

September 2004

MARITIME SECURITY FLEET

Many Factors Determine Impact of Potential Limits on Food Aid Shipments



G A O

Accountability * Integrity * Reliability



Highlights of [GAO-04-1065](#), a report to congressional committees

Why GAO Did This Study

Food aid cargo must generally be carried on U.S.-flag ships under requirements set by the cargo preference program. Two groups of carriers compete for this cargo: (1) those that participate in the Maritime Security Program and receive an annual government subsidy—generally liners operating on scheduled routes and (2) those that do not—generally carriers operating on a charter basis. Congress directed GAO to study (1) how the cargo preference and Maritime Security programs are designed and who participates; (2) the nature and extent of MSF and non-MSF carrier participation and competition in the food aid program; and (3) how a tonnage limitation on bagged preference cargo for MSF vessels could affect MSF, other U.S.-flag ships, the cargo preference food aid program, and the ports servicing these ships.

While GAO makes no recommendations in this report, we observe that a decline in bulk food aid shipments since 2000 suggests greater competition for bagged food aid, but clear trends in how industry segments are responding cannot yet be determined. Our analysis suggests that under certain conditions a tonnage limit would not lead to large shifts in food aid to non-MSF carriers, and could result in lower levels of subsidy payments and increased agency burdens. We note significant limits of efforts to predict the future course of events where key factors are so volatile.

www.gao.gov/cgi-bin/getrpt?GAO-04-1065.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Celia Thomas at (202) 512-8987 or thomasc@gao.gov.

MARITIME SECURITY FLEET

Many Factors Determine Impact of Potential Limits on Food Aid Shipments

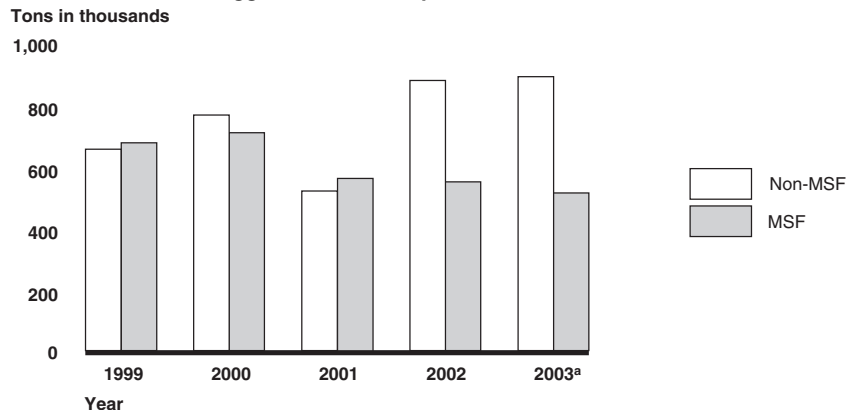
What GAO Found

The cargo preference program and the Maritime Security Program provide incentives to retain privately owned U.S.-flag ships and their U.S. citizen mariners for commercial and national defense purposes. The cargo preference program is open to all U.S.-flagged vessels, while the Maritime Security Fleet (MSF) subsidy is only available to certain militarily useful vessels. Of the 47 ships currently in the MSF, 37 have participated in cargo preference food aid shipments.

MSF and non-MSF carriers compete for food aid shipped as bagged cargo, which averaged 33 percent of food aid shipments by tonnage from fiscal years 1999 to 2003. There is no competition for bulk food aid shipments because MSF carriers do not carry bulk cargo. Changes in food aid spending have contributed to a shift from bulk to bagged cargo and increased reliance on bagged cargo by some non-MSF carriers. From 1999 to 2003, MSF carriers shipped about 45 percent and non-MSF carriers 55 percent of bagged food aid cargo. Competition between MSF and non-MSF carriers for bagged food aid is affected by certain cargo preference requirements.

Establishing a tonnage limitation on MSF vessels would likely reduce their share of food aid shipments, but the extent would depend on factors such as the level of the limit and the options MSF carriers have in responding to it. We examined three proposed limits and found that the percentage of food aid voyages carrying more than the proposed limit rises from 3 percent with a limit of 7,500 tons to 19 percent above 2,500 tons, according to fiscal year 2001 to 2003 data. The actual impact on MSF carriers will be smaller if they are able to (1) carry some food aid up to the limit, (2) replace some food aid above the limit with other cargo, and/or (3) elect to carry food aid even without the subsidy. Food aid agencies are concerned about the impacts of a tonnage limit, including increased delays in providing food aid, administrative burdens, and higher shipping costs. Major ports would generally experience a limited overall impact of a tonnage limitation, but specific food aid terminals could be affected.

Non-MSF and MSF Bagged Food Aid Shipments, Fiscal Years 1999-2003



Contents

Letter

	1
Results in Brief	3
Background	5
Cargo Preference and Maritime Security Programs Provide Incentives to Retain U.S.-Flag Ships and Mariners	11
MSF and Non-MSF Carriers Compete for Bagged Food Aid Shipments	16
Multiple Factors Determine How Tonnage Limit Changes Would Impact Food Aid Carriers	26
Observations	38
Agency Comments and Our Evaluation	39

Appendixes

Appendix I: Objectives, Scope, and Methodology	45
Appendix II: Simulating Potential Impacts of a Bagged Tonnage Limitation	49
Appendix III: Profile of Maritime Security Fleet	56
Appendix IV: Comments from the U.S. Agency for International Development	59
Appendix V: Comments from the Department of Agriculture	64
Appendix VI: Comments from the Department of Defense	66
Appendix VII: GAO Contacts and Staff Acknowledgments	67
GAO Contacts	67
Acknowledgments	67

Tables

Table 1: Characteristics of U.S.-Flag Vessels Participating in Cargo Preference Food Aid, Fiscal Years 1999-2003	6
Table 2: Tonnage of Bagged Food Aid Cargo Loaded by MSF and Non-MSF Vessels at Major Food Aid Ports, Fiscal Years 1999-2003	25
Table 3: GAO Simulation of MSF Voyages with Food Aid above a 2,500 Tonnage Limit, 3-Year Annual Average for Fiscal Years 2001-2003	32
Table 4: Assumptions in the Simulation Model and the Probability Distributions Reflecting Those Assumptions	51

Table 5: GAO Simulation of MSF Voyages with Food Aid above a 5,000 Ton Limit, 3-Year Annual Average for Fiscal Years 2001-2003	54
Table 6: Maritime Security Fleet, as of December 2, 2003	56

Figures

Figure 1: A Bulk Vessel	7
Figure 2: A Containership	8
Figure 3: USDA Purchases of Bulk and Bagged Agricultural Commodities for the Food Aid Program, Fiscal Years 1996-2003	17
Figure 4: Non-MSF Total Food Aid Shipments, Fiscal Years 1999-2003	19
Figure 5: Non-MSF and MSF Bagged Food Aid Shipments, Fiscal Years 1999-2003	20
Figure 6: Criteria for MARAD's Prioritization of U.S.-Flag Vessel Service for the Cargo Preference Program	21
Figure 7: Estimated Share of Title II Food Aid Shipments by U.S.-Flag Liner Carriers at Each Priority Level, Fiscal Years 1999-2003	23
Figure 8: Number of MSF Food Aid Voyages at Different Tonnage Levels, Fiscal Years 2001-2003	28
Figure 9: Percentage of MSF Food Aid Revenues from Voyages with Tonnage above a Potential Limitation, Fiscal Years 2001-2003	29

Abbreviations

DOD	Department of Defense
LASH	Lighter Aboard Ships
MARAD	Maritime Administration
MSF	Maritime Security Fleet
TEU	Twenty-foot Equivalent Unit
USAID	U.S. Agency for International Development
USDA	U.S. Department of Agriculture

This is a work of the U.S. government and is not subject to copyright protection in the United States. It may be reproduced and distributed in its entirety without further permission from GAO. However, because this work may contain copyrighted images or other material, permission from the copyright holder may be necessary if you wish to reproduce this material separately.



United States Government Accountability Office
Washington, D.C. 20548

September 13, 2004

Congressional Committees:

Food aid shipments must generally be transported on U.S.-flag ships under the requirements set by the cargo preference program.¹ Two broad groups of U.S.-flag carriers compete for these food aid shipments:

1. those that participate in the Maritime Security Fleet (MSF)² (generally liners that carry containers on scheduled routes) and receive a \$2.1 million annual subsidy from the federal government and
2. those that do not (generally carriers of bulk and bagged cargo that operate on a charter basis).

During the debate on renewing the Maritime Security Program and MSF, the non-MSF carriers complained that the MSF subsidy put them at a competitive disadvantage, particularly for bagged food aid cargo. They supported a provision to limit the amount of bagged cargo that MSF ships could carry so that, on days when the limit was exceeded, MSF ships would have to forfeit their subsidy. Since no analysis had been conducted on the effects of such a change, the Maritime Security Program was authorized without this provision, and we were directed to study the impact of placing a limitation on MSF transportation of bagged food aid preference cargo.³

¹Cargo preference is the reservation, by law, for transportation on U.S.-flag vessels, of all or a portion of all ocean borne cargo that moves in international trade, either as a direct result of the federal government's involvement or indirectly because of the financial sponsorship of a federal program or guarantee provided by the federal government. These preference cargoes include agricultural, military, and Export-Import Bank cargoes. This report focuses only on cargo preference food aid shipments; cargo preference shipments of military or other cargo were outside the scope of our review. Agricultural preference cargoes accounted for about a quarter of all preference cargoes, by tonnage, according to Maritime Administration data for 2002.

²MSF comprises vessels that participate in the Maritime Security Program, a program established by the Maritime Security Act of 1996 that provides funding to U.S. vessels participating in international trade, to support the Department of Defense (DOD).

³Section 3535 of the National Defense Authorization Act for fiscal year 2004, P.L. 108-136, 117 Stat. 1818-19.

As discussed with representatives of the House and Senate Committees on Armed Services and the Senate Committee on Commerce, Science, and Transportation, we have focused on answering the following questions:

1. How are the cargo preference and Maritime Security Programs designed to meet their objectives and who participates in them?
2. What are the nature and extent of MSF and non-MSF carrier participation and competition in the food aid program?
3. How would establishing a bagged cargo preference tonnage limitation on MSF vessels be expected to affect MSF, other U.S.-flag ships, the cargo preference food aid program, and the ports servicing these ships?

To answer these questions, we gathered and analyzed food aid shipment data for fiscal years 1999 to 2003 from the U.S. Agency for International Development (USAID), the Department of Agriculture (USDA), and the Maritime Administration (MARAD), as well as MSF and cargo preference vessel data from MARAD and military contingency participation data from MARAD and the Department of Defense (DOD).⁴ Through electronic data testing, verification of data against other sources, and interviews with agency officials managing the data, we found the data to be sufficiently reliable and appropriate for our purposes. We conducted interviews and obtained financial data for fiscal years 2001 to 2003 from representatives of 15 carriers that transported the majority of cargo preference food aid, including 5 MSF and 10 non-MSF carriers.⁵ We also conducted interviews with representatives of eight ports through which a major share of food aid shipments were shipped. Consistent with the terms of our mandate, we analyzed the potential impact of daily tonnage limits on MSF vessels of 2,500, 5,000, and 7,500 tons.⁶ While our analysis provides a range of impact estimates based on data in recent years and several additional assumptions, if future market conditions differ from those reflected in this recent data, impacts may differ from those illustrated by our analysis. We conducted our work in accordance with generally accepted government

⁴We did not conduct an evaluation of programs related to this study, including the cargo preference program and the Maritime Security Program.

⁵Self-reported financial data is subject to limited verification. Heightened uncertainties in our analysis relating to financial data are discussed in appendixes I and II.

⁶Our analysis and findings are expressed in terms of metric tons.

auditing standards. (See app. I for details about our scope and methodology.)

Results in Brief

The cargo preference and Maritime Security Programs both provide incentives to retain privately owned U.S.-flag ships and their U.S.-citizen mariners for commercial and national defense purposes. By allocating a percentage of federal cargoes to U.S.-flag vessels, the cargo preference program creates a protected market that provides an economic incentive for vessel owners to pay the higher costs associated with U.S.-flag registry and employ U.S.-citizen crews. We found that a total of 190 privately owned U.S.-flag vessels carried cargo preference food aid shipments at some point during the fiscal year 1999 to 2003 period. In addition, the Maritime Security Program provides a subsidy for MSF carriers with particular types of militarily useful vessels. MSF currently has 47 participating ships, of which 37 have also participated in cargo preference food aid shipments. DOD strongly supports both programs and said it has benefited from both during the recent wars in Afghanistan and Iraq.

MSF carriers compete with non-MSF carriers for the 33 percent of the food aid tonnage that is currently shipped as bagged cargo. However, MSF carriers do not compete with non-MSF carriers for the 67 percent of food aid tonnage that is shipped as bulk cargo because MSF vessels do not carry bulk cargo. Changes in the amount of bulk and bagged commodities purchased for food aid programs have contributed to a decline in bulk shipments and a relative increase in bagged shipments from fiscal years 1999 to 2003. The reduction in bulk food aid shipments has caused some non-MSF bulk carriers to rely more on bagged food aid shipments in recent years. From fiscal years 1999 to 2003, MSF carriers shipped about 45 percent and non-MSF carriers 55 percent of bagged food aid cargo. Competition between MSF and non-MSF carriers for bagged food aid is affected by certain cargo preference requirements. For example, MARAD's priority system for U.S.-flag service guarantees preference for carriers that use only U.S.-flag vessels to transport food aid cargo. This system has tended to favor non-MSF carriers because they provide charter service from the port of origin to the port of destination solely on a U.S.-flag vessel, whereas MSF liners may use a foreign-flag vessel on one leg of their scheduled service route. However, a provision of the Maritime Security Act of 1996 allocates a certain amount of bagged food aid cargo to Great Lakes ports, which has favored MSF carriers and other carriers that offer intermodal services. MSF and non-MSF carriers ship most of the bagged food aid cargo from U.S. ports in the Gulf of Mexico.

Establishing a bagged cargo tonnage limitation on MSF vessels would likely reduce their market share in food aid, but the extent will depend on factors such as the level of the limit and the options MSF carriers have in responding to it. Recent data show that only 3 percent of MSF food aid voyages would be affected by a 7,500-ton limit; 19 percent of MSF food aid voyages would be affected by a 2,500-ton limit. Almost all MSF voyages during fiscal years 2001 to 2003 with more than 7,500 tons were on a small number of noncontainership, specialized vessels that are being phased out of MSF. If MSF vessels were to lose all food aid shipments on containership voyages with more than 2,500 tons, the MSF would carry on average 160,000 tons less food aid per year—out of their average total of 324,000 tons of food aid per year. However, setting a limit at this level may not mean a reduction of 160,000 tons of food aid cargo for MSF vessels, to the degree they are able to respond in the following ways: (1) carrying some food aid up to the limit, (2) replacing some food aid above the limit with other cargo, and (3) continuing to carry food aid above the limit when they determine that is the most profitable decision. Under a scenario in which these options are considered, for a limit of 2,500 tons for example, we estimate that under certain assumptions the total annual decline in food aid carried by the MSF would range from 17,000 tons to 63,000 tons. We estimate that the total annual decrease in MSF net revenues over all carriers would then range from around \$2 million to \$5 million.⁷ While this analysis reflects some range of probabilities in the flexibility MSF carriers have in responding to a tonnage limit, it may not fully reflect certain logistical challenges that MSF carriers have identified, such as agreements between carriers to share vessel space. Food aid agencies and MARAD are also concerned that tonnage limits would create increased delivery delays, administrative burdens, and higher shipping costs. Food aid agencies emphasized concerns that these potential impacts could impede their ability to meet critical humanitarian needs. The major food aid ports would generally experience a limited impact on their overall port activity if a bagged food aid tonnage limit were established, although some terminals within the ports that service MSF vessels could potentially be affected, depending on the degree to which MSF participation in food aid were decreased.

USAID, USDA, and DOD provided written comments on a draft of this report, which are reproduced in appendixes IV, V, and VI. These agencies generally stated that our report appropriately identified issues and

⁷We use the term net revenues to reflect revenues minus costs.

concerns regarding food aid shipments and potential tonnage limits. They expressed concerns that tonnage limits could negatively impact their program or mission. DOT provided oral comments, which we summarize in the agency comments section below. DOT said that the draft report provided a thoughtful analysis of the potential impact of tonnage limitations. However, it identified issues with some factors in our simulation model and emphasized its view that MSF carriers would face constraints in responding to a tonnage limitation. We agree that MSF carriers would face such constraints and explicitly included these considerations in our analysis. We modified our report language in several places to clarify our discussion of these constraints and the uncertainties regarding potential tonnage limitation impacts. In addition, USAID and DOT provided technical comments, which we incorporated in the report as appropriate.

Background

U.S.-flag fleet participants in cargo preference food aid shipments comprise two general categories of carriers: charter service and liner service. The cargo preference and Maritime Security Programs are intended to support both as part of the U.S.-flag fleet. These programs are administered by MARAD, while the food aid programs are administered by USAID and USDA.

U.S.-Flag Fleet Generally Comprises Charter and Liner Service Carriers

Vessels in the privately owned U.S.-flag fleet engaged in international commerce can be placed into two general categories: charter service and liner service. While most non-MSF carriers provide charter service, most MSF carriers provide liner service, as shown in table 1 below.

Table 1: Characteristics of U.S.-Flag Vessels Participating in Cargo Preference Food Aid, Fiscal Years 1999-2003

	MSF vessels	Non-MSF vessels
Major type of service ^a	Liner vessels with regularly scheduled sailings on a fixed route	Charter vessels hired to carry cargo to specific ports at a specific time
Major types of vessels ^a	Containerships and LASH vessels ^b	Bulk vessels, break-bulk vessels, and tug-barge vessels
Types of food aid that are carried	Bagged	Bulk and bagged
Number of vessels	47 vessels ^c	143 vessels
Number of companies	5 companies	38 companies

Source: GAO analysis of data from USDA and MARAD.

^aThis table is a simplification that places vessels into two broad categories. There are exceptions such as some non-MSF vessels that offer liner service and some containerships and LASH vessels, operated by MSF carriers, that are not enrolled in MSF.

^bLASH, or Lighter Aboard Ships, are barge-carrying vessels that use barges like containers.

^cThis number reflects 42 containerships and 5 LASH vessels that participated in MSF over a 5-year period and carried food aid. Currently, MSF comprises 36 containerships and 1 LASH vessel that carried food aid.

Most charter service vessels are operated by non-MSF carriers. Charter service means that vessels are hired to carry a cargo to specific ports at a specific time; these vessels do not provide regularly scheduled service on a fixed route but typically carry a shipload of cargo for only one or a few customers at a time. Charter service is primarily provided by bulk, break-bulk, and tug-barge vessels that can carry either bulk or bagged cargo. Bulk vessels are designed to carry dry bulk commodities, such as rice or wheat, in large interior holds. The benefit of bulk shipments is the economies of scale that can be gained from shipping large amounts of a single commodity. Figure 1 shows a photograph of a bulk vessel. Break-bulk vessels are general cargo ships that are designed to carry nonuniform items packaged as single parcels or assembled together on pallet boards. Bagged commodities are stacked and secured within interior holds of the ship. Tug-barge vessels have a tugboat or towboat that propels a separate barge by pushing or towing it. Barges generally carry bulk or break-bulk cargo, although some also carry containerized cargo.

Figure 1: A Bulk Vessel



Source: MARAD.

Most MSF vessels are liner service vessels. Liner service means that vessels have regularly scheduled sailings on fixed routes. These vessels typically carry small amounts of cargo for many customers at one time and will sail, even if not completely full. Liner service is primarily provided by containerships that carry bagged cargo; they do not carry bulk cargo. Containerships are designed to carry cargo in standard-size, preloaded containers that are stacked next to and on top of each other on the ship. The benefit of containers is that they permit rapid loading and unloading and efficient transportation of cargo to and from the port area. Containers facilitate intermodal transportation because they can be loaded by the supplier and sealed, taken by truck or railcar to the port, then loaded onto the containership without the cargo being handled. In the case of food aid, generally the suppliers do not load the containers but instead ship bagged commodities by rail or truck to the port of loading, where they are loaded into the containers. Figure 2 shows a photograph of a containership. Liner service is also provided by Lighter Aboard Ships (LASH), which are barge-carrying vessels that use barges like containers. They are also intermodal because the barges can use rivers and canals to pick up and drop off cargo at interior loading docks.

Figure 2: A Containership



Source: MARAD.

Cargo Preference and Maritime Security Programs Intended to Support U.S.-Flag Fleet

The cargo preference and Maritime Security Programs are both intended to bolster the U.S.-flag market share in international commerce, as well as to ensure the availability of an adequate number of U.S.-flag ships and U.S.-citizen mariners in the event of a national defense need. The cargo preference laws are part of the overall statutory program to support the privately owned and operated U.S.-flag commercial fleet, or merchant marine.⁸ DOD and MARAD consider the merchant marine vital to U.S. national security, providing essential sealift capability in wartime. The ships that carry these cargoes also provide jobs for American seafarers who are available in time of national emergency to crew the sizable fleet of reserve government vessels. As an agency of the Department of Transportation, MARAD's responsibilities include promoting the development and maintenance of the U.S. merchant marine. It administers both the cargo preference and Maritime Security Programs.⁹

The Maritime Security Program is more targeted than the cargo preference program in terms of the vessels that can participate. It is intended to guarantee that certain kinds of militarily useful ships and their crews will be available to DOD in a military contingency. Under the renewed program starting in 2005, DOD must approve the proposed vessels as militarily

⁸A 1954 amendment to the Merchant Marine Act of 1936 (P.L. 83-664), requires that at least 50 percent of the gross tonnage of all government-generated cargo be transported on privately owned, U.S.-flag commercial vessels to the extent such vessels are available at fair and reasonable rates. In 1985, the Merchant Marine Act of 1936 was amended to require that the percentage of certain agricultural cargoes to be carried on U.S.-flag vessels be increased from 50 to 75 percent. The Cargo Preference Act of 1904 requires 100 percent of supplies bought for U.S. military departments to be carried on U.S.-flag vessels available at rates that are not excessive or otherwise unreasonable. Finally, Public Resolution 17 of the 73rd Congress calls for all cargoes, resulting from loans from federal government agencies, such as the Export-Import Bank of the United States, to be shipped exclusively on U.S.-flag vessels, unless MARAD grants a waiver.

In addition, Section 901(b) of the Merchant Marine Act of 1936, as amended, prohibits vessels built or rebuilt outside the United States or under foreign registry from carrying preference cargo subject to the Act for 3 years, unless the vessel is in MSF.

⁹For cargo preference, MARAD establishes the regulations governing how the cargo preference laws are to be implemented by federal agencies. MARAD also exercises oversight over how these regulations are carried out in practice by federal agencies, such as when USAID and USDA determine ocean transportation for food aid shipments. It also reimburses USAID and USDA for a portion of the higher costs related to using U.S.-flag vessels. For the Maritime Security Program, MARAD screens applicants to MSF, establishes operating agreements with the carriers that are selected, and provides their monthly subsidy payment.

useful. The program's main focus has been to enable globally competitive carriers that operate militarily useful vessels to enter or keep U.S.-flag status. Most MSF vessels are containerships, operated by some of the largest containership carriers in the world. For instance, MSF carriers Maersk Sealand, P&O Nedlloyd, and APL were ranked among the top four containership carriers by volume as of May 2001, according to the Bureau of Transportation Statistics. These containership carriers have intermodal systems that also come as part of the package, allowing DOD to benefit from private sector global transportation and communication networks. According to MARAD, these networks include not only vessels, but also logistics management services, infrastructure, terminals and equipment, communications and cargo-tracking networks, and thousands of trained, professional U.S.-citizen mariners and shoreside employees located throughout the world.

The Maritime Security Program also results in the reflagging of new and more efficient vessels to U.S. registry for participation in MSF. The program requires that vessels be less than 15 years old to participate (except that LASH vessels can be 25 years old). From its implementation in 1996 through 2002, a total of 18 modern commercial liner vessels, with an average age of less than 9 years, were reflagged to U.S. registry for participation in MSF, according to MARAD.

Food Aid Programs Administered by USAID and USDA

USAID and USDA's Foreign Agricultural Service are responsible for administering the food aid programs that provide humanitarian food assistance to countries in need. The food aid programs had an annual average budget of \$1.97 billion during fiscal years 1999 to 2003, according to USDA. The primary mechanism through which the U.S. government implements its international food assistance initiatives is P.L. 480.¹⁰ Food assistance provided under P.L. 480 is delivered to foreign countries through three separate programs: Titles I, II, and III. USDA administers Title I, which provides for government-to-government sales of agricultural commodities to developing countries on credit terms or for local currencies. USAID administers Titles II and III. Title II provides for donation of U.S. agricultural commodities to meet emergency and nonemergency food needs in other countries, and it is by far the largest of the food aid programs. Title III provides for government-to-government grants to support long-term growth in the least developed countries but has been inactive in recent years. In addition to P.L. 480, food aid is provided through three smaller programs administered by USDA's Foreign Agricultural Service: Food for Progress, section 416(b), and the McGovern-Dole International Food for Education and Child Nutrition Program.¹¹

Cargo Preference and Maritime Security Programs Provide Incentives to Retain U.S.-Flag Ships and Mariners

The cargo preference and Maritime Security Programs both provide incentives to retain privately owned U.S.-flag ships and their U.S.-citizen mariners for commercial and national defense purposes. Cargo preference makes available a protected market that provides the economic incentive for vessel owners to pay the higher costs associated with the U.S. flag and employ U.S.-citizen crews. We found that a total of 190 privately owned U.S.-flag vessels carried cargo preference food aid shipments at some point during the fiscal year 1999 to 2003 period. In addition, the Maritime Security Program provides a subsidy for MSF carriers with particular militarily useful vessels. MSF currently has 47 ships, of which 37 have participated in cargo preference food aid shipments. DOD strongly

¹⁰The Agricultural Trade Development and Assistance Act of 1954, P.L. 83-480, 68 Stat. 454.

¹¹Food for Progress provides for the donation or credit sale of U.S. commodities to developing countries and emerging democracies to support democracy and an expansion of private enterprise. Section 416(b) provides for overseas donations of surplus USDA commodities. The McGovern-Dole International Food for Education and Child Nutrition Program provides for donations of U.S. agricultural products, as well as financial and technical assistance, for school feeding and maternal and child nutrition projects in low-income, food-deficit countries that are committed to universal education.

supports both programs and said it has benefited from both during the recent wars in Afghanistan and Iraq.

Cargo Preference Program Provides Protected Market as Incentive for U.S.-Flag Registry

Preference cargoes are intended to provide the economic incentive for vessel owners to pay the higher costs associated with U.S.-flag registry and employ U.S.-citizen crews. According to MARAD, due to high U.S. labor costs; safety, health, and environmental regulations; and taxes, it is more expensive for vessels to be U.S.-flagged. For instance, U.S.-flag vessels generally incur higher labor costs due to higher manning level requirements, as well as higher wages and benefits for U.S.-citizen mariners.

The cargo preference laws, by guaranteeing the availability of cargo to U.S.-flag ships, contribute to the financial viability of U.S.-flag vessel operating companies, thereby helping to ensure that the vessels, trained crews, and vessel service industries continue to exist, according to MARAD.¹² The cargo preference program provides this incentive by reserving a portion of the U.S. market for U.S.-flag vessels, despite the higher prices they typically charge. In the food aid transportation market, a minimum of 75 percent of food aid shipments must be shipped on U.S.-flag vessels.¹³

The U.S.-flag vessels (both MSF and non-MSF) participating in cargo preference food aid shipments during fiscal years 1999 to 2003 comprised a variety of vessel types. According to our analysis of USDA data, a total of 190 individual vessels participated in food aid shipments at some point between 1999 and 2003.¹⁴ This included 111 bulk, break-bulk, tug-barge, and

¹²One reason for MARAD support of the U.S.-flag fleet is concern about its continuing decline. From 1983 to 2003, the number of active privately owned ships in the U.S.-flag fleet declined by about half and their carrying capacity fell by about 25 percent, according to MARAD data. Another concern is related to the declining size of the U.S.-citizen mariner pool.

¹³However, cargo preference has also meant that U.S. government-sponsored cargoes, including food aid, have been required to be shipped on higher-cost vessels, resulting in historically higher government transportation costs. See GAO, *Cargo Preference Requirements: Objectives Not Significantly Advanced When Used in U.S. Food Aid Programs*, [GAO/GGD-94-215](#) (Washington, D.C.: Sept. 29, 1994) and GAO, *Maritime Industry: Cargo Preference Laws—Estimated Costs and Effects*, [GAO/RCED-95-34](#) (Washington, D.C.: Nov. 30, 1994).

¹⁴There was an annual average of 108 U.S.-flag vessels that carried food aid during these years.

tanker vessels that provided charter service and 79 containership, LASH, and other vessels that provided liner service. These vessels were operated by 38 carrier companies.

We found that the level of dependence on food aid varied significantly among carriers. We interviewed representatives of 15 of the top carriers that participated in U.S.-flag cargo preference food aid shipments during 1999 to 2003, comprising 77 percent of food aid revenues. Of the 10 non-MSF carriers we interviewed that generally provided charter service, 4 said that 60 percent or more of their annual revenues came from food aid shipments, 3 said between 20 and 50 percent, and 3 said less than 10 percent came from these shipments. Most of the five MSF carriers we interviewed that provided liner service said that food aid revenues comprised a small percentage of their total revenues.

Maritime Security Program Provides Subsidy for MSF

The Maritime Security Program was authorized for fiscal years 1996 to 2005¹⁵ and provides about \$100 million in annual funding for up to 47 vessels to participate. Each participating vessel receives an annual subsidy payment of \$2.1 million,¹⁶ intended to partially offset the higher operating cost of keeping these vessels under U.S.-flag registry. In November 2003, Congress passed another 10-year authorization for the Maritime Security Program,¹⁷ starting in fiscal year 2006, that would expand the program from 47 to 60 vessels. Annual subsidy payments were increased from a flat \$2.1 million payment to an escalating payment of \$2.6 million for fiscal years 2006 to 2008, \$2.9 million for fiscal years 2009 to 2011, and \$3.1 million for fiscal years 2012 to 2015, always subject to the availability of congressional appropriations.

According to MARAD officials and MSF carrier representatives we interviewed, the combination of MSF subsidy and access to cargo preference shipments, including food aid shipments, enables these containership carriers to stay in MSF and creates incentives to reflag newer vessels. While most MSF carriers primarily carry commercial cargo, MSF

¹⁵Maritime Security Act of 1996, P.L. 104-239, 110 Stat. 3118.

¹⁶The exception was that the subsidy payment was \$2.3 million for the first year of the program, 1996. However, according to MARAD, the Act was not signed until the end of the first year, so the \$2.3 million was never paid.

¹⁷P.L. 108-136, 117 Stat. 1803.

carrier representatives said that they need both MSF subsidy and cargo preference food aid shipments to offset the higher costs of operating as a U.S.-flag vessel. MARAD stated in its 2002 annual report that the current \$2.1 million subsidy represents about 13 percent of the cost of operating a U.S.-flag vessel. According to a MARAD official, the subsidy only partially offsets the higher cost of employing U.S.-citizen mariners. However, during the interviews, MSF carrier representatives said that the subsidy was important to them because it was a guaranteed monthly payment that provided a level of financial stability.

MSF currently comprises 47 vessels operated by 12 companies, based on data as of December 2003.¹⁸ These vessels include 38 containerships, 1 LASH, and 8 roll-on/roll-off vessels.¹⁹ Of the vessels currently participating in MSF, 36 containerships and 1 LASH vessel participated in cargo preference food aid shipments during fiscal years 1999 to 2003. Approximately 2,162 mariners are employed on these ships, according to MARAD.²⁰ (See app. III for a profile of the current MSF participants.)

DOD Supports Both Cargo Preference and Maritime Security Programs

DOD strongly supports both the cargo preference and Maritime Security Programs. DOD officials said that DOD's priority is to maintain or increase the current level of U.S.-flag ships and mariners and, therefore, it strongly supports both programs. Through the cargo preference and Maritime Security programs, an additional manpower pool is maintained that DOD can draw on to crew the reserve fleet.²¹ DOD officials said that the Maritime Security Program, in addition to guaranteeing militarily useful

¹⁸These 12 operating companies were owned by 8 carriers. Of these 8 carriers, 5 had participated in cargo preference food aid shipments.

¹⁹Roll-on/roll-off ships are vehicle carriers that allow vehicles such as cars, trucks, or tanks to drive on and off the ship. They do not participate in food aid shipments.

²⁰According to MARAD, MSF ships have approximately 940 mariner billets. MARAD calculates that each billet supports 2.3 mariners based on current industry ratios, so that the number of employed mariners would total 2,162. However, DOD calculates that each billet supports 2 mariners in its contingency planning, which would result in a total of 1,880 mariners.

²¹The reserve fleet comprises (1) the Ready Reserve Force, 59 standby reserve ships maintained by MARAD and (2) DOD's Surge Force, 8 fast sealift ships and 11 large, medium-speed roll-on/roll-off ships. Reserve fleet vessels are kept ready with a skeleton crew but need additional mariners to make a full complement when activated for service.

U.S.-flag ships and trained U.S.-citizen mariners, provides access to MSF liner carriers' intermodal systems, which is important to DOD.

In testimony before the House Armed Services Committee on October 8, 2002, General John W. Handy, Commander of the U.S. Transportation Command, strongly supported reauthorization of the Maritime Security Program. He stated that DOD limited its sealift fleet²² to those assets that the commercial sector could not provide, so that only 33 percent of the vessels DOD may require resided in its own fleet. The remainder of the sealift capacity, needed to transport military equipment and supplies, came from the commercial sector.

DOD officials said that it had benefited from both programs during the Afghanistan and Iraq wars. For example, during Operation Iraqi Freedom, DOD did not need to pull MSF vessels out of their normal commercial service. Instead, it chartered two MSF roll-on/roll-off vessels for DOD use and used the other MSF vessels in their normal commercial routes, where appropriate, to meet its needs, according to a DOD official. This official said that DOD preferred to leave MSF vessels in their normal commercial service because then DOD would also be able to benefit from use of their global intermodal systems. MSF carriers may have had to displace some commercial cargo but otherwise continued business as usual. During the period January 1 to October 14, 2003, MSF vessels made 135 vessel voyages of cargo to sustain the Iraqi deployment. This effort included 35 MSF containerships. These vessels transported a total of 8,668 twenty-foot equivalent units (TEU),²³ according to DOD data. According to MARAD, more than 7,500 merchant mariners served in Operation Iraqi Freedom. Of these, about 1,470 mariners served on MSF vessels, based on a DOD estimate.

²²DOD prepositioned sealift ships are kept fully loaded with military material and fully crewed at all times to be ready to embark immediately to a war zone in the initial surge of a deployment.

²³A TEU is the unit of measure for containerized cargo. One 20-foot container would be one TEU, while one 40-foot container would be two TEUs.

MSF and Non-MSF Carriers Compete for Bagged Food Aid Shipments

MSF and non-MSF carriers compete only for bagged food aid shipments because MSF vessels do not carry bulk food aid. Although the majority of food aid continues to be shipped as bulk cargo, bulk food aid shipments decreased from fiscal years 1999 to 2003, partly because of changes in food aid spending. The recent decline in bulk cargo has caused some non-MSF bulk carriers to rely more on bagged cargo. Non-MSF carriers transported about 55 percent and MSF carriers 45 percent of bagged food aid shipments from fiscal years 1999 to 2003. Cargo preference requirements affect whether agencies award bagged food aid shipments to MSF or non-MSF carriers. Most of the bagged food aid cargo carried by MSF and non-MSF vessels is loaded for export at U.S. ports in the Gulf of Mexico.

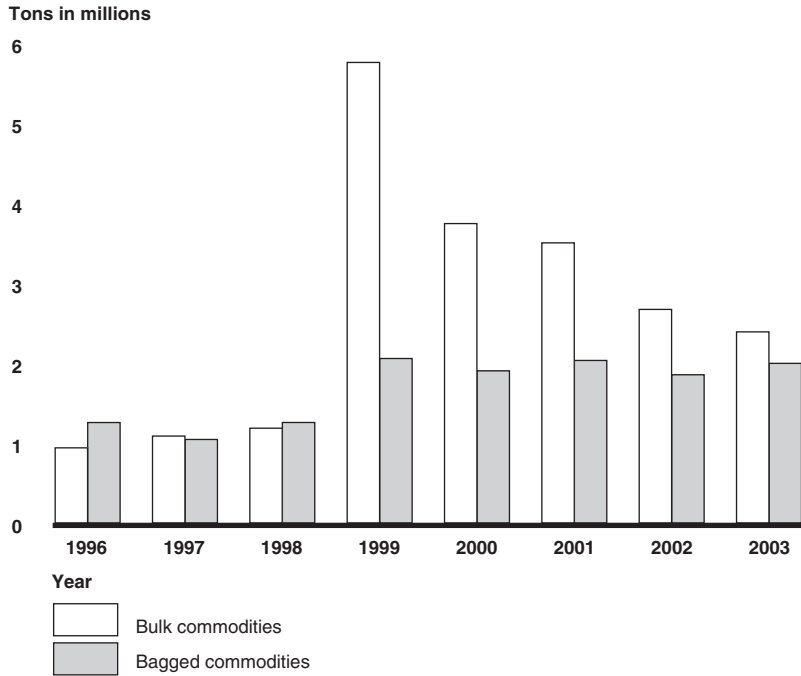
Increasing Share of Food Aid Is Shipped as Bagged Cargo

Although on average approximately 67 percent of food aid was shipped as bulk cargo and 33 percent as bagged cargo²⁴ from fiscal years 1999 to 2003, the share of food aid shipped as bagged cargo generally increased during these years. This change was due mostly to a decline in USDA's purchases of bulk agricultural commodities for the food aid program. Although USDA purchases of bulk commodities remained relatively stable from 1996 to 1998, they increased dramatically in 1999 and then declined steadily from 1999 to 2003.²⁵ As the procurement data in figure 3 show, purchases of bulk commodities decreased from 5.76 million tons in 1999 to 2.39 million tons in 2003. However, purchases of bagged commodities equaled about 2 million tons each year during this period. Thus, the percentage of commodities procured that were bagged increased from 26 percent in 1999 to 46 percent in 2003.

²⁴Bagged cargo includes agricultural commodities that are packaged or processed. Processed commodities are packaged in bags, tins, or other containers.

²⁵In 1999, bulk commodity purchases were augmented to provide food aid to Russia. This donation to Russia was one of the largest single food aid transfers in U.S. history.

Figure 3: USDA Purchases of Bulk and Bagged Agricultural Commodities for the Food Aid Program, Fiscal Years 1996-2003



Source: GAO analysis of USDA data.

Note: Figure is based on procurement data. USDA shipment data are available from fiscal years 1999 to 2003. They show the same pattern as the procurement data for those available years. However, the shipment amounts are generally smaller than the procurement amounts primarily because food aid cargo is often damaged while it is being handled in preparation for export shipment, according to USDA officials.

Changes in food aid spending from fiscal years 1999 to 2003 have contributed to this shift from bulk to bagged cargo. The largest food aid program is administered under P.L. 480 Title II, which experienced an increase in funding from 2000 to 2003. The P.L. 480 statute requires that at least 75 percent of agricultural commodities donated for development, or nonemergency, purposes be value-added. Value-added commodities are shipped as bagged cargo, as opposed to bulk.²⁶ Aside from Title II development assistance, many of the commodities donated by the Food for Education and section 416(b) food aid programs also have been shipped as bagged cargo in recent years, according to USDA officials. However, spending for the P.L. 480 Title I food aid program generally declined from 1999 to 2003.²⁷ Most commodities sold under the P.L. 480 Title I program are shipped as bulk cargo, such as wheat, corn, and soybeans.

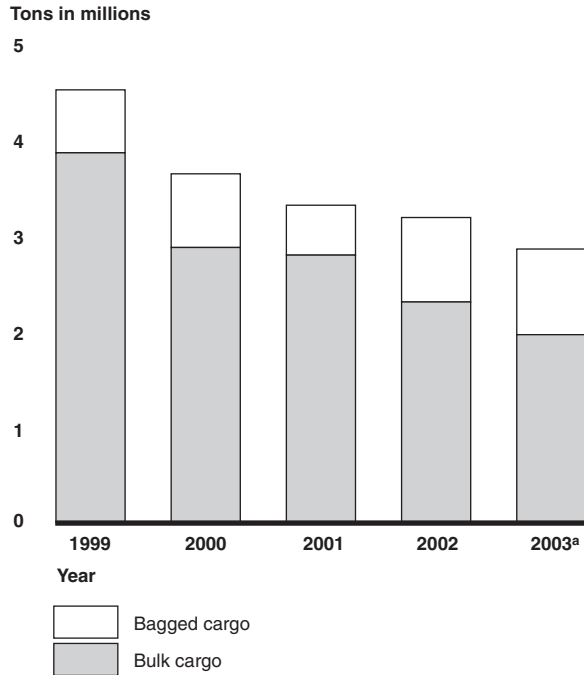
Reduction in Bulk Food Aid Cargo Leads to Increased Reliance on Bagged Food Aid Cargo

Many non-MSF carriers depend on cargo preference food aid shipments for a large share of their business; therefore, the decline in bulk cargo has meant increased reliance on bagged cargo shipments. According to the interviews we conducted with non-MSF carriers, some non-MSF carriers that traditionally ship bulk food aid reacted to the decline in bulk food aid shipments by increasing their participation in bagged food aid shipments. Figure 4 shows that while total shipments of food aid by non-MSF vessels decreased over the fiscal year 1999 to 2003 period, the decline in bulk food aid shipments was partially offset by an increase in bagged food aid shipments. Among non-MSF carriers that have shipped bulk food aid, 43 percent have also shipped bagged food aid.

²⁶Value-added commodities are processed, fortified, or bagged, and include such food products as wheat flour, cornmeal, corn-soy blend, and vegetable oil.

²⁷Title I spending also declined from 1992 to 1998, before the spike in 1999 when food aid was provided to Russia.

Figure 4: Non-MSF Total Food Aid Shipments, Fiscal Years 1999-2003



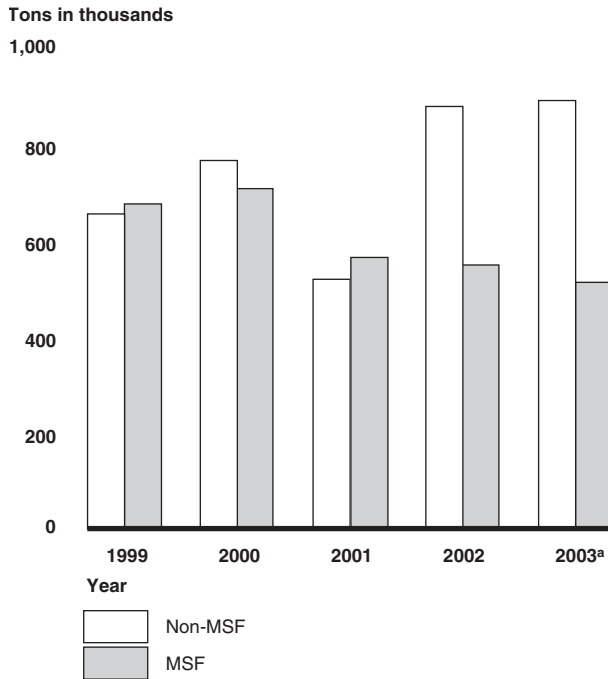
Source: GAO analysis of USDA data.

^a2003 data are estimated.

MSF and non-MSF vessels combined carried a total of 6.73 million metric tons of bagged food aid cargo and earned an average of \$430 million each year from bagged food aid shipments from 1999 to 2003.²⁸ MSF vessels carried about 45 percent of this cargo and non-MSF vessels carried 55 percent. However, non-MSF carriers' share of the bagged food aid market was clearly greater in 2002 and 2003 than in the previous 3 years, as shown in figure 5.

²⁸If foreign-flag vessels are included, the total is \$499 million.

Figure 5: Non-MSF and MSF Bagged Food Aid Shipments, Fiscal Years 1999-2003



Source: GAO analysis of USDA data.

^a2003 data are estimated.

The MSF cargo was shipped by five companies: four operating 42 containerships and one operating 5 LASH vessels. Each MSF containership carried an average shipment of 950 tons per voyage, and each MSF LASH vessel carried an average shipment of 22,440 tons per voyage. The non-MSF cargo was shipped by 38 companies that operated 143 vessels. Each non-MSF vessel carried an average shipment of 1,750 tons of bagged cargo per voyage, almost twice the average shipment of each MSF containership.

Cargo Preference Requirements Affect Whether Food Aid Shipments Are Awarded to MSF or Non-MSF Carriers

Cargo preference requirements affect the results of competition between MSF and non-MSF carriers for food aid shipments. One requirement that has tended to favor non-MSF carriers is MARAD's interpretation of U.S.-flag service for the cargo preference program. Figure 6 outlines the criteria agencies are required to follow when awarding shipments subject to cargo preference laws. As the figure indicates, an ocean carrier that offers to carry preference cargo on a U.S.-flag vessel can be counted as either

Priority 1 or Priority 2 service. For example, a U.S.-flag vessel qualifies for Priority 1 service if it offers to transport preference cargo on a U.S.-flag vessel or transship the cargo to U.S.-flag vessels for the entire portion of the waterborne voyage. However, a U.S.-flag vessel would qualify for Priority 2 service if it transshipped the cargo to a foreign-flag vessel for any leg of the voyage. In the absence of Priority 1 service availability, agencies may also count Priority 2 as Priority 1 service by default.

Figure 6: Criteria for MARAD’s Prioritization of U.S.-Flag Vessel Service for the Cargo Preference Program

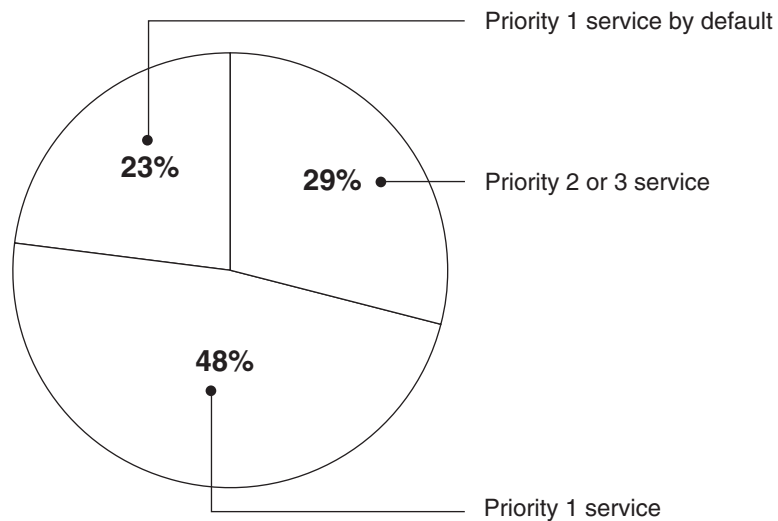
Priority 1
The following U.S.-flag vessel services have equal status in the selection by shippers of preference cargoes:
<ul style="list-style-type: none">A Direct U.S.-flag vessel serviceB U.S.-flag vessel service with transshipment to another U.S.-flag vessel to the final discharge portC Intermodal services to the final destination from the point or port of origin utilizing only U.S.-flag vessels for any waterborne portion of the voyage.
Priority 2
U.S.-flag vessel service with transshipment via a foreign-flag vessel to the final discharge port.
Priority 3
Foreign-flag vessel service.

Source: MARAD.

Most non-MSF vessels qualify for Priority 1 service because they offer the food aid program charter service entirely on a U.S.-flag vessel. However, vessels that operate in liner service, such as MSF containerships, often qualify for Priority 2 service because they transfer shipment of (transship) food aid cargo to a foreign-flag vessel for a leg of the voyage. In some locations, however, some MSF carriers have started to transship food aid cargo to prepositioned U.S.-flag vessels instead of foreign-flag vessels so that they can qualify as Priority 1 service. In fact, as figure 7 shows, liner vessels that carried Title II food aid cargo from fiscal years 1999 to 2003 qualified for Priority 1 service about 48 percent of the time.²⁹ Liner vessels counted as Priority 1 service by default about 23 percent of the time and Priority 2 or 3 service about 29 percent of the time. Under the cargo preference program, agencies are required to award food aid shipments to carriers that offer Priority 1 service over carriers that offer Priority 2 or 3 service, even if the freight rate charged by the carrier offering Priority 1 service is higher, unless the rate exceeds MARAD's fair and reasonable rate calculation.

²⁹This estimate is for food aid shipments by tonnage from both containership and LASH carriers with U.S.-flag liner service and consequently includes shipments from some non-MSF carriers. Title II food aid data only records the carrier rather than the vessel name.

Figure 7: Estimated Share of Title II Food Aid Shipments by U.S.-Flag Liner Carriers at Each Priority Level, Fiscal Years 1999-2003



Source: GAO analysis of USAID and USDA data.

Other cargo preference requirements tend to favor MSF carriers. An example of a requirement that has benefited MSF carriers is section 17 of the Maritime Security Act of 1996.³⁰ This provision allocates up to 25 percent of the total tonnage of Title II bagged food aid cargo each month to Great Lakes ports. Moreover, shipments of this cargo are awarded to carriers without regard to the flag of the vessel offering service and therefore are not subject to MARAD's priority rules.³¹ From fiscal years 1999 to 2003, MSF vessels and foreign-flag vessels carried an estimated total of 221,000 tons and 379,000 tons of this cargo, respectively.³² MSF carriers have shipped much of this cargo because they have incorporated certain Great Lakes ports facilities into their intermodal networks. They have created a system for transporting this cargo intermodally in containers by rail to U.S. ports on the East and West Coast, where the cargo is ultimately exported.³³ MSF carriers have been successful in winning much of this cargo because these intermodal shipments allow them to offer competitive freight rates, according to USAID and USDA officials. However, non-MSF carriers ship this cargo less often than MSF carriers because they generally lack access to the intermodal infrastructure that enables MSF carriers to move this cargo efficiently.³⁴

MSF and Non-MSF Carriers Load Most Bagged Food Aid Cargo from U.S. Gulf Ports

U.S. Gulf ports handled about 70 percent of the average annual tonnage of bagged food aid cargo carried by MSF and non-MSF vessels from fiscal years 1999 to 2003. Table 2 shows the tonnages of bagged food aid cargo loaded by MSF and non-MSF vessels at major food aid ports. As the table indicates, the ports of Lake Charles and Jacintoport handled 1.72 million tons and 1.43 million tons of bagged food aid cargo from 1999 to 2003, respectively. These two ports handle bagged food aid mostly as break-bulk,

³⁰P. L. 104-239, 110 Stat. 3138.

³¹Agencies are required to count all vessels that carry this cargo as Priority 3 service, or foreign-flag vessel service, according to USDA and USAID officials.

³²These data reflect an estimate because USDA's food aid shipment database does not designate this cargo differently from other food aid cargo that is shipped from Great Lakes ports.

³³Few U.S.-or foreign-flag carriers offer to transport food aid cargo by sailing on the Great Lakes.

³⁴According to USAID, non-MSF carriers also indirectly benefit from this cargo because it is treated as foreign flag, even though it is mostly carried by U.S.-flag vessels, thereby leaving a higher proportion of U.S.-flag cargo available for the non-MSF carriers.

or noncontainerized, cargo. Lake Charles is an agricultural port that is also the only U.S. port approved by USDA to store prepositioned commodities for the food aid program. Jacintoport has an automated cargo handling system capable of loading large tonnages of bagged food aid into break-bulk vessels and bulk vessels at a high rate of speed. Lake Charles will soon have a similar machine with like capabilities. MSF carriers do not load food aid directly into their vessels from these two ports. Instead, they hire stevedores to stuff the food aid cargo into containers and then move the containers intermodally by barge or rail to nearby ports that have container terminals where they have regularly scheduled service, such as the ports of New Orleans and Houston. MSF carriers run a similar operation from the Port of Chicago, where most of the Title II bagged food aid cargo subject to section 17 of the Maritime Security Act of 1996 is loaded. The Port of Chicago handled on average an estimated 35,000 tons of bagged food aid cargo for MSF carriers each year from 1999 to 2003. Much of this cargo was transported intermodally by rail to major U.S. container ports, such as Charleston, South Carolina; Norfolk, Virginia; and Seattle, Washington.

Table 2: Tonnage of Bagged Food Aid Cargo Loaded by MSF and Non-MSF Vessels at Major Food Aid Ports, Fiscal Years 1999-2003

Port	Tonnage	Percent of total
Lake Charles, Louisiana	1,716,035	27
Jacintoport, Texas	1,432,957	23
New Orleans, Louisiana	799,382	13
Houston, Texas	346,228	6
Charleston, South Carolina	341,118	5
Litco Memphis, ^a Tennessee	276,057	4
Norfolk, Virginia	270,411	4
Chicago, Illinois	264,121	4
All other ports	819,402	13
Total	6,265,711	100

Source: GAO analysis of USDA data.

Note: Table does not include estimated data for 2003. Percentages do not add up to 100 due to rounding.

^aLitco Memphis is a facility owned by the company that operated the five LASH vessels in MSF that carried food aid from 1999 to 2003.

Multiple Factors Determine How Tonnage Limit Changes Would Impact Food Aid Carriers

Our analysis of data from program agencies and carriers suggests that establishing a bagged tonnage limitation could reduce MSF vessels' market share in food aid, but the extent will depend on the limitation level and the options MSF carriers have in responding to it.³⁵ Using recent data, we examined daily limits of 7,500, 5,000, and 2,500 tons and found that the percentage of MSF food aid voyages affected rises from 3 percent at a limit of 7,500 tons to 19 percent at a limit of 2,500 tons. Almost all voyages above 7,500 tons were on the specialized LASH vessels, of which only one remains in MSF. Total annual food aid for MSF containerships on voyages above a 2,500-ton limit was around 160,000 tons. However, setting a limit at this level may not mean a reduction of 160,000 tons that MSF vessels carry, to the extent they are able to continue to carry some food aid on affected voyages, replace some food aid with other cargo, and forfeit their subsidy for food aid shipments that are sufficiently profitable. A simulation analysis we performed for MSF containerships suggests that, at a limit of 2,500 tons for example, the total annual decrease in food aid carried by these vessels could, under certain assumptions incorporating those options, range from about 17,000 to about 63,000 tons. Structured interviews with the carriers suggest that considerations such as vessel sharing arrangements could also affect the outcome and impacts on non-MSF carriers may depend on their market niche. Further, if the terms of MSF and non-MSF carriers' participation in cargo preference change, program agencies are concerned that they could face increased delivery delays, administrative burdens, and shipping costs. The major food aid ports would generally experience a limited impact on their overall port activity from a bagged tonnage limit, although specific food aid terminals could potentially be affected, depending on the extent of any limitation and the MSF carriers' responses to it.

³⁵Increasing or decreasing a bulk tonnage limitation on current MSF vessels will have no effect because these vessels currently do not carry bulk cargo. However, according to MARAD, the new Maritime Security Program allots space for five tanker vessels that would be impacted by a bulk tonnage limitation, and would therefore have a disincentive to join MSF.

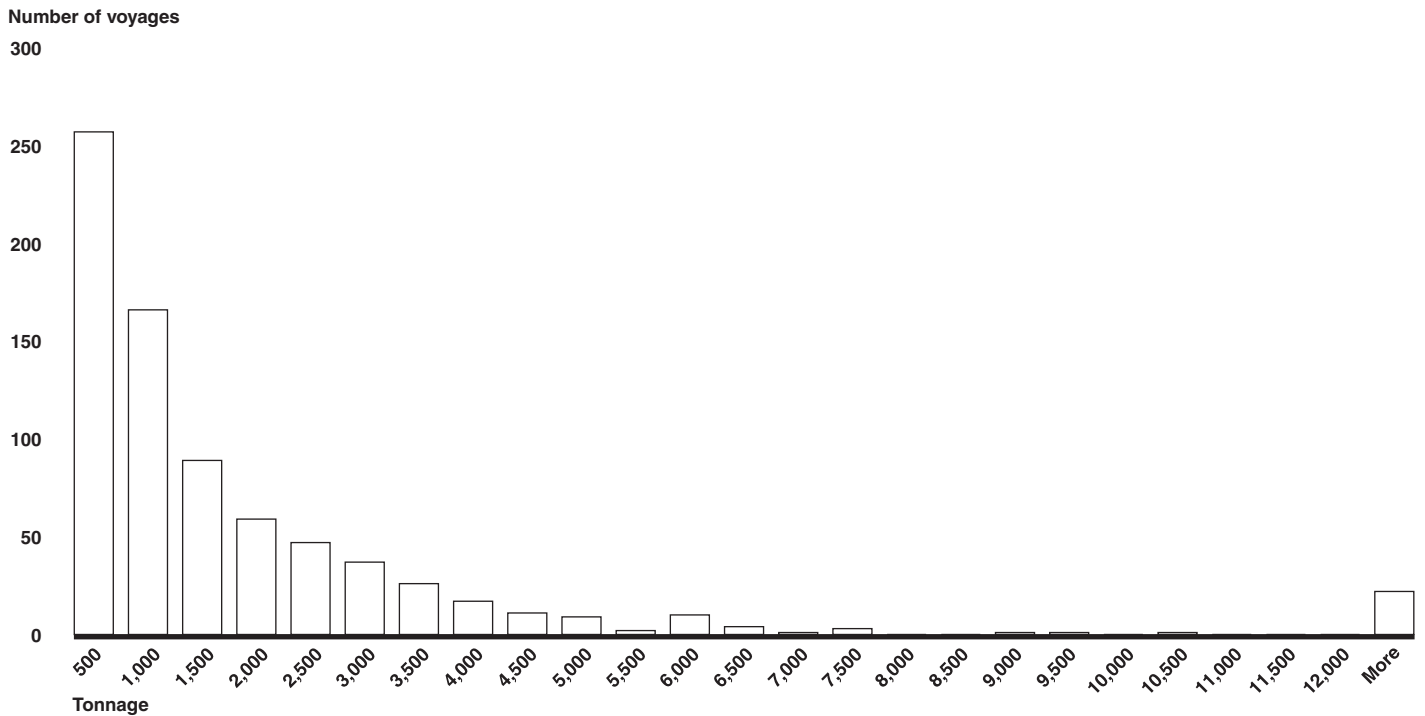
Share of MSF Food Aid Voyages Affected Would Increase Substantially as Limitation Level Decreases

While more than 80 percent of MSF food aid voyages fall below a 2,500-ton limit, establishing a limit at 2,500 tons would be substantially more constraining for the majority of the fleet than limits at 5,000 or 7,500 tons. According to USDA data from fiscal years 2001 to 2003, only 3 percent of MSF food aid voyages carried more than 7,500 tons, almost all of which occurred on the five LASH vessels that have participated in the MSF.³⁶ However, another 16 percent of MSF food aid voyages carried food aid tonnage between 2,500 and 7,500 tons. All of these voyages occurred on containerships, which comprise the majority of current MSF vessels. Figure 8 shows the number of MSF food aid voyages at different tonnage levels. The average annual tonnage carried by both MSF LASH vessels and containerships on voyages in excess of 2,500 tons was around 322,000 tons, of which around 160,000 tons were carried on the containerships.³⁷

³⁶Almost all LASH voyages carried in excess of 7,500 tons of food aid such that establishing a tonnage limitation at any of the proposed levels would affect these vessels. However, only one LASH vessel remains in MSF.

³⁷This figure represents a 3-year annual average for data from fiscal years 2001 through 2003.

Figure 8: Number of MSF Food Aid Voyages at Different Tonnage Levels, Fiscal Years 2001-2003

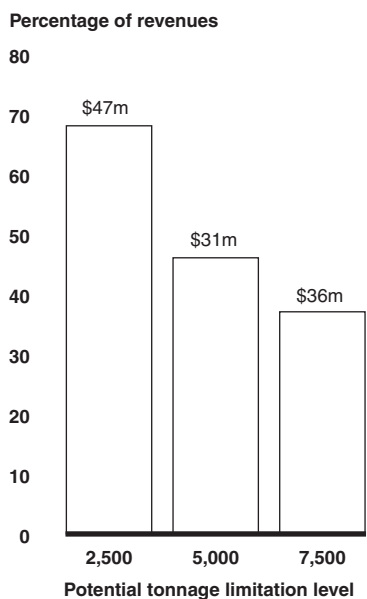


Source: GAO analysis of USDA food aid data.

Similar to the percentage of MSF food aid voyages, the share of MSF food aid revenues affected by a tonnage limit rises substantially as the level is decreased. As shown in figure 9, 37 percent of MSF total food aid revenues were earned on voyages carrying more than 7,500 tons of food aid while 68 percent of MSF total food aid revenues were earned on voyages with more than 2,500 tons of food aid. In comparison to the percentage of voyages affected, these revenue shares reflect that MSF voyages above a potential tonnage limit are earning proportionally more food aid revenues than those with smaller cargo volumes. MSF food aid revenues earned on the primarily LASH vessels that carried more than 7,500 tons were around \$26 million annually, or \$8.5 million per vessel. Not including LASH vessels, MSF food aid revenues earned on containerships that carried more than 2,500 tons were around \$22 million annually, or \$1.3 million per vessel. Nonetheless, while these data indicate how often an MSF vessel could be restricted by a tonnage limitation, they indicate the potential loss in

revenue from food aid only under the assumption that MSF carriers were to no longer carry any food aid on these voyages.

Figure 9: Percentage of MSF Food Aid Revenues from Voyages with Tonnage above a Potential Limitation, Fiscal Years 2001-2003



Source: GAO analysis of USDA food aid data.

Various Factors Will Affect Actual Impact on MSF

The actual food aid tonnage and net revenue impact for MSF vessels under a tonnage limitation will depend on options available to the carriers and how they respond to them. Numerous considerations relating to market conditions, food aid logistics, and carrier characteristics would ultimately shape the impact of any tonnage limitation. We identified three factors to explicitly consider in an analysis of a tonnage limitation. Each of these factors, under certain assumptions, has the potential to make the impact of a tonnage limit on MSF vessels smaller than suggested by the share of MSF voyages affected.

First, affected MSF vessels might be able to carry some food aid, potentially up to the level of the limit, and may not have to give up the entire tonnage for that voyage to keep their subsidy. This situation can occur if a carrier can bid on a portion of an offered shipment or if the food aid tonnage on a voyage comprises multiple shipments, such that the carrier could bid on those shipments providing tonnage under the limit.³⁸ For example, a carrier that would normally have a voyage with 3,700 tons of food aid may be able to carry two food aid contracts for 1,000 tons each and, under a tonnage limit of 2,500 tons, face a potential loss of food aid cargo of only 1,700 tons.

Second, depending on market conditions, affected MSF carriers may be able to replace a portion of the food aid above the limit with commercial or nonfood preference cargo, diminishing their loss in total revenues. For example, if an MSF vessel were to carry 1,700 tons less food aid due to a tonnage limit, the carrier may be able to replace a portion of that tonnage with nonfood aid cargo.

Third, there may be occasions when carrying food aid cargoes above a tonnage limit is more profitable than reducing food aid to receive the subsidy for a voyage, thus providing an incentive to carry food aid above the limit. This may occur for food aid shipments that are particularly large or earn a particularly high freight rate such that an affected MSF carrier might choose to carry the food aid, even if it entailed forfeiting the subsidy otherwise earned during the days of that voyage, as well as forgoing any net revenues from available replacement cargo.³⁹ For example, if an MSF vessel were to normally carry 7,000 tons of food aid on a voyage that lasted 15 days, the carrier would have to give up a subsidy payment of around \$107,000 to carry that entire tonnage. The carrier might choose to forfeit

³⁸According to USDA and USAID, the food aid tonnage on both MSF and non-MSF vessel voyages is often comprised of multiple food aid contracted shipments, often from different agencies and programs, such that a carrier could decrease the food aid tonnage carried on a voyage. With regard to carriers' ability to bid on a portion of a contract, program agencies, carriers, and industry representatives had different opinions. MARAD officials stated that contracts are typically structured to require carriage of the total tonnage with specific arrival dates, which prevents the splitting of cargoes. USAID and USDA noted that carriers' flexibility is limited because contract terms are primarily determined by the private voluntary organizations that seek the food aid grants, however, they acknowledged that bidding on a portion of a contract was possible.

³⁹The five MSF carriers reported that they would not give up their subsidy to carry food aid on any voyage—a view that was corroborated by MARAD. However, USDA acknowledged that this practice could be financially beneficial for large voyages.

the subsidy payment if the net revenues from the food aid effectively above the 2,500-ton limit exceeded the \$107,000 plus potential net revenues from replacement cargo.

To illustrate the impact of a tonnage limitation when accounting for these three factors, we created a simulation model that suggests ranges of possible tonnage and net revenue changes for MSF vessels at different tonnage limits. The model uses estimates of average freight rates, average cargo volumes, and average vessel costs for voyages from fiscal years 2001 to 2003, and includes probability distributions that reflect certain assumptions about carrier options and behavior.⁴⁰ Table 3 provides the annual average simulation estimates for MSF containership voyages that carried more than 2,500 tons of food aid.⁴¹

⁴⁰See appendix II for a more detailed discussion of the model's probability distributions, assumptions that are used to assign the probabilities, and the limitations in financial data that heighten the model's uncertainties.

⁴¹Simulation results for a tonnage limit at 5,000 tons are included in appendix II. We did not perform the simulation on a tonnage limit at 7,500 tons, given that so few containership voyages carried cargo at that level and that only one LASH vessel remains in the MSF.

Table 3: GAO Simulation of MSF Voyages with Food Aid above a 2,500 Tonnage Limit, 3-Year Annual Average for Fiscal Years 2001-2003

Dollars in millions

	Estimated range of values ^a		
	Low value	Average value	High value
Total food aid tonnage on voyages affected by the limit^b		160,000	
Factor 1: MSF vessels may carry some food aid up to the limit, depending on number and terms of food aid shipments:			
Food aid tonnage effectively above the limit ^c	61,000	92,000	138,000
Food aid net revenues associated with this tonnage	\$6.7	\$10.4	\$15.6
Factor 2: MSF vessels may replace some food aid above the limit with other cargo:			
Estimated tonnage of additional other cargo	3,000	24,000	49,000
Net revenues earned from additional other cargo	\$0.2	\$1.8	\$4.0
Factor 3: MSF vessels may continue to carry some food aid above the limit and forfeit the subsidy if sufficiently profitable:			
Food aid tonnage above the limit that is carried	24,000	53,000	102,000
Net Revenues earned from food aid above the limit minus forfeited subsidy payments	\$2.6	\$5.1	\$9.4
Simulation estimates with factors 1-3 combined			
Decline in MSF food aid tonnage ^d	17,000	39,000	63,000
Decline in MSF net revenues ^e	\$2.2	\$3.5	\$4.8

Source: GAO analysis using USDA data and MSF vessel data.

^aRanges provided are based on probability distributions and the range of probable results given the assumptions at a 90 percent confidence interval. See appendix II for a more detailed discussion.

^bThis tonnage does not include LASH vessels.

^cWe assume carriers are not able to carry food aid tonnage exactly up to the limit in every case, so that the food aid tonnage effectively above the limit is greater than the difference between the tonnage and the limit.

^dThis tonnage is calculated by subtracting the food aid tonnage above the limit that is carried from the total food aid tonnage effectively above the limit.

^eThis decline includes the revenue loss from carrying less food aid, the revenue gain from carrying additional other cargo, the forfeited subsidy payments, and cost savings from altering the cargo tonnages carried of food aid and other goods.

The estimates illustrate that, under the assumption that carriers could respond to a tonnage limit in the ways we have discussed, impacts on MSF vessels could be reduced. While the total food aid tonnage on voyages affected by the limit is around 160,000 tons, to the degree that carriers can keep some food aid on voyages where the total food aid tonnage has been above the limit, the amount of food aid that they could lose due to the limit would, under certain assumptions, range from around 61,000 to 138,000

tons. This food aid tonnage that is effectively above the limit would correspond to estimated net revenues of around \$7 million to \$16 million. Based on our assumptions about how much other cargo MSF carriers are able to secure to replace the food aid, MSF net revenues from additional cargo might range from an estimated \$200 thousand to an estimated \$4 million. Based on our assumptions about net revenues for food aid and other cargo, the food aid tonnage above the limit that MSF vessels continue to carry might range from an estimated 24,000 to an estimated 102,000 tons. The net revenues from this food aid tonnage minus the forfeited subsidy payments would then range from around \$3 million to \$9 million. Taking all three factors into account, the total decline in MSF net revenues under a limitation of 2,500 tons of food aid might range from around \$2 million to \$5 million a year. On a per vessel basis, this amounts to roughly \$120,000 to \$270,000. By estimating the food aid tonnage effectively above the limit and subtracting the tonnage that MSF vessels might continue to carry while forfeiting their subsidy payments, the annual food aid tonnage available to non-MSF carriers might range from around 17,000 to 63,000 tons.

Impacts on carriers could fall toward the ends of the simulation ranges reported in table 3 or, in some cases, outside those ranges if carrier options and responses differ from those simulated. An important consideration is that certain key assumptions in the simulation are based on information from fiscal years 2001 to 2003. To the extent that future market conditions differ from those reflected in recent years, or carriers respond in different ways than we have considered, the impacts of a tonnage limitation could be affected. For example, if future food aid program levels decline, then the overall tonnage and revenue changes from a shift in MSF's food aid market share would also likely decline. If, however, future nonfood preference cargo levels decline, then MSF may be able to replace a smaller share of the food aid tonnage above a limit with other cargo, and the revenue impacts from a tonnage limit would be greater. If MSF carriers decide never to carry food aid above a limit—even when it is profitable to do so, net of a forfeited subsidy payment—then the total decline in food aid tonnage they carry and the revenue loss to MSF vessels would increase.

Carriers Reported that Structural Challenges Would Impede Their Ability to Adapt to Tonnage Limits

MSF carriers told us they face certain logistical constraints that challenge them in being able to effectively respond to a tonnage limit at any level.

- One challenge is the difficulty in planning vessel tonnages around a limit. The MSF carriers cited their lack of control over when they receive food aid cargoes from suppliers, which makes it difficult to

distribute the food aid tonnage onto vessel sailings to stay under the limit and meet delivery deadlines. They stated they could face additional expenses for cargo storage at ports as well as loading penalties and charges for delayed delivery. MSF carriers also cited the fact that they may bid on multiple food aid shipments concurrently as a complication in planning vessel tonnages around a limit.

- A second challenge cited by two MSF carriers was that they have agreements with other carriers to share space on their vessels that could be at risk if a carrier is concerned with shipping food aid above a certain tonnage. USDA and MARAD corroborated this view and expressed concern that eliminating vessel-sharing agreements would increase inefficiency in the market.
- A third challenge noted by some MSF carriers was that the costs they incur to maintain an infrastructure to support food aid cargo might become too high if their food aid tonnage should be reduced. Such infrastructure might include a U.S.-flag vessel stationed abroad to transfer food aid from major ports to more remote destinations or the container loading operations some MSF carriers have set up in the Great Lakes region.

The ability of the non-MSF carriers to benefit from a tonnage limitation would depend on their market niche, according to our interviews with 10 non-MSF carriers. The simulation we discussed above suggests that, under certain assumptions, the additional bagged food aid available to all non-MSF carriers might range from less than 1 percent to 8 percent of this segment's current bagged tonnage for tonnage limits at 5,000 and 2,500 tons, respectively.⁴² However, each non-MSF carrier's ability to bid for and win that cargo would be differentially affected by (1) whether it carries bagged food aid; (2) whether it services food aid destinations where cargo has become available; and (3) the tonnage of cargo available, compared with its vessel capacity. For example, while seven of the non-MSF carriers we interviewed said they would benefit from a tonnage limitation, two non-MSF carriers said they would be unaffected because they do not carry bagged food aid. Three non-MSF carriers supported a lower tonnage limitation limit, but two of them mentioned being constrained by the

⁴²This percentage only reflects tonnage impacts forecasted for MSF containerships. If the one remaining LASH vessel in the MSF were to also carry less food aid, then these percentages would rise.

geographic routes they service in their ability to pick up new business. Moreover, two other non-MSF carriers responded that a lower tonnage limitation would actually hurt them because it would encourage MSF carriers to more intensely compete in their market niche that services smaller shipments. Three other non-MSF carriers with larger vessels were satisfied with a higher tonnage limitation because it would reduce MSF competition in the market niche for large shipments.

Effect on Program Agencies Will Depend on MSF and Non-MSF Carrier Responses

The impact of a bagged tonnage limitation on program agencies is hard to predict and will ultimately depend on the degree to which both MSF and non-MSF carriers alter the terms in which they participate in the Maritime Security Program and cargo preference. According to DOD, a tonnage limit could cause some MSF carriers to withdraw from the Maritime Security Program, though DOD officials indicated that they expect to receive more applications for the next program than available slots. USDA, USAID, and MARAD also reported several concerns about a tonnage limit at any level. These concerns include:

- Decreased food aid timeliness: USDA and USAID noted concern that food aid shipments could be delayed if the non-MSF vessels do not have sufficient capacity to quickly carry the additional food aid shipments above a limit or if MSF carriers responded to the limitation by spreading food aid tonnage over several sailings to stay under the limit.⁴³

⁴³When we asked the non-MSF carriers about excess capacity, only 3 of 10 reported they could do more sailings with their existing vessels while the others would either have to charter or buy new vessels. Additionally, most MSF and non-MSF carriers reported that food aid agencies tend to bunch up contracts in the last 3 months of the fiscal year, such that vessel availability could become a problem under a tonnage limitation.

-
- Increased administrative burdens: USDA and USAID noted concern about additional administrative burdens if MSF carriers responded to the limit by submitting partial bids or dividing up shipments and if non-MSF carriers increasingly submitted bids for bagged cargo that were contingent on getting numerous contracts in order to fill larger vessels. MARAD noted concern that a tonnage limit would negatively affect their initiative to implement service contracts.⁴⁴ Additionally, both food aid agencies and MARAD will face the administrative burden of having to track volumes on a voyage basis—something they do not currently do.
 - Increased shipping costs: USDA, USAID, and MARAD noted concern over the possibility of increased freight rates if (1) non-MSF carriers raised prices in response to decreased competition, (2) freight rates bid by non-MSF vessels for contracts that would have otherwise been carried by MSF vessels are higher because of charter service rather than liner service or because the non-MSF carrier may not regularly sail to that location, (3) MSF carriers raised prices in response to losses associated with carrying less food aid, receiving fewer subsidy payments, or incurring costs for delayed delivery charges, and/or (4) freight rates bid by MSF carriers for food aid shipments below a tonnage limitation are higher than their bid otherwise would have been for a larger shipment due to the loss of economies of scale.⁴⁵

**Tonnage Limitation
Generally Would Have
Limited Overall Impact on
Ports, with Greater
Potential Effects on Certain
Terminals**

A bagged food aid tonnage limitation on MSF carriers generally would have limited impact on the overall activity of the major food aid ports, based on our analysis of the food aid shipment data and the interviews we conducted with port representatives. Some ports may experience some shift in the type of food aid handled, which could affect participating terminals within these ports. For example, if bagged cargo shipments by MSF containerships were seriously affected, this would likely have a greater impact on terminals that predominantly stuff bagged food aid cargo into

⁴⁴According to MARAD, a service contract is a long-term contract arranged for a regular volume of cargo to be delivered over a period of time for a negotiated freight rate. If a tonnage limit were imposed, MARAD is concerned that MSF carriers would not be able to participate in service contracts because they would fear exceeding a tonnage limitation.

⁴⁵We did not analyze freight rate differences between MSF and non-MSF carriers. Both groups of carriers emphasized that competitive pressures in the market limit their ability to raise prices.

containers. However, any impact would depend on the extent of the limitation imposed and the MSF carriers' responses to it.

The major Gulf ports, from which most food aid cargo is shipped, would likely experience little impact if a bagged food aid limitation were imposed on MSF carriers because they service both MSF and non-MSF vessels that carry bagged cargo. The result would be a shift among their customers, according to port officials. The ports of Lake Charles and Jacintoport are specialized agricultural commodity ports that handle only bagged food aid cargo, and they anticipate that any loss of bagged cargo by MSF carriers would likely be picked up by the non-MSF carriers who are their biggest customers. The ports of New Orleans and Houston service both MSF and non-MSF customers at different terminals. These large ports handle all kinds of cargo in addition to food aid shipments, and port officials anticipate that there would be no net loss in overall business for the port. While officials said there could be some impact on individual terminals, they estimated that the terminals could likely replace any lost food aid container cargo with other container cargo.

The large coastal container ports like Norfolk, Charleston, and Seattle would also likely experience little impact since the volumes of food aid cargo involved comprise a very small percentage of their total business. For instance, Norfolk handled 12 million tons of cargo in 2003, of which 70,000 tons were food aid that they stuffed into containers at the port, according to a port official. Norfolk did not track how much food aid it handled that was already in containers. The port official in Charleston estimated that food aid was about 1 percent of its cargo, while the official in Seattle estimated about 3 to 4 percent. These ports would experience little impact from a bagged tonnage limitation on MSF carriers, according to these officials. However, they said that the terminals at the ports that stuff the bagged food aid into the containers might be affected.

A port of Chicago representative expressed the greatest concern about the potential impact from a tonnage limitation, although food aid cargo is a small portion of Chicago's total cargo. MSF carriers transport most of the section 17 cargo reserved for Great Lakes ports, and the majority of it goes through the port of Chicago. The port official said that the port valued food aid cargo because it was relatively more labor intensive and generated more jobs than other types of cargo. The preponderance of food aid cargo going through the port of Chicago is handled at a single terminal, whose business could be damaged, depending on the nature and extent of the impact. If MSF carrier participation in food aid shipments is severely

curtailed and other carriers do not step in to carry section 17 cargo, the terminal could be seriously affected. In addition, the port official said that one benefit of the section 17 provision was that it helped make Midwestern commodity suppliers more competitive when their cargo could be loaded in nearby Great Lakes ports instead of being transported to Gulf ports. The official said that the regional effort to encourage more food aid commodity sourcing from Midwestern suppliers could also be affected if section 17 bagged cargo was curtailed.

Observations

While we make no recommendations in this report, we believe that our analysis provides important insights into the nature of competition between MSF and non-MSF carriers for food aid shipments. A sharp drop in bulk food aid shipments in fiscal years 2000 and 2001 suggests that competition for bagged food aid has become more intense. In those years, MSF carriers captured a large share of the business, but market share of bagged shipments shifted toward the non-MSF carriers in fiscal years 2002 and 2003. The two segments of the industry appear to be finding ways to respond to the changes in food aid, but this time frame is too short to determine any clear trends.

We also believe that our analysis of a potential limit on the MSF carriers' food aid shipments provides some findings that are not obvious without a close examination of the system. One finding is that, if MSF carriers have certain options in responding to a tonnage limit that would mitigate the impacts of that limit, the potential decline in food aid shipments by this group would be less than the total volume of food aid carried on voyages over the limit. This result would occur if MSF vessels carry some food aid up to the limit on affected voyages, and in some cases choose to forfeit subsidy payments in favor of carrying profitable shipments above the limit. To the extent that MSF carriers do choose to carry food aid over the limit and forfeit the subsidies, a tonnage limit may not lead to a large shift in food aid shipments and financial benefits to non-MSF vessels. Where any financial effects of food tonnage limitations would accrue remains uncertain. For example, MARAD subsidy payments could be lower if MSF carriers continue to carry food aid. However, food aid agencies could face higher costs if the limits resulted in fewer and more expensive options for some shipments, and these agencies have emphasized their concerns that additional constraints on food aid shipments could impede their ability to provide food aid to meet critical humanitarian needs.

Finally, it is important to recognize the limits of any effort to predict the future course of events in an area in which key factors are so volatile. For example, the volume of food aid shipments has varied greatly over recent years, and the relationship between food aid and export subsidies is also under discussion in the WTO negotiations. The outcome of MARAD's efforts to support the two key maritime sectors is clearly influenced by the level and composition of food aid, so long-term trends and even fluctuations in food aid shipments will affect the program. Second, the importance and profitability of food aid, compared with other commercial or preference cargo, has a large influence on the health of the various firms and components of the industry, and the volume and prices for these alternative cargoes can also change significantly. In these cases, firms may decide to move vessels into or out of the program, which will have an effect on the existing operators.

Agency Comments and Our Evaluation

USAID, USDA, and DOD provided written comments on a draft of this report, which are reproduced in appendixes IV, V, and VI. USAID stated that we used sound and logical methodologies to analyze the data and accurately identified trends pertaining to MSF and non-MSF carriers that carried food aid over a 5-year period. USAID agreed that predicting the impact of a tonnage limitation is difficult and said it takes a cautious approach to changes, citing concerns regarding impacts on administrative systems and the ability to meet foreign assistance objectives. USDA said that the report adequately summarized USDA's major concerns over the impact on food aid programs that could result from a bagged cargo tonnage limitation placed on MSF carriers, including decreased food aid timeliness, increased administrative burdens, and increased shipping costs. DOD generally concurred with our findings. It stated that it would oppose any change in cargo preference that would adversely impact the U.S. merchant marine because it believed there would be negative impacts on DOD mobilization capabilities. DOT provided oral comments. DOT said that the draft report provided a thoughtful analysis of the potential impact of tonnage limits on food aid shipments and how they might affect the U.S.-flag shipping industry. However, DOT identified issues with some factors, and the way they are considered, in the simulation model we used to estimate the range of impacts from different tonnage limits. In addition, USAID and DOT provided technical comments, which we incorporated in the report as appropriate.

DOT officials, including the Director of MARAD's Cargo Preference Program, said that they identified issues with some factors and the way

they are considered in the simulation model used in our analysis of potential impacts of a tonnage limitation. In particular, these officials suggested that the draft report and its simulation model could have more thoroughly explored the effects of three factors: (1) MSF carriers' ability to replace food aid cargo with commercial cargo, (2) the industry's reluctance to carry cargo over the limit and forfeit the subsidy, and (3) the logistical constraints on carriers' ability to operate under a low tonnage limit. Specifically, with respect to replacing food aid cargo, DOT officials questioned whether sufficient commercial cargo is actually available in the marketplace to replace food aid cargo for MSF vessels. With respect to carrying cargo above the limit and forfeiting the subsidy, DOT emphasized that all five MSF carriers stated they would not give up their subsidy to carry food aid. DOT officials stated their view that logistical limitations, which would further constrain MSF carriers' ability to carry food aid shipments under low tonnage limits, may be underestimated in the model. While the DOT officials recognized these factors are acknowledged in the draft report as limitations on the model's predictive value, they emphasized their view that the cumulative effect of more thoroughly exploring them in the model might have led us to conclude that the imposition of tonnage limits could be more detrimental to MSF than the results otherwise indicated. As a result, the officials suggested the model's limitations be more extensively and prominently recognized in the body of the report. Finally, the DOT officials emphasized their agreement with the aspect of our observations that the imposition of any tonnage limit on MSF vessels could drive up costs for the food aid program and decrease efficiency by limiting competition and increasing freight charges.

We agree that MSF carriers may face constraints in terms of their options in responding to a tonnage limitation. Specifically, we agree that carriers may have restricted flexibility in managing contract amounts to keep food aid shipments below limits and still carry food aid, and in replacing lost food aid with other cargo. Our simulation analysis specifically incorporates uncertainty in these factors, and we have modified our report language in several places to clarify the range of assumptions concerning those and other variables, and the implications of the uncertainty regarding our results. Additional detail about how these factors are treated in our analysis is presented in the following paragraphs. With respect to whether carriers would in some cases carry food aid above a tonnage limit and forgo the subsidy for affected days, we agree that including that assumption is important to our simulation model results. Our simulation model represents the outcome when carriers choose the most profitable option available on each voyage, and vessel data reported by MSF carriers suggest

that there are times when carriers would have the financial incentive to carry food aid above the limit and forfeit their subsidy payment for that voyage. The presentation of our simulation model results makes it clear that option is an important one in carriers being able to mitigate the impact of a tonnage limitation. If carriers never forgo the subsidy, the impacts of a limitation on MSF carriers would be greater. Neither carriers nor MARAD provided us a reason why they would not ever forgo a subsidy.

The simulation model incorporates the likelihood that MSF carriers would face logistical constraints in managing food aid contracts to continue carrying food aid amounts near but under the limit. It reflects possibilities ranging from carriers being able to carry food aid exactly up to the limit amount—for example 2,500 tons—to not being able to carry any food aid on the share of voyages above the limit. We tested the sensitivity of our simulation results to the particular probability distribution assumed for this variable; and we found that if carriers are assumed to have less flexibility in managing food aid tonnage below a limit, the average values for the impacts would differ somewhat from the averages we reported. For example, for one alternative distribution assuming less flexibility, the average value of food aid tonnage that carriers would have to give up or lose the subsidy for the voyage increased from about 92,000 tons to about 109,000 tons.⁴⁶

Similarly, our simulation model allows for the possibility that MSF carriers would be unable to replace any food aid above a limit with commercial or nonfood preference cargo. However, most MSF carriers reported that they are currently sailing near full capacity, with a range of capacity utilization rates that together average 90 percent. The simulation model relies on these reported capacity utilization rates to determine the most likely value for the share of food aid effectively above the limit that carriers might be able to replace with other cargo. However, the simulation model reflects a range of probabilities with respect to carriers being able to replace lost food aid cargo and achieve their current (based on the fiscal year 2001 to

⁴⁶As in the simulation model results in our report, this simulation assumed that the food aid effectively above the limit (or given up to keep the subsidy on a voyage) equaled the amount above the limit plus an additional amount that ranged from 0 to 2,500 tons. The most likely value in this range of incremental amounts was changed from 0 to 1,250. Other distributions in the simulation model were unchanged. Other impacts of this changed distribution include a similar percentage increase in net revenue lost from carrying food aid and a greater likelihood that carriers would forgo the subsidy to carry larger food aid shipments on some voyages. The average overall decline in MSF food aid tonnage due to the limit under this scenario was about 42,000 tons, compared with 39,000 tons in the simulation we report.

2003 data we analyzed) average capacity utilization, and includes at one extreme the possibility that no lost food aid tonnage will be replaced.

To the extent that these constraints strongly affect MSF carriers' ability to respond to tonnage limits, then the high end of the range of possible results suggested by the simulation model should be considered. For example, if MSF carriers face significant logistical constraints to carrying food aid up to the limit, then, under a tonnage limit of 2,500 tons, they are more likely to have an annual 138,000 tons of food aid effectively above the limit, compared with the annual 61,000 tons of food aid effectively above the limit as estimated by the simulation's low value results.⁴⁷

In addition to the potential impacts of a tonnage limit that are suggested by the simulation model under certain assumptions, there are potential structural constraints we were not able to reliably quantify and include in the model. One example is the potential impact on MSF carriers' total tonnage and revenues if a tonnage limit were to jeopardize their vessel sharing agreements. As we stated in the report, these types of structural constraints could challenge MSF carriers in being able to effectively respond to a tonnage limit at any level.

We are sending copies of this report to appropriate congressional committees, the Secretaries of USDA, DOD, and DOT, and the Administrator of USAID. We will also make copies available to others upon request. In addition, this report will be available at no charge on the GAO Web site at <http://www.gao.gov>.

⁴⁷We provided the individual simulation results for each of the three carrier options discussed in the report in table 3, for a limit of 2,500 tons, and in table 5, for a limit of 5,000 tons. While eliminating any one of the three carrier options would affect the results for the remainder of the model, the results are provided individually in order to illustrate the types of impacts associated with each option.

If you or your staff have any questions about this report, please contact me at (202) 512-4128. Additional contacts and staff acknowledgments are listed in appendix VII.

A handwritten signature in black ink that reads "Loren Yager". The signature is written in a cursive style with a large initial "L" and "Y".

Loren Yager
Director, International Affairs and Trade

Report to Congressional Committees

The Honorable John McCain
Chairman
The Honorable Ernest F. Hollings
Ranking Minority Member
Committee on Commerce, Science,
and Transportation
United States Senate

The Honorable John W. Warner
Chairman
The Honorable Carl Levin
Ranking Minority Member
Committee on Armed Services
United States Senate

The Honorable Duncan Hunter
Chairman
The Honorable Ike Skelton
Ranking Minority Member
Committee on Armed Services
House of Representatives

Objectives, Scope, and Methodology

In a legislative mandate in section 3535 of the National Defense Authorization Act for Fiscal Year 2004 (P.L. 108-136), Congress directed us to review the impact of placing a tonnage limitation on transportation by the Maritime Security Fleet (MSF) of cargo preference food aid and to report to the Chairman and Ranking Minority Member of the House and Senate Committees on Armed Services and the Senate Committee on Commerce, Science, and Transportation. As discussed with Committee representatives, we have focused on answering the following questions: (1) how the cargo preference and Maritime Security Programs are designed to meet their objectives and who participates in them; (2) what the nature and extent are of MSF and non-MSF carrier participation in the food aid program; (3) how establishing a bagged cargo preference tonnage limitation on MSF vessels would be expected to affect the MSF, other U.S.-flag ships, the cargo preference food aid program, and the ports servicing these ships.

To examine how the cargo preference and Maritime Security Programs are designed to meet their objectives and who participates in them, we reviewed documents, relevant legislation, regulations, and data pertaining to the cargo preference and Maritime Security Programs from the Maritime Administration (MARAD) and Department of Defense (DOD), as well as our prior studies and those done by the Congressional Research Service. We also obtained and analyzed MSF and cargo preference vessel data and food aid shipment participation data from MARAD and the Department of Agriculture (USDA) for fiscal years 1999 to 2003. We examined the data for their reliability and appropriateness for our purposes through electronic testing of the data, verification of the data against other sources, and interviews with agency officials that manage the data. We found the data to be sufficiently reliable to represent participation by MSF and non-MSF vessels and carriers in transporting food aid shipments. In addition, we interviewed agency officials at MARAD, DOD, USDA, and the Agency for International Development (USAID), as well as representatives of three maritime trade associations. We also conducted structured interviews with representatives of 15 carriers that transported the majority of cargo preference food aid, including 5 MSF and 10 non-MSF carriers.

To determine the nature and extent of MSF and non-MSF carrier participation and competition in the food aid program, we gathered and analyzed food aid shipment data from USDA and USAID for fiscal years 1999 to 2003. We examined the data for their reliability and appropriateness for our purposes and found them sufficiently reliable to represent MSF and non-MSF carrier participation and competition in the food aid program. We

also interviewed USDA, USAID, MARAD, DOD, and maritime trade association officials, including company representatives from 5 MSF and 10 non-MSF carriers. To determine whether bagged cargo has accounted for an increasing share of food aid shipments, we obtained and analyzed USDA food aid procurement data from fiscal years 1996 to 2003. We examined the data for their reliability and appropriateness for our purposes through electronic testing of the data, verification of the data against other sources, and interviews with agency officials that manage the data. We found them sufficiently reliable to confirm that an increasing share of food aid was shipped as bagged cargo from 1999 to 2003. In addition, we reviewed agency reports that discussed food aid program activities and trends, and conducted interviews with USDA and USAID officials. To examine the process by which agencies award food aid shipments to MSF and non-MSF carriers, we obtained and reviewed USDA, USAID, and MARAD directives and regulations governing the ocean transportation of food aid cargo and also reviewed applicable legislation. We also conducted interviews with USDA and USAID officials responsible for awarding food aid shipments in accordance with cargo preference requirements. To identify the U.S. ports that handled the largest tonnages of food aid cargo shipped by MSF and non-MSF carriers, we analyzed USDA food aid shipment data. To gain additional perspectives on how MSF and non-MSF carriers handled and transported this cargo in preparation for export shipment, we interviewed port officials from 8 major food aid ports,¹ as well as 15 MSF and non-MSF carrier representatives.

To examine how establishing a bagged cargo preference tonnage limitation on MSF vessels would potentially affect MSF and other U.S.-flag ships, we obtained and analyzed USDA food aid shipment data for fiscal years 1999 to 2003. We analyzed the tonnage carried and revenues earned for each MSF vessel voyage that carried food aid above potential limits of 2,500, 5,000, and 7,500 tons. To illustrate how carriers might respond to a tonnage limit, we obtained operating and revenue information from the five MSF carriers on each of their vessels from fiscal years 2001 to 2003. To account for variation in the values of our estimates, we performed a Monte Carlo simulation² that varied the impact model approximately 20,000 times from

¹Port selection criteria included the tonnage of bagged cargo handled by the port as well as factors relating to geographic location and whether the port services MSA-17 cargo.

²A Monte Carlo simulation is a widely used computational method for generating probability distributions of variables that depend on other variables or parameters represented as probability distributions.

probability distributions characterizing possible values for variables, such as the percent of food aid above the limit that carriers replace with other cargo, the freight rate for other cargo, and the cost differential between food aid and other cargo. This simulation resulted in a range of estimates, under certain assumptions, for the likely total decline in MSF food aid tonnage and net revenues on an annual basis. A technical discussion of the simulation model and the results at a 5,000-ton limitation is provided in appendix II.³ We examined USDA's food aid shipment data and carrier's vessel estimates for their reliability and appropriateness for our purposes. For USDA's data, we performed electronic testing of the data, verification of the data against other sources, and interviews with agency officials that manage the data. Although we were able to do only limited verification of the self-reported data from carriers, we found both sources to be sufficiently reliable to inform our simulation model. In addition, we supplemented our simulation results with information that both MSF and non-MSF carriers provided in interviews pertaining to any structural constraints they may face in responding to a tonnage limitation.

To examine how establishing a bagged cargo preference tonnage limitation on MSF vessels would potentially affect the program agencies, we reviewed the current extent of data collection and procedures for tracking food aid shipments to see if additional administrative burdens would be entailed. We also interviewed agency officials at USDA, USAID, MARAD, and DOD.

To examine how establishing a bagged cargo preference tonnage limitation on MSF vessels would potentially affect the ports that service food aid shipments by MSF and non-MSF carriers, we analyzed food aid shipment data from USDA that identified the ports used for each shipment for fiscal years 1999 to 2003. We also conducted telephone interviews with representatives of eight major food aid ports (Charleston, South Carolina; Chicago, Illinois; Houston and Jacintoport, Texas; Lake Charles and New Orleans, Louisiana; Norfolk, Virginia; and Seattle, Washington) to obtain additional information, including their assessment of the potential impact of a limitation on their port.

³We did not perform the simulation on a tonnage limit at 7,500 tons, given that so few containership voyages carried cargo at that level and that only one LASH vessel remains in MSF.

Appendix I
Objectives, Scope, and Methodology

We performed our work from February through August 2004 in accordance with generally accepted government auditing standards.

Simulating Potential Impacts of a Bagged Tonnage Limitation

This appendix describes the data and methodology that we used to analyze the impact of a bagged tonnage limitation on MSF and presents some additional estimates not contained in the letter portion of this report. This simulation analysis is based on certain assumptions regarding carrier options and responses and makes use of food aid data from agencies, reported vessel revenue and cost estimates for recent years, and information from interviews about the food aid industry. The three potential carrier responses incorporated into our model include an MSF vessel's potential ability to continue carrying some food aid on affected voyages, replace some food aid with other cargo, and forfeit its subsidy for food aid contracts that are sufficiently profitable. Our methodology illustrates that, depending on the degree to which these options exist for MSF, carriers may reduce the overall tonnage and net revenue¹ impacts of a limit. These estimates reflect some probability that carriers will face constraints in how they respond to limits, however, there is uncertainty associated with some of the assumptions of the model. Carriers may face additional logistical or structural constraints relating to program requirements or company characteristics that would limit their responses to a greater degree than our simulation reflects. Moreover, future market conditions may differ from those reflected in recent data, such that our analysis could not be used as a forecast. Thus, while our simulation can help decision-makers understand important factors that should be taken into account when considering tonnage limits—and develops a range of impact estimates based on recent years that reflect those factors—actual impacts could be near the outer limits of or fall outside our estimated ranges.

¹We use the term net revenue to reflect revenue minus costs.

Data and Methodology

To analyze the impacts of a tonnage limit on MSF vessels, we collected data on key tonnage and revenue variables from a variety of sources for fiscal years 2001 to 2003. To create a list of MSF vessel voyages that carried food aid tonnage above a potential limit, we examined USDA's food aid shipment data and identified 123 vessel voyages. We paired this voyage list with estimates we collected from the MSF carriers on each vessel's annual costs and annual tonnage and freight rates for commercial cargo, food aid cargo, and nonfood aid preference cargo.² We also calculated the subsidy per voyage each MSF vessel earns, based on the number of days per voyage in that vessel's regularly scheduled outbound service.³

To estimate a range of impacts for a tonnage limitation under certain assumptions, we explicitly consider three options that MSF carriers may potentially have in responding to such a limit. For affected voyages, an MSF carrier may be able to (1) continue carrying some food aid up to the limit, (2) replace some food aid above a limit with other cargo, and (3) continue carrying food aid above a limit if it were more profitable than the subsidy payment for that voyage plus any net revenue from replacing the food aid with other cargo. As discussed below, we rely on assumptions about the degree to which carriers may be able to respond in these three ways to assign probabilities to a probability distribution. Table 4 shows that we use the following five probability distributions to calculate a range of impacts for MSF carriers under a tonnage limitation. Each of these distributions is discussed further in the text following table 4.

²Our cost data reflect total costs incurred by the MSF carrier for each vessel's annual operations. They include vessel expenses such as wages and insurance, as well as cargo handling expenses. They do not include administrative and general expenses incurred by the carrier company.

³We used the days of outbound service because a vessel carrying food aid cargo above a tonnage limit would have to forfeit its subsidy only for the days the food aid is on the vessel, which occur on the outbound portion of its voyage.

**Appendix II
Simulating Potential Impacts of a Bagged
Tonnage Limitation**

Table 4: Assumptions in the Simulation Model and the Probability Distributions Reflecting Those Assumptions

Variable	Type of distribution ^a	Basis	Probability at 90 percent confidence interval			
			Mean	Minimum	Likeliest	Maximum
Food aid tonnage effectively above the limit ^b	Triangular	USDA and USAID report food aid voyage tonnage is comprised of multiple, divisible contracts.	Varies by voyage	Same as likeliest	Total food aid tonnage per voyage minus limit tonnage (e.g. 2,500 or 5,000 tons)	Total food aid tonnage per voyage
Percent of food aid tonnage effectively above the limit that is replaced with other cargo	Triangular	Capacity utilization rates as reported by each carrier	Likeliest value times 67 percent	0 percent	Reported capacity usage for each vessel (ranges from 75 to 95 percent)	Same as likeliest
Freight rate per ton for other cargo	Triangular	Standard deviation of freight rates on other cargo reported by all MSF carriers	Calculated mean freight rate times 1.0, with certain constraints ^c	Calculated mean freight rate times 0.6, with certain constraints ^c	Calculated mean freight rate times 1.0, with certain constraints ^c	Calculated mean freight rate times 1.4, with certain constraints ^c
Per-ton cost difference for food aid over other cargo	Triangular	Estimates reported from carriers and industry experts	\$21.67	\$0	\$30	\$35
Percent of total vessel costs that vary with the tonnage level	Uniform	Estimate from MARAD on fixed vessel costs	35 percent	0 percent	Not applicable due to uniform distribution	70 percent

Source: GAO analysis.

^aGiven the information available pertaining to each of our impact variables, we selected probability distributions that are widely used by researchers.

^bThis term is used to indicate the food aid tonnage that may not be carried when an MSF vessel voyage is affected by the limit.

^cWe considered the freight rates that all five MSF carriers reported for all of their vessel voyages—both those above and below a tonnage limit—to calculate a standard deviation (\$58.18). We then used this standard deviation to create a distribution for each voyage ranging from 1.65 standard deviations below the reported freight rate to 1.65 standard deviations above the reported freight rate. This range was constrained to fall between the lowest (\$39.45) and highest (\$300.94) freight rates reported by the group of carriers, and was further constrained to not exceed the food aid rate for the voyage. From that distribution (without the food aid rate constraint), we determined the mean freight rate for each voyage. When the constraints created by the highest and lowest reported rates are not binding, the mean equals the reported rate. But when the lower (higher) constraint is binding, the mean will be greater (lesser) than the reported rate.

1. USDA and USAID reported that the food aid tonnage on a voyage often comprises multiple food aid contracts such that carriers may be able to continue to bid only on those shipments providing tonnage under the limit. However, since food aid contract terms vary, the degree to which MSF carriers can maximize carrying food aid up to the limit will also

vary. As a result, we include in our simulation an assumption that carriers will most likely be able to carry tonnage up to the level of the limit (based on profit maximization principles), but we use a probability distribution that includes a range of values for the amount of food aid that the vessel could potentially lose—otherwise stated as the amount of food aid *effectively* above the limit. For example, at a limit of 5,000 tons, for an MSF voyage with 6,000 tons of food aid, only 1,000 tons of food aid could be effectively above the limit. However, if MSF carriers had less flexibility in managing food aid tonnage, up to the entire 6,000 tons could be effectively above the tonnage limit.

2. We asked carriers to provide information about their current capacity utilization as an indication of the most likely value for the share of food aid they may be able to replace. Reported capacity utilization rates were high for all carriers with a range of values averaging 90 percent. However, we note the uncertainty regarding how close to the reported capacity utilization rates carriers would be able to come through replacing lost food aid tonnage with other cargo. We use a probability distribution to incorporate this uncertainty that allows for the possibility that carriers would not be able to replace any lost food aid with other cargo.
3. We asked carriers to provide their average freight rates for commercial cargo and nonfood aid preference cargo as an indication of the most likely freight rate they may receive on replacement cargo. Using annually weighted information from the five MSF carriers on all of their vessel voyages, we calculated a standard deviation and used this variation to apply a range of values for each voyage to reflect likely freight rates for other cargo, subject to certain constraints.
4. If MSF carriers replace food aid above a limit with other cargo, they are also likely to experience a change in costs. We found that it is generally more costly for the MSF to carry a ton of food aid than it is to carry a ton of commercial cargo.⁴ Based on interviews with carriers and industry experts, we incorporate, across the model, a range of values for this additional food aid cost differential around a most likely estimate of \$30 per ton.

⁴The primary reasons for this cost difference include container stuffing and stripping costs, as well as fumigation costs that are required for food aid and not for commercial cargo. This estimate does not include cost differences pertaining to particular voyage contract terms.

If carriers alter the total tonnage on a vessel voyage, their costs will also vary. We do not have data pertaining to the percentage of MSF total vessel costs that vary with tonnage levels. Based on broad estimates from MARAD that around 40 percent of vessel costs are for overhead or fixed items, we consider a wide range of values around the remaining 60 percent of total costs.

To incorporate these five assumptions into our impact estimates, we performed a Monte Carlo simulation.⁵ In this simulation, values were randomly drawn 20,000 times from probability distributions characterizing possible values for impact variables discussed above and listed in table 4. Under assumptions described by probability distributions selected for these impact variables, the simulation yields estimates for the total decline in both MSF food aid tonnage and net revenues on an annual basis.

Summary of Results

Using our simulation model, we analyzed the tonnage and net revenue impacts on MSF of a food aid limit at 5,000 and 2,500 tons.⁶ Results for a 2,500-ton limit are presented in the letter portion of this report while table 5 provides the results for a 5,000-ton limit. As shown in table 5, the estimated decline in MSF food aid tonnage under this limitation ranges from around 3,000 to 13,000 tons, a decline significantly less than the total tonnage on voyages affected by the limit—46,000 tons. In this analysis, carriers are estimated to replace food aid above the limit with 1,000 to 11,000 tons of other cargo and continue to carry 5,000 tons to 31,000 tons of food aid above the tonnage limit. The total decline in net revenues for this group would range from roughly \$500,000 to \$1 million.

⁵Monte Carlo simulation is a widely used computational method for generating probability distributions of variables that depend on other variables or parameters represented as probability distributions. Monte Carlo methods are to be contrasted with the deterministic methods used to generate specific single number or point estimates.

⁶We did not analyze a food aid limit at 7,500 tons in our model due to the fact that recent data show that most of these voyages occurred on LASH vessels that are being phased out of MSF.

**Appendix II
Simulating Potential Impacts of a Bagged
Tonnage Limitation**

Table 5: GAO Simulation of MSF Voyages with Food Aid above a 5,000 Ton Limit, 3-Year Annual Average for Fiscal Years 2001-2003

Dollars in millions

	Estimated range of values ^a		
	Low value	Average value	High value
Total food aid tonnage on voyages affected by the limit^b	46,000 tons		
Factor 1: MSF vessels may carry some food aid up to the limit, depending on number and terms of food aid shipments:			
Food aid tonnage effectively above the limit ^c	11,000	22,000	38,000
Food aid net revenues associated with this tonnage	\$1.3	\$2.6	\$4.5
Factor 2: MSF vessels may replace some food aid above the limit with other cargo:			
Estimated tonnage of additional other cargo	1,000	5,000	11,000
Net revenues earned from additional other cargo	\$0.0	\$0.4	\$0.9
Factor 3: MSF vessels may continue to carry some food aid above the limit and forfeit the subsidy if sufficiently profitable:			
Food aid tonnage above the limit that is carried	5,000	15,000	31,000
Net revenues earned from food aid above the limit minus forfeited subsidy payments	\$0.5	\$1.5	\$3.3
Simulation estimates with factors 1-3 combined			
Decline in MSF food aid tonnage ^d	3,000	7,000	13,000
Decline in MSF net revenues ^e	\$0.5	\$0.7	\$1.0

Source: GAO analysis using USDA data and MSF vessel data.

^aRanges provided are at a 90 percent confidence interval.

^bThis tonnage does not include LASH vessels.

^cWe assume carriers are not able to carry food aid tonnage exactly up to the limit in every case, so that the food aid tonnage effectively above the limit is greater than the difference between the tonnage and the limit.

^dThis tonnage is calculated by subtracting the food aid tonnage above the limit that is carried from the total food aid tonnage effectively above the limit.

^eThis decline includes the revenue loss from carrying less food aid, the revenue gain from carrying additional other cargo, the forfeited subsidy payments, and cost savings from altering the cargo tonnages carried in food aid and other goods.

According to this analysis, the impact estimates for a limit at both 2,500 and 5,000 tons are influenced most by variations in assumptions pertaining to the amount of food aid effectively above the limit for each voyage, and the share of food aid above the limit that carriers may be able to replace with other cargo. A higher value for the amount of food aid effectively above the limit tends to increase the estimate for the total decline in MSF net revenues because MSF carriers are less able to maximize carrying food aid up to the limit. A higher value for the share of food aid above the limit that

Appendix II
Simulating Potential Impacts of a Bagged
Tonnage Limitation

carriers might replace with other cargo tends to lower the estimate for the total decline in MSF net revenues because carriers are earning more money from replacement cargo. However, this assumption tends to raise the estimate for the total decline in MSF food aid tonnage carried because it makes the option of forfeiting the subsidy payment to carry food aid above the limit less profitable.

This simulation model has certain limitations resulting from two broad areas of uncertainty not incorporated into the estimates. First, MSF carriers may face logistical or structural constraints as imposed by program requirements or company characteristics that would alter their response to a tonnage limit in ways our simulation does not reflect. For example, if an MSF carrier decides never to carry food aid above a limit—even if it is profitable to do so, net of a forfeited subsidy payment—then the total food aid tonnage available to the non-MSF carriers would also increase. In addition, vessel financial data are based on estimates of annual averages and may not incorporate the entire range of variation for every variable.⁷ One example might include a higher food aid cost differential associated with an emergency food aid shipment to a remote area with particularly expensive contract terms.

Second, our model relies on data from fiscal years 2001 to 2003, which may not be an accurate indicator of future food aid program levels, future food aid program requirements, or the future number of U.S.-flag vessels participating in cargo preference. For example, if future food aid program levels decline, then the overall tonnage and revenue changes from a shift in the MSF's food aid market share would also likely decline. Therefore, to the extent that our model's assumptions do not adequately reflect these two broad areas of uncertainty, the impacts of a tonnage limit could lie outside our estimated ranges.

⁷Vessel financial data are also self-reported, and we were only able to do limited verification of these data.

Profile of Maritime Security Fleet

The Maritime Security Fleet currently comprises 47 vessels operated by 12 companies. Table 6 provides a profile of the vessels participating in the Maritime Security Fleet, as of December 2, 2003.

Table 6: Maritime Security Fleet, as of December 2, 2003

MSP contract number	Vessel name	Company name	Vessel type	Volume carried (TEUs, square feet or metric tons)
MA/MSP-1	APL Korea	American Ship Management, LLC	Containership	3,900 TEUs
MA/MSP-2	APL Philippines	American Ship Management, LLC	Containership	3,900 TEUs
MA/MSP-3	APL Singapore	American Ship Management, LLC	Containership	3,900 TEUs
MA/MSP-4	APL Thailand	American Ship Management, LLC	Containership	3,900 TEUs
MA/MSP-5	President Adams	American Ship Management, LLC	Containership	3,600 TEUs
MA/MSP-6	President Jackson	American Ship Management, LLC	Containership	3,600 TEUs
MA/MSP-7	APL China	American Ship Management, LLC	Containership	3,900 TEUs
MA/MSP-8	President Polk	American Ship Management, LLC	Containership	3,600 TEUs
MA/MSP-9	President Truman	American Ship Management, LLC	Containership	3,600 TEUs
MA/MSP-10	Green Cove	Central Gulf Lines, Inc.	Roll-on/roll-off	131,998 sq. ft.
MA/MSP-11	Green Point	Central Gulf Lines, Inc.	Roll-on/roll-off	128,328 sq. ft.
MA/MSP-12	Green Lake	Central Gulf Lines, Inc.	Roll-on/roll-off	150,828 sq. ft.
MA/MSP-13	Liberty	American International Car Carrier, Inc.	Roll-on/roll-off	135,324 sq. ft.
MA/MSP-14	Patriot	American International Car Carrier, Inc.	Roll-on/roll-off	155,947 sq. ft.
MA/MSP-15	Freedom	American International Car Carrier, Inc.	Roll-on/roll-off	215,709 sq. ft.
MA/MSP-16	Chesapeake Bay	First American Bulk Carrier Corporation	Containership	2,409 TEUs
MA/MSP-17	Delaware Bay	First American Bulk Carrier Corporation	Containership	2,409 TEUs
MA/MSP-18	Endeavor	E-SHIPS, Inc.	Containership	1,834 TEUs
MA/MSP-19	Endurance	E-SHIPS, Inc.	Containership	1,834 TEUs

**Appendix III
Profile of Maritime Security Fleet**

(Continued From Previous Page)

MSP contract number	Vessel name	Company name	Vessel type	Volume carried (TEUs, square feet or metric tons)
MA/MSP-20	Enterprise	E-SHIPS, Inc.	Containership	1,834 TEUs
MA/MSP-21	Lykes Navigator	First Ocean Bulk Carrier- I, LLC	Containership	2,698 TEUs
MA/MSP-22	Lykes Discoverer	First Ocean Bulk Carrier- II, LLC	Containership	2,698 TEUs
MA/MSP-23	Lykes Liberator	First Ocean Bulk Carrier- III, LLC	Containership	2,698 TEUs
MA/MSP-24	Maersk Missouri	Maersk Line, Limited	Containership	3,084 TEUs
MA/MSP-25	Maersk Virginia	Maersk Line, Limited	Containership	3,084 TEUs
MA/MSP-26	Maersk Georgia	Maersk Line, Limited	Containership	3,084 TEUs
MA/MSP-27	Maersk Carolina	Maersk Line, Limited	Containership	3,084 TEUs
MA/MSP-28	Overseas Joyce	OSG Car Carriers, Inc.	Roll on/roll-off	100,965 sq. ft.
MA/MSP-29	Sealand Achiever	U.S. Ship Management, Inc.	Containership	3,606 TEUs
MA/MSP-30	Sealand Florida	U.S. Ship Management, Inc.	Containership	3,606 TEUs
MA/MSP-31	Sealand Pride	U.S. Ship Management, Inc.	Containership	2,890 TEUs
MA/MSP-32	Sealand Motivator	U.S. Ship Management, Inc.	Containership	2,890 TEUs
MA/MSP-33	Sealand Commitment	U.S. Ship Management, Inc.	Containership	3,606 TEUs
MA/MSP-34	Sealand Atlantic	U.S. Ship Management, Inc.	Containership	3,606 TEUs
MA/MSP-35	Sealand Defender	U.S. Ship Management, Inc.	Containership	2,306 TEUs
MA/MSP-36	Sealand Endurance	U.S. Ship Management, Inc.	Containership	2,306 TEUs
MA/MSP-37	Sealand Explorer	U.S. Ship Management, Inc.	Containership	2,306 TEUs
MA/MSP-38	Sealand Innovator	U.S. Ship Management, Inc.	Containership	2,306 TEUs
MA/MSP-39	Sealand Integrity	U.S. Ship Management, Inc.	Containership	3,606 TEUs
MA/MSP-40	Sealand Liberator	U.S. Ship Management, Inc.	Containership	2,306 TEUs
MA/MSP-41	Sealand Patriot	U.S. Ship Management, Inc.	Containership	2,306 TEUs
MA/MSP-42	Sealand Performance	U.S. Ship Management, Inc.	Containership	3,606 TEUs

**Appendix III
Profile of Maritime Security Fleet**

(Continued From Previous Page)

MSP contract number	Vessel name	Company name	Vessel type	Volume carried (TEUs, square feet or metric tons)
MA/MSP-43	Sealand Quality	U.S. Ship Management, Inc.	Containership	3,606 TEUs
MA/MSP-44	Lykes Motivator	Waterman Steamship Corporation	Containership	2,500 TEUs
MA/MSP-45	Atlantic Forest	Waterman Steamship Corporation	LASH ^a	40,795 metric tons
MA/MSP-46	Green Dale	Waterman Steamship Corporation	Roll on/roll off	131,998 sq. ft.
MA/MSP-47	Lykes Explorer	Waterman Steamship Corporation	Containership	2,698 TEUs

Source: MARAD and DOD.

^aLASH or Lighter Aboard Ships are barge carrying vessels that use barges like containers.

Comments from the U.S. Agency for International Development



U.S. AGENCY FOR
INTERNATIONAL
DEVELOPMENT

SEP 3 2004

Mr. Loren Yager, Ph.D.
Director, International Affairs
And Trade
U.S. Government Accountability Office
441 G Street, N.W.
Washington, DC 20548

Dear Mr. Yager:

I am pleased to provide you with the U.S. Agency for International Development's (USAID's) formal response to the draft GAO report entitled Maritime Security Fleet: Many Factors Determine Impact of Potential Limits on Food Aid Shipments (September 2004).

As the report contains no specific recommendations, USAID will focus our comments to the background portions which may impact future discussions concerning the U.S. cargo preference program generally.

Thank you for the opportunity to respond to the GAO draft report and for the courtesies extended by your staff in the conduct of this review.

Sincerely,

A handwritten signature in black ink, appearing to read "John Marshall".

John Marshall
Assistant Administrator
Bureau for Management

Enclosure: a/s

1300 PENNSYLVANIA AVENUE, N.W.
WASHINGTON, D.C. 20523

USAID Comments on the GAO report
Maritime Security Fleet:
Many Factors Determine Impact of Potential Limits
On Food Aid Shipments (September 2004)

I. General Observations.

USAID agrees with the GAO that the overall impact of limiting food aid tonnage for Maritime Security Fleet (MSF) vessels is difficult to predict. The GAO used sound and logical methodologies to analyze the extensive statistical data provided, and were able to accurately identify trends pertaining to Maritime Security Fleet (MSF) carriers and non-MSF carriers that carried P.L. 480 Title II food aid over a five-year period. GAO should be commended in accomplishing their assignment in the short timeframe provided. USAID finds that this is a useful report and intends to use it for future reference.

II. Discussion of Cargo Preference and the Maritime Security Programs.

USAID would like to highlight the following points in relation to these background portions of the report:

1. USAID needs both MSF and non-MSF carriers in order to deliver P.L. 480 Title II food aid. Typically, MSF carriers deliver packaged, processed and tinned commodities, while non-MSF vessels deliver bulk grains and oils. Both carriers serve a vital role in the efficient delivery of more than 2,000 individual Title II shipments each year to various destinations worldwide to be utilized in feeding programs, monetization programs, school feeding, food work programs and emergency programs such as disaster relief, famine and other such dire circumstances.

Most MSF carriers that participate in the Title II food aid program are containerships which operate regularly scheduled liner service on their U.S.-flag, line-haul vessels from ports in the United States to trans-shipment hubs in Europe and Southeast Asia. Cargoes are then trans-shipped to foreign-flag feeder vessels for the final leg of the delivery. This type of service is efficient and economical.

There are two types of non-MSF vessels which provide service for both packaged commodities and bulk grains. The first type of vessel is the bulker which carries bulk commodities such as wheat and corn. These vessels deliver bulk commodities anywhere in the world at reasonable rates with acceptable service provided the tonnage offered to them fits their vessel size. They are also able to offer reasonable rates for packaged commodities, provided there is sufficient tonnage to fill out the vessel.

The second non-MSF vessel type is the break-bulk vessel which provides charter or tramp service with no regular schedule. This vessel is able to carry both packaged and bulk commodities, but typically carries packaged commodities under the Title II program. This type of vessel is generally smaller and more expensive than most of the vessels in the U.S.-flag bulk fleet, thus its niche is found in the packaged commodity market. These vessels are costly to operate and pass those costs on to the Title II program in the form of higher rates than the other U.S. containerships or larger bulk vessels.

2. Cargo preference is an indirect subsidy to our U.S.-flag fleet. Throughout the draft report it is noted that DOD supports the cargo preference program. It is unclear, however, to what extent cargo preference achieves this objective and at what cost.

Page 12 of the draft GAO report states: “Of the 10 non-MSF carriers we interviewed that generally provided charter service, 4 said that 60 percent **or more** of their annual revenues came from food aid shipments, 3 said between 20 and 50 percent, and 3 said less than 10 percent came from these shipments. Most of the 5 MSF carriers interviewed that provided liner service, said that food aid revenues comprised a small percentage of their total revenues. [emphasis added]”

This indicates that MSF vessels are not necessarily relying on cargo preference, as related to Title II food assistance, to stay afloat. With their direct maritime security subsidy, they are able to compete in the worldwide market and carry other types of cargoes. On the other hand, non-MSF vessels with little or no military usefulness, which do not receive this direct subsidy, do rely on cargo preference to maintain their business.

Ultimately, USAID and other U.S. government agencies, in the course of providing humanitarian food aid relief, are paying to maintain a trained U.S. mariner base on non-MSF vessels upon which DOD can draw. This continues to be an unfortunate dilemma for the food aid programs that must pay the higher freight rates in maintaining compliance with our cargo preference tonnage requirement. The Title II program, shown recently through ongoing responses to sudden emergencies such as Afghanistan and Sudan, is itself vital to United States national security interests. Moreover, as the Title II food aid budget is capped, every dollar spent to transport food is one less dollar available to purchase food. Typically, the net cargo preference costs to the Title II food aid program is approximately \$90 million per year in additional transportation costs.

III. Establishment of a bagged cargo preference tonnage limitation on MSF vessels.

As stated earlier, USAID agrees that it is difficult to predict the actual impact of a tonnage limitation. USAID offers, however, that imposing a limit would further complicate an already complex process. In complying with current cargo preference requirements and sub-requirements impacting how tonnage is allocated to U.S. and foreign-flag carriers, USAID must negotiate a priority system within and among U.S.-vessels while taking into account a Maritime Security Act set aside program. Adding another potentially arbitrary limitation on the amount of tonnage assigned to various vessels would likely make the process more difficult and less efficient; thereby impeding USAID's ability to meet critical foreign policy and humanitarian assistance objectives. The changing nature of food aid, with the increased frequency of responses to sudden emergencies, can ill afford additional financial or bureaucratic impediments. Moreover, in this era of streamlining programs, the addition of further complexities may well be seen as counter-productive.

IV. Conclusion

USAID meets its obligations under the Cargo Preference Act and related statutes. However, a delicate balance must always be struck in balancing USAID's cargo preference obligations with the foreign assistance objectives sought through the Title II food aid program. The processes in place to strike this balance are very complex and burdensome. Consequently, USAID takes a very cautious approach to any new variables that could

further complicate these complex administrative systems, and more importantly negatively impact the Title II program's ability to achieve foreign assistance objectives.

Comments from the Department of Agriculture



SEP 8 2004

United States
Department of
Agriculture

Farm and
Foreign
Agricultural
Services

Foreign
Agricultural
Service

1400
Independence
Ave, SW
Stop 1035
Washington, DC
20250-1035



Mr. Loren Yager
Director, International Affairs and Trade
U.S. Government Accountability Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Yager:

The U.S. Department of Agriculture (USDA) would like to thank the Government Accountability Office (GAO) for the opportunity to comment on draft report #GAO-04-1065 entitled "Maritime Security Fleet: Many Factors Determine Impact of Potential Limits on Food Aid Shipments." USDA is pleased to provide the following comments for your consideration.

The report adequately summarizes USDA's major concerns over the impact on food aid programs that could result from a bagged cargo tonnage limitation placed on the Maritime Security Fleet (MSF). These concerns are decreased food aid timeliness, increased administrative burdens and increased shipping costs.

Although your report does not make recommendations, it does observe potential actions that could be taken by the MSF if tonnage limitations were to go into effect. The MSF carriers may choose to: 1) continue to carry food aid up to the tonnage limit, 2) replace some food aid above the tonnage limit with other cargo, and/or 3) carry food aid even without the MSF subsidy.

Given your observations, we reiterate our concern that each potential action by the MSF carriers to bagged cargo tonnage limitations has a potential negative effect on food aid programs. If individual carriers were to opt out of or limit their carriage of food aid to the tonnage limitation, we anticipate a decrease in the competition that now exists between carriers. This loss in competition would likely result in increased freight rates, thus increased program costs. You also observe that carriers may elect to carry food aid tonnage in excess of the tonnage limitation because they are able to offset the subsidy loss with higher freight rates on the food aid tonnage. This carrier response would directly impact food aid program costs.

The potential actions by the carriers add an additional degree of complexity in the already complex task of managing cargo preference. This could lead to uncertainty

USDA is an Equal Opportunity Employer

Appendix V
Comments from the Department of
Agriculture

2

in the process, which could negatively impact not only the timeliness of deliveries but also the amount of cargo we can provide.

In closing, I again want to thank you for allowing us to comment on this draft report.

Sincerely,



A. Ellen Terpstra
Administrator

Comments from the Department of Defense



DEPUTY UNDER SECRETARY OF DEFENSE FOR
LOGISTICS AND MATERIEL READINESS
3500 DEFENSE PENTAGON
WASHINGTON, DC 20301-3500

SEP 7 2004

Mr. Loren Yager
Director, International Affairs and Trade
U.S. Government Accountability Office
441 "G" Street, N.W.
Washington, D.C. 20548

Dear Mr. Yager:

This is the Department of Defense (DoD) response to the Government Accountability Office Draft report, "MARITIME SECURITY FLEET: Many Factors Determine Impact of Potential Limits on Food Aid Shipments," dated August 25, 2004 (GAO Code 320245/GAO-04-1065)

The DoD acknowledges receipt of the draft report and in general concurs with the findings. The Department of Defense supports a strong and viable United States Merchant Marine which provides DoD with needed U.S.-flag vessels and mariners during war. The Cargo Preference and Maritime Security Programs are vital to the U.S. Merchant Marine and DoD. Any change in cargo preference that would adversely impact the U.S. Merchant Marine will have a similar negative impact to DoD's mobilization capabilities. The Department appreciates the opportunity to comment on the draft report.

Sincerely,


Bradley Berkson
Principal Assistant



GAO Contacts and Staff Acknowledgments

GAO Contacts

Celia Thomas (202) 512-8987
Leyla Kazaz (202) 512-9638

Acknowledgments

In addition to those named above, Jay Cherlow, Martin De Alteriis, Jamie McDonald, Eric Petersen, Kendall Schaefer, Richard Seldin, and Daniel Williams made key contributions to this report.

GAO's Mission

The Government Accountability Office, the audit, evaluation and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

Obtaining Copies of GAO Reports and Testimony

The fastest and easiest way to obtain copies of GAO documents at no cost is through GAO's Web site (www.gao.gov). Each weekday, GAO posts newly released reports, testimony, and correspondence on its Web site. To have GAO e-mail you a list of newly posted products every afternoon, go to www.gao.gov and select "Subscribe to Updates."

Order by Mail or Phone

The first copy of each printed report is free. Additional copies are \$2 each. A check or money order should be made out to the Superintendent of Documents. GAO also accepts VISA and Mastercard. Orders for 100 or more copies mailed to a single address are discounted 25 percent. Orders should be sent to:

U.S. Government Accountability Office
441 G Street NW, Room LM
Washington, D.C. 20548

To order by Phone: Voice: (202) 512-6000
TDD: (202) 512-2537
Fax: (202) 512-6061

To Report Fraud, Waste, and Abuse in Federal Programs

Contact:

Web site: www.gao.gov/fraudnet/fraudnet.htm

E-mail: fraudnet@gao.gov

Automated answering system: (800) 424-5454 or (202) 512-7470

Congressional Relations

Gloria Jarmon, Managing Director, JarmonG@gao.gov (202) 512-4400
U.S. Government Accountability Office, 441 G Street NW, Room 7125
Washington, D.C. 20548

Public Affairs

Jeff Nelligan, Managing Director, NelliganJ@gao.gov (202) 512-4800
U.S. Government Accountability Office, 441 G Street NW, Room 7149
Washington, D.C. 20548

**United States
Government Accountability Office
Washington, D.C. 20548-0001**

**Presorted Standard
Postage & Fees Paid
GAO
Permit No. GI00**

**Official Business
Penalty for Private Use \$300**

Address Service Requested

