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# Test Results Inconclusive For Determining Economies Of Using Great Lakes Instead Of Tidal Ports For Shipping Military Cargo

B-165421

BY THE COMPTROLLER GENERAL OF THE UNITED STATES

SEPT. 7, 1971

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COMPTROLLER GENERAL OF THE UNITED STATES  
WASHINGTON, D.C. 20548

B-165421

Dear Senator Mondale:

Pursuant to our letter of May 18, 1971, enclosed is our report on our evaluation of a test made by the Department of Defense involving the use of Great Lakes ports for military cargo moving between the United States and Europe.

Our evaluation was made at the request of several interested members of Congress.

This report is being sent today to those members.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "A. G. Keller".

362877 Comptroller General  
of the United States

Enclosure

C1 The Honorable Walter F. Mondale  
United States Senate

D I G E S T

WHY THE REVIEW WAS MADE

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- 1 In 1969 the Department of Defense (DOD) decided to conduct a test using Great Lakes ports for military cargo moving between the United States and Europe. By using the lake ports DOD reasoned that it could decrease substantially costs involved in moving similar cargo overland to more distant tidal ports. (See p. 3.)

Announcement of the proposal resulted in congressional requests that the General Accounting Office (GAO) halt the test or postpone it until a determination could be made regarding the need for the test. (See p. 3.) GAO advised that the data necessary to determine the feasibility of using Great Lakes ports was not available and that it had no basis for recommending cancellation of the test.

GAO did agree, however, to monitor the test and evaluate its results. (See p. 4.)

GAO discussed its findings with DOD, but DOD was not asked to comment on the draft of this report. (See p. 14.)

FINDINGS AND CONCLUSIONS

The test was made during the period April through November 1969. Two Victory-type ships chartered by the Military Sealift Command were used. DOD reported that it cost \$415,000 more to ship the test cargo through Great Lakes ports than via tidal ports. (See p. 4.)

DOD indicated that poor cargo mix was a factor in making the use of Great Lakes ports uneconomical. However, since the test ships sailed with considerable unused space on most of the outbound voyages and all of the inbound voyages, the mix of cargo was of minor importance. (See pp. 4 and 8.)

GAO, however, believes that the test results were inconclusive and not a valid basis for determining the relative economies of Great Lakes versus tidal ports. (See p. 6.)

There were errors in the cost data used by DOD to evaluate the test, and areas were identified where improved management could have significantly changed the results. These and other considerations reduced the excess costs reported by DOD from \$415,000 to about \$61,000. (See pp. 6 and 7.)

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Although GAO identified some additional cargo that should have been shipped on the test ships, it was unable to identify all such cargo because of inadequacies in DOD's management information system and the incomplete shipping records maintained by DOD. (See p. 8.)

In view of the relatively small adjusted cost difference identified during the test--about \$61,000 or about 2 percent of the total program cost of \$2.8 million--and in view of the possibility that better management could have further influenced the test results, GAO is not able to reach a conclusion regarding the economies of using Great Lakes instead of tidal ports. (See pp. 6 and 14.)

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### ABBREVIATIONS

DOD	Department of Defense
GAO	General Accounting Office
M/Ts	measurement tons
MSC	Military Sealift Command
MTMTS	Military Traffic Management and Terminal Service

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## CHAPTER 1

### INTRODUCTION

Prior to 1969, military cargo originating in the Great Lakes area and destined for overseas locations had been routed overland to tidal ports because there was no regular ocean service by U.S.-flag ships from nearby Great Lakes ports. In DOD's opinion, the use of this relatively high-cost overland transportation to more distant tidal ports unnecessarily increased its transportation costs.

Therefore, in October 1968, DOD requested our views concerning the propriety of using other than U.S.-flag ships for shipping military cargo through the Great Lakes ports. In reply (B-165421, dated December 23, 1968), we concluded that the diversion of military cargo from U.S.-flag ships at tidal ports to foreign ships at Great Lakes ports would be illegal. We pointed out, however, that it would not constitute a violation of the cargo preference act relating to the transportation of military supplies by sea as enacted April 28, 1904 (10 U.S.C. 2631), if ships controlled or owned by the Military Sealift Command (MSC) were used. We advised DOD that the use of such ships would not seem to deprive privately owned U.S.-flag ships of cargo because, in effect, the MSC ships would merely operate from Great Lakes ports instead of tidal ports.

Subsequently, DOD decided to test the use of MSC-controlled shipping between the Great Lakes and Europe during the 1969 shipping season. Announcement of the test resulted in congressional requests that we halt the test or at least postpone it until such time as a determination could be made regarding the need for such a test. Opponents of the test contended that sufficient cost data was available to determine the feasibility of using Great Lakes ports. They further believed that this cost data would show that the use of the lakes would result in excess costs to the Government.

We examined the matter and determined that the necessary cost data was not available within DOD. We then advised those concerned that there was no basis for



recommending that the test be canceled. But we agreed to monitor the test and evaluate its results.

In March 1969 DOD established guidelines for the test. The guidelines provided that all cost-favorable cargo suitable for inclusion in the test be routed to selected Great Lakes ports with the further stipulation that the Military Traffic Management and Terminal Service (MTMMS) take steps to ensure the success of the test. These steps were to include actively seeking reduced overland transportation rates to the ports and more favorable port handling conditions and rates. MTMMS was also to check shippers to ensure that cargo was being routed to the test ships. DOD directed that serious consideration be given to including shipments of household goods and privately owned vehicles in the test program.

The test was made during the period April through November 1969 using two Victory-type ships already operating under charter to MSC. There were a total of 11 sailings outbound from the ports of Milwaukee and Kenosha, Wisconsin; Toledo, Ohio; and Port Huron, Michigan, to Bremerhaven, Germany, and Rotterdam, Netherlands. All except the last two sailings were on a round-trip basis. The Great Lakes ports involved in the test are shown on the map on page 9.

On April 2, 1970, the Office of the Assistant Secretary of Defense (Installations and Logistics) reported to interested members of Congress that 68,631 measurement tons of cargo had been transported on the test ships and that it cost about \$415,000 more to ship the cargo through the Great Lakes ports than it would have cost through tidal ports.

The Assistant Secretary of Defense reported that the primary factor causing increased costs through Great Lakes ports was the inability to generate sufficient general cargo to effectively utilize the space on the test ships. Of the total cargo shipped on the test ships, 66 percent was military vehicles. The Assistant Secretary reported that vehicles were difficult to stow efficiently on conventional ships and that, if a greater proportion of the cargo had been general cargo, ship utilization would have been improved and thus would have permitted larger payloads and

lower unit costs. In addition, the Assistant Secretary stated that direction of more inbound cargo to the test ships would have reduced the excess cost of using the Great Lakes ports.

Initially, DOD established an outbound ship utilization goal of 7,300 measurement tons (M/Ts) and an inbound goal of 730 M/Ts. Considering the cargo capacity of the ships involved and the past volume of military traffic inbound from Northern Europe, we believe that DOD's goals were reasonable.

An analysis of ship utilization records showed, however, that these goals were achieved only on one outbound voyage and two inbound voyages. The average tonnage carried was 5,929 M/Ts on outbound voyages and 310 M/Ts on inbound voyages.

DOD officials concluded that the operation of controlled ships in the Great Lakes was uneconomical because of the mix of cargo and the lack of retrograde traffic. They expressed the opinion, however, that commercial U.S.-flag operators could improve substantially upon DOD's experience by carrying additional general cargo outbound and by attracting inbound nonmilitary cargo.

On the basis of our preliminary evaluation of the test results and the cost data then available, we reported to several members of Congress that we agreed with DOD's estimate of excess cost on the shipments made through the Great Lakes. We also reported, however, that we had identified cargo which had not been routed via the test ships even though routing via the Great Lakes appeared cost favorable. We reported that we planned, as a part of our overall evaluation of the test, to carefully review records relating to this cargo.

## CHAPTER 2

### TEST RESULTS INCONCLUSIVE FOR

#### DETERMINING FEASIBILITY OF USING GREAT LAKES PORTS

We believe that the test results were inconclusive and cannot be used as a basis for determining the relative economies of using Great Lakes and tidal ports. We found errors in the cost data used by DOD to evaluate the test results, and we identified areas where improved management could have significantly changed the outcome of the test. An adjustment of the test results to reflect our findings reduced the excess cost reported by DOD from \$415,000 to about \$61,000. A table showing our various adjustments to the cost of the test is included as an appendix to this report.

Further, although we identified some additional cargo that should have been included in the test, we were unable to identify all such cargo because of inadequacies in DOD's management information system and the incomplete shipping records retained in the DOD system. The nonavailability of adequate shipping information was the major factor in frustrating a conclusive evaluation of the test result.

In view of the relatively small adjusted cost difference--about \$61,000 or about 2 percent of the total program cost of \$2.8 million--and in view of the possibility that better management would have further affected the results of the test, we cannot draw any conclusions regarding the relative economies of using Great Lakes ports rather than tidal ports for cargo to and from locations near the Great Lakes.

Our findings are discussed in detail in the following sections.

#### DOD'S ESTIMATE OF EXCESS COST INACCURATE

On the basis of our preliminary analysis of the test results, DOD's estimated excess cost of \$415,000 seemed reasonable. During our detailed examination of the cost data, however, we identified several errors in the estimate.

We found that other than cost-favorable cargo had been routed to the Great Lakes to achieve better utilization of the test ships. For example, cargo was routed from Texas to the Great Lakes to effect use of otherwise unused space on the test ships even though the gulf ports would normally be cost favorable. Such diversions distorted the results of the test because under normal operating conditions this cargo would not have been routed to the Great Lakes. Elimination of these shipments, which we estimate to have been about 3,700 M/Ts, would have resulted in a net cost increase of about \$36,000 in the test results as reported by DOD.

Another error involved Army and Air Force Exchange Service cargo which was included in the test program. Since the overland cost for this particular cargo (4,462 M/Ts) was paid by the Exchange Service, the \$10,000 savings in lower overland costs to the nearer Great Lakes ports should not have been used to reduce DOD's overall excess cost.

On the other hand, we found that two elements of the cost of shipping by tidal ports were not considered by DOD in its final evaluation although they were included in the cost of shipping by Great Lakes ports. These elements were indirect administrative charges incurred at the port terminals (about \$44,000) and the cost of preparing vehicles for overseas shipment (approximately \$20,000).

IMPROVED MANAGEMENT WOULD HAVE RESULTED IN  
ADDITIONAL TEST CARGO

An area where improved management could have influenced the test results involves the omission of cost-favorable cargo from the test program. The test ships sailed with considerable unused space on most of the outbound sailings and on all of the inbound sailings. This indicates that the poor cargo mix reported by DOD as a reason for the use of the Great Lakes being uneconomical was of only minor importance. As long as there was significant unused space on the test ships the cargo mix would have had little effect on the overall results of the test. Only if the ships had been loaded close to capacity would a better mix of cargo--such as the use of general cargo to replace military vehicles--been of substantial benefit.

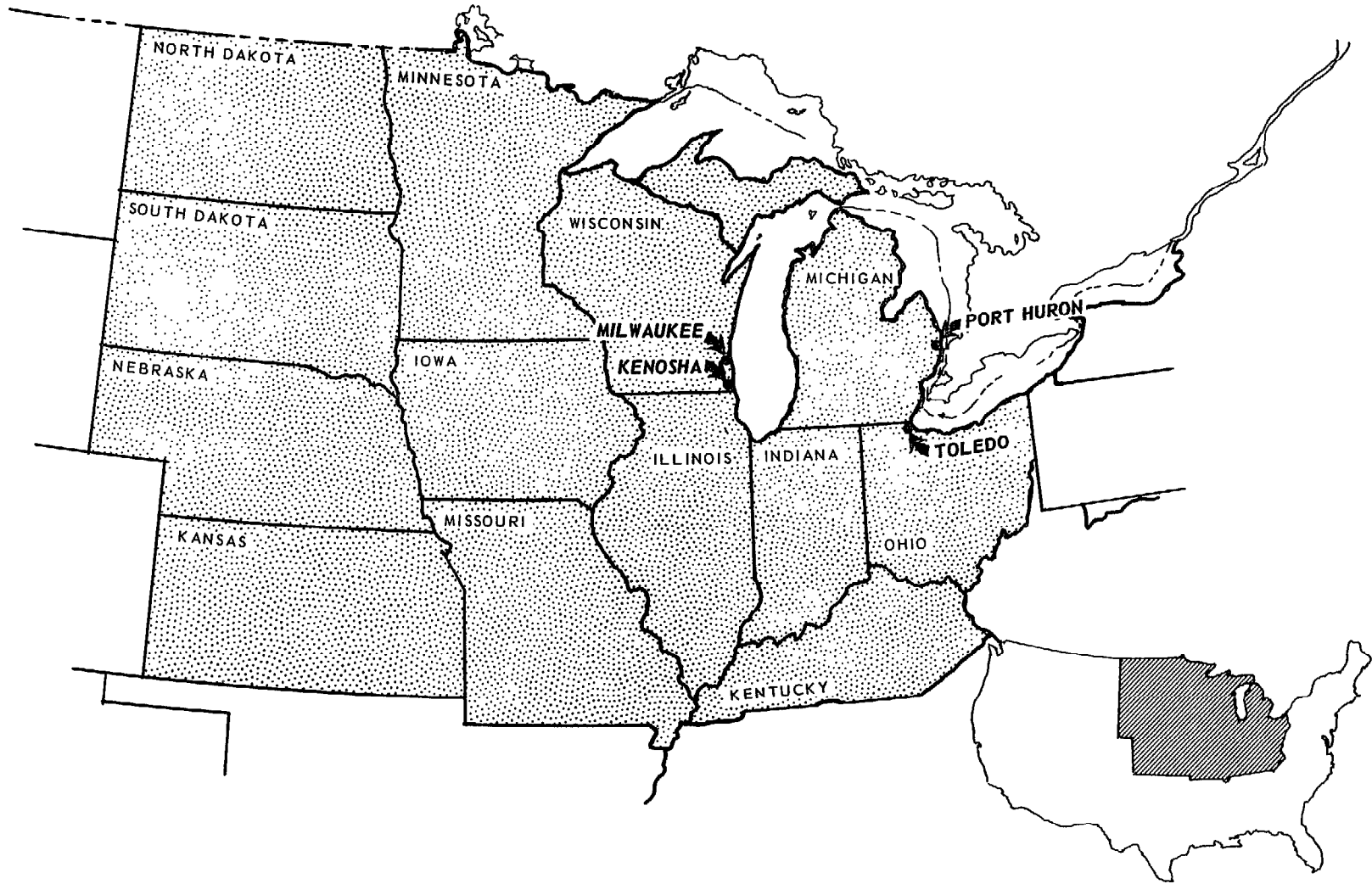
Of prime importance to proper conduct of the test was the routing of all appropriate cargo to the test ships. We found that this was not done. For example, DOD did not route 12,719 M/Ts of cargo--principally household goods--to the test ships even though the cargo originated at or was destined to the 13 States that we considered to be rate favorable to the Great Lakes ports. (See map on p. 9.) Inclusion of this additional cost-favorable cargo would have reduced the excess cost of the test to about \$61,000 after adjusting for the inaccuracies mentioned earlier. (See appendix.)

Although we believe, as explained later, that even more cargo could have been diverted to the test program, we were unable to identify such cargo because the shipping records of DOD were inaccurate or incomplete. We are currently involved in an overall review of the adequacy of the management information systems used by DOD's transportation activities.

Significant volume of household goods  
omitted from test program

DOD did not give proper consideration to including household goods in the test program, and as a result a significant volume was omitted from the test. Our analysis of the tonnage carried on the test ships showed that only 1,597 M/Ts of household goods were shipped via the Great Lakes. Our review of household-goods shipments between

THIRTEEN STATES CONSIDERED COST FAVORABLE TO  
THE GREAT LAKES PORTS USED IN THE TEST



points in the Great Lakes area and Germany showed that at least an additional 10,275 M/Ts should have been included in the test program.

In a memorandum dated March 27, 1969, the Deputy Assistant Secretary of Defense (Supply and Services) directed that serious consideration be given to including shipments of household goods in the test program. It was not until May 20, 1969, however, that MTMTS advised responsible transportation officers to consider shipping household goods in the program. Even then, MTMTS merely encouraged the transportation officers to use the Great Lakes ports.

Generally there are two methods available to transportation officers for moving household goods overseas. The first method is the through-Government-bill-of-lading method whereby a single bill of lading is issued to a forwarder to cover all the necessary services from origin to destination. Under this method, if the Government provides the ocean transportation, the forwarder offers a reduced rate. The second method is direct procurement whereby the Government manages the shipment and makes separate arrangements for the various services required, which are packing, movement to the port, port handling, ocean transportation, movement to destination, and unpacking.

Because the ships used in the test were chartered by the Government and the use of otherwise unused space was, in essence, "free," we believe that all shipments between the Great Lakes area and Europe should have been evaluated for movement via the Great lakes.

We estimate that inclusion of through-bill shipments alone would have added 10,275 M/Ts of cargo to the test program. We limited our evaluation of household-goods shipments to those moved under the through-bill method because DOD's records relating to direct procurement shipments were inadequate to identify the specific origins and destinations involved. We found, however, that MSC statistical data showed that it carried 70,158 M/Ts of household-goods shipments to Northern Europe (principally Germany) and 136,094 M/Ts inbound from the same area during the first 9 months of calendar year 1969. Although a portion of this tonnage involved through-bill shipments, the majority moved under the

direct procurement method. The statistics did not identify the specific U.S. points involved; however, in our opinion, some of this tonnage would involve direct procurement traffic to and from the 13 States in the proximity of the Great Lakes.

In support of our opinion, we found that about 19 percent of the through-bill traffic moving during the test period involved the 13 Great Lakes States. The significance of this percentage is demonstrated when it is realized that diversion of only 2 percent of the 206,000 tons of direct procurement household-goods shipments to the test ships would have resulted in additional savings of about \$104,000.



Other cargo omitted  
from test program

DOD reported that only about 3,400 M/Ts of cargo had been returned to CONUS on the test ships and that the ships had returned to CONUS empty on four of the nine round-trip voyages. In an effort to identify additional cargo which might have been handled by the test ships, we requested DOD on June 11, 1970, to furnish us with a record of all retrograde cargo movements during the test period. The requested data was furnished to us by DOD on October 8, 1970.

From this data we identified 1,826 M/Ts of retrograde general cargo which, we believe, should have been included in the test program. The DOD listing showed a total of 44,528 M/Ts of retrograde cargo which moved through tidal ports during the test period; however, we considered as potentially cost-favorable cargo only the 1,826 M/Ts destined to the 13 States in the proximity of the Great Lakes ports used in the test.

Also, from data furnished to us by DOD, we identified 32,335 M/Ts of outbound general cargo shipments (excluding ammunition and vehicles) which were routed via the east or gulf coast ports even though the shipments originated in the Great Lakes area. A review by DOD of these cargo movements showed that only 618 M/Ts could have been included in the test program. DOD explained that about 66 percent of the identified cargo was containerized either at origin or at the port, and since no container service was available via the Great Lakes, the cargo was routed via tidal ports. Other reasons given by DOD for shipping the cargo via tidal ports were:

- The high priority of the cargo and the required delivery dates precluded use of the test ships.
- Cargo shipped on commercial bills of lading was procured on a free-on-board-port basis, with an east or gulf coast port designated as the port of exit. Diversion of shipment to another port would have required an amendment to the procurement contract.

Because of the length of time that had elapsed since the decision was made by the various transportation officers to use a particular mode of transportation or to use expedited service, we could not evaluate the validity of these reasons.

Attempts to identify additional cargo frustrated by inadequate records

Our attempts to identify additional shipments, potentially cost favorable via the Great Lakes, were frustrated by the incomplete and inadequate shipping records of the military services. For example, records furnished to us by MTMIS showed that the total tonnage of through-bill household-goods movements for the 5-month period May through September 1969 between Germany and 10 selected Great Lakes States was 6,286 M/Ts inbound and 1,967 M/Ts outbound. To test the validity of these figures, we surveyed actual payments made to household-goods forwarders during this period. On the basis of this survey, we estimate that more than twice as many shipments of household goods actually moved to or from the Great Lakes area than were reported by MTMIS for the test period.

MTMIS records show that approximately 26,000 M/Ts of household goods moved through east or gulf coast ports under the direct procurement method from Germany to all destinations in CONUS during the period April through September 1969. Military Sealift Command records for the same period, however, showed that 90,000 M/Ts of household goods were moved from Northern Europe, principally Germany, to all States in CONUS. Our review of payment records showed that MSC carried about 12,000 M/Ts for through-bill carriers. If MSC records are correct, the remaining 78,000 M/Ts were direct procurement shipments. This differs significantly from the 26,000 M/Ts reported by MTMIS.

Statistical data involving general cargo shipments, both outbound and retrograde, also varied significantly when comparing that furnished to us by MTMIS, MSC, and the U.S. Army, Europe. Records of MSC showed that 730,437 M/Ts moved to Northern Europe from all States in CONUS for the

period January through September 1969, whereas MTMTS records for the same period indicated that only 487,265 M/Ts were shipped.

With regard to retrograde cargo, records furnished to us by the U.S. Army, Europe, showed that a total of 43,170 M/Ts were shipped during the period January through September 1969; whereas MSC records showed a total of 167,138 M/Ts for the period January through September 1969.

Although it was difficult to determine which records were unreliable, we were able to determine the inaccuracy, to some degree, of the statistical data furnished to us by MTMTS that involved outbound general cargo. We compared this data with the ships' manifests for the 11 sailings during the test program and found that about 20 percent of the tonnage unloaded was not recorded in the MTMTS statistical data. This same data showed about 5,000 M/Ts as having moved on the test ships when, in fact, the tonnage actually moved via tidal ports. Only 22 percent of the cargo manifests that we examined were recorded correctly in the statistical data.

We have discussed our findings with DOD officials, but they were not asked to comment on the draft of this report.

### CONCLUSIONS

Because of the relatively small cost difference identified during the test and the possibility that improved management could have further affected the test results, we cannot draw any conclusions regarding the relative economies of using Great Lakes ports as opposed to using tidal ports. The test results, in our opinion, were inconclusive.

## CHAPTER 3

### SCOPE OF REVIEW

Our review included an examination of pertinent test records; an analysis of data relating to the movement of general cargo, household goods, and retrograde cargo between CONUS and Germany during the period April through October 1969; and discussions with responsible transportation officials.

Our review work was done at the following locations.

Headquarters, Military Traffic Management and Terminal Service, Fall Church, Virginia

Headquarters, Eastern Area Military Traffic Management and Terminal Service, Brooklyn, New York

Port of Toledo, Toledo, Ohio

Port of Milwaukee, Milwaukee, Wisconsin

APPENDIX

ADJUSTMENTS TO THE DOD REPORTED COST OF  
THE GREAT LAKES TEST

	Actual cost of test	Estimated cost via Atlantic or gulf port	Excess cost or decrease(-)
DOD report	\$2,821,000	\$2,406,000	\$415,000
Exclusion of cargo not cost favorable (p. 7):			
Ocean	-	-76,000	
Port handling	-19,000	-21,000	
Overland	<u>-72,000</u>	<u>-30,000</u>	
Total	<u>-91,000</u>	<u>-127,000</u>	<u>36,000</u>
	2,730,000	2,279,000	451,000
Exclusion of overland costs of Army and Air Force			
Exchange Service cargo (p. 7)	<u>-23,000</u>	<u>-33,000</u>	<u>10,000</u>
	2,707,000	2,246,000	461,000
Inclusion of cost elements not considered by DOD (p. 7):			
Indirect terminal charges	-	44,000	
Vehicle processing	-	<u>20,000</u>	
Total	<u>          </u>	<u>64,000</u>	<u>-64,000</u>
	2,707,000	2,310,000	397,000
Inclusion of candidate household-goods ship- ments (p. 8)	<u>824,000</u>	<u>1,090,000</u>	<u>-266,000</u>
	3,531,000	3,400,000	131,000
Inclusion of candidate retrograde cargo (p. 12)	<u>25,000</u>	<u>78,000</u>	<u>-53,000</u>
	3,556,000	3,478,000	78,000
Inclusion of candidate outbound general cargo (p. 12)	<u>13,000</u>	<u>30,000</u>	<u>-17,000</u>
Adjusted cost comparison	<u>\$3,569,000</u>	<u>\$3,508,000</u>	<u>\$ 61,000</u>