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Centralized Department of Defense Management of Cargo Shipped in Containers Would Save Millions and Improve Service. LCD-77-227; B-181714. November 8, 1977. 10 pp. + appendix (2 pp.).

Report to Secretary, Department of Defense; by Robert G. Rothwell (for Fred J. Shafer, Director, Logistics and Communications Div.).

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Organization Concerned: Department of the Navy: Military Sealift Command; Department of Defense: Military Traffic Management Command.
Congressional Relevance: House Committee on Armed Services; Senate Committee on Armed Services.

The Military Traffic Management Command and the Military Sealift Command divide management responsibilities for selecting containers for cargo going overseas, often preventing the Department of Defense (DOD) from getting the lowest transportation costs. Both Commands make adequate selections for each portion of the movement, considering the information they have and their responsibilities. However, if shippers submitted enough cargo information and responsibility and information were centralized, better selections could be made.
Findings/Conclusions: DOD could have saved about $12.9 million of the more than $200 spent on overseas cargo shipments in fiscal year 1976 though use of an effective central management system and better use of up-to-date computer technology to select the most economical shipping arrangement. Transportation service to DOD shippers could also have been improved, reducing the shipping times. Less shipping time lowers the inventory costs which the Department estimated could be millions of dollars each year. Recommendations: The Secretary of Defense should designate a central manager for carrier and container selections. The central manager should obtain detailed cargo information from shippers and use available computer technology to make the best selections for origin-to-destination shipments of cargo sent overseas. (Author/SC)

UNITED STATES
GENERAL ACCOUNTING OFFICE

Centralized Department Of Defense Management Of Cargo Shipped In Containers Would Save Millions And Improve Service

The Military Traffic Management Command and the Military Sealift Command divide management responsibilities for selecting containers for cargo going overseas. Each makes independent decisions based on different responsibilities and information. The Department should:

--Designate a central manager for carrier and container selections.

--Use available computer technology to help make the best selections.

LCD-77-227

NOVEMBER 8, 1977

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

LOGISTICS AND COMMUNICATIONS
DIVISION

B-181714

The Honorable
The Secretary of Defense

Attention: Assistant for Audit Reports

Dear Mr. Secretary:

This report discusses the practices used in shipment of containerized cargo overseas.

As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the Senate Committee on Governmental Affairs and the House Committee on Government Operations not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

Copies of this report are being furnished to the Secretaries of the Army, Navy, and Air Force.

Sincerely yours,

R. B. Rothwell

for Fred J. Shafer
Director

GENERAL ACCOUNTING OFFICE
REPORT TO THE
SECRETARY OF DEFENSE

CENTRALIZED DEPARTMENT OF DEFENSE MANAGEMENT OF CARGO SHIPPED IN CONTAINERS WOULD SAVE MILLIONS AND IMPROVE SERVICE

D I G E S T

The Department of Defense spent over $200 million during fiscal year 1976 to ship cargo overseas in ocean containers. Management responsibilities for moving this cargo were divided between the Military Traffic Management Command and the Military Sealift Command, preventing Defense from getting the lowest transportation costs.

Defense could have saved about $12.9 million through an effective central management system and better use of up-to-date computer technology to select the most economical shipping arrangement.

Transportation service to Defense shippers could also have been improved, reducing shipping times. Less shipping time lowers inventory costs, which the Department estimated could be millions of dollars each year.

Today, about 77 percent of the cargo sent overseas goes in ocean containers. Shippers load cargo into containers inland and the Traffic Management Command arranges for delivery at overseas destinations without rehandling the cargo. This is an origin-to-final-destination transportation system.

POOR CONTAINER SELECTIONS

The container and carrier selection system is not achieving its objective of moving cargo at the lowest transportation cost. The two Commands independently decide what to do, based on their different responsibilities and different (and in the case of the Traffic Management Command, insufficient) information. This split prevents

the best container from being selected and causes excess transportation costs.

Excess transportation costs

Both Commands make adequate selections for each portion of the movement, considering the information they have and their responsibilities. However, if shippers submitted enough cargo information and responsibility and information were at a central point, better selections could be made.

GAO studied 304 container requests from Department of Defense shippers from the east and west coasts. The Commands selected 815 containers costing $1,015,480 to move the cargo.

Using a simulated central management system, GAO selected containers on the same requests. Only 780 containers would have been required to move the same cargo, reducing transportation costs by $65,098.

GAO changed container selections:

--To adjust the container size.

--To use a different carrier.

--To use a combination of container sizes.

--To use a combination of container sizes between different carriers.

For example, the Commands shipped 2,520 cubic feet of general cargo weighing 84,200 pounds in two large containers for $3,210. The same cargo could have been shipped in three small containers, saving $986.

OTHER BENEFITS FROM CENTRALIZED MANAGEMENT

The Commands are responsible for providing prompt service to shippers. The fragmented management, however, requires an additional

2 to 3 days for container selections and bookings. Defense estimated that reducing these delays could save millions of dollars annually by decreasing inventory.

Neither Command has a cost performance measurement system. By adopting centralized management and by determining what the best container is, Defense could develop a cost performance measure. Actual bookings could be compared to the ideal, not only to measure cost performance but also to determine why the best selection was not made.

RECOMMENDATIONS

The Secretary of Defense should designate a central manager for carrier and container selections. The central manager should obtain detailed cargo information from shippers and use available computer technology to make the best selections for origin-to-destination shipments of cargo sent overseas.

AGENCY COMMENTS

Commenting on GAO's report, the Department of Defense agreed that more extensive use of computer technology might help to make the most cost-effective selection of containers. DOD added that it is carefully considering designating a central manager.

Contents

ABBREVIATIONS

CONUS	continental United States
DOD	Department of Defense
GAO	General Accounting Office
MSC	Military Sealift Command
MTMC	Military Traffic Management Command

CHAPTER 1

INTRODUCTION

In 1966 almost no Department of Defense (DOD) cargo was containerized. Break-bulk shipping was the only surface transportation system available to move cargo overseas. The Military Traffic Management Command (MTMC) and the Military Sealift Command (MSC) divided management responsibilities along the lines of inland versus ocean movements. For shipments originating inland, MTMC managed the movement to the continental United States (CONUS) port, entered the shipment into the terminal system, and held the cargo until enough had accumulated for MSC booking. MSC then managed the cargo movement from the CONUS port to the overseas port. Theater commanders arranged delivery from overseas ports. In this mode of shipping, MTMC managed carrier selection for land movements and MSC managed ocean carrier selection.

Container shipping began to replace break-bulk shipping as the primary surface mode for overseas cargo movement during the mid-1960s. Today, about 77 percent of the cargo is shipped in containers. Shippers now load cargo into containers at the inland origin and arrange for delivery at the overseas destination without rehandling the cargo. This is a true systems-oriented transportation mode. Container management differs from break-bulk management because there is no clear distinction between land and ocean movement. Containerized cargo does not go through military ocean terminals, but is handled as a single move through commercial ports in CONUS and overseas. However, MTMC and MSC management responsibilities remain the same as they were in the break-bulk system.

In the current carrier and container selection system, shippers request containers from MTMC based on cargo on hand or projections of anticipated cargo shipments. These requests give MTMC information on the shipment's origin; destination; commodity; and, in some cases, weight and cube. MTMC reviews these container requests and, without change, requests ocean carrier booking from MSC. The booking requests give MSC information on the number and size of containers needed, ports of embarkation and debarkation, and type of inland drayage service. MSC makes a low cost analysis of the available ocean carriers that will satisfy the MTMC booking request. MSC books the shipment and notifies MTMC, which in turn notifies the shipper.

DOD recognized the difference between break-bulk and container management, and in 1971 it proposed consolidating MTMC and MSC, so that the total surface transportation system, from origin to destination, could be centrally managed. This consolidation also would have reduced the time required to coordinate shipment requests between the two agencies; DOD estimated that this could result in annual inventory savings of more than $1 million. For various reasons, the Congress did not approve the consolidation.

In this report we describe how container selection, which is now separately performed by each organization, can be centrally managed for improved economy and efficiency even though MTMC and MSC continue as separate commands. In a separate, but related report, now being prepared, we will address the need for more progress by DOD in developing an effective container system for use in a contingency.

CHAPTER 2

CONTAINER SELECTIONS ARE NOT ALWAYS OPTIMAL

The container and carrier selection system is not achieving its objective of moving cargo at the lowest cost. MTMC and MSC make independent decisions based on different management responsibilities and different information. Also, MTMC receives insufficient information from shippers about the cargo to be shipped. This fragmentation prevents selection of the optimal container and results in excess transportation costs.

DOD's container shipping costs were $201 million in fiscal year 1976. Through a central decisionmaking system for container and carrier selections, we estimate that overseas shipping costs could be reduced about $12.5 million annually.

FRAGMENTED MANAGEMENT SYSTEM

As discussed previously, MTMC and MSC divide management responsibilities for overseas cargo movement. MTMC selects the number and size of containers needed based on shipper requirements, then selects the type of inland transportation service and the port of embarkation. MSC manages the carrier selection and bookings based on MTMC requests, which can be for ocean transportation or a combination of ocean and land transportation. Neither MTMC nor MSC manages the entire system.

MTMC is responsible for selecting the lowest overall cost route for overseas cargo. MTMC develops CONUS and overseas inland transportation cost information. MSC provides MTMC with ocean transportation cost data and other ocean carrier charges.

Shippers do not always send cargo weight, cube, and dimension information. Frequently, they request only a specific number of small or large containers. MSC could give MTMC container and carrier availability information, but it does not do so because MSC is responsible for selecting the ocean carrier. MTMC could challenge container requests from shippers and select the optimal container and carrier, but without adequate information it can only review requests and submit them to MSC for ocean booking.

MSC makes a cost analysis of available carriers that will satisfy the MTMC request and books the shipment with an ocean carrier. MSC officials said their responsibility is to provide the service requested by MTMC, if that service is available within the required sailing dates.

MTMC and MSC officials agree that, because management responsibilities are segmented, decisionmaking is fragmented. They also agree that eliminating this fragmentation could reduce transportation costs. They believe that their primary responsibility is to provide transportation services to shippers at the lowest possible cost.

EXCESS TRANSPORTATION COSTS RESULT

MTMC and MSC generally make appropriate decisions, considering the information in their possession and their responsibilities. However, if all information were available at a central point, optimal selections could be made by a responsible manager. The computer used by MTMC is capable of selecting the most cost-effective container.

To determine the overall benefit of a central decision point, we studied 153 general cargo shipments from the west coast to Japan and 151 such shipments from the east coast to Germany. We simulated a central management system and developed a mathematical model, using all pertinent available information, to determine the optimal container selection. This information came from MSC and MTMC records. The model selections considered only containers that were available when actual bookings were made.

A comparison of the model and actual selections indicates the potential for savings through centralized decisionmaking. Actual transportation costs for the 304 container requests studied were $1,015,480. Had the requests been managed in a central system, 124 requests would have been changed and costs thereby reduced $65,098 (or 6.4 percent).

Container requests were changed for the following reasons:

--To adjust the container numbers and sizes (from large to small or small to large).

--To use a different carrier.

--To use a mix of container sizes.

--To use a mix of container sizes between different carriers.

The following examples illustrate container selection improvements.

Adjustment of container number and sizes

The Air Force Water Port Logistics Office Distribution Center, Bayonne, New Jersey, requested two 40-foot containers to ship 2,520 cubic feet of general cargo weighing 84,200 pounds to the Kastel Air Station, Germany. MTMC and MSC reviewed the request and selected and booked two United States Lines 40-foot containers for $3,210. Based on available information and according to the quantitative selection model, that cargo could have been moved in three 20-foot United States Lines containers, saving $987.

Use a different carrier

Each week Sharpe Army Depot requested one large container to ship general cargo to Sagami, Japan. MTMC and MSC selected and booked one Sealand 40-foot container at $1,929, with Sealand responsible for CONUS drayage. The model, however, selected one United States Lines 40-foot container, saving $32.

Use a mix of container sizes

The General Services Administration's Supply Distribution Facility in Auburn, Washington, requested five large containers to ship 112,400 pounds--9,000 cubic feet--of general cargo to the U.S. Naval Supply Depot, Yokosuka, Japan. MTMC and MSC selected and booked five Sealand 40-foot containers at $9,375. The model selected one Sealand 40-foot and four Sealand 35-foot containers to move the cargo, saving $948.

Use a mix of container sizes between different ocean carriers

The Army and Air Force Exchange Service requested 25 large or 42 small containers to move 1,118,250 pounds--33,950 cubic feet on 750 pallets--of beverages from Long Island City, New York, to the Support Center, Roedgeners, Geissen, Germany. MTMC and MSC selected and booked 25 Sealand 35-foot containers as the best alternative. The total cost was $35,925. The model considered possible alternatives and selected 1 Sealand 35-foot and 40 United States Lines 20-foot containers, saving $608.

CHAPTER 3

OTHER BENEFITS FROM CENTRALIZED MANAGEMENT

Centralized management of container and carrier selection offers additional benefits. The system would be more responsive to the transportation needs of DOD shippers because delays caused by coordination between MTMC and MSC would be avoided. Also, the quantitative selection model would provide a cost performance measurement system that could identify system weaknesses.

POTENTIAL TRANSPORTATION SERVICE IMPROVEMENTS

MTMC and MSC are responsible for providing timely transportation service to DOD shippers. Yet the coordination process between the two agencies causes delays of up to 3 days in container selections and bookings. DOD, in considering the 1971 proposed consolidation, felt that reducing these booking delays could result in substantial pipeline inventory savings.

To determine the effect of centralized management and container request changes, we discussed our findings with DOD shippers and commercial vendors on the east and west coasts. All shippers agreed that central decisionmaking would reduce the time required to receive bookings and would help their operations because they could coordinate their shipping requirements at one point. All but one of the shippers and vendors felt that shipments moving in two different size containers and between two different carriers would not affect their shipping procedures.

The New Cumberland Army Depot and the Mechanicsburg Defense Depot require procedures different from those used for other DOD shippers. Currently, these depots ship such large volumes of cargo that MTMC and MSC cannot handle individual requests. As a result, both depots request containers in large allocations 3 to 5 weeks in advance. These allocations, referred to as container pools, include a mixture of container sizes belonging to various ocean carriers. For example, Mechanicsburg may require 130 containers a week, but the cargo to be shipped is not known when the request is made. MTMC and MSC merely satisfy the request. These two shippers, however, said that a centralized management system would benefit their operations because they could deal with one agency instead of two.

The quantative selection model could also help in selecting the best containers from the container pool when all shipment information is available and the cargo is about to be moved.

POTENTIAL COST PERFORMANCE MEASUREMENT SYSTEM

MTMC and MSC do not know how cost effectively they are providing transportation services. MTMC uses container utilization reports to measure its performance. However, these utilization reports, which are prepared after the cargo is shipped, only indirectly indicate effectiveness at making container selection. What MTMC needs is cost standards it could apply to choose the most cost-effective arrangement of available containers, carriers, and routes before the shipment is made. Since MSC is only providing a service to MTMC and shippers, it does not have a measurement system.

A central decisionmaking system could develop a viable cost performance measurement. By selecting the optimal carrier and container, a cost performance objective is developed. The actual costs could be compared to the estimates to measure performance and indicate whether the optimal selection was made. This would provide a basis for investigating deviations and taking necessary corrective actions.

CHAPTER 4

CONCLUSIONS, RECOMMENDATIONS, AND AGENCY COMMENTS AND OUR EVALUATION

CONCLUSIONS

Within the constraints of the cargo information they receive and their current responsibilities, MTMC and MSC generally make good carrier and container selections to ship DOD cargo overseas. A centralized decisionmaker, however, could make optimal selections which would save transportation costs, improve transportation service, and develop criteria for a cost performance measurement system.

MTMC is the agency responsible for selecting the lowest overall cost route for overseas cargo movement. MTMC has the computer technology available to make the most cost-effective container selection.

RECOMMENDATIONS

We recommend that the Secretary of Defense designate a central manager for carrier and container selections on containerized shipments. Although we have not examined all of the command relationships and prerogatives of MTMC and MSC, it is apparent that MTMC has a broader traffic management responsibility, the computer capability and expertise, and greater responsibilities and relationships with shippers and shipping data. Therefore, within the specific command relationships covered by this study, we believe MTMC is the logical choice for the centralized management responsibility.

We also recommend that the Commanding General, MTMC, (1) require shippers to provide the cargo data needed to make the most cost-effective selections of containers and (2) use available quantitative techniques and computer technology in making the selections.

AGENCY COMMENTS AND OUR EVALUATION

We furnished a draft of this report to DOD for review. Its comments are included as appendix I.

DOD agreed that, within the constraints of data received and their current responsibilities, MTMC and MSC make good carrier and container selections to ship DOD

cargo overseas. DOD also agreed that more extensive use of applicable computer technology might help to make the most cost-effective selection of containers and can be an excellent tool for managers. However, DOD said that the timeliness and accuracy of weight and cube data provided by shippers was a key to the entire issue. DOD also alluded to potential problems of container availability.

We agree that accurate weight and cube information is necessary to determine container requirements. However, many large shippers, such as vendors of beverages, who have standard load configurations can and do provide accurate weight and cube data when requesting a booking. In our opinion, other DOD shippers also could provide estimated weight and cube data based on an experience factor for their commodities.

DOD contends that the computer model made no allowance for nonavailability of containers from a particular carrier at a given time, and that availability of containers is a dynamic data element and should not be considered a constant.

We recognize that the availability of containers is a dynamic data element. In the tests described on page 4, we only considered containers that carriers stated were available. Likewise, the computer model considers availability of containers to be a variable and not a constant data element.

DOD said that the matter of designating a central manager for carrier and container selection was being considered and that the command relationships and responsibilities of MTMC and MSC were among the factors to be taken into account.

CHAPTER 5

SCOPE OF REVIEW

We evaluated DOD's container and carrier selection system for moving cargo overseas at the Military Traffic Management Command, Headquarters, Western and Eastern Areas, and the Military Sealift Command, Pacific and Atlantic. We also visited and interviewed DOD shipper services, commercial vendors, and commercial ocean carriers on the west and east coasts.

We interviewed DOD, MTMC, and MSC officials; reviewed and evaluated procedures; examined files and records; and studied pertinent legislative actions.

APPENDIX I

ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D C 20301

MANPOWER,
RESERVE AFFAIRS
AND LOGISTICS

October 7, 1977

Mr. Fred J. Shafer
Director
Logistics and Communications Division
U.S. General Accounting Office
Washington, D. C. 20548

Dear Mr. Shafer:

This is in response to your letter of July 18 to the Secretary of Defense transmitting copies of your draft report on "Centralized Management for Cargo Container Selections Would Reduce Transportation Costs and Improve Service" (OSD Case #4669).

We agree with the conclusion that within the constraints of the data received and their current responsibilities the Military Traffic Management Command (MTMC) and the Military Sealift Command (MSC) make valid carrier and container selections to ship DoD cargo overseas. We also agree that more extensive use of applicable computer technology may very well assist in optimizing the cost effective selection of containers. However, key to the entire issue is the timeliness and accuracy of data received from shippers. The assumption that exact weight and cube data are available at the time containers are requested is overly optimistic. More often than not, large DoD shipping activities request containers prior to actual availability of cargo, based on experience and historical cargo generation patterns, so that the container will be ready when the cargo is offered. This practice reduces pipeline time inventories, required warehouse space, and personnel. These activities do not operate under an allocation system but are provided containers specifically requested based on need. Further, there may or may not be container pools available contingent on commercial demand for containers. Although New Cumberland Army Depot and Mechanicsburg Defense Depot produce a significant volume of shipments, they are not so great that MTMC/MSC cannot handle processing individual requests.

We agree that the optimization techniques of linear programming can be excellent tools for managers. Care must be taken to insure appropriate constraints are included however. Otherwise the optimization process,

APPENDIX I

although correct in itself, can produce unrealistic results. For example, your computer model made no allowance for non-availability of containers from a particular carrier at a given time. Availability of containers is a dynamic data element and should not be considered a constant.

Your recommendation that the Secretary of Defense designate a central manager for carrier and container selections on containerized shipments is being carefully considered. We are currently in the process of analyzing revisions to the single manager charters. While eventual designation of a central manager for container selection may serve to increase efficiency and improve service, our review of MTMC and MSC command relationships and responsibilities must also be an element in such a decision.

Sincerely,

ROBERT B. PIRIE, JR.
Principal Deputy Assistant Secretary
of Defense (MRA&L)

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