



*REPORT TO THE SELECT COMMITTEE
ON SMALL BUSINESS
UNITED STATES SENATE*

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Department Of Transportation's
Cargo Security Programs

B-169347

*BY THE COMPTROLLER GENERAL
OF THE UNITED STATES*

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

B-169347

The Honorable Alan Bible
Chairman, Select Committee on
Small Business
United States Senate

Dear Mr. Chairman:

This is our report on the Department of Transportation's cargo security programs. We made our examination in accordance with your request of January 31, 1973, and subsequent discussions with your office.

As your office instructed, we are sending copies of this report to the House and Senate Committees on Government Operations; the House and Senate Committees on Appropriations; the Secretary of Transportation; and the Director, Office of Management and Budget.

We do not plan to distribute this report further unless you agree or publicly announce its contents.

Sincerely yours.

A handwritten signature in cursive script that reads "James B. Stacks".

Comptroller General
of the United States

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ABBREVIATIONS

CAB	Civil Aeronautics Board
DOT	Department of Transportation
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
GAO	General Accounting Office
ICC	Interstate Commerce Commission
OTS	Office of Transportation Security

COMPTROLLER GENERAL'S REPORT
TO THE SELECT COMMITTEE ON
SMALL BUSINESS
UNITED STATES SENATE

DEPARTMENT OF TRANSPORTATION'S
CARGO SECURITY PROGRAMS B-169347

D I G E S T

WHY THE REVIEW WAS MADE

The Committee asked GAO to obtain information on the programs of the Department of Transportation (DOT)

- to reduce cargo thefts in the transportation industry,
- to assess the industry's awareness of these programs, and
- to evaluate a consultant's estimates of industry losses from cargo thefts.

FINDINGS AND CONCLUSIONS

The growing incidence of theft and pilferage of cargo in this country disrupts the orderly and efficient flow of goods in all modes of transportation and levies a huge financial toll.

Theft-related cargo losses are believed to exceed \$1 billion a year in the trucking, rail, maritime, and air cargo industries. Most of these losses are passed on to the consumer through increased prices for goods and services.

DOT's cargo security programs are carried out by its Office of Transportation Security (OTS), and by

- the Federal Aviation Administration (FAA),

- the Federal Highway Administration (FHWA),
- the Federal Railroad Administration (FRA), and
- the Coast Guard.

These organizations will be identified by their initials throughout the report.

OTS was established in mid-1971 as the focal point in DOT for promoting voluntary action of the industry to improve cargo security and its cargo security efforts consisted of

- sponsoring nine research projects demonstrating the effectiveness of antitheft devices and procedures;
- publishing eight brochures on cargo procedures;
- promulgating three cargo security advisory standards; and
- employing a management consulting firm to estimate cargo losses incurred by U.S. air, truck, rail, and maritime industries.

FAA reviews and approves air carrier and airport security programs at the Nation's airports, conducts theft prevention surveys, and provides technical assistance and guidance concerning aircargo security matters on request.

FHWA makes cargo security surveys at truck terminals as a part of its safety inspections.

FRA conducted research into the use of helicopters to deter vandalism and thefts at railroad switching yards but has no ongoing cargo security programs.

The Coast Guard made cargo security inspections at four major U.S. ports. A Coast Guard official told GAO that no other cargo security activities were conducted because of insufficient staff resources. (See p. 10.)

Industry's awareness of DOT's programs

Of the 210 firms GAO interviewed, 162 said that they were aware that DOT was conducting programs to improve cargo security and 73 said they were influenced by DOT's programs.

All the airlines and railroad companies and most of the large trucking companies, steamship companies, and maritime terminal operators knew that DOT was conducting programs to reduce cargo thefts.

Twenty-six of 41 small trucking companies and 17 of 31 freight forwarders knew about DOT's programs. (See p. 4.)

Fifty-six carriers and terminal operators knew about the DOT research activities. Most of these projects were designed to test or demonstrate devices and procedures that would be of particular interest to trucking firms and freight forwarders.

Twenty-nine of 131 trucking firms and 2 of 31 freight forwarders interviewed were aware of these research efforts. (See p. 7.)

All airlines and railroads and 60 of 90 large trucking firms interviewed were familiar with the publications by DOT's Office of Transportation Security.

Sixteen of 41 small trucking firms, 11 of 31 freight forwarders, and 16 of 29 steamship companies and terminal operators interviewed were acquainted with these publications. (See p. 8.)

All the rail and air carriers were familiar with advisory standards of the Office of Transportation Security.

Of the other modes, 47 of 131 trucking firms, 8 of 31 freight forwarders, and 14 of 29 steamship companies and terminal operators acknowledged awareness of the standards. (See p. 9.)

Consultant's estimates of doubtful value

Because of the use of questionable data bases and faulty statistical sampling, the consultant's estimates of 1970 theft-related cargo losses--\$1 billion--for the U.S. air, truck, rail, and maritime industries are of doubtful value to DOT in identifying major problem areas, planning and developing remedial programs, and measuring program effectiveness.

The consultant considered the estimates conservative because they did not include freight-forwarder losses, shipper unreported losses, and certain carrier and shipper intangible losses. In April 1973, the consultant undertook a second contract to estimate 1971 cargo losses. (See p. 12.)

The consultant's aircargo loss estimate of \$15.4 million was based on an analysis of 1971 freight loss and damage claims obtained for a Civil Aeronautics Board investigation of air carrier liability and claims rules practices. The data was not a satisfactory basis for estimating cargo losses because it did not include a random sample of claims for a 12-month period. (See p. 14.)

The trucking industry cargo-theft estimate of \$850.5 million was based on information obtained from 36 carriers responding to a questionnaire sent to over 1,200 firms. This data could not be meaningfully projected because of the few responses and because companies with revenues under \$300,000 and companies carrying household goods, petroleum, agriculture, and other bulk products were not included in the sample. (See p. 15.)

The railroad cargo-loss estimate of \$54.5 million was based on information obtained from seven responses to the questionnaire sent to all 71 class I railroads (annual revenues in excess of \$5 million). The estimate is of questionable value because there is no assurance that cargo-loss data obtained from seven railroads is representative of the losses of all 71 railroads. (See p. 15.)

The maritime cargo-loss estimate of \$85.5 million was based on the experience of the Military Sealift Command, Department of Defense, shipping cargo via common carrier and three carriers.

The consultant acknowledged that this estimate, based on only a 1-percent sample, was not as accurate as the estimates for other modes. (See p. 16.)

RECOMMENDATIONS

DOT's Office of Transportation Security should tell the consultant the results of the GAO review of its estimates of 1970 theft-related cargo losses and insure that the consultant's method of estimating 1971 losses does not include the errors GAO noted in the 1970 estimates. (See p. 16.)

AGENCY AND CONSULTANT COMMENTS AND UNRESOLVED ISSUES

DOT said that measures had been taken to improve the consultant's method in estimating cargo losses for 1971 by using a stratified sample. This would show loss experience of various sized companies adequately within each transportation mode. There has been a significant increase in the number and distribution of transportation companies included in the 1971 estimate.

DOT agreed with the GAO conclusion that the Civil Aeronautics Board's claims data was not adequate for estimating air carrier losses in 1970 and directed the consultant to develop 1971 losses from its own inquiries.

Although DOT recognized that shippers' unreported and intangible losses were important factors in estimating overall cargo losses, it concluded that such losses could not be determined adequately within the scope of the contract.

The consultant agreed that GAO accurately pointed out the inadequacies in the data bases and sampling techniques used to estimate theft-related losses for 1970. It believes that the worst of the inadequacies have been overcome in estimating

1971 cargo thefts.

GAO believes that before DOT accepts the consultant's estimate of 1971 cargo losses, it should make sure that measures taken were adequate to prevent the type of errors noted in the 1970 estimates.

CHAPTER 1

INTRODUCTION

One of the most serious transportation problems facing the Nation is the growing incidence of theft and pilferage of cargo. It disrupts the orderly and efficient flow of goods in all modes of transportation and levies a huge financial toll. Theft-related cargo losses in the United States are estimated to exceed \$1 billion a year in the trucking, rail, maritime, and aircargo industries. Most of these losses, including the cost of increased insurance premiums and additional administrative expenses, are passed on to the consumer through increased prices for goods and services.

THE DEPARTMENT OF TRANSPORTATION PROGRAMS

Pursuant to the Department of Transportation Act of 1966 (49 U.S.C. 1651), which gave the Department of Transportation (DOT) responsibility for developing and implementing national policies and programs to provide fast, safe, efficient, and coordinated Federal transportation programs, the Secretary of Transportation announced on June 17, 1971, that DOT would be the principal agency of the Federal Government in matters relating to developing solutions to the cargo-theft problem and would coordinate the efforts of other Government agencies and of industry in seeking ways to improve the security of cargo throughout the Nation's transportation system. Because the act did not authorize a regulatory program, DOT centered its efforts around promoting voluntary measures to improve cargo security.

In June 1971, DOT established the Office of Transportation Security (OTS) to direct its antihijacking and cargo security programs. OTS is part of the Office of the Secretary and is staffed by a Director; Deputy Director; and, on the average, four professional staff members with duties relating to cargo security.

In September 1971, the Secretary of Transportation directed the Federal Aviation Administration (FAA), the Federal Highway Administration (FHWA), the Federal Railroad Administration (FRA), and the Coast Guard to incorporate cargo security into their missions.

SCOPE OF REVIEW

We made our review at DOT headquarters in Washington, D. C. We examined pertinent legislation, DOT's policies and programs for improving cargo security, and a consultant's study on cargo-theft losses and discussed cargo security activities with the appropriate DOT officials. We also interviewed representatives of 210 carriers and terminal operators in and around Chicago, New York, and San Francisco regarding the industry's reaction to DOT's efforts to improve cargo security.

Our selection of carriers and terminal operators was intended to obtain a cross section of the industry and included 8 of the 23 domestic air carriers certificated by the Civil Aeronautics Board and 11 of the largest railroad companies, 29 major maritime carriers and terminal operators, 131 trucking companies, and 31 freight forwarders located in the vicinity of Chicago, New York, and San Francisco. The selected trucking companies included a mix of Interstate Commerce Commission (ICC) class I carriers (annual revenues in excess of \$1 million), class II carriers (annual revenues of \$300,000 to \$1 million) and class III carriers (annual revenues of less than \$300,000).

CHAPTER 2

SCOPE OF MAJOR CARGO SECURITY EFFORTS AND INDUSTRY'S AWARENESS OF THESE EFFORTS

The DOT cargo security programs are carried out by OTS, which was established as the focal point in DOT for promoting the voluntary action of industry to improve cargo security, and by FAA, FHWA, FRA, and the Coast Guard.

OTS's major programs consisted of:

- Sponsoring nine research projects demonstrating the effectiveness of antitheft devices and procedures.
- Publishing eight brochures on cargo security.
- Promulgating three cargo security advisory standards.

FAA reviews and approves air carrier and airport security programs at the Nation's airports, conducts theft prevention surveys, and provides technical assistance and guidance concerning aircargo security matters on request. FHWA makes cargo security surveys at truck terminals as a part of its safety inspections. FRA conducted research into the use of helicopters to deter vandalism and thefts at railroad switching yards. The Coast Guard made cargo security inspections at four major U.S. ports.

In addition, the Interagency Committee on Transportation Security, formed under DOT's leadership in 1971, issued four cargo security reports in June 1972.

Of the 210 air, truck, rail, and maritime carriers and terminal operators we interviewed, 162 were aware that DOT was conducting programs to improve cargo security and 73 said that their security systems had been influenced by DOT's programs.

The larger carriers and terminal operators interviewed generally employed security specialists and were better informed about the cargo-theft problem and DOT's programs. All airlines (8), all railroad companies (11), 76 of the 90 classes I and II trucking companies (annual revenues in excess of \$300,000) and 24 of the 29 steamship companies and maritime terminal operators knew that DOT was conducting programs designed to reduce cargo thefts. Twenty-six of 41 class III trucking companies (annual revenues of less than \$300,000) and 17 of 31 freight forwarders interviewed knew about DOT's programs.

Of the 210 carriers and terminal operators interviewed, 56 knew about OTS' research projects, 122 were acquainted with its publications, and 87 were acquainted with its advisory standards. Generally, trucking companies, particularly the small firms, and freight forwarders were less knowledgeable about these activities. For example, 29 of the 131 trucking companies and 2 of the 31 freight forwarders interviewed were aware of the research activities which had been directed principally to areas of interest to the trucking industry.

OTS CARGO SECURITY PROGRAMS

Since its establishment in June 1971, OTS' principal efforts have been directed to (1) sponsoring research projects demonstrating the effectiveness of antitheft devices and procedures, (2) publishing pamphlets and brochures on cargo security, and (3) promulgating cargo security advisory standards. Also it is developing a cargo-loss analysis system on the nature and value of cargo losses by transportation mode and assisted in the planning and organization of three national cargo security conferences, jointly sponsored by DOT and the Transportation Association of America.

Comments on OTS' major activities during its first 2-1/2 years and the awareness of the transportation industry to OTS' efforts follow.

Research projects

OTS sponsored nine research projects, at a total cost of about \$284,000, to determine and demonstrate the effectiveness of antitheft devices and procedures. Of these nine projects, six dealt with cargo security problems of the trucking industry which is generally considered to have the highest cargo losses of all transportation modes, two with railroad security problems, and one with the use of police data to develop cargo-theft information. Several of the projects represented phases of long-term efforts to improve cargo security and had been partially financed and/or performed by private industry or by other Federal and local governmental bodies.

OTS informs industry of its research efforts by notices in trade journals and other publications and by announcements at industry conferences and seminars. OTS uses the results of the research projects in developing cargo security advisory standards or publishes the results to aid the transportation industry in developing solutions to specific cargo-theft problems. The published research projects are disseminated to carriers, terminal operators, and trade associations selected from a mailing list of over 1,800 firms and associations.

Four of the projects have been completed, and the results of three projects were published in August and November 1973. Brief descriptions of the nine projects follow.

Railcar Locking Device Project--introduces and demonstrates use of simple, inexpensive devices to secure boxcars to deter cargo theft while in transit or at terminals. The demonstration, which started in November 1971, is being conducted in cooperation with several railroads, an automobile manufacturer, a tire manufacturer, and a tobacco company. OTS provided the locking devices for the project at a cost of \$600.

Cargo Security Training Project--developed a cargo security training program for small trucking companies and conducted a pilot training seminar. The project was started in January 1972 under a \$32,900 contract awarded to Mercemedia, Inc. DOT's Transportation Safety Institute in Oklahoma City is conducting training courses.

St. Louis Rail Yard Project--demonstrated use of helicopter surveillance and radio communication equipment in reducing cargo theft and vandalism. The project, which started in May 1972, was completed in November 1973. A pamphlet describing the results of the project was published in November 1973. The Research and Development Department, Naval Ammunition Depot, Department of Navy, conducted this project under a \$40,000 contract with OTS.

Philadelphia Concentrated Campaign Project--developed a system for reporting cargo thefts, utilizing police data. The project, which started in May 1973, is being conducted by the Philadelphia Police Department, under a \$2,000 contract with OTS. The Pennsylvania Motor Truck Association and Departments of Justice and the Treasury also are assisting in the project.

Truck Trailer Top Marking Project--determined the most visible sizes, shapes, and colors for marking trailer tops as a means of locating and identifying hijacked trucks. The project was started in January 1973, and the results were published in August 1973, at a total cost of about \$5,000. Tests were made by DOT's Transportation Systems Center with assistance by the New York City Police Department and several trucking firms in the New York City area.

Cooperative Approach to Cargo Security Project--demonstrated that better security could be obtained at a lower cost by pooling the security resources of truck terminals in the same area. This project was conducted from January 1972 to August 1973 by Executive Services, Inc., under a \$66,500 OTS contract, using the experiences of seven trucking terminals. OTS published the results of the demonstration in August 1973.

Antihijacking Device Project--demonstrated the effectiveness of a device to make a truck engine inoperative if an unauthorized person enters the truck cab. New York City and the Master Truckmen Association are demonstrating this device in the city's garment district. The project, which started in March 1973, was scheduled for completion in June 1974. OTS provided 16 truck-guard devices for the demonstration at a cost of \$2,400.

Electronic Vehicle Identification Project--demonstrated the feasibility of using electronic communication techniques to locate and identify hijacked trucks. The project, which started in January 1973, was scheduled for completion in July 1974. The Hoffman Electronics Corporation is conducting this project under a \$130,000 OTS contract.

Computer Analysis of Transportation Personnel Data Project--determined whether there was a relationship between the employee turnover rate and the cargo-theft experience of transportation companies. This project developed background information for a planned advisory standard on preemployment screening. Research, which started in November 1972, was completed in April 1974. OTS awarded two contracts, totaling \$4,245, to the National Transportation Information Center, Inc., for computer analysis of employee termination experience.

Of the 210 air, motor, rail, and maritime carriers and terminal operators interviewed, 56 knew about OTS' research activities. Most of the projects undertaken by OTS were designed to test or demonstrate devices and procedures that would be of particular interest to trucking firms and freight forwarders. Twenty-nine of 131 trucking firms and 2 of 31 freight forwarders interviewed were aware of OTS' research efforts. About one-half of the 48 air, rail, and maritime carriers interviewed were acquainted with OTS' research efforts.

Publications

OTS published the following eight pamphlets and brochures on cargo security.

- Guidelines for the Physical Security of Cargo, May 1972
- An Economic Model of Cargo Loss: A Method for Evaluating Cargo Loss Reduction Programs, May 1972
- Increased Profits Through Freight Claim Reduction, June 1972
- Cargo Security Handbook for Shippers and Receivers, September 1972
- Cargo Theft and Organized Crime, October 1972

--A Cooperative Approach to Cargo Security in the Trucking Industry, August 1973

--Truck-Top Markings for Visual Identification, August 1973

--St. Louis Helicopter Project - A Cooperative Effort Among 14 Railroad Police Departments, November 1973

The last three listed publications contain the results of OTS - conducted research projects. Each of these publications was distributed to carriers, terminal operators, and trade associations of the affected mode selected from a mailing list of over 1,800 firms and associations. Notice of OTS publications is also in trade journals. Interested parties can get these publications from OTS at no charge or from the Government Printing Office for a nominal charge.

All the airlines (8) and railroads (11) and 60 of the 90 large trucking firms we interviewed were familiar with the OTS publications. Sixteen of the 41 small trucking firms, 11 of 31 freight forwarders, and 16 of 29 steamship companies and terminal operators interviewed were acquainted with OTS' publications.

Cargo security advisory standards

Cargo security advisory standards are offered as authoritative aids to all elements of the transportation system, including shippers and consignees, to help prevent theft and pilferage of cargo. Compliance with the standards is not mandatory, and they do not replace or modify any statutory requirements or regulatory authority vested in Federal, State, or local government bodies. As of April 1974, OTS had issued the following standards.

	<u>Date issued</u>
Seal Accountability and Procedures	June 1973
High Value Commodity Storage Procedures	August 1973
Internal Accountability Procedures	February 1974

OTS told us that it planned to issue one advisory standard approximately every 3 months. Subjects of advisory standards scheduled for issuance in the near future include high value and sensitive cargo transit procedures, preemployment screening procedures, document control procedures, and packaging and marking procedures.

Announcement of proposed advisory standards and the approved standards are published in the Federal Register. OTS sends copies of the Register containing both the proposed and the approved standards to individual carriers, industry groups, and trade associations.

When we interviewed carriers and terminal operators in September 1973, two advisory standards had been issued. Of the 210 firms interviewed, 88 were aware of the standards. All interviewed air (8) and rail (11) carriers said they were familiar with the standards. Of the other carriers interviewed, 47 of 131 trucking firms, 8 of 31 freight forwarders, and 14 of 29 steamship companies and terminal operators acknowledged awareness of the standards.

OTHER DOT CARGO SECURITY PROGRAMS

In September 1971 the Secretary of Transportation directed FAA, FHWA, FRA, and the Coast Guard to establish cargo security programs.

FAA, as part of its antihijacking program, requires that the master security plans of the 504 airports serving air carriers include procedures for preventing unauthorized access to cargo handling, storage, and loading areas in terminal areas.

From January to September 1973, FAA reviewed and approved the security plans of all 504 air carrier airports and made 448 security inspections of aircargo facilities.

FHWA's Bureau of Motor Carrier Safety, in July 1972 began making cargo security inspections as part of its overall safety inspections at terminals of 150,000 trucking firms engaged in interstate commerce. The Bureau tells the carriers of their security weaknesses and encourages them to take corrective action.

As of March 1974, about 1,100 inspections had been made. FHWA also had conducted about 350 cargo security seminars for carriers and trade associations.

FRA's cargo security activities were limited to conducting a research project in 1972 demonstrating the effectiveness of helicopter surveillance in deterring vandalism and thefts at the switching yards of two railroads in Philadelphia. FRA published these findings in January 1973. In July 1974 FRA told the Assistant Secretary for Administration that it had no plans to initiate a cargo security inspection program.

From March to June 1972, the Coast Guard made cargo security inspections at the ports of Baltimore, New Orleans, San Francisco, and Seattle. Security weaknesses noted in these inspections were brought to the attention of the maritime carriers and terminal operators at the ports. According to a Coast Guard official, no other cargo security activities were conducted because of insufficient staff resources.

INTERAGENCY COMMITTEE ON TRANSPORTATION SECURITY

Under the Secretary's leadership, an Interagency Committee on Transportation Security was formed in June 1971 to stimulate interagency communications and to develop policies and programs designed to reduce or prevent cargo theft. The committee, with representatives from 14 Federal agencies, initially established 12 working groups to study different problems affecting cargo security and to recommend remedial programs. During its initial period of operation, the Interagency Committee issued four cargo security reports in June 1972 on

- Cargo Security Equipment Applications Guide,
- Inventory of Technology and Programs Applicable to Cargo Security,
- Recommended Standards for Preparation of Shipments to Improve Cargo Security, and
- Reduced Shipping Losses Through Better Managed Documentation.

The first two reports were distributed to other Federal agencies to assist their cargo security research and development activities. The other two reports OTS incorporated into the "Cargo Security Handbook for Shippers and Receivers."

Beginning in July 1972, the committee shifted its emphasis from fact gathering and analysis to providing a means of communication and guidance to its member agencies in matters relating to the national problem of cargo theft.

CHAPTER 3

CONSULTANT'S ESTIMATES OF THEFT-RELATED CARGO LOSSES HAVE DOUBTFUL VALUE

The estimates of theft-related cargo losses incurred by U. S. air, truck, rail, and maritime transport industries in 1970, made by a consultant for OTS, were based on shipments of revenue-producing cargo; losses resulting from shipment of household goods and passenger baggage were not determined. The consultant considered the estimates conservative because they did not include freight-forwarder losses; shipper and consignee unreported losses; and carrier, shipper, and consignee intangible losses. Even as a conservative measure of theft-related losses of revenue-producing cargo, the estimates were of doubtful value because of the use of questionable data bases and faulty statistical sampling.

ESTIMATE OF THEFT-RELATED CARGO LOSSES

OTS employed Braddock, Dunn and McDonald, Inc., a management consulting firm, in September 1971 to estimate the cargo losses incurred by U. S. air, truck, rail, and maritime transport industries, with emphasis on losses resulting from theft and pilferage, and to develop and recommend a system for the continuous collection, analysis, and reporting of cargo-loss data for U. S. modes of transportation.

These estimates were to identify major problem areas, to determine cost effectiveness of proposed cargo security improvement programs, and to establish bench-mark data against which progress could be measured. In May 1972, OTS published the results of the consultant's estimates of cargo losses for 1970 in a document entitled, "An Economic Model of Cargo Losses: A Method for Evaluating Cargo Loss Reduction Programs."

The consultant's recommendations for a cargo-loss reporting system, in a February 1972 report to OTS, are being considered by OTS in its development of a reporting system. In April 1973, OTS awarded a second contract to the consultant for an estimate of 1971 cargo losses. The consultant submitted a draft report to OTS on June 5, 1974, for final editorial comment.

The consultant based its 1970 cargo-loss estimates on the transport of revenue-producing cargo. Losses resulting from the transport of household goods and passenger baggage were not included in the estimates shown in the table below.

<u>Transportation mode</u>	<u>Theft-related cargo losses</u>		
	<u>Carrier</u>	<u>Shipper or consignee</u> (million)	<u>Total</u>
Air	\$ 8.3	\$ 7.1	\$ 15.4
Truck	591.9	258.6	850.5
Rail	44.6	9.9	54.5
Maritime	<u>61.3</u>	<u>24.2</u>	<u>85.5</u>
Total	<u>\$706.1</u>	<u>\$299.8</u>	<u>\$1,005.9</u>

The consultant's approach in estimating cargo losses was to measure all direct and indirect costs incurred by carriers and shippers (or consignees). Freight claims were used as the data source for direct costs because they were the most readily available source of cargo-loss data for both carriers and shippers. The consultant considered carrier direct costs to be the difference between claims paid and the salvage value of cargo and insurance proceeds. The shippers' direct costs were considered to be the value of cargo less compensation from the carrier and insurance company. For both carriers and shippers, the consultant included a factor for lost profit on capital tied up during the period of claim or insurance settlement.

The consultant believed that both carriers and shippers might have (1) used security personnel and facilities and (2) incurred losses resulting from claim processing and litigation. The consultant included these cost items in its estimate of indirect costs.

Although the consultant recognized that shipper unreported losses; shipper loss claims filed with freight forwarders, which were not subrogated to carriers; and carrier and shipper intangible losses, such as loss of sales, loss of seasonal business, and loss of goodwill, were important factors which should have been used in estimating cargo losses; it did not include these costs in its estimates because they could not be adequately documented within the contract time and resource limitations.

The consultant obtained most of the carrier and shipper direct-cost data from information submitted by carriers. Aircargo data was obtained from the Civil Aeronautics Board (CAB). Truck and rail cargo data was obtained directly from selected carriers, and maritime cargo data was obtained directly from three carriers and supplemented by data from the Military Sealift Command, Department of Defense. The consultant assumed that shipper indirect costs would be equal to the indirect costs reported by carriers.

The consultant considered all cargo losses reported as thefts and 80 percent of the losses classified by carriers as shortages to be theft-related losses. More detailed comments on the estimates by transportation modes follow.

Air

The \$15.4 million estimate was based primarily on the consultant's analysis of 1971 freight loss and damage claims data obtained by CAB in an investigation of air carrier liability and claims rules practices. Although the CAB data did not include thefts of passenger baggage from airport pickup and delivery areas or thefts of cargo from airport storage areas, the consultant believed it to be the best available data for estimating 1970 losses. The CAB data, however, was not a satisfactory basis for estimating losses for a 1-year period because it was composed of two limited samples of air carrier freight loss and damage claims--a random sample of claims processed from January through June 1971 and the first 500 claims processed in September and October 1971. The consultant used one of every 10 of the CAB randomly sampled claims from January through June 1971 to estimate carrier direct and indirect costs and used the CAB September and October 1971 sample to estimate shipper direct cost. Neither of these samples were sufficient for projecting losses for a 12-month period because the carrier sample did not include claims processed from July through December 1971 and the shipper sample was not a random sample of claims for a 12-month period.

In February 1972, OTS submitted a draft of the consultant's report, containing its initial estimate of \$98.1 million for aircargo theft losses, to the Air Transport Association for review and comment. The Association objected that the estimate was grossly overstated. The consultant reanalyzed the CAB data submitted by the larger U.S. air carriers and found that the ratio of claims filed by shippers to the amount paid by air carriers for such claims was much lower than it previously estimated.

Use of the revised ratio resulted in a reduction of the aircargo theft estimate from \$98.1 million to \$15.4 million.

Truck

The \$850.5 million estimate was based primarily on the projection of cargo-loss data from 36 trucking companies that responded to the questionnaire. The consultant sent a questionnaire to all 1,286 classes I and II (annual revenues in excess of \$300,000) general freight carriers listed in "Trinc's Blue Book of the Trucking Industry."

The data obtained by the consultant could not be meaningfully projected over the entire trucking industry because (1) an insufficient number of firms responded to the questionnaire and (2) the sample did not include trucking companies with revenues under \$300,000 or trucking companies carrying household goods, petroleum, agriculture and other bulk products.

The trade association representing the trucking industry indicated a willingness to accept the consultant's cargo-loss projection with the understanding that these projections represented another attempt to estimate the magnitude of the cargo-theft problem and were not the only acceptable figures.

Railroad

The \$54.5 million estimate was based primarily on the projection of cargo-loss data from seven class I railroads (annual revenues in excess of \$5 million) responding to the questionnaire. The consultant assumed that the data obtained from class I railroads could be used to measure cargo losses for the 297 class II railroads (annual revenues of less than \$5 million) which accounted for only 2 percent of railroad revenue. Because there is no assurance that the cargo-loss data obtained from seven railroads is representative of the losses of all 71 class I railroads, the estimate is of questionable value.

The trade association representing the rail industry acknowledged that cargo thefts were a serious problem but expressed general concern that the method used by the consultant produced an unrealistically high estimate of theft-related cargo losses.

Maritime

The \$85.5 million estimate was based on the cargo-loss experience of the Military Sealift Command, Department of Defense, shipping cargo via common carrier and of the three carriers responding to the consultant's questionnaire. The consultant pointed out that cargo-loss data for the maritime industry was not generally available because it did not operate under a standard account reporting system as did other transportation modes and that the estimate, based on a 1-percent sample, was not as accurate as for other modes.

OTS did not receive comments from the maritime industry on the consultant's estimate.

CONCLUSION

The consultant's estimates of 1970 theft-related cargo losses for the U.S. air, truck, rail, and maritime industries were of doubtful value to DOT in identifying major problem areas, planning and developing remedial programs, and measuring program effectiveness because of the use of questionable data bases and faulty statistical sampling. These matters should be brought to the consultant's attention so that it will not make similar errors in estimating 1971 losses.

RECOMMENDATIONS

We recommend that the Secretary of Transportation have OTS tell the consultant the results of our review of its estimates of 1970 theft-related cargo losses and insure that the consultant's method of estimating 1971 losses does not include the errors we noted in the 1970 estimates.

DOT COMMENTS

DOT said that:

- Measures had been taken to insure that the methodology used by the consultant in estimating 1971 cargo thefts and losses does not repeat the errors we noted in the 1970 estimates.

- The 1971 contract with the consultant specified a stratified sample that would adequately show loss experience of various sized companies within each mode of transportation. The sampling technique used by the consultant resulted in a significant increase in both the number and the distribution of transportation companies included in the 1971 study.
- It agreed with our conclusion that CAB claims data was not adequate for estimating 1970 cargo losses for air carriers and it directed the consultant to develop 1971 losses from its own inquiries.
- It recognized that shipper unreported and intangible losses were important factors in estimating overall cargo losses but concluded that such losses could not be adequately quantified within the contract resource limitations. (See appendix.)

We believe that DOT, before accepting the consultant's estimates of 1971 cargo losses, should assure itself that the measures taken were adequate to prevent the types of errors noted in the 1970 cargo-loss estimates.

CONSULTANT COMMENTS

The consultant said that:

- Our report accurately pointed out the inadequacies in the data bases and sampling techniques used to develop the estimates of theft-related losses for 1970.
- The time and resources allowed for the estimates and the cooperation received from some organizations in making the estimates were not sufficient to permit a precise statistical determination of the magnitude of theft-related cargo losses.
- Despite these limitations, the study of 1970 cargo losses was worthwhile in developing a preliminary methodology for deriving statistically based estimates of theft-related losses.

--The 1971 cargo loss estimate, being prepared for OTS, had a substantially expanded sampling and data base and it believes the worst of the inadequacies in the 1970 estimates generally were overcome.



OFFICE OF THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

ASSISTANT SECRETARY
FOR ADMINISTRATION

August 1, 1974

Mr. Henry Eschwege
Director
Resources and Economic Development
Division
U. S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Eschwege:

This is in response to your letter of June 24, 1974, requesting the Department of Transportation's comments on the General Accounting Office's (GAO) draft report on the Department's Cargo Security Program.

The report recommends that our Office of Transportation Security bring the results of a GAO review, of the consultant's estimates of 1970 theft-related cargo losses, to its attention and ensure that the consultant's methodology in estimating 1971 losses does not include the errors noted by the GAO review of the 1970 estimates.

The Department has noted that GAO comments on the contractor cargo theft and loss estimates and has taken measures to correct the deficiencies. These measures are specifically itemized in the enclosed reply.

I have enclosed two copies of our reply.

Sincerely,

A handwritten signature in black ink, appearing to read "William S. Heffelfinger".

William S. Heffelfinger

Enclosure

DEPARTMENT OF TRANSPORTATION REPLY

TO

GAO REPORT TO THE SELECT COMMITTEE ON SMALL BUSINESS

UNITED STATES SENATE
REPORT OF JUNE 1974

ON

DEPARTMENT OF TRANSPORTATION'S CARGO SECURITY PROGRAM

SUMMARY OF GAO FINDINGS AND RECOMMENDATIONS

Consultant's Estimates of Cargo Losses Have Doubtful Value

The GAO finds that the consultant's estimates of CY 1970 theft-related cargo losses for the U. S. air, truck, rail and maritime industries are of doubtful value to the DOT in identifying major problem areas, planning and developing remedial programs, and measuring program effectiveness because of the use of questionable data bases and faulty statistical sampling. GAO recommends that the Office of Transportation Security bring the results of the GAO review of CY 1970 theft-related cargo loss estimates to the attention of the contractor to ensure that the consultant's methodology in estimating CY 1971 losses avoid the errors noted in this review.

Roles of the DOT Operating Administrations

The GAO reports that the DOT operating administrations are participating in cargo security in the following manner:

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FAA inspects and approves the cargo security systems of the nation's air carrier airports and FHWA makes cargo security inspections at truck terminals. FRA conducted research into the use of helicopters to deter vandalism and thefts at railroad switching yards and plans to initiate cargo security inspections in January 1975 as part of its safety inspections of railroads.

DEPARTMENT OF TRANSPORTATION POSITION

Consultant's Estimates of Cargo Losses Have Doubtful Value

The Department of Transportation has noted GAO comments on the contractor cargo theft and loss estimates for CY 1970 presented in DOT Report P 5200.3, "An Economic Model of Cargo Loss: A Method for Evaluating Cargo Loss Reduction Programs," dated May 1972. The Department has taken the following steps to ensure that the consultant's methodology in estimating CY 1971 cargo theft and losses avoids the errors noted in the GAO draft report.

First, the contract Statement of Work for developing CY 1971 cargo loss estimates specified a requirement to design a stratified sample that adequately reflects the strata within each mode of transportation. Attachment I summarizes the response to the CY 1970 and CY 1971 questionnaires. The CY 1971 response has provided

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a significant increase in both the number and the distribution of transportation companies included in this study.

Second, the Department agrees that the CAB claims data used to develop CY 1970 air carrier cargo theft and loss estimates was not a random sampling of claims for the full calendar year. The Department advised the contractor to develop CY 1971 cargo theft and loss estimates based on direct questionnaire responses from air carriers and air freight forwarders and not utilize sample air cargo claims data from other sources.

Third, the Department recognizes that shipper unreported and intangible losses such as loss of sales, seasonal business and goodwill are important factors in estimating overall cargo theft-related losses. However, the Department has concluded that such intangible costs could not be adequately quantified within the contract resource limitations.

Roles of the DOT Operating Administrations

GAO's description of the work of the operating administrations in cargo security could be more accurately stated as follows:

The FAA reviews and approves air carrier and airport security programs at the nation's airports, conducts theft prevention surveys and provides technical assistance

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and guidance concerning air cargo security matters on request. The FHWA conducts cargo security surveys at truck terminals as a part of their safety inspections.

The FRA has conducted research into the use of helicopters to deter vandalism and theft at railroad switching yards.

By memorandum dated July 19, 1974, the Federal Railroad Administration advised the Assistant Secretary for Administration that FRA has no plans to initiate cargo security inspection in January 1975 as a part of the safety inspections of railroads.