Outlays in Millions of Dollars, 1980–2008

Fiscal Year	CDS	Reconstruction CDS	Total: CDS	ODS	Total: ODS and CDS	MSP	Total: ODS and MSP	Total: ODS, MSP, and CDS
1980	262.7	23.5	265.1	341.4	606.4	0.0	341.4	606.4
1981	196.4	11.7	208.1	334.9	543.0	0.0	334.9	543.0
1982	140.8	43.7	184.5	400.7	585.2	0.0	400.7	585.2
1983	77.0	7.5	84.5	368.2	452.7	0.0	368.2	452.7
1984	13.7	0.0	13.7	384.3	398.0	0.0	384.3	398.0

⁸⁴ “The Mega Containers Invade: As Freight Rates Plunge, Gargantuan Carriers Hope to Muscle Aside Smaller Rivals,” *Wall Street Journal*, January 26, 2009.

⁸⁵ Note that these amounts are not adjusted for inflation. In 2008 dollars, the 1982 subsidies provided for CDS and ODS were equal to \$1.29 billion.

**Table 11. U.S. Maritime Subsidy Outlays in Millions of Dollars, 1980–2008
(continued)**

Fiscal Year	CDS	Reconstruction CDS	Total: CDS	ODS	Total: ODS and CDS	MSP	Total: ODS and MSP	Total: ODS, MSP, and CDS
1985	4.7	0.0	4.7	351.7	356.4	0.0	351.7	356.4
1986	-0.4	0.0	-0.4	287.8	287.3	0.0	287.8	287.3
1987	0.4	0.0	0.4	227.4	227.8	0.0	227.4	227.8
1988	1.2	0.0	1.2	230.2	231.4	0.0	230.2	231.4
1989	0.0	0.0	0.0	212.3	212.3	0.0	212.3	212.3
1990	0.0	0.0	0.0	231.0	231.0	0.0	231.0	231.0
1991	0.0	0.0	0.0	217.6	217.6	0.0	217.6	217.6
1992	0.0	0.0	0.0	215.7	215.7	0.0	215.7	215.7
1993	0.0	0.0	0.0	215.5	215.5	0.0	215.5	215.5
1994	0.0	0.0	0.0	213.0	213.0	0.0	213.0	213.0
1995	0.0	0.0	0.0	200.0	200.0	0.0	200.0	200.0
1996	0.0	0.0	0.0	164.7	164.7	0.0	164.7	164.7
1997	0.0	0.0	0.0	121.6	121.6	43.2	164.7	164.7
1998	0.0	0.0	0.0	36.7	36.7	84.2	120.9	120.9
1999	0.0	0.0	0.0	16.9	16.9	95.2	112.1	112.1
2000	0.0	0.0	0.0	10.0	10.0	98.5	108.5	108.5
2001	0.0	0.0	0.0	7.9	7.9	98.4	106.3	106.3
2002	0.0	0.0	0.0	2.9	2.9	96.1	99.1	99.1
2003	0.0	0.0	0.0	1.1	1.1	97.0	98.1	98.1
2004	0.0	0.0	0.0	0.2	0.2	98.7	98.9	98.9
2005	0.0	0.0	0.0	0.0	0.0	97.7	97.7	97.7
2006	0.0	0.0	0.0	0.0	0.0	154.4	154.4	154.4
2007	0.0	0.0	0.0	0.0	0.0	155.0	155.0	155.0
2008	0.0	0.0	0.0	0.0	0.0	153.4	153.4	153.4

Source: Maritime Administration

As the ODS subsidies wound down, the MSP subsidies began to phase in. During 1997 to 2005, MSP financial payments averaged \$89 million per year. Beginning in 2006, following an increase in the MSP fleet from 47 to 60 vessels, the MSP outlay increased to approximately \$155 million. Payments to MSP participants were \$2.6 million per vessel during FYs 2006 to 2008, and subject to appropriations, will increase to \$2.9 million in FY 2009. The outlay for the MSP is projected to be \$174 million in FY 2009.

While there are no longer any subsidies provided for the construction of vessels in the United States, the Maritime Administration has adopted a strategic goal to expand reliable private and public investment funding mechanisms to support the growth of the marine transportation system. In the past 5 years, U.S. ports and shipyards have made significant investments in infrastructure and building technologies to better serve this system.⁸⁶ However, comments made by MSP carrier spokespersons during this evaluation indicated widespread concern about the cost of maintenance and repair performed in U.S. shipyards. They also questioned the

⁸⁶ U.S. DOT, Maritime Administration, (August 2008), op. cit.

capacity of U.S. shipyards to perform work on time and within budget. The tension between shipyards and owners and operators of U.S. flag ships has been in existence for a long time.⁸⁷

In order to provide support to the shipbuilding and repair industry, it is a policy of the MSP that repairs and maintenance will be made in U.S. shipyards, if possible. Under MSP procedures, two estimates of repair and maintenance costs are provided, and carriers are allowed to accept a lower cost estimate from a foreign shipyard under certain circumstances. Different rules apply for emergency repairs. MSA 2003 authorized a \$19.5 million pilot program for maintenance and repair reimbursement performed in U.S. shipyards. So far, there has been no appropriation for this program. Existing MSP participants have an option on whether to apply for maintenance and repair funds, but MSP participants signing operating agreements after October 1, 2008 will be required to join the pilot program.

The Nature of Shipping Policies in Other Countries

Governments can use a wide variety of policies and programs to provide assistance to their local maritime industries. These can be classified as either fiscal or non-fiscal.⁸⁸ Non-fiscal aids used by the United States include, for example, rules on cabotage and cargo preference; fiscal aids include financial payments under the MSP and tax considerations such as the 2004 policy change to allow for a tonnage tax in place of a corporate tax.

Many types of government involvement have been used by other countries to promote maritime shipping. These have included: operating subsidies; construction subsidies; restructuring aids; financing programs; cargo preference requirements; bilateral or trade agreements; scrap and build aids; export aids; tax and depreciation benefits; customs duties, levies, and requirements; government ownership; cabotage (a policy of reserving domestic marine transportation to wholly domestic carriers); research and development aids; and maritime insurance aids.⁸⁹ For many years, the Maritime Administration published an annual report that cataloged the use of these policies by maritime nations. An internal Maritime Administration survey has shown a wide range of policies still in effect today.⁹⁰

Since 1980, there has been a precipitous decline in the shipping fleet registered in developed market economy nations.⁹¹ While the traditional maritime nations have generally lost a share of this business, a new group of nations have proactively enacted policies that favor their maritime industries. These new centers of maritime business have been described as “shipping friendly,” whereas the policies of many of the traditional maritime nations have been described as “shipping hostile.” Examples of the shipping friendly category include nations such as South Korea, Taiwan, and Singapore. Policies of shipping friendly nations are usually focused on specific aspects of the shipping business, such as ship operation and construction in South Korea,

⁸⁷ U.S. GAO, “Maritime Subsidy Requirements Hinder U.S. Flag Operators’ Competitive Position.” See: <http://archive.gao.gov/f0102/116935.pdf>, Washington DC, November 1981.

⁸⁸ Jantscher, (1975), op. cit.

⁸⁹ Kumar, Shashi N., “World Shipping Competition,” in Lovett (1996), op. cit.

⁹⁰ IHS Global Insight, (2009), op. cit.

⁹¹ UNCTAD Handbook of Statistics, 2008.

or ship registration in smaller service economies.⁹² China's rise to commercial maritime power in the past 30 years has been the result of a carefully structured maritime industrial policy.⁹³

Pros and Cons of Government Shipping Policies

There are sound economic and political reasons underlying the policies of developed market economies that allowed their maritime sectors to fall into relative decline. The reality today is that shipping-related issues are subservient to the trade needs of these nations. Developed market nations have adopted national transportation policies that facilitate the seamless, multimodal movement of commerce. The emphasis is not on the size or tonnage of the flag registry fleet, but on eradicating barriers to the through movement of cargo.⁹⁴

Maritime economists have generally attacked each of the reasons commonly advanced to defend reliance on maritime industrial policy. These reasons have included:

- The “infant industry” argument, that young industries need protection in early stages.
- Import substitution in order to develop new industries in developing countries.
- Shipping capacity needed to carry trade.
- Contribution to balance of payments.
- Defense purposes—providing shipping capacity during military conflict.
- Need to be present in international organizations in order to participate in internal policy decisions (maintaining a “presence”).⁹⁵

The nearly unanimous conclusion of most maritime economists regarding effectiveness of policies used to address these purposes is summed up by Goss and Marlow:

“There have been so many errors in so many governments’ policies towards shipping, and they have generally combined in such high expense with such limited effectiveness, that one must be tempted to fall into the trap of saying that the best policies are those which involve the smallest levels of government activity, the lowest levels of public expenditure and the least chance of serious error.”⁹⁶

There is doubtless some truth to the above quote. The Operating Differential Subsidy program, for example, that preceded the MSP, is widely regarded as having incurred needless expense while actively interfering with the efficient operation of the United States merchant marine. Yet, it is clearly important to maintain a commercial merchant marine capacity in the United States. The military impact section of this report has shown how the commercial fleet has contributed to DOD military and humanitarian objectives, at a cost far less than could otherwise be obtained. And, while oceanborne transport has become more a matter of global logistics than of registered

⁹² Kumar et al, in Grammenos (2002), op. cit., pp. 52-54, for example.

⁹³ Heine, Irwin, *China's Rise to Commercial Maritime Power*, Greenwood Press: Westport, CT, 1989. See also Kumar, in Lovett (1996), op. cit.

⁹⁴ Kumar et al, in Grammenos (2002), op. cit., pp. 51-52.

⁹⁵ Sletmo, Gunnar, “The Rise and Fall of National Shipping Policies,” in Grammenos (2002), op.cit., pp. 474-475.

⁹⁶ R.O. Goss and P.B. Marlow, “Internationalism, Protectionism and Interventionism in Shipping,” in *Current Issues in Maritime Economics*, K.M. Gwillam (Ed.), Kluwer Academic Publishers: The Netherlands, 1993; as quoted in Sletmo, Ibid.

ships and tonnage, it still remains true that a flag of registry provides a legal basis for representation in international trade and international policy discussions. In 2008, the United States flag fleet included only about 120 privately-owned, oceangoing ships engaged in foreign trade (Table 8). It is generally considered necessary to maintain multiple ships along each separate trade route in order to have a credible presence.

In a speech in 1995, former Maritime Administrator Albert Herberger correctly pointed out that the maritime industry, in receiving federal assistance, shares common ground with American farmers, who benefit from direct subsidies, price supports, and below market financing; and also with the American auto industry, defense industries, and others.⁹⁷ Recent economic events, nationally and internationally, have caused economists and policy analysts from all fields to reconsider industrial policies, not in a protectionist sense, but as a means of carrying out national strategic objectives. Increasingly, government and industry are called on to form partnerships in order to obtain common objectives. Maritime policy is no exception. In other countries, subsidies and institutional practices are in place to strengthen and maintain the maritime capacity. There is no reason to believe that other countries will withdraw these policies. Countries that have provided broad support to their maritime industries can be expected to continue their support during the current global economic recession to make sure that their maritime capacity is not harmed.

The U.S. commercial fleet of oceangoing cargo vessels engaged in foreign trade has had great difficulty competing for international shipping business, although the cost differential between operating costs of U.S. flag vessels and those of foreign vessels is reportedly narrowing. Support to the U.S. flag fleet is principally provided through cargo preference and the MSP. Cargo preference has helped to smooth out some of the volatility inherent in the shipping trade, and apparently provides a major reason for U.S. flag vessels to remain in the U.S. registry. Financial payments to owners and operators of 60 vessels in the MSP also provide stability and help to reduce the operating cost differential over costs that they would incur if they reflagged to an open registry.

There was a period in the 1990s when ODS program outlays were declining but MSP outlays had not yet begun. Between 1994 and 1997 there was a 17 percent reduction in tonnage in the U.S. foreign trade, general cargo fleet (from about 3.5 million DWT to about 2.5 million DWT). Following enactment of the MSP in 1997, there was a 30 percent increase in the deadweight tonnage of this fleet. At that time, all of the ships entering the foreign trade cargo fleet were either participating in the MSP or enrolled in VISA.⁹⁸ This is perhaps the clearest quantitative evidence of a direct relationship between the provision of MSP financial payments, along with priority for cargo preference shipments provided through participation in VISA, and the numbers and tonnage of vessels engaged in U.S. foreign trade.

Conclusions on U.S. Flag Fleet Impact

A key objective of this evaluation is to analyze the impact of the MSP on the U.S. flag presence in international commercial shipping. In addition to assuring military access to commercial

⁹⁷ Sletmo, Gunnar, "The Rise and Fall of National Shipping Policies," in Grammenos (2002), *op.cit.*, p. 478.

⁹⁸ The statistics on changes in deadweight tonnage prior to, and after, implementation of MSP are from Figure III-5, p. 23, U.S. DOT, Maritime Administration, (2002), *op. cit.*

shipping capacity during times of war or national emergency, a secondary purpose of the MSP is to maintain a United States presence in international commercial shipping. To consider the impact of MSP on this second objective, we have reviewed trends in the number, type, capacity and usage of the U.S. flag fleet in past decades. We have restricted our analysis of impact to dry cargo vessels; tankers have followed a different trend as a result of the implementation of OPA-90 environmental legislation. For dry carriers, the tonnage of the fleet in 2007 was less than the tonnage in 1997, the year that the MSP began. However, good time series information on the trend in tonnage is hard to obtain. The only generally available data are from the United Nations Conference on Trade and Development (UNCTAD), and include the Marshal Island fleet in U.S. statistics through 2002. What we can reasonably conclude, however, is that the United States did still maintain a credible presence in international commercial shipping in 2007, and that the MSP, along with cargo preference, clearly contributed to this result.

The current fleet of MSP vessels must depend on revenue from three sources—MSP annual financial payments, cargo preference shipments, and private commercial trade in the international market—in order to remain commercially viable. Due to the operating cost differential with foreign flag vessels, it is very difficult for U. S. flag vessels to compete in the international market without the MSP and cargo preference. Actual costs of operation vary widely by age and type of vessel, and by the type of cargo being transported. For any given carrier and vessel, the key is getting a correct mixture of MSP income, cargo preference income, and income from foreign (international commercial) cargo.

Without the financial assistance provided by MSP, one of the three critical components of carrier income would no longer exist. The result, according to our interviews with industry, military and academic experts, would be that there would very likely be a significant reduction, perhaps a reduction of thirty vessels (i.e., half of the MSP fleet). Some respondents believed that all 60 vessels would reflag to foreign registries if MSP did not exist. Elimination of MSP would have no effect on U.S. government-owned oceangoing cargo vessels that are part of the U.S. flag fleet; and it would have little or no impact on Jones Act oceangoing vessels engaged in noncontiguous intercoastal trade. Instead, the reduction would occur in the privately-owned vessels engaged in foreign trade. A loss of 30 or more vessels would be very substantial, given that there were only about 120 such vessels engaged in foreign trade in 2007.

The informants that we interviewed were unanimous in indicating that if the United States were to discontinue both the MSP and cargo preference, there would no longer be an economic reason for operating a U.S. flag fleet of oceangoing vessels engaged in foreign trade. In this case, the owners of most U.S. flag ships in the MSP fleet would reflag to foreign registries, where operating costs are significantly less expensive than in the United States, or would scrap or sell their vessels. Containerships engaged in liner trade would be the most likely to be reflagged; the business decision on whether to reflag would be based in part on the amount of cargo preference business that could be anticipated. Breakbulk vessels would also likely be reflagged. Companies that own or operate specialized vessels such as geared ships, heavy lift ships and shallow draft vessels might be more likely to keep their vessels under U.S. flag, perhaps under charter to DOD. Newer ships would be more likely to be reflagged. RO/RO vessels have significant commercial viability and would likely reflag, although such decisions must also reflect the shipping cycle.

The loss of a privately owned, oceangoing flag fleet engaged in foreign trade would jeopardize the ability of the United States to maintain a credible U.S. flag presence in international trade, with associated political and economic implications. Loss of this flag fleet would also raise national security issues, as the military would rely to an increasing extent on the vessels and the mariners of other countries in order to meet its sealift needs. There would also be a significant budgetary cost, as DOD would spend substantially more than at present in order to provide for sealift.

The budgetary cost of MSP seems very small in comparison with the adverse repercussions described above. The companies receiving MSP payments make large investments and face significant risks when they agree to partner with DOD in delivering sealift. These companies are responsible for assuring that they have assets that are compatible with their own business, but also are appropriate for transporting the expected mix of military cargo. They also must be ready to move crews around the world, and to train these crews. Considering the costs involved in these investments and other activities, the MSP payment does not seem very consequential.

III-C. Impact on the Number of U.S. Mariners

One of the objectives of the MSP is to help ensure that there is an adequate supply of U.S. crewmembers certified and available to serve as mariners on U.S. merchant vessels. This section of the report analyzes the impact of MSP on the supply of U.S. mariners. The discussion begins with a definition of the role of U.S. mariners in the MSP, VISA, and commercial fleets. This is followed by information on labor market conditions for mariners, both nationally and internationally. We describe the function of the maritime academies in maintaining the skill level of the mariner labor pool. Finally, we review available estimates of the number of mariners needed by DOD in times of war or national emergency, concluding with an estimate of the likely impact on mariners in the absence of the MSP.

Role of U.S. Mariners in the MSP, VISA, and Commercial Fleets

A mariner (or seafarer) is a person who navigates or assists in the operation of a ship. Mariners may work on the deep sea (on “blue water”), in areas extending out from coastal areas (“green water”) or along the coasts, on the Great Lakes, or inland (“brown water”). Oceangoing vessels may be used in foreign or domestic trade. Information presented below pertains to mariners working on oceangoing vessels engaged in foreign trade as part of the world commercial trading fleet. This excludes, for example, seafarers working in the fishing industry, on harbor tugs, in noncontiguous intercoastal trade, or providing ancillary or support services on passenger ships.

Mariners are issued licenses or credentials based on their training and experience.⁹⁹ With only a few exceptions, the crew members working on U.S. registered vessels greater than 100 tons must hold a U.S. Coast Guard (USCG) credential. There are two general classes—licensed and unlicensed. Within each class there are numerous specific certifications and levels, which are based on:

- Position (Captain, Engineer, etc.)
- Type of water (Deep Sea, Coastal, Inland, etc.)
- Type of ship
- Tonnage
- Horsepower
- Other/Additional

USCG credentials must be renewed every five years.

Besides the categories of “licensed” and “unlicensed,” mariners are often categorized as officers and non-officers (sometimes referred to as “ratings”). Officers include: deck officers, whose duties relate to navigation, deck operations and cargo work; engineer officers, whose duties principally relate to the operation and maintenance of the vessel propulsion engines and mechanical equipment or technical matters; and others. Non-officers include persons who require certification (such as firemen or oilers, who are qualified members of the engineering department), or others, such as cooks or trainees.

⁹⁹ Information presented below on licensing and credentials, mariner to billet ratio, and crewing of the maintenance performed on Ready Reserve Force vessels was obtained in interviews with Maritime Administration staff.

A U.S. flag vessel must have a U.S. crew. Only U.S. citizens and aliens lawfully admitted to the United States for permanent residence may be issued a USCG credential. All licensed officers must be U.S. citizens, and only 25 percent of the unlicensed crew on board a vessel may be aliens lawfully admitted to the United States.¹⁰⁰

A billet is a position (or job) on a ship, and more than one mariner is necessary to fill that billet over the course of a year. Thus, there is a ratio of mariners to billets that is used to determine the size of the active workforce. There are reasonable differences of opinion regarding this ratio. The Maritime Administration estimates that in peacetime this ratio is between 2.0 and 2.3 mariners for each billet on board commercial vessels. Estimates presented in this report are based on a ratio of 2.0:1 of mariners to billets. For U.S. flag ships, the actual ratio depends on agreements between unions and ship operators. One factor in determining the ratio is the amount of time that will be allowed for vacation. Vacation is typically either 17 or 30 days off for every 30 days on. The union-operator agreements differ by union and operator, and the vacation allotment differs billet to billet.

The 60 vessels included in the MSP fleet provide an estimated 1,200 billets and employment for an estimated 2,400 deep sea mariners. The mariners who work on MSP ships make up a portion of the total mariner pool that crews U.S. flag vessels. These include the non-MSP ships in the VISA fleet, vessels in the Ready Reserve Force, and the fleet of ships operated by the Military Sealift Command. As explained in Section III-A, MSC ships include government-owned “prepositioning” ships; publicly and privately owned vessels that are used in surge operations; and privately owned DOD-chartered vessels.

Besides carrying out crewing duties while at sea, U.S. mariners carry out repair and maintenance functions onboard RRF vessels that are owned by the Maritime Administration and that may be activated by the MSC. While inactive, RRF vessels are kept on a 5-day Reduced Operating Status (ROS-5). At ROS-5, each vessel has a maintenance crew of approximately 10 U.S. mariners (five who are actually on board the ships, and five who are available as their replacements, when needed). When a RRF vessel is activated, it goes from ROS-5 to fully operational status in five days. The ROS-5 crew (10 people) is smaller than the fully operational crew, and the ROS-5 crew lacks key billets that are required for a fully operational crew. In order to ramp up to fully operational status, the operator of the vessel (usually a contract carrier) must work with the unions to recruit from the pool of available U.S. citizen mariners.

The U.S. Coast Guard administers a Merchant Mariner Licensing and Documentation (MMLD) system that contains information on licenses and certification. Anyone who applies for a U.S. license/certificate is entered into the database, but this information includes many people who have never worked at sea and may never crew a vessel.¹⁰¹

¹⁰⁰ There are rare exceptions, such as when a required crewmember is lost to the ship while in a foreign port and the only available replacement is a foreign citizen.

¹⁰¹ Use of data derived from the MMLD system was not considered feasible for this evaluation. The Maritime Administration has been working with the Coast Guard to establish business processes in order to produce data that are useful for time-series analysis, and this data may become valuable in subsequent program evaluations.

Labor Market Conditions for Mariners

The last two decades of the 20th century witnessed the emergence of a global labor market for mariners. Open registry ships account for more than half of the world's commercial trading fleet, and many countries that belong to the OECD have relaxed or virtually abolished crew nationality requirements. As a result, ships whose flags and entire crews share the same nationality are mainly owned in the world's developing countries. These same countries also supply seafarers for open registry fleets and ships of OECD countries' fleets, as well as for vessels owned in the United States. The movement of mariners between flags, as ship owners and operators select different combinations of nationalities when choosing crews, allows for a global labor market to be established.¹⁰²

It is difficult to obtain accurate, timely information on the world supply of mariners. One widely quoted source of information is the BIMCO/ISF (International Shipping Federation) Manpower Survey. The survey is conducted every five years.¹⁰³ The 2005 BIMCO/ISF survey estimated the global labor force of seafarers at 1.2 million persons, including 466,470 officers and 721,021 ratings (non-officers). These included an estimated 6,433 officers and 14,127 other mariners (non-officers) in the U.S. labor supply (Table 12). In 2005, the United States ranked 12th among countries providing seafarers. China and the Philippines provided about one-fifth of the world's supply of mariners. Turkey, India and the Ukraine provided another 19 percent of the supply. Some countries provided a larger proportion of officers than of non-officers. Seafarers from China have served largely on Chinese flag vessels, while mariners from the other leading labor supply countries often serve on international crews.

Table 12. Labor Supply of Seafarers in 2005 for the Top 15 Countries

Country	Officers	Non-Officers	Total
People's Republic of China	42,704	79,504	122,208
Philippines	46,359	74,040	120,399
Turkey	22,091	60,328	82,419
India	46,497	32,352	78,849
Ukraine	28,908	36,119	65,027
Russia	21,680	34,000	55,680
Indonesia	7,750	34,000	41,750
Greece	17,000	15,000	32,000
Myanmar	6,000	23,000	29,000
Egypt	3,970	17,999	21,969
Italy	9,560	11,390	20,950
United States	6,433	14,127	20,560
Japan	12,968	6,856	19,824

¹⁰² International Labour Office (Ed.), *Global Seafarer: Living and Working Conditions in a Globalized Industry*, ILO Publications: Switzerland, 2004, p. 57.

¹⁰³ Warwick Institute for Employment Research, University of Warwick, "BIMCO/ISF Manpower 2005 Update: The Worldwide Demand for and Supply of Seafarers," Main Report, UK, 2005. See also the Executive Summary for this report at: <http://www.marisec.org/resources/Manpower2005UpdateSUMMARY.pdf>.

Table 12. Labor Supply of Seafarers in 2005 for the Top 15 Countries (continued)

Country	Officers	Non-Officers	Total
Honduras	4,239	15,341	19,580
Croatia	10,300	9,200	19,500
Total (Top 15 Countries)	286,459	463,256	749,715
Total (All Countries)	466,470	721,021	1,187,491

Source: Warwick Institute for Employment Research, University of Warwick, "BIMCO/ISF Manpower 2005 Update, Main Report," UK, 2005.

There has been a long-term decline in the seafaring labor force of the United States and of other developed market economy countries. During the late 1960s and 1970s, these losses were due to the increasing size and automation of ships. The vessel sizes and capacities were increasing, but the ships required the same or smaller number of crew members. By the 1980s, the continued decline in mariners of developed countries was almost entirely due to the phenomenon of open registries and the use of mariners from developing countries and, beginning in the 1990s, of mariners from Eastern Europe.¹⁰⁴

Based on our discussions with MSP carriers and representatives of the Seafarers International Union, we believe BIMCO/ISF results for U.S. mariners may overestimate the number of U.S. mariners who are actually able and willing to serve on oceangoing vessels for foreign trade. The BIMCO/ISF methodology focuses on seafarers who are working or actively looking to work at sea, and includes a number of adjustments designed to correctly reflect the active/inactive element.¹⁰⁵ However, in a data collection from 160 countries, it is not feasible to determine whether mariners hold the necessary documents and credentials and are capable or likely to work on a vessel. To address this issue, SIU keeps track of how often mariners go to sea. SIU expects that their members will go to sea at least once during a rolling 2-year period. SIU members who do not work within a rolling 5-year period must effectively start all over again—enrolling in the necessary training, and spending time at sea before being issued the proper documents and credentials. The need for mariners to work regularly onboard vessels is due to continual changes in maritime technology. With the nature of the “job” constantly changing, if someone has been away from the job for five or more years, he or she needs to be retrained.

Our interview with SIU indicated that there were about 12,000 members of SIU (including U.S. citizens and resident aliens) who were capable and available to work on oceangoing vessels. This estimate includes mariners who work on the Great Lakes, but are available for part of the year to go on oceangoing vessels. There are five other unions, including unions for officers and engineers, but membership of SIU is much larger than any of the other unions.

Current labor market conditions seem to be fairly balanced between supply and demand, but labor trends indicate that the supply of U.S. citizen licensed mariners could decrease faster than any decline in billets. The two most notable trends that could lead to a labor shortage are competition from onshore jobs and the elimination of deputy positions due to automation and cost savings.

¹⁰⁴ ILO, (2004), op. cit.

¹⁰⁵ Statement by Chris Horrocks, Secretary General, International Shipping Federation, Maritime Cyprus 2005.

The skill set of a licensed mariner, particularly one that studied at one of the Maritime Academies, matches that required for many onshore jobs. These jobs, particularly for engineers, are not necessarily in the maritime industry. There has been an increase in onshore companies recruiting Academy graduates, and in new graduates accepting onshore employment in the maritime industry. In 2002, a survey of mariners conducted for the Maritime Administration by the Bureau of Transportation Statistics found that 20 percent of licensed and 33 percent of unlicensed mariners are not working in the industry. The vast majority of licensed (73 percent) and a majority of unlicensed (57 percent) mariners were sailing or attempting to sail on oceangoing vessels.¹⁰⁶

Many positions on ships, particularly second- and third-assistants, have been eliminated or deemed non-vital due to technological advances and automation. This has eliminated the middle rungs of the career ladder for licensed mariners. Carriers that we interviewed indicated that in general they did not have difficulty finding skilled mariners to operate ships at the present time. The loss of these subordinate licensed positions means that fewer mariners are progressing to the highest license levels. As a result, it has become more difficult to find mariners with the requisite license and experience to occupy the highest level billets.

The onboard working environment is another contributor to potential and actual U.S. mariner labor shortages. Mariners live and work onboard for the duration of the voyage, amongst a crew of strangers. The work consists of repetitive tasks in an isolated environment. The crew, with the possible exception of the highest level officers, is employed to work on a ship only for one voyage at a time, and future employment is not necessarily guaranteed. The working conditions on board ship can contribute to a sense of isolation, made worse by strained family relations caused by absence from home for three months at a time or more. While safety issues have improved dramatically aboard ships, there is always some danger when the weather is a factor. Crew members feel a strong sense of obligation for the safety of their fellow crew-members, and there is pressure from knowing that operating such a large ship with such huge cargoes has the potential of causing enormous economic damage, loss of life, or environmental catastrophe.¹⁰⁷ Facing these challenges, there is a tendency for U.S. mariners to gravitate towards work on the coastal or inland areas. Many would prefer to work on tugs and barges rather than on the “blue water” oceangoing vessels.

The average crew size of cargo ships in the world’s merchant fleet was 60 percent smaller in 2002 than it was in 1970. The reductions were achieved by automation and large reductions in the number of trainee ratings and officers. In 1998, the average crewing level on a containership of 20,000 to 50,000 DWT was 22.1 persons. General cargo ships of this size required 22.7 persons, while the average crew of tankers in this size category was 24.8 persons.¹⁰⁸ The crew size needed to operate ships varies not only by size and type of vessel but also by country (flag registry) and by age of ship.

¹⁰⁶ U.S. DOT, BTS, “2002 Mariner Survey, Principal Findings, June 2003,” Washington DC, 2003.

¹⁰⁷ IMO, Maritime Knowledge Center, International Shipping and World Trade, “Facts and Figures, Updated November 2008” (See the Information Resources section of the IMO Web site); and also International Labor Organization, (2004), *op. cit.*, pp. 95-119.

¹⁰⁸ ILO, (2004), *op. cit.*, p. 62.

A modern vessel with a crew of 20 might consist of the Master (captain), four officers, three engineers, a bosun (petty officer), eight seamen, and three catering staff. A 10-year-old ship, where maintenance workload is beginning to increase, might require a crew of 24, while a 20-year-old ship might require a crew of 28. The extra crew would include an additional engineer, an extra electrician, four seamen, and additional workers in the engine room.¹⁰⁹

A key factor in the demand for U.S. mariners is the crewing costs for a vessel. Operating costs are ongoing expenses connected with the day-to-day running of a ship, and account for about 25 percent of total costs. The principal components of operating cost are crewing costs, stores, routine repair and maintenance, insurance, and administration (fuel is included in voyage costs). Crewing costs, which include all direct and indirect charges including wages, benefits and repatriation expenses, may account for up to half of operating costs,¹¹⁰ and perhaps even a higher proportion on U.S. flag vessels due to the high cost of wages relative to those paid in other countries.

The higher crewing costs for U.S. mariners affects whether or not the vessel operates under a U.S. flag. Because of the large pool of sufficiently skilled and mobile labor in the shipping industry, the global wage and employment market is highly competitive and sometimes volatile. Vessel operators have various crewing options, and both crewing costs and flag of registry are major, interconnected factors in determining the size and composition of each crew. Employment contracts and practices are highly variable, and it is difficult to assemble data on wages and conditions.¹¹¹

The International Transport Workers Federation (ITF) sets minimum basic monthly wages for all ranks as part of its worldwide and Far East wage scale, but these are not universally accepted. There are wide disparities in the rates of pay received by crews of different nationalities. The costs of crews has been as much as 50 percent higher for a vessel registered under a European flag than for an open-registry flag, such as Liberia, Panama, or Singapore. As the practice of flagging out became more widely accepted, the cost differentials narrowed in the 1990s, and quality became as much an issue as cost.¹¹²

As of 2004, average monthly wage costs of able seamen (those certified to perform all routine duties at sea) were: \$2,386 for seamen from the United States; \$1,300 for seamen from the United Kingdom; \$1,300 for seamen from the Russian Federation; and \$1,042 for seamen from the Philippines. Wage costs for able seamen from India averaged about \$504 per month.¹¹³

Our interview respondents indicated that in the past few years there has been a continued narrowing of the cost differential between wages paid to U.S. and foreign mariners. The differential in wage cost has been narrowing particularly for officers and engineers, and wages of crews (licensed and unlicensed) paid in Euros are reaching parity. However, there is still a large disparity in wage costs between U.S. unlicensed mariners and those serving on open registry

¹⁰⁹ Stopford, (1997), op. cit., pp. 159-172.

¹¹⁰ The definitions of the components of operating cost are from Stopford, (1997), op. cit.

¹¹¹ ILO, (2004), op. cit.

¹¹² Ibid.

¹¹³ 2004 International Shipping Federation survey, as provided by staff of the Maritime Administration.

vessels. According to the BTS mariner survey in 2001, very few U.S. mariners serve on foreign vessels. Of mariners employed in a deep-sea position at some time, only 5 percent of licensed and 8 percent of unlicensed mariners had worked on a foreign flag vessel.¹¹⁴

Finding U.S. Mariners to Serve during a National Emergency

Interviews with industry representatives indicated a widespread belief that, when needed, they are able to find the mariners necessary to support commerce and national defense. The labor pool was found to be quite expandable during the Persian Gulf War, when unions and carriers greatly bolstered their training programs, and many mariners came out of retirement, some at a very advanced age, in order to support the nation's needs for sealift.¹¹⁵

Sources that we interviewed suggested that the labor supply and demand for U.S. mariners is in approximate balance. The Maritime Administration and the Military Sealift Command are able to work with carriers and labor unions to obtain the labor supply needed to man and maintain the organic fleet. Better statistics are needed on the age and employment plans of U.S. mariners. The BTS 2002 Mariner Survey asked mariners to estimate how many more years they planned to work as a mariner before quitting or retiring. Over half (57 percent) of licensed mariners indicated that they would quit or retire within ten years. In contrast 58 percent of unlicensed mariners reported that they would stay 10 or more years.¹¹⁶

Both the BIMCO/ISF "Manpower 2005 Update" (referenced above) and a more recent report by Drewry Shipping Consultants, "Manning 2008," indicate a growing worldwide shortage of officers. BIMCO/ISF estimated that there were 476,000 officers worldwide in 2005, and assessed the officer shortage at 10,000. However, Drewry Shipping Consultants indicated that the shortage was as high as 34,000 in 2008, and could reach 83,900 by 2012.¹¹⁷ The current global economic recession has already reduced the volume of international trade and temporarily reduced demand for mariners, but when economic conditions improve a significant shortage of officers and engineers is expected to reappear.

Role of the Maritime Academies

The Maritime Administration supports maritime training and education programs designed to improve the capacity, efficiency, and safety of the U.S. merchant marine. To assure a consistent supply of capable and well-trained mariners, the Maritime Administration operates the U.S. Merchant Marine Academy, and also provides limited funding to six State maritime academies (Figure 7). Combined annually, these academies graduate between 500 and 600 merchant marine officers, licensed by the U.S. Coast Guard.¹¹⁸

¹¹⁴ U.S. DOT, (2003), op. cit.

¹¹⁵ Matthews et al, (1996), op. cit. It should be noted that in 1991, the Seafarers International Union had an estimated 80,000 members, compared with approximately 12,000 in 2008. See: Thoms, in Lovett, (1996), op. cit., pp. 162-163.

¹¹⁶ U.S. DOT, (2003), op. cit.

¹¹⁷ IMO, (2008), op. cit.

¹¹⁸ IHS Global Insight, (2009), op. cit.

Figure 7. Maritime Academies

Academy	Location	Current Enrollment
U.S. Merchant Marine Academy	Kings Point, NY	950
California Maritime Academy	Vallejo, CA	760
Great Lakes Maritime Academy	Traverse City, MI	120
Maine Maritime Academy	Castine, ME	825
Massachusetts Maritime Academy	Cape Cod, MA	1,100
State University of New York Maritime College	Throgs Neck, NY	1289
Texas Maritime Academy	Galveston, TX	306

Source: U.S. Maritime Academies

The U.S. Merchant Marine Academy in Kings Point, New York, is one of five United States service academies. Students at the Merchant Marine Academy (known as midshipmen) are trained in marine engineering, ship's administration, maritime law, and many other subjects necessary for running a large ship. Graduates of the Maritime Academy are required to fulfill a service obligation by providing to the Maritime Administration annual proof of employment in a variety of eligible occupations. Those not serving as active-duty commissioned officers are required to maintain a U.S. Navy, Merchant Marine Reserve commission (or comparable reserve commission) for a period of eight years. Graduates are required to work in the maritime industry for at least five years following graduation.

The State maritime academies are located in Maine, Massachusetts, New York, Michigan, Texas, and California. These academies all provide four-year undergraduate programs, and most offer graduate-level degrees. Their graduates find employment as licensed mariners and in shore-side occupations such as shipyard management and transportation logistics. Some State maritime academy students receive tuition assistance in exchange for a post-graduation service obligation.

The curricula of the State maritime academies include a wide range of subjects in engineering, technology, and science. Undergraduate and graduate majors include marine engineering operations and technology, marine systems engineering, power engineering, emergency management, seamanship, navigation and piloting, and marine biology. Several of the academies also specialize in business aspects of maritime issues, such as international business and logistics.

Maritime academies constantly update their curricula to keep pace with technological change and emerging issues. For example, the maritime academies are now offering more training in ways of fending off attacks from pirates. Students are taught to "fishtail" their vessels at high speeds, drive off intruders with high pressure water hoses, and illuminate their decks with floodlights. In courses at the California Maritime Academy, students learn the location of piracy hotspots, and how these have shifted over the years. A new anti-piracy course at the Maine Maritime Academy will teach crews how to use observation techniques, lights, fire hoses, and evasive action to prevent piracy incidents before they can get started.¹¹⁹

¹¹⁹ Canfield, Clarke, Associated Press Writer, Yahoo News, "US Seamen are Being Trained to Fend off Pirates," February 2, 2009.

The U.S. Maritime Academy and the six State academies have a very significant impact on the availability and skill levels of U.S. mariners. The BTS 2001 mariner survey found that 69 percent of licensed mariners had attended one of the maritime academies, and 18 percent of other mariners graduated from these academies. About 17 percent of licensed mariners and 23 percent of unlicensed mariners reported attending industry schools that provide technical training in maritime skills.¹²⁰

In addition to the role of the maritime academies, the labor unions, particularly SIU, provide training to mariners. SIU operates a school at Piney Point, Maryland, that provides extensive training facilities and training courses that include government vessels, engineering, safety, fire-fighting, and other vessel-, mission-, and company-specific courses. The facilities include training rooms that are set up like the bridge on a ship, and provide opportunities to simulate various aspects of work at sea. Trainees participate in a program of class work and time spent at sea in order to become classified as an able seaman.

Supply of Mariners Needed for DOD Sealift

Department of Defense military planners regularly conduct analyses to determine whether there are enough U.S. mariners to address the mobility requirements needs of DOD. These mariners need to be able to support the activation and operation of the government's sealift force under the Military Sealift Command. According to the MSC website, in December 2008, MSC operated an organic fleet of 23 sealift ships, including 4 tankers, 11 LMSRs, and 8 FSS vessels.¹²¹ When needed, MSC can also request activation of any of the 51 vessels in the Ready Reserve Force operated by the Maritime Administration. MSC also operates a fleet of 22 Special Mission vessels, and 32 Prepositioning vessels that are crewed by U.S. mariners who work for ship operating companies under contract to the Federal Government.¹²²

Based on earlier Maritime Administration estimates, a contingency operation that requires crewing this fleet for a period greater than six months would require approximately 3,200 qualified crew members (in addition to cadre crews on board ships in reduced operating status). The Maritime Administration has in the past projected a shortfall of almost 2,000 mariners in meeting this need, but interviews that we conducted with Maritime Administration staff and with contacts in the military/DOD community indicated that the current mariner labor pool is adequate to meet these needs. Active ships need a crew of about 20 licensed and unlicensed crew members per ship, plus a crew of approximately 10 rotation crew members using a 2:1 ratio of billets to mariners. Inactive vessels need a 10-member crew performing on-board maintenance on vessels while in reduced operating status.

Past experience and survey research indicate that U.S. mariners will be available during times of war or emergency. The 2002 BTS mariner survey indicated that 77 percent of licensed U.S. mariners and 67 percent of unlicensed mariners would volunteer for national defense service. A majority of both types indicated that they would only accept a billet at their highest credentials. Less than 15 percent of each type would accept a billet more than one level below their highest

¹²⁰ U.S. DOT, BTS, "2001 Mariner Survey, Principal Findings, August 2001," Washington DC, 2001.

¹²¹ The Maritime Administration took control of the eight FSS vessels in late 2008.

¹²² MSC uses civil service mariners to operate the remainder of their fleet, including 41 ships in the Naval Fleet Auxiliary Force and 3 Special Mission ships. See the MSC Web site, op. cit.

credentials. Both groups indicated that they would be interested in multiple, 3 to 4 month tours with 1 to 2 month breaks between tours. In a national emergency, it appears that there would be an adequate supply of U.S. mariners to serve on sealift ships, but there could be shortages in specific billets due to unwillingness to serve below their current credentials.

Military sources emphasize the need for use of U.S. mariners in contingency operations. Officers who have graduated from the maritime academies are effectively a branch of the military service, along with the Army, Navy, Air Force, Marines, and Coast Guard. As demonstrated during the Persian Gulf War, and also during Operations Enduring Freedom and Iraqi Freedom, in some instances mariners on foreign flag ships have been unwilling to operate the ship in war zones. U.S. merchant mariners were willing to complete sealift operations inside the war zones. Matthews, et al, observe that under international labor conventions, foreign seamen have the right to refuse to enter a war zone. They state that patriotism and special wartime remuneration, rather than any lack of legal protection, explain why U.S. merchant mariners did not balk at entering a war zone during the Persian Gulf War.¹²³

Conclusions on U.S. Mariner Impact

A key objective of this evaluation is to analyze the impact of the MSP on the supply of U.S. crewmembers certified and available to serve as mariners on U.S. merchant vessels. Most respondents during industry and military/DOD interviews conducted for this evaluation stated that the impact on mariners was one of the most important aspects of the MSP. The 60 ship MSP fleet provides 1,200 billets and employment for 2,400 U.S. mariners. The U.S. labor pool for mariners engaged in oceangoing merchant marine activities is approximately 20,500, including 6,400 officers and 14,100 others. While there is a shortage of officers in international crews, U.S. mariners have generally not worked on foreign flag ships in significant numbers. For non-officers, wages paid to crews working on foreign flag vessels are much less than wages paid to U.S. mariners. Most U.S. mariners would rather work inland in maritime jobs than on crews of foreign flag vessels.

As of the end of calendar year 2008, the supply of and demand for U.S. mariners was approximately in balance. All RRF vessels could be crewed as needed, and mariners were available to man all active ships. In the absence of the MSP, there would be a loss of some 2,400 U.S. mariner positions. The primary source of mariners to crew DOD sealift ships is the pool of U.S. mariners actively sailing in the U.S. flag commercial industry. The sufficiency (availability, commitment, and skills) of this mariner pool depends on the continued viability of the merchant fleet. As described in Section III-B, the MSP is a significant factor in the economic viability of the U.S. flag commercial fleet.

The loss of 2,400 U.S. mariner positions would reduce the ability of the United States to find sufficient numbers of mariners to maintain the RRF and to operate ships for the MSC. In times of war and national emergency, this reduction in the mariner pool would make it more difficult for the United States to project military force or address humanitarian needs. When needed, the

¹²³ Matthews et al, (1996), op. cit., p.137. The 2006 Maritime Labour Convention, adopted by the International Labour Conference, and sometimes called a "bill of rights" for seafarers, includes language that entitles a seafarer to repatriation under a number of circumstances, including in the event of a ship being bound for a war zone, as defined by national laws or regulations or collective agreements, to which the seafarer does not consent to go.

U.S. mariner labor pool has proven to be very expandable in the past, most notably during the Persian Gulf War, but technological advances on ships and the increasing technical knowledge required of mariners may limit this expandability, thus making it more important than in the past to maintain the supply and demand of mariners in approximate balance.

IV. Organizational Assessment

Besides assessing program impact, a final purpose of this evaluation was to assess the appropriateness of the management structure that the Maritime Administration has put in place to support the MSP. In this part of the evaluation, we attempt to answer the following core research questions:

- Has the Maritime Administration devoted sufficient and appropriate resources to the MSP in order to ensure that the program operates effectively and efficiently?
- Do the current operating procedures of the MSP conform to the parameters set out in the authorizing legislation and subsequent implementing regulations?

Logic Model

A model for the MSP, showing the logical flow of programmatic activities and placing them within the larger context of the policy and strategic objectives is provided in Figure 8.

Figure 8. Logic Model

Objectives
<ul style="list-style-type: none"> • Maintain Militarily Useful and Commercially Viable Oceangoing U.S. Flag Fleet • Maintain Significant U.S. Flag Presence in International Shipping • Maintain Trained and Active U.S. Mariner Labor Force

Inputs	Programmatic Activities		Outputs
	Maritime Administration	USTRANSCOM	
5 Full-time Equivalent Staff \$174 Million Annual Budget (subject to annual appropriations) DOD Peacetime and Contingency Cargo Shipping Payments	<ul style="list-style-type: none"> • Make Awards of MSP Operating Agreements • Provide Annual Financial Assistance to MSP Vessel Operators • Administer Payment Process to Comply with all Billing and Payment Procedures • Perform Monitoring and Ensure Conformance with Reporting Requirements • Plan and Coordinate Vessel Selection and Replacement Activities • Confirm Ongoing Eligibility and Compliance of MSP Operators • Co-chair Joint Planning Advisory Group (JPAG) 	<ul style="list-style-type: none"> • Provide Ongoing Input on Military Requirements during Selection and Replacement Activities • Provide Input on Long-Range Military Transportation Planning • Provide DOD Concurrence on All Vessel Selection and Replacement Decisions • Co-chair Joint Planning Advisory Group (JPAG) 	Continuation of 60-Ship MSP Fleet Baseline Ship Capacity for Container Ships (currently 110,000 TEUs) Baseline Ship Capacity for RO/RO Ships (currently 1.8 million sq. ft.) Access to Intermodal Infrastructure Access to Worldwide Cargo Management and Tracking 1,200 Berths on U.S. Flag Vessels (2,400 U.S. mariner positions)

Participants
<ul style="list-style-type: none"> • U.S. Maritime Administration • Vessel Owners and Operators • U.S. Maritime Labor • USTRANSCOM



Program Outcomes	
Short-Term	Intermediate-Term
<ul style="list-style-type: none"> • Help Maintain Commercial Viability of U.S. Flag Fleet • DOD Access to Militarily Useful Cargo Vessels • Stable Level of Employment for U.S. Seafarer Labor Force • Maintain Ready Capacity for 3-Stage Cargo Fleet Mobilization Activation Plan (current target of 94% of required capacity) • Maintain Capacity for Origin-to-Destination Shipping 	<ul style="list-style-type: none"> • Maintain U.S. Legal and Administrative Presence in International Shipping • Maintain Labor Force Mobilization Capacity for DOD Organic Fleet • Improve Business and Financial Stability for U.S. International Shipping Firms
Long-Term	
<ul style="list-style-type: none"> • Support to U.S. Strategic Security Objectives, Including Ability to Respond to DOD Emergency Sealift Needs • Support to U.S. Commercial and Economic Strategic Objectives • Support to U.S. Strategic Maritime Policy 	

In order to carry out the statutory objectives of MSP, the Maritime Administration uses as inputs the five staff positions allocated to the program and \$174 million in annual authorizations for appropriations. As shown earlier in Table 4, ocean freight revenues for cargo preference shipments totaled \$1.28 billion in FY 2007. The annual Federal outlay for these shipments appears within the budgets of DOD and other Federal agencies. These outlays represent a resource that helps to further the MSP program's objectives.¹²⁴

Using these resources as inputs, the Maritime Administration carries out a range of programmatic activities: making awards of MSP operating agreements; administering a financial payment process, confirming ongoing eligibility of MSP operators, and making financial payments; replacing MSP vessels when needed; and, performing monitoring and ensuring conformance with reporting requirements.

The principal operational functions associated with managing the MSP are:

- Conducting an application process for vacant MSP fleet slots that meets the program requirements set forth in 46 CFR Part 296. It should be noted that a significant part of these procedures largely deal with an application process focused on the enlargement of the MSP fleet from 47 to 60 vessels under MSA 2003. However, these same procedures have been used for reviewing subsequent applications for vacant slots. The regulations provide specific guidance on the announcement of the application process and submission deadlines, eligibility criteria for both participants¹²⁵ and vessels, and ranking criteria for selection.
- The Maritime Administration routinely confirms that all participating ship owners and operators and their vessels continue to meet the eligibility criteria for the program.
- On a monthly basis the Maritime Administration is responsible for reviewing vouchers submitted for all participating MSP vessels. If the Maritime Administration determines that the participant and vessel are in compliance with program regulations, then one-twelfth of the annual operating subsidy is then paid under the terms of the operating agreement.
- The Maritime Administration is responsible for coordinating with USTRANSCOM and ensuring that DOD sealift requirements are adequately integrated and addressed in MSP operations and planning.

Within the Maritime Administration, lead responsibility for management of the MSP is held by the Office of Sealift Support. A staff of five permanent full-time positions is allocated to carry

¹²⁴ Congressional Budget Office (CBO), "Budget Options," Washington, DC, February 2007, p. 251. CBO has estimated that by eliminating cargo preference and thereby allowing the government to ship cargo at the lowest available rates, \$295 million in outlays would have been saved in 2008, and nearly \$2.5 billion would be saved by 2012. Roughly 70 percent of these savings would come from discretionary defense spending. CBO notes that there are both commercial and strategic national security arguments for retaining cargo preference.

¹²⁵ Participants are contractors—either ship owners or operators—who enter into MSP operating agreements with the Maritime Administration.

out this work. In January 2009, the staff consisted of one senior-level manager, one person who spends time primarily (but not exclusively) on the payment process, and two others. There was an open slot in the Office in January 2009. Some of the staff's time is spent performing work on VISA or other DOD-related matters, but their work primarily involves the MSP.

Ongoing Management Responsibilities

Core responsibilities of the Office of Sealift Support include:

- Coordinating the application and selection for any “open” MSP slots and ensuring that the applications and selection process proceed according to the programmatic regulations (the most recent of these selection procedures concluded in January 2009);
- Coordinating the replacement of existing vessels with substitute vessels provided by the previously selected ship owner. There have been 15 such substitutions since the 2003 reauthorization (see Figure 3).
- Ensuring that all vessels in the MSP remain program compliant during each fiscal year. Key compliance criteria are:
 - Did the vessel operate at least 320 days in foreign trade during the year? This is intended to further the objective of maintaining a U.S. presence in international trade. Analysts reduce monthly payments proportionally for non-operating or drydock days during a given month. However, at year end, if the 320-day requirement is met the Office of Sealift Support makes a supplemental payment to compensate for any previous reductions.
 - Did the vessel carry more than 7,500 tons of civilian bulk preference cargo at any time during the year?
 - Was the vessel under time-charter to another Federal agency?
 - Except for Section 2 Citizens, reductions are also made for periods in which the contractor participated in noncontiguous domestic trade.
- On a monthly basis subsequent to vessel compliance reviews, program personnel review monthly vouchers submitted by participants. In the event of any noted noncompliance redacted subsidy payments are sent out.
- On an ongoing basis, program personnel review the ownership status of the participants to ensure that they remain in compliance with the program's regulations regarding the management independence of U.S. subsidiaries of foreign entities. Such reviews are particularly pertinent in those cases when the financial and/or organizational structure of the foreign entities have changed.
- The Office of Sealift Support coordinates closely with USTRANSCOM on all programmatic decision making. Input from USTRANSCOM, is particularly important

regarding the selection of vessels for any vacant slots, and in the substitution and replacement of vessels by participating owners.

- The Office of Sealift Support coordinates with other components of the Maritime Administration, including the Office of Naval Architecture, the Office of Cargo Preference, the Office of Financial Management, and the Office of the General Counsel.
- Program staff members respond to information requests. These may come from the Administrator or through the Administrator's Office, the Secretary of Transportation, DOD, other Federal agencies, the Office of Management and Budget, the U.S. Congress, and key programmatic stakeholders.

The Application Process

Since the MSP was reauthorized in 2003, the application process has proceeded in two distinct phases. The first phase involved applications for participation in an enlarged MSP fleet. MSA 2003 provides for 60 slots, a 28 percent increase over the 47 slots authorized in MSA 1996. The reauthorization and subsequent regulations established a precise prioritization for selecting vessels for the enlarged the fleet. The prioritization included the following elements:

- *Priority I.* Five tankers constructed in the United States after October 1, 2004 and on a temporary basis, five existing tankers. This priority for selection was subject to the caveat that selection of tankers was dependent on reasonable assumptions regarding future construction of new tankers to replace existing tankers.
- *Priority II.* Forty-seven vessels previously enrolled in the MSP.
- *Priority III.* Vessels operated by Section 2 Citizens. Within this priority category there was a descending order of prioritization based on vessel characteristics, namely: Size, capacity, deck height, and other requirements to be specified by USTRANSCOM.
- *Priority IV.* Other eligible vessels.

In addition to using this prioritization system to make the selection of ships, the Maritime Administration was also required to certify that the managers and charterers administering the entities to be awarded MSP slots met the definition of U.S. citizens as stipulated in Section 2 of the Shipping Act of 1916, as amended.

This initial selection began with applications received at the Maritime Administration on or before October 15, 2004. Notifications of selection or denial were sent out on January 12, 2005. The earliest date for MSP payment eligibility under the reauthorized MSP program was October 1, 2005.

The main features of the reauthorization selection process were as follows:

- Under *Priority I*, three new tankers were added to the MSP fleet: The Maersk Rapier, the Maersk Regent, and the Maersk Richmond. Although six firms chose to provide applications for this priority, the three above named ships were the only ships in this category ready for deployment in October 2005. All other applications (a total of 32) were for newly built ships that were to be constructed with the help of construction subsidies included MSA 2003.
- As stipulated in MSA 2003, the 47 vessels operating under the original MSP as of December 31, 2004 were included in the reauthorized MSP for the full term of the new program (subject to age replacement requirements).
- In addition to the three tankers added to the MSP fleet, the Maritime Administration selected 10 vessels for inclusion in the expanded fleet. This expansion significantly diversified the capabilities of the fleet with only one of the new selections being a containership. Five of the new selections were versions of RO/ROs, one a pure car/truck carrier, one a geared containership and two were heavy lift vessels.
- Ship owners and operators replaced nine vessels of the 47 vessels that had participated in the MSP fleet prior to 2003. This was to meet the requirement that ships 15 years of age on October 1, 2005 should not be allowed to enter the reauthorized program. In addition, the Maritime Administration (with the concurrence of DOD) granted waivers from the 15-year restriction for 21 of the *Priority II* vessels under MSA 2003.

As indicated above, the main result of the reauthorization selection process was to broaden and diversify the military support capabilities of the MSP fleet. In the initial MSP fleet over 75 percent of the vessels were containerships. In the enlarged fleet, only slightly more than 60 percent of the vessels were containerships. Interviews conducted as part of this evaluation clearly indicated that this broadening of fleet capabilities was due to the direct involvement of USTRANSCOM in the selection process.

The Maritime Administration has application and selection procedures in place in order to replace vessels enrolled in the MSP when a need arises. In making an award, the main criteria that the Maritime Administration would use are that:

- Vessels must meet the general requirements for vessel eligibility.
- The ownership of the applying commercial entities must meet the Section 2 citizenship requirements.

The overarching selection prioritization used in this process followed the guidance provided in the MSA 2003. The *Priority I* and *Priority II* categories were excluded since Congress had not appropriated any funds for the U.S.-based construction of tankers and all 47 vessels eligible for *Priority II* had been selected at reauthorization. The Office of Sealift Support received eight applications for this opening. Six of the vessels were placed in Priority III status, and the other two in Priority IV status (due to citizenship considerations). Only the six Priority III vessels

were actively considered in the decision process. In the preliminary review process all of the Priority III vessels were found by USTRANSCOM to be militarily useful.

In the award document submitted to Ocean Shipbuilding, the Office of Sealift Support listed several specific features of the vessel that enhanced its military utility including its ice strengthened capability and its size similarity to the current tanker fleet. In addition the Office of Sealift Support indicated that the addition of this foreign-registered vessel to the U.S. flag fleet would increase the U.S. mariner base.

The Replacement Function

Since the enlarged MSP fleet was activated on October 1, 2005, the Office of Sealift Support has had an ongoing function of coordinating the retirement of MSP vessels that have reached the threshold for retirement based on age. Since 2005, this replacement activity has focused on those MSP ships that were 15 years of age or more on October 1, 2005, and did not receive an age related waiver in the 2005 application decision. Key approval criteria in this process include:

- Does the proposed replacement vessel meet stipulated requirements for MSP vessels of its type?
- Does the ownership entity continue to meet the eligibility requirements for program participation (primarily U.S.-citizen ownership, financial solvency, and a record of meeting the operational requirements of the program)?
- Does the proposed replacement vessel address a current U.S. military requirement of the Department of Defense?

Through the end of 2008, the Office of Sealift Support had completed 15 such vessel replacement procedures. As with the 2005 fleet enlargement, the vessel replacement function has tended to diversify and enhance the capabilities of the MSP fleet. The cohort of 15 retiring vessels was made up of nine container ships, four geared container ships, one LASH, and one RO/RO. The cohort of replacement vessels consists of eight geared container ships, three container ships, and four RO/ROs. Note that the four retired geared container ships were replaced by geared container ships.

The Office of Sealift Support will have to continue to manage vessel replacement through the end of the period authorized for program operations. From 2009 through 2013, the Office will need to retire 14 MSP vessels that will reach the 25-year age limit. These replacement procedures will offer ongoing opportunities to diversify the capacity of the fleet, as this cohort consists of 12 container vessels and 2 RO/ROs.

The Monitoring Function

A major fiduciary responsibility of the Maritime Administration is to monitor the performance of MSP contractors in order to ensure that their ships are meeting the programmatic requirements. Payments from 2008 through the end of the current MSP in 2015 will total more than \$1.2 billion. This programmatic function was the subject of a 2008 report issued on October 1, 2008 by the Office of the Inspector General (OIG). The report analyzed over 2,000 monthly payments totaling \$433 million which the Maritime Administration made from FY 2006 through July

2008. The OIG study team determined that Office of Sealift Support staff reviewed the operational status of all MSP fleet vessels on a monthly basis. Office of Sealift Support personnel are required to verify that: Requests for payment comply with regulatory requirements on number of days in service during the year; transport of civilian preference cargo falls within required limits; and time spent under charter is properly documented. If analysts determine that any of the programmatic requirements had not been met, payments to ship owners and operators should be reduced in a manner that is proportional to the number of days the vessel was not in compliance.

The OIG report found that of \$433 million in operator payments from FY 2006 through July 2008, the Maritime Administration reduced 27 payments totaling \$3,455,095 (0.7 percent of total payments). The OIG study team determined that the review process in place within the Office of Sealift Support gave confidence that the Office was effectively vetting the operational compliance of MSP participants.

The only concerns raised by the OIG team about MSP operations dealt with definitions employed in its vetting process. Currently Office of Sealift Support receives certification regarding vessels carrying agricultural bulk preference cargo only. The OIG team recommended that this certification include non-agricultural cargo as well. In addition, the Office of Sealift Support does not include liquid cargo as a part of the 7,500 ton limitation on civilian cargo. The OIG team recommended that it do so. However, neither of these procedures have affected past performance since there have been no findings to date related to the 7,500 ton bulk preference cargo limitation.

The OIG validated the current vetting process within the Office of Sealift Support. Interviews with MSP participants indicated that this vetting process does not reduce the efficiency of the voucher review and approval process. MSP payments are normally processed expeditiously.

Conclusions on Organizational Assessment

The project team's review of current MSP operations by the Office of Sealift Support led to the following key findings:

- The current resources devoted to the program by the Maritime Administration appear adequate to manage the program and coordinate its various activities. Input provided by key programmatic stakeholders indicated that the program is efficient in the conduct of its programmatic management functions and effective in maintaining the various organizational linkages required to implement the program as designed.
- In both the selection of vessels for 13 new slots in 2005 and one vacant slot in 2009, and also in the selection of replacement vessels, the Office of Sealift Support has applied the prioritization and statutory criteria of MSA 2003 and implementing regulations at 46 CFR Part 296. In the application process the Office of Sealift Support has used this prioritization to categorize the pool of applicants. In both the selection and replacement processes the Office of Sealift Support has used the review and selection criteria stipulated in the MSA 2003, the most important of these being:

- Confirming that all proffered vessels meet the size and age qualifications stipulated in the legislation and regulations.
- Confirming that the applicants meet the U.S. citizenship requirements, either as Section Citizens or as Documentation Citizens, and management independence criteria stipulated in the legislation and regulations for Documentation Citizens are met.
- Through liaison with USTRANSCOM, assuring that all selected vessels are militarily useful and address current operational requirements of the Department of Defense.
- The Office of Sealift Support appears to be conducting adequate “forward-looking” management in establishing a set schedule for replacement of existing MSP vessels as these vessels reach the programmatically established age limitations.

The review of the processes described above indicates that the Office of Sealift Support has established adequate linkages with representatives of the Department of Defense, primarily USTRANSCOM, to assure that DOD requirements are integrated into all key programmatic decision processes. These linkages appear to work effectively both in formal venues and informally as circumstances dictate. The effectiveness of these linkages appears to significantly enhance the ability of the program to meet its mandated objectives.

With regard to the monitoring function, it appears that the Office of Sealift Support is effectively and efficiently vetting operational compliance of MSP participants.

V. Evaluation Conclusions and Recommendations

Program Impact Assessment

This section summarizes key findings for each of the three impact indicators included in this evaluation, as well as key findings from the organizational assessment. For each finding, we also delineate key factors that led to the conclusions.

Impact on DOD Sealift

Clearly, the current MSP does make available 60 ships and intermodal infrastructure that support the sealift mission of the Department of Defense (DOD). DOD has relied extensively on commercial shipping during Operations Enduring Freedom and Iraqi Freedom. Commercial logistics capacity in the Middle East has been crucial for execution of these operations; future military or humanitarian operations could be anywhere in the world, such as in Africa or Asia. Carriers participating in the MSP program provide logistics capacity needed for these operations.

Our analysis considered the likely outcome if the annual financial payments made to owners and operators of the MSP fleet of vessels were reduced or eliminated. We found that such actions would have significant adverse impacts on the nation's ability to respond to military or humanitarian crises.

- Our interviews with industry, military and academic experts indicate that in the absence of the MSP, there would very likely be a significant reduction in the number of U.S. flag ships—perhaps a reduction of half of the vessels currently in the MSP fleet (30 vessels). These vessels would no longer be available for military use when needed.
- If there were to be a significant reduction in the MSP fleet, the DOD would need to build or charter additional ships at significantly greater expense than at present. DOD would also need to lease access to intermodal infrastructure.
- DOT's annual financial payments to MSP carriers cover only a small portion of the operating costs of the 60 ships. The authorization for MSP outlays in FY 2008 was \$156 million. Without the MSP, the costs to DOD would be orders of magnitude greater than the current MSP costs. By one estimate, replicating only the RO/RO and containership¹²⁶ capacity of the current MSP, without taking into account the intermodal infrastructure, would require a capital expenditure of \$13 billion.¹²⁷

Owners and operators of MSP vessels are required to enroll in the VISA program, an emergency preparedness program that provides sealift support to DOD for contingency and humanitarian operations. The MSP fleet provides approximately 75 percent of the capacity of VISA. The impacts of MSP and VISA on military capacity for ocean transport extend well beyond just the vessels.

¹²⁶ That is, the commercial liner trade vessels used to transport containerized goods and wheeled or tracked vehicles. These terms are further defined in the text of the report.

¹²⁷ Reeve and Associates, 2006, op. cit.

- Access to intermodal infrastructure allows the DOD to get cargo moved, in a seamless fashion, between any two points on the globe. This means, for example, that a cargo transported to a port in the Middle East will be carried by truck or rail to the destination where it is needed by American troops engaged in a contingency operation. Carriers participating in MSP maintain extensive, worldwide supply chains that support point-to-point transport of military shipments.
- MSP and VISA also offer DOD a more flexible way of transporting goods than was possible prior to enactment of MSP in 1996. MSP and VISA program participants work in a partnership with DOD to meet the nation's sealift needs. Through the Joint Planning and Advisory Group (JPAG) meetings and the more frequent Executive Working Group (EWG) meetings, DOD works with carriers and maritime labor unions to better manage existing resources and to determine the best ways to improve the mix and responsiveness of sealift resources over time.

Based on available evidence and on input from informants in the military/DOD community, we conclude that all of the ships in the MSP fleet at the time of this evaluation are militarily useful.

- After the reauthorization of the MSP in 2003, and during subsequent expansion of the MSP fleet from 47 to 60 ships, there has been an increased emphasis on maintaining a fleet of vessels in MSP that best addresses mobility requirements of DOD. Representatives of the U. S. Transportation Command at DOD have directly participated in the process of selecting ships and approving Maritime Administration recommendations on replacement vessels.
- However, this is not to conclude that the current mix of ship types in the MSP fleet is "optimal" to meet current military requirements. The recurring, predictable annual payment provided in MSP, and the operating agreement contract term of ten years, subject to annual appropriation, helps to partially offset the highly volatile nature of the international shipping business, and promotes program participation among ship owners and operators. This can create a lag between capacities offered in the MSP fleet and emerging needs identified in DOD mobility requirements studies. The Maritime Administration and USTRANSCOM use the JPAG and EWG meetings to maximize the effectiveness of capacities offered in the existing MSP/VISA fleet.
- A new mobility requirements study is underway, and will project DOD mobility requirements through the year 2016. Decisions on the upcoming scheduled replacements of MSP vessels will be influenced by the new mobility study.

Finally, MSP has benefitted military capacity by contributing to a supply of U.S. mariners who perform maintenance on vessels in the Ready Reserve Force. These same mariners become part of the U.S. mariner crew that operates RRF vessels when activated by DOD's Military Sealift Command (MSC). MSC also relies on this pool of U.S. mariners to operate 78 other non-combatant, civilian crewed ships that include the Special Mission Ships, Afloat Prepositioning Ships, and Sealift ships comprised of government-owned and long-term chartered dry cargo

vessels and tankers. The quantitative impact of MSP on the supply of U.S. mariners is discussed in further detail below.

Impact on U.S. Flag Fleet

There has been a long-term decline in the number of vessels and tonnage in the U.S. flag fleet. The decline can be traced to the globalization of the maritime industry and to higher costs of transporting cargo on U.S. flag vessels due to differentials in wages, maintenance and repair, regulatory costs, insurance, and taxes. Industry and academic interviews conducted for this evaluation suggest that while an overall cost differential still exists, it has been narrowing in recent years.

Carriers that own and operate the current fleet of MSP vessels must depend on revenue from three sources—MSP annual financial payments, cargo preference shipments, and private commercial trade in the international market—in order to remain commercially viable. Due to the operating cost differential with foreign flag vessels, U.S. flag vessels cannot compete effectively in the international market without the MSP and cargo preference. Actual costs of operation vary widely by age and type of vessel, and by the type of cargo being transported. For any given carrier and vessel, the key is getting a correct mixture of MSP income, cargo preference income, and income from foreign (international commercial) cargo.

The existence of MSP since first implemented in 1997 has become a critical part of the Federal Government approach to retaining the existing fleet and maintaining a commercial presence in foreign trade.

- Without the financial assistance provided by MSP, an important source of carrier income would no longer exist. The result, according to our interviews with industry, military and academic experts, would be that there would very likely be a significant reduction in the number of vessels in the U.S. flag fleet, perhaps a reduction of 30 vessels (i.e., half of the MSP fleet).
- Elimination of MSP would cause a reduction in the number of privately owned vessels engaged in foreign trade. A loss of thirty or more oceangoing vessels would be very substantial, given that there were only 120 such vessels engaged in foreign trade in 2007.
- If the United States were to discontinue both the MSP and cargo preference, the experts that we interviewed were unanimous in indicating that there would no longer be an economic reason for operating a U.S. flag fleet of oceangoing vessels engaged in foreign trade. In this case, the owners of most of these ships would scrap or sell their vessels, or would reflag to foreign registries, where operating costs are significantly less expensive than in the United States.

The budgetary cost of MSP seems very small in comparison with the adverse repercussions described above. The companies receiving MSP payments make large investments and face significant risks when they agree to partner with DOD in providing sealift. These companies are responsible for assuring that they have assets that are compatible with their own business, but also are appropriate for transporting the expected mix of military cargo. They also must be ready

to move crews around the world, and train these crews. Considering the costs involved in these investments and other activities, the MSP payment does not seem very consequential.

In the near-term future, and due to external factors, the combination of MSP and cargo preference may not be enough to continue to retain the existing U.S. flag commercial fleet and maintain a presence in foreign trade.

- The ability of MSP and cargo preference to maintain the current fleet of oceangoing ships engaged in foreign trade should not be taken for granted. As a result of military plans for base closures overseas, there could be fewer U.S. military families stationed overseas, and therefore, less cargo being transported to support these families.
- Once the wars in Iraq and Afghanistan are brought to a close, and depending on the future direction of food aid shipments (which have been declining and in any case do not have the high value per ton of military cargo), the ability to keep a fleet of 60 ships in the MSP fleet is uncertain. The current global recession and decline in international trade only worsen this situation. Companies now participating in MSP/VISA will need to make an investment strategy decision at some point whether it is economically feasible to remain in the U.S. flag fleet.
- In other countries, subsidies and institutional practices are in place to strengthen and maintain maritime capacity. There is no reason to believe that other countries will withdraw these policies. In fact, countries that have provided broad support to their maritime industries can be expected to step up during the global economic recession to make sure that their maritime capacity is not harmed.

Impact on U.S. Mariners

By law, U.S. flag fleet vessels are required to be operated by crews composed primarily of U.S. citizen mariners. In order to maintain a merchant marine engaged in the nation's foreign trade, and to support military ocean transport during times of war or humanitarian crisis, there must be a labor supply of U.S. mariners ready to operate the ships. Most respondents during industry and military/DOD interviews conducted for this evaluation stated that the impact on mariners was one of the most important benefits of the MSP.

- The MSP effectively places a "floor" under the number of U.S. crewmembers who are certified and available to serve as mariners on U.S. merchant vessels. The MSP's 60-ship fleet provides 1,200 billets and employment for 2,400 U.S. mariners. The labor pool of U.S. mariners engaged in oceangoing, merchant marine activities is approximately 20,500, including 6,400 officers and 14,100 others. Thus, the loss of employment for 2,400 U.S. mariners would represent a significant reduction relative to the size of the U.S. mariner labor pool.
- For deck and engineering officers, the wage rate difference between U.S. and foreign flag vessels has shrunk and continues to shrink towards parity. While there is a shortage of officers in international crews, U.S. officers have generally not worked on foreign flag ships in significant numbers. For non-officers, wages paid to crews working on foreign

flag crews are much less than wages paid to U.S. mariners. Most U.S. mariners would rather work inland in maritime jobs than to work on foreign flag vessels.

The existence of an adequate labor supply of U.S. mariners has had a significant impact on military use of ocean transport for military contingencies and humanitarian operations.

- In December 2008, MSC operated an organic fleet of 23 sealift ships, including 4 tankers, 11 LMSRs, and 8 FSS vessels.¹²⁸ When needed, MSC can also request activation of any of the 51 vessels in the Ready Reserve Force operated by the Maritime Administration. MSC also operates a fleet of 22 Special Mission vessels, and 32 prepositioning vessels that are crewed by U.S. mariners, who work for ship operating companies under contract to the Federal Government.
- Based on earlier Maritime Administration estimates, a contingency operation that requires crewing this organic fleet for a period greater than 6 months would require approximately 3,200 qualified crew members (in addition to cadre crews on board ships in reduced operating status).
- The Maritime Administration has in the past projected a shortfall of almost 2,000 mariners in providing crews for the organic fleet, but interviews that we conducted with Maritime Administration staff and with contacts in the military/DOD community indicated that the current mariner labor pool is adequate to meet these needs. Active ships need a crew of about 20 licensed and unlicensed crew members per ship, plus a crew of approximately 10 rotation crew members using a 2:1 ratio of billets to mariners. Inactive vessels need a 10-member crew performing on-board maintenance on vessels while in reduced operating status.
- Without an adequate supply of trained U.S. mariners to operate ships in the organic fleet, DOD presumably would have to maintain an active-duty unit or recruit U.S. civil service mariners (such as the crews that operate the MSC's Naval Fleet Auxiliary Force). These alternatives would be more costly and less flexible than relying on civilian mariners working for private U.S. companies.

Military sources emphasize the need for use of U.S. mariners in contingency operations. Officers who have graduated from the maritime academies are effectively a branch of the military service, along with the Army, Navy, Air Force, Marines, and Coast Guard. In the absence of the MSP, there would be a loss of some 2,400 U.S. mariner positions. This would lead to a substantial reduction in the domestic mariner labor pool, and would throw into doubt the ability of the United States to find sufficient numbers of mariners to maintain the Ready Reserve Force and to operate sealift ships for the Military Sealift Command.

- Due to a continuing trend toward increased automation and greater technological sophistication on board ships, and taking into account the requirements that mariners

¹²⁸ Information is from the MSC Web site. The Maritime Administration took control of the eight FSS vessels in late 2008.

must meet to obtain credentials, it is very important that mariners work at sea at regular intervals.

- During past military actions, such as during the Persian Gulf War, it was possible to expand the pool of U.S. mariners available to operate sealift ships. At the present time, there is a reduced pool of U.S. mariners and a more challenging set of technical requirements associated with operating ships.

One of the main benefits of the MSP is that it helps maintain a cohort of U.S. mariners actively engaged in oceangoing shipping, knowledgeable about current technology used on a variety of types of cargo vessels, and relatively easily called upon for U.S.-defined military contingency and humanitarian missions.

Recommendations

Following are key recommendations for the MSP and other programs and policies that have a bearing on MSP and are discussed in this report. For each recommendation, we also provide a brief summary of the underlying concern. More complete discussion can be found in the body of this report. The recommendations are ordered from short-term to longer term.

Staffing—While the current staff are performing effectively in carrying out MSP program requirements, it would be reasonable to allocate one or two additional full-time equivalent (FTE) staff positions to the management of the program. This would both address current needs and support an agencywide emphasis on attrition planning. Hiring staff would provide time for new personnel to move up through the ranks and ultimately replace those who are eligible for retirement. In discussions with Maritime Administration personnel, it appeared that the greatest need at present is for a person dedicated to data support. This person would provide planning and statistical support, for example providing an enhanced capacity to use databases and spreadsheets in order to provide briefing materials on the composition of the various fleets available for sealift. This person would also be used to respond to data queries both internally and from DOD. A second person could help support the program's monitoring functions while also learning about the financial payment process and other aspects of the program. With these two additional staff positions, the Office of Sealift Support would have improved management control and an enhanced ability to identify and correct problems before they arise.

Data Availability—While conducting this evaluation the project team encountered a number of data limitations that could be addressed in the future through better interagency cooperation. In each case, the Maritime Administration is not responsible for producing the information, but has a role in using the data or disseminating the data to outside groups. Each of the data gaps restricts the Maritime Administration's ability to measure program outputs or outcomes identified in the logic model for the Maritime Security Program. A program can be considered fully effective only when the program's impacts can be clearly measured. Data gaps also prevent meaningful policy discussions on options for modifying the MSP's program design. With reauthorization due to occur by FY 2014, and with research policy analysis demands during the two or three years prior to reauthorization, there is a current need to begin or expedite collaboration with other Federal agencies to reduce or eliminate the identified data gaps.

- USTRANSCOM is responsible for maintaining information on the use of commercial shipping for waterborne transport of military cargo. It appears that USTRANSCOM makes this information available only at the U.S. carrier level, not for individual vessels. The carriers operate both MSP and non-MSP vessels, and own ships that sail under both U.S. and foreign flags. USTRANSCOM has in the past had the capacity to report transport by individual vessel, and the project team believes that it would be appropriate for the Maritime Administration to work with USTRANSCOM to restore this capacity, for use in reporting to Congress and for future evaluations. Establishing a recurring monthly or quarterly report on waterborne transport by individual vessel from USTRANSCOM to the Maritime Administration would address this concern and provide information on one of the most important outputs of the MSP.
- The U.S. Coast Guard administers a Merchant Mariner Licensing and Documentation (MMLD) system that contains information on licenses and certification. Use of data derived from the MMLD system was not considered feasible for this evaluation. The Maritime Administration has been working with the Coast Guard to establish business processes in order to produce data that are useful for time-series analysis. Continuing this effort will provide information needed for policy analysis of options for modifying the existing MSP program design while also providing critical information on one of the most important outcomes of the MSP.
- The Bureau of Transportation Statistics, under contract to the Maritime Administration, has conducted surveys and published reports on the supply of mariners, focusing on readiness and training issues. The last survey report was published in 2003. Given the concern for the continued availability of an adequate supply of U.S. mariners, the project team believes it would be appropriate to conduct these surveys on a regular basis, such as every three to five years. These surveys can be used to address a wide range of policy issues, but are particularly useful for measuring changes in the ability of the MSP and VISA programs to access a labor supply of U.S. mariners during times of war or national emergency.
- Statistics on the tonnage and value of U.S. foreign waterborne trade were maintained for many years by the U.S. Census Bureau, but the responsibility was transferred to the U.S. Army Corps of Engineers (Corps) in 1998. Beginning in calendar year 2006, the Corps no longer maintained monthly and annual Waterborne Databanks or produced Preliminary Waterborne Cargo Summary reports. Except for information maintained on the Data and Statistics Web page of the Maritime Administration, it was impossible for this evaluation to get time series information on the value of waterborne trade. In its 2007 Transportation Statistics Annual Report, the Bureau of Transportation Statistics (BTS) identified as a “data gap” that monthly foreign trade and transportation data are no longer available from the Corps. Information on waterborne trade is needed for understanding commercial as well as transportation policy issues, and should continue to receive attention as a long-term data need. The data are also helpful in measuring trends in the U.S. presence in international commercial trade, one of the statutory objectives of the MSP.

Competitive Pricing—Under the MSP, fixed annual payments are made available to 60 ships. From a military standpoint, it would be better to base the payment on degree of risk and degree of militarily usefulness, for example by taking a given amount of money and conducting an auction (this is similar to what DOD has actually done in purchasing ships for the RRF). Using an auction or some other variable pricing arrangement, DOD could take into account both the military utility of the ship and its cost. DOD would be able to pay a premium for ships with additional military capability.

- The idea that payment to MSP carriers should be based competitively rather than on a fixed-payment basis is not new. Competitive payments would interfere with one of the most important features of MSP from the point of view of the carriers. The recurring, predictable annual payment provided in MSP, and the operating agreement contract term of ten years, subject to annual appropriation, helps to partially offset the highly volatile nature of the international shipping business and is a significant inducement for participation in the program.
- The project team does not believe that competitive pricing should be considered an option under the current MSP, which provides long-term contracts with ship owners and operators through 2015. However, analysis of options for competitive pricing should be done prior to work on the next reauthorization of MSP, which could begin in the next few years.

Maritime Policy—Finally, the project team identified a need for review of maritime policy more broadly. The long-term decline of the U.S. flag fleet has reached a point where the continued existence of a privately owned, commercial fleet engaged in foreign trade is not assured. The role of the commercial fleet in DOD sealift might be expanded, possibly reducing the overall cost of sealift to the U.S. government. The statutory and regulatory rules that have contributed to a differential in operating cost for U.S. flag vessels over those of foreign flag vessels might be reexamined. The underlying issues are very broad, including U.S. flag registry requirements, Coast Guard regulatory requirements, application of U.S. tort law, and many others. One of the objectives of such a review might be to attempt to create a more level “playing field” for owners of U.S.-registered vessels, reducing the incentive for them to reflag their vessels into foreign, open registries. In 2009, other sectors of the U.S. economy are being reviewed to assess infrastructure needs and to determine the potential for long-term job creation. Oceanborne transport is taken for granted by the American public and often overlooked in government and academic circles, and yet maintaining a viable maritime sector is vital for the nation’s commercial and security needs.

Appendix A: Discussion Guide for Military/DOD Stakeholder Community

1. Maritime Administration statistics indicate that MSP currently provides approximately 115,123 TEUs (20-foot equivalent units of container capacity) and 2,685,228 square feet. The program also accounts for 77 percent of VISA's capacity. Do you agree with these statistics, and are there any qualifications or other observations that should be considered?
2. What portion of DOD's total intermodal sealift requirement is represented by MSP/VISA?
3. Is the capacity provided through MSP/VISA adequate?
4. Is the mix of vessels in MSP/VISA suitable to meet sealift requirements?
5. Does the MSP/VISA fleet adequately meet USTRANSCOM's time-phased deployment requirements for sealift? Has the Maritime Administration responded adequately to changes in requirements in the past three to five years?
6. Besides MSP/VISA, what other sources of sustainment intermodal sealift capacity does DOD have available? How is this capacity made available to DOD?
7. What portion of sustainment cargo is expected to be carried on MSP/VISA vessels in future contingency plans, as developed in the most recent Mobility Requirements Study?
8. What is the current definition of "militarily useful"? Has the MSP/VISA fleet met this definition?
9. Does MSP/VISA provide sufficient door-to-door intermodal transportation services to meet USTRANSCOM's needs? Have there been any significant or important improvements in intermodal services in the past three to five years?
10. Have MSP/VISA vessels been equipped with the communications systems needed for cargo in-transit visibility? Have there been any significant or important improvements in communications capability in the past three to five years?
11. What has been the role of MSP/VISA assets used on a voluntary basis, either in regional conflicts where DOD has deployed troops, or in humanitarian crises where the United States has provided supplies? If possible, please provide a spreadsheet indicating: (a) Nature of the military/humanitarian operation; (b) number and type of MSP/VISA assets used; (c) whether the services were adequate to meet USTRANSCOM time-phased delivery and location requirements; (d) any problems that were encountered using MSP/VISA carriers; and (e) what proportion of the capacity used for the operation was MSP/VISA, DOD organic, other U.S. flag, or foreign flag.

12. Referring to the spreadsheet requested above, were any services provided through non-MSP/VISA carriers considered adequate? Were such shipments delivered on time and at the location USTRANSCOM requested? Were any problems encountered using non-MSP/VISA services?
13. Does USTRANSCOM support the continuation of compensation payments to partly defray the U.S. flag operating costs of operators that commit to Stage III of VISA?
14. At the current time, four of the U.S. companies with MSP contracts have merged with foreign carriers. Does the involvement of foreign companies affect sealift or raise any other possible adverse effects?
15. If appropriations for the MSP program were to be reduced or eliminated, or if sufficient U.S. carriers were not available in the future, how would USTRANSCOM meet requirements, including vessels, crews, and intermodal systems? What costs would be associated with these alternatives?
16. Are changes to the MSP/VISA program needed to enhance the usefulness of the program to USTRANSCOM? (Explain in detail.)
17. Are there other aspects of the MSP/VISA program that USTRANSCOM would like to comment on for this evaluation? (Explain in detail.)

Appendix B: Discussion Guide for Ship Owner/Operator Stakeholder Community

Introduction

The Maritime Administration is assessing the impact of the Maritime Security Program and selected aspects of the interlocking Voluntary Intermodal Sealift Agreement program. This evaluation will seek to determine the contribution of MSP/VISA to the achievement of statutory objectives. The MSP is designed to help ensure that a militarily useful and commercially viable U.S. merchant fleet—and the trained personnel needed to operate both privately-owned active commercial vessels and Government-owned and controlled reserve ships—will be available to meet Department of Defense requirements for sealift during national emergencies. In FY 2008, through MSP, DOD has access to 115,123 TEUs and 2.69 million square feet of U.S. flag, commercial vessel capacity—and to carriers' intermodal transportation equipment and service networks.

The Maritime Administration is seeking empirical information from vessel operators and other affected parties in the maritime and transportation industries, such as shippers, maritime labor, and DOD and other Federal agencies, to assess the MSP's impact on DOD sealift capability and the U.S. merchant fleet.

1. To what extent have MSP and VISA accomplished the goals of ensuring the availability of a U.S. maritime fleet for wartime or national emergencies, and retaining a pool of qualified mariners to serve on these vessels?
2. Has MSP served as an effective mechanism for retaining vessels under United States registry?
3. What has been the effect of the MSP's fixed financial assistance of \$2.6 million per ship annually (during the years 2006 to 2008) on the international competitiveness of MSP carriers?
4. What has been the impact of the MSP payment as an economic incentive for carriers to replace existing vessels with newer ships?
5. To date, Congress has not appropriated funds for the Maritime Administration's MSP repair and maintenance program, as permitted in regulations. What has been the effect of this lack of funding?
6. Past evaluations have referenced the following factors as having an impact on carriers' fleet decisions to remain under U.S. flag. Please comment separately and rate the importance of each of these factors:
 - Higher wage scales for crewmembers on U.S. flag vessels.
 - Maintenance and repair costs.

- Regulatory burden, including Coast Guard and other Federal, State, and local regulations.
 - Insurance costs.
 - Tax considerations.
7. Besides the above-mentioned factors, are there other factors that have impact on carriers' fleet replacement decisions, and, if so, what are these factors?
8. What key aspects of the MSP and VISA program affect carriers' willingness to participate?
9. Please comment on the appropriateness of the compensation levels for carriage of contingency cargoes.
10. Please describe the impact each of the following statutory restrictions on carrier participation:
- Section 656 (cargo movements in domestic noncontiguous trade).
 - Section 804 (prohibition on operating competing foreign flag vessels) of the Merchant Marine Act, 1936, as amended.
 - The cap on the amount of cargo preference that can be carried on MSP vessels.
 - The requirement to operate 320 days per year.
 - Section 2 citizenship requirements.
 - Requirements on trust arrangements.
11. What external factors have a significant effect on program impact (for example, what are the trends in global shipping, or have there been changes in national or international economic conditions)?
12. What would be the likely impact on MSP participant plans if congressional appropriations for MSP were to be reduced or eliminated?
13. What aspects of MSP and VISA program implementation need to be changed to better accomplish program objectives?
14. Are there other complementary programs, policies, or Federal Government actions that need to be changed in order to better address the MSP's statutory objectives?

Appendix C: Econometrica Corporate Credentials

This appendix provides brief overviews of the qualifications of Econometrica and members of the Project Team that were directly relevant to the requirements of this study.

Relevant Qualifications of Econometrica, Inc.

Econometrica, Inc. is a small business research and management consulting firm committed to providing high quality, cost-effective economic and analytical services for clients in the private and public sectors. Since its founding in 1998, Econometrica has been involved in complex, high-profile contracts for organizations including the U.S. Office of Management and Budget, Department of Health and Human Services (AHRQ, CMS, HRSA, SAMHSA), Department of Transportation (BTS, FAA, FMCSA, NHTSA, PHMSA, VNTSC), Department of Labor (ESA and OSHA), Department of Homeland Security (Private Sector Office, U.S. Coast Guard, Immigration and Customs Enforcement), Department of Energy, Department of Education, Department of Housing and Urban Development, Department of Veterans Affairs, Small Business Administration, Millennium Challenge Corporation, and Corporation for National and Community Service. Econometrica's primary products are:

- Economic/Impact Analysis
- Program Evaluation
- Performance Measurement
- Risk Analysis
- Financial and Budget Analysis
- Cost-Benefit Analysis
- Econometrics
- Statistical Analysis
- Simulation Modeling
- Survey Research
- Technical Writing and Editing
- Technical Assistance
- Publication Design and Production
- Operations Research
- Web Publishing
- Data Graphics Design and Production
- Information Management Support

Econometrica has been awarded numerous contracts to provide evaluation services on behalf of Federal agencies. For each of these contracts we provided a highly skilled team with cutting edge evaluation methodologies and techniques. We have designed studies and program or product evaluations that have required a range of methodologies, including case studies, network analysis, and innovative techniques. We have performed simple and complex quantitative analyses that included original data collections as well as federally supplied or public access data. When the ability to perform primary or secondary quantitative analysis is limited, we have also employed innovative qualitative techniques in our evaluations, such as key informant interviews and focus group studies.

Econometrica is currently providing evaluation services on behalf of five Federal agencies. Current and past evaluation and assessment studies include:

- An evaluation of the Medicare Recovery Audit Contractor (RAC) Demonstration, conducted for the Centers for Medicare and Medicaid Services (CMS). Among other activities, Econometrica has performed data analysis and data integrity assessment of

information collected in the RAC data warehouse, which captures key pieces of information generated by RACs during their audit activities. Econometrica will continue to assist CMS in ramping up the RAC program for nationwide implementation by 2010. Econometrica will perform quarterly analysis and reporting on RAC activities, monitor RAC performance, support RAC sampling validation, develop an online health care provider survey, and report on progress and problem issues.

- A national evaluation of the Mark-to-Market (M2M) Program, conducted for the Department of Housing and Urban Development (HUD). This study analyzed the impact of the M2M refinancing strategy on the quality of housing and services provided through the 8(a) housing program. Econometrica focused on both cost effectiveness and participant satisfaction. An important aspect of the cost estimate was developing a baseline against which cost effectiveness could be measured. Econometrica's evaluation study had three major components: A "Process Study" that documented the administrative and policy strategies employed to implement M2M; a "Retrospective Study" that provided statistical analysis of participation levels and estimated the likely savings to the Federal Government resulting from the program; and a "Prospective Study" that documented the M2M process by developing case studies on 15 properties being refinanced through M2M.
- A comprehensive evaluation of the Indian Community Development Block Grant Program (ICDBG), conducted for HUD's Office of Native American Programs (ONAP). This study developed a set of outcome measures that validly assessed the success of the ICDBG in promoting economic and community development on Native American reservations. Econometrica evaluated specific impact measures and suggested modifications for future impact assessment. Ultimately, results from the evaluation should support ONAP in meeting OMB's ongoing requirements under the Program Assessment Rating Tool (PART) for the ICDBG program.
- An assessment of Community Development Block Grant (CDBG) subrecipient management by grantees, conducted for HUD. Econometrica evaluated how agencies awarded a CDBG were enlisting, managing, and assessing the work of subrecipients to ensure that community development programs were being implemented effectively, and how the legal and financial integrity of community development programs that are carried out by subrecipients could best be maintained.
- An assessment of the management and training configuration used by the National Civilian Community Corps (NCCC), conducted for the Corporation for National and Community Service. Key factors guiding Econometrica's evaluation included: (1) The relationship between the regional structure of NCCC's residential campuses and the national coverage required to meet the needs of communities for disaster relief and public safety; (2) the costs of operating the NCCC program, including the private and community resources leveraged by the program; and (3) the extent to which NCCC was accomplishing its mission and purposes and whether it could do so with greater efficiency and economy.

- An assessment of current practices regarding the treatment of severe spinal cord injuries, conducted for the Department of Veterans Affairs. Econometrica provided analytical services in four areas: (1) Data collection at 16 health care facilities and provided a descriptive cataloging of clinical services, equipment, and benefits available; (2) identified structures and resources necessary for providing health care services and achieving quality outcomes, and noted variations in structural and resource elements across modes of care; (3) proposed a predictive model of risk adjustment that would control for variations in populations served by different modes of care; and (4) contrasted several definitive or anticipated outcome elements for the patient population that were likely to exist in various Federal databases, and that could be developed for purposes of comparison and benchmarking of patient outcomes.

Experience and Qualifications of Mr. Charles Hanson

Charles (Chuck) Hanson, Senior Staff Associate, serves as Project Manager for Econometrica and assists with analytical and modeling projects on a variety of policy development and program evaluation issues. He recently served as Project Manager on the Centers for Medicare & Medicaid services contract to evaluate the Recovery Audit Contractor program. He has led or supported several evaluations for HUD, including an evaluation of the residual value of public housing conversion properties, an evaluation of the Indian Community Development Block Grant program, an evaluation of the Mark to Market restructuring program, and numerous others. He led Econometrica's work supporting a Front-End Risk Assessment in which HUD's risks associated with the sale of certain subsidized mortgage loans were documented and assessed. He co-led Econometrica's support of the Katrina Disaster Housing Assistance Program, which provided temporary rental assistance to families impacted by Hurricane Katrina. Mr. Hanson has more than 20 years of experience supporting government agencies in resolving management and budget issues, and his career has spanned both the executive and legislative branches as well as the private sector. His experience lies primarily in the areas of financial analysis, program and policy development, program impact assessment and evaluation, compliance with OMB PART requirements, budget planning and presentation, operational assessment, and Federal credit reform analysis. Mr. Hanson is a former budget analyst with the U.S. Office of Management and Budget and the U.S. Senate Budget Committee. He holds a B.S. in Mathematics from the University of Oregon and a Master of Public Policy from the University of Michigan.

Experience and Qualifications of Mr. Robert Gray

Robert W. Gray, Senior Staff Associate, is a social science analyst with 37 years of experience in analysis and research management with the U.S. Department of Housing and Urban Development. Mr. Gray has extensive experience in program design and in evaluating performance of Federal programs. He has participated in studies using quantitative and qualitative methods to evaluate effectiveness and efficiency, using data from the Census Bureau and other government statistical agencies, administrative data from Federal agencies, survey research data, case studies, focus groups, ethnographic research, and other sources. From 2006 to 2007, Mr. Gray directed a study that responded to adverse findings made in an OMB PART analysis. HUD's June 2008 publication, "*Section 202 Supportive Housing for the Elderly: Program Status and Performance Measurement*," evaluates program performance, reviews

performance measures currently in use, and proposes new measures for effectiveness and efficiency. Mr. Gray holds a B.A. in Economics from the University of Maryland and an M.A in Economics from the University of New Mexico.

Experience and Qualifications of Dr. Richard Hilton

Richard Hilton, Ph.D., Econometrica Senior Staff Associate, has more than 25 years of experience providing professional support services to public- and private-sector clients. Dr. Hilton's primary areas of expertise are survey research design and implementation, program evaluations, qualitative research methods, training design and implementation, and group facilitation. He has directed projects for eight Federal departments, including the U.S. Departments of Agriculture, Defense, Energy, Health and Human Services, Housing and Urban Development, Labor, Transportation, and Veterans Affairs. Dr. Hilton has extensive "hands-on" experience at all levels of Federal program implementation, having worked with Federal, State, and local staff in more than 300 communities in 41 States. He currently serves as a senior researcher under two Task Order contracts on behalf of the Agency for Healthcare Research and Quality, including (1) developing an inventory of health care data collection initiatives to inform practitioners, policymakers, and the public; and (2) creating a national framework for quality measurement. He also recently served as a senior researcher on the first independent assessment of the Department of Housing and Urban Development's Indian Community Development Block Grant program. Dr. Hilton holds a B.A. in Political Science and an M.A. in Philosophy from the University of Southern California, and a Ph.D. in Economic History from the University of Michigan.

Experience and Qualifications of Mr. Alexander Thackeray

Alexander Thackeray, Staff Associate, assists Econometrica with projects involving economic and statistical analysis. Mr. Thackeray is currently assisting the Centers for Medicare and Medicaid Services with extensive analysis and documentation of data collected through the Recovery Audit Contractor (RAC) program. He also assists with regulatory analyses, including a small entity impact analysis for the Department of Homeland Security and cost-benefit analyses for the Department of Transportation. Previous projects include testing the Office of Management and Budget's revised Credit Subsidy Calculator; constructing a database used to create a Community Needs Index for the Department of Housing and Urban Development; and providing technical assistance for the Housing Authority of New Orleans to convert operations into an asset management system. Prior to joining Econometrica, Mr. Thackeray taught macroeconomics as a university teaching assistant and taught high school algebra and geometry. He is proficient with the statistical software Stata, SAS, and TSP; Microsoft Office; Adobe Acrobat Professional; and Web programming languages, including HTML, ColdFusion, and SQL. Mr. Thackeray received a B.A. in Mathematics and Economics from Denison University and an M.A. in Economics, with a concentration in Econometrics, from the University of Maryland.

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