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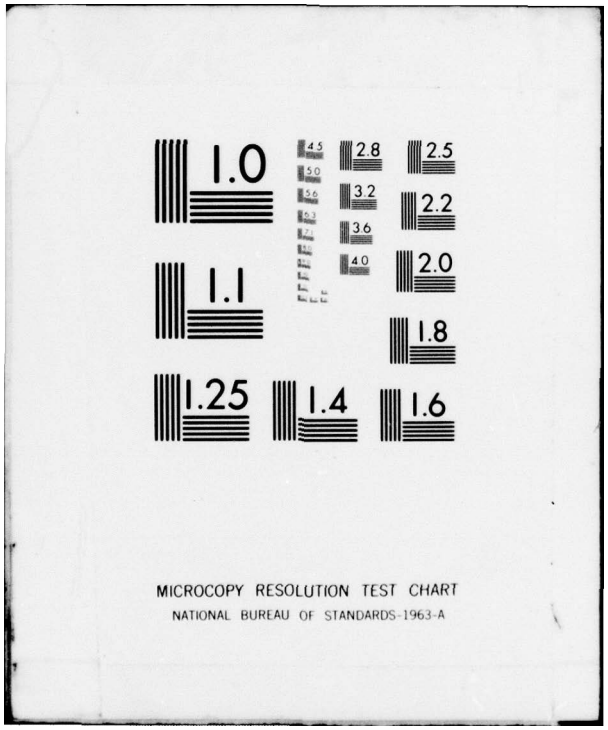
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NAVAL POSTGRADUATE SCHOOL
Monterey, California

THESIS

AN ANALYSIS OF THE ROLE OF TRANSPORTATION IN THE U.S. COAST GUARD PHYSICAL DISTRIBUTION SYSTEM

by

John Anthony Wcislo

June 1979

Thesis Advisor: R.W. Sagehorn

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER

2. GOVT ACCESSION NO.

3. RECIPIENT'S CATALOG NUMBER

4. TITLE (and Subtitle)

(6) An Analysis of the Role of Transportation in the U.S. Coast Guard Physical Distribution System

5. TYPE OF REPORT & PERIOD COVERED

Master's Thesis; June 1979

6. PERFORMING ORG. REPORT NUMBER

7. AUTHOR(s)

(10) John Anthony Wcislo

8. CONTRACT OR GRANT NUMBER(s)

9. PERFORMING ORGANIZATION NAME AND ADDRESS

Naval Postgraduate School
Monterey, California 93940

10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS

11. CONTROLLING OFFICE NAME AND ADDRESS

Naval Postgraduate School
Monterey, California 93940

(11)

12. REPORT DATE

June 1979

13. NUMBER OF PAGES

113

14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)

Naval Postgraduate School
Monterey, California 93940

(12) 114 p.

15. SECURITY CLASS. (of this report)

Unclassified

15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

(9) Master's thesis,

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Material Movement
Logistics
Physical Distribution
Transportation
Traffic Management
U.S. Coast Guard

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The purpose of this study was to analyze how the United States Coast Guard utilizes transportation to effect the physical distribution of goods. The study examined the existing organizational, managerial, and financial structures of transportation and physical distribution within the Service, as well as the transportation management activities that occurred at the working level. The focus of this working level examination was the

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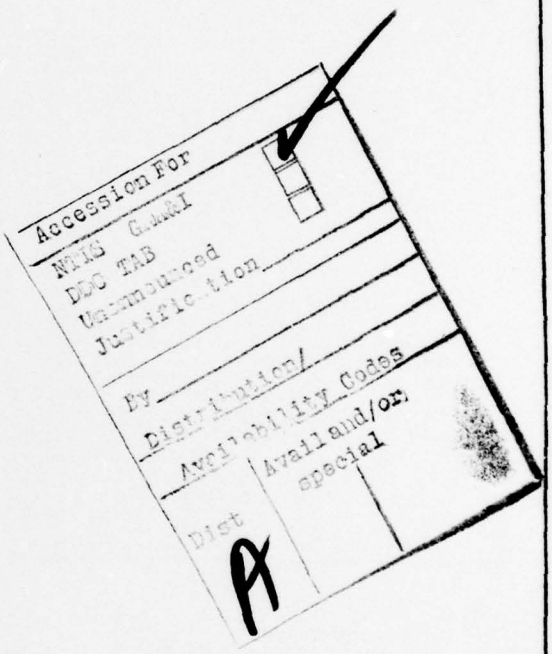
From analysis of the available information, it appeared that concerted efforts were being made at the working level to manage transportation effectively. The recommendations contained in this study have emphasized a realignment of authority and accountability for transporation management, in order to effect a greater integration of these working level efforts into the physical distribution system of the Coast Guard.



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An Analysis of the Role of Transportation in the U.S. Coast Guard Physical Distribution System

by

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Lieutenant, United States Coast Guard
B.S., United States Coast Guard Academy, 1974

Submitted in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
June, 1979

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ABSTRACT

The purpose of this study was to analyze how the United States Coast Guard utilizes transportation to effect the physical distribution of goods. The study examined the existing organizational, managerial, and financial structures of transportation and physical distribution within the Service, as well as the transportation management activities that occurred at the working level. The focus of this working level examination was the traffic management organization at two of the Coast Guard's supply centers: the U.S. Coast Guard Supply Center, Brooklyn, New York, and the U.S. Coast Guard Aircraft Repair and Supply Center, Elizabeth City, North Carolina.

From analysis of the available information, it appeared that concerted efforts were being made at the working level to manage transportation effectively. The recommendations contained in this study have emphasized a realignment of authority and accountability for transportation management, in order to effect a greater integration of these working level efforts into the physical distribution system of the Coast Guard.

TABLE OF CONTENTS

I. INTRODUCTION

A. RESEARCH OBJECTIVES

The objective of this study was to examine and analyze the role of the United States Coast Guard as a user of transportation. Specifically, it has attempted to analyze how transportation is utilized within the service to effect the physical distribution of goods and materials.

B. RESEARCH QUESTIONS

This study has attempted to answer the following questions: 1) What significance does transportation have in the meeting of the goals and objectives of the Coast Guard? 2) What is the relationship between transportation and the physical distribution within the Service? 3) How does this relationship manifest itself in the present organizational, managerial, and financial structure of the Coast Guard? 4) How are transportation activities being managed at the working level within the service?

C. RESEARCH METHODOLOGY

The information presented in this study has been gathered through an examination of current Coast Guard publications and directives that address transportation and physical distribution. From this information, the present policies, the organizational structure, and the financial structure have been identified and established. In addition, personal visits and telephone interviews were conducted to clarify the stated

policies, and to establish the nature of the transportation interfaces that occur at the working level. Information that serves to highlight these interfaces was also supplied by the various organizational components mentioned in this study; these represent sources both within and outside the Coast Guard.

D. SCOPE AND LIMITATIONS

The scope of this study has been limited to transportation activities in the Service. It focuses almost entirely upon the activities that occur at the U.S. Coast Guard Supply Center, Brooklyn, New York, and the U.S. Coast Guard Aircraft Repair and Supply Center, Elizabeth City, North Carolina. In reality, these organizations represent only a small part of the entire physical distribution system of the Service, and are responsible for only a portion of the total annual Service expenditures for transportation.

Such limitations, however, do not necessarily distort the ability of this study to present the relationship between physical distribution and transportation. Elizabeth City and Brooklyn had been chosen because both of these organizations have active, ongoing transportation functions. By tracing the existing lines of financial, managerial, and organizational authority into and out of these functions, the result is a model depiction of what occurs in the Coast Guard today.

E. ASSUMPTIONS

Transportation, for the purposes of this study, refers to all of the means utilized by Brooklyn and Elizabeth City to effect the movement of materials to Coast Guard units. These means, among others, include the U.S. Postal Service, Air Carriage, Motor Carriage, and the various transportation systems operated by the Department of Defense.

The vast majority of transportation activity at Brooklyn and Elizabeth City involves shipments that are small in size and weight, and which are subject to established time constraints in regards to ultimate delivery. Interface with transportation, therefore, does not necessarily involve all available transportation modes. Because of this, the study contains terminology common to those modes regularly used by the two organizations.

For example, commodities moved by railroad are defined by Uniform Freight Classification (UFC), and shipments can consist of either Carload (CL) or Less than Carload (LCL) lots. However, since movement by these modes is rarely effected at Brooklyn and Elizabeth City, the respective terminology is not addressed here. Most of the detailed terminology has been that related to movement by motor carriage; commodities that are shipped by this mode are defined by the National Motor Freight Classification (NMFC). Moreover, while such freight can consist of either Truckload (TL), or Less than Truckload (LTL) lots, the information that was available, and that has been presented here, has largely emphasized the latter designation.

F. DEFINITION OF PHYSICAL DISTRIBUTION

Physical distribution refers to the activities incident to the movement of finished goods and materials from the source of supply to the ultimate user. This term is not widely used in the Coast Guard; rather, such activities have been termed "logistics." While a distinction has evolved concerning the exact meaning of the two terms, the semantic differences have not been belabored here. Physical distribution and logistics, for purposes of this study, refer to essentially the same activities in the Coast Guard.

G. ORGANIZATION OF STUDY

The next chapter of this study serves to highlight the significance of transportation in America, as a complex interrelationship among system, government, and user. The requirement for the user of transportation to formulate goals and objectives, to organize in support of these goals and objectives, and to effectively manage resources through the organization, is then presented.

The third chapter examines the United States Coast Guard and its goals and objectives. It attempts to explain how physical distribution and transportation effect the realization of these goals and objectives.

The fourth chapter presents the organizational and financial aspects of physical distribution and transportation in the Coast Guard. The current lines of authority and responsibility, and the present policies and definitions applicable to transportation, are presented here.

The fifth chapter presents a detailed description of how transportation functions actually are carried out at Brooklyn and Elizabeth City. This is accomplished through use of a process model. The level of interaction between the functions and the higher level organization is also discussed, as well as the manner in which accountability and responsibility over the functions have been defined and effected.

The final chapters are devoted to an analysis of the transportation functions; the resultant conclusions and recommendations are made with the intent of fostering further study and discussion in this important aspect of Coast Guard operations.

II. CONCEPTS OF TRANSPORTATION AND PHYSICAL DISTRIBUTION (BACKGROUND)

A. TRANSPORTATION IN AMERICA

Transportation is a vital and dynamic aspect of the livelihood of Americans. The history of the Nation is a study in the conquest of spatial relations; vivid are the details of efforts made to link vast expanses of territory with a network of transportation that can move both people and goods in an efficient and effective manner. The opening of the Erie Canal in 1825, the Cumberland Road in 1836, and the First Transcontinental Railroad in 1869 are milestones in the Nation's rise to a position of world power and eminence. Transportation enabled the Nation to transcend the bonds of a localized, subsistence economy. It made possible the large scale development of vast natural resources. It effected new market places for its products, both within and beyond its borders. Transportation enabled many of the Nation's cities to become important centers of trade and commerce (13; 4).

Today, the role of the Nation's transportation system as a catalyst for national unity and strength remains essentially unchanged. The system itself, however, has changed immensely. The days of the Conestoga wagon and the Erie Canal have given way to the evolution of an incredibly complex network of interstate highways, rail routes, airports, pipelines, deepwater ports, and inland waterways. Technological surges have yielded an equally extensive inventory of

of vehicles and vessels, which traverse this network in a fasion once considered impossible. No other nation possesses such a wealth of transportation resources.

> The highway system of the United States is traveled by approximately 104.8 million automobiles, 24.6 million trucks, 356,800 school and non-commercial buses, and 90,100 commercial buses. The railroad system has an equipment stock of approximately 1.7 million freight cars, 7,100 passenger cars, and 30,200 locomotives. Nearly 25,500 barges and towboats travel (the) waterway system and nearly 600 ships ply deepwater ports.
>
> In utilizing this extensive transportation system, Americans paid more than $139 billion for freight transportation services and nearly $163 billion for passenger travel in 1976. Each year such transportation outlays are approximately one-fifth of (the) Gross National Product. (15;11)

B. GOVERNMENT AND TRANSPORTATION

Given the importance of transportation to society, it is natural that a close involvement of government in transportation affairs has always existed. Unlike other nations, however, the government of the United States has traditionally eschewed outright ownership and operation of transportation resources. Instead, it has concentrated its efforts on regulation of the various transportation modes. With the first Interstate Commerce Act of 1887, the Federal Government began to exercise authority over rail transportation, and in the ensuing years its involvement has become much more elaborate. By 1942, all modes of transportation - air, water, pipeline, motor, freight forwarders as well as rail - were under some form of regulation by a federal agency, as well as by similiar bodies established at the state and local levels.

Today, the pervasiveness of government involvement in all aspects of the Nation's transportation system is rivaled only by the complexity of the system itself. Government monetary outlays effect the construction of highways, airports, and waterways. The installation and maintenance of surface and air navigational aids; the inspection and licensing of ships; air traffic control personnel and services at all major airports; these are just a few examples of activities for which the government is directly responsible.

The formation of the Department of Transportation in 1966 epitomized the concern of the Federal Government for transportation. The organization has brought the government into a visible and highly active role within the transportation realm. Through its funding of projects and research and development efforts in the various modes, the government now exerts a major influence on the very nature of the transportation market place, and the relative position and importance of the modes (15; 295).

Regulation, however, remains as the greatest example of government pervasiveness. Today, the scope of regulation encompasses such factors as determination of markets that carriers may serve, prices for services, mergers among carriers, whether or not a carrier may introduce new services, and securities issuance. Other matters that are subject to regulatory control include those bearing on safety, such as vehicle weights, operating speeds, and the number of consecutive hours that operators are permitted to work. The sheer

volume of the regulations that have proliferated is truly incredible; it has been estimated that the Interstate Commerce Commission, which exercises authority over motor, rail, and some water carriers, has on file over 400,000 tariff schedules and 40 trillion rates, specifying where carriers may operate and how much they may charge (3; 179).

Much is said now about the effects of such massive regulation, whether it protects the public interest or actually works to its detriment. Moreover, measures, such as the Air Cargo Deregulation Act of 1977 and the eventual dismantling of the powers of the Civil Areonautics Board, are perhaps indications that the regulatory tide is beginning to ebb. Nevertheless, government continues to play a formidable role in the transportation system of the nation. It is important to fully understand this role, since the ability of some mode of transportation to perform effectively, as well as to change and adapt, is heavily influenced by the extent of government involvement in its affairs.

C. TRANSPORTATION AND ITS USERS

The users of transportation, both individuals and organizations, are greatly influenced by the transportation system and its accompanying regulatory structure. The options available to users are many and varied, and the distinctions among options in terms of cost, speed, operating restrictions, commodity limitations, and ability to offer specialized services, render the use of transportation a formidable task.

Transportation, therefore, has to be placed in proper perspective. Above all, it has to be regarded as a means to achieve certain goals and objectives.

An organization, in the economic sense, is a network of interacting operational and administrative processes, which utilize and transform resources to achieve specified goals. These goals may be maximum profit, the optimal use of resources, and the most efficient performance of a service. Transportation is vial to the organization, and the realtionship between the two is a highly significant one, as best described by Pegrum:

> It is the function of transportation to supply the means to bring together the resources used in the productive processes, to provide access to the markets for the resulting products, (and) to bridge the time and space gaps separating buyers and sellers. In its economic aspect this means diminishing the effects of spatial factors of time and distance between producers and users.
>
> Efficient transport reduces this combination of time and distance costs to the minimum, that is, with the most economical combination of resources that will accomplish the given objective (18; 4).

Given a set of goals and objectives, the achievement of which yields a defined level of utility, transportation effects the movement of persons and goods to that place where maximum possible utility can be realized. If utilized efficiently, moreover, the cost of this movement will be of the least possible economic burden to the individual or organization.

D. MANAGEMENT OF TRANSPORTATION

In the profit-oriented organization, the interface with transportation pervades nearly all levels of organizational

activity. Raw materials are transported from sources to manufacturing centers. Finished goods are shipped from manufacturing centers to regional distribution warehouses, and then to retail outlets and the ultimate consumer. One result of such pervasiveness is the fact that transportation costs represent 20 percent of the price that a consumer eventually pays for all goods (15; 19). Transportation costs are thus highly significant factors in an organization's ability to sell its products, gain a share of the market, and maintain a competitive posture. What is necessary, therefore, to ensure efficient and effective use of transportation, is prudent transportation management.

1. The Physical Distribution and Logistics Concepts

The post-World War II period wroght a number of changes that affected the basic attitudes of organizations in their approach to transportation management. The growth of competition, the rising cost of maintaining inventory levels, the proliferation of products, the availability of computers, and the growth of operations research, led many organizations to redefine their perceptions of themselves. Organizations began to view their operations in terms of an interrelated series of systems.

Peter Drucker was an early proponent of the concept of physical distribution, when he described the typical manufacturing process as a physical flow of materials. This flow, according to Drucker, was subject to a series of interruptions; these occurred when materials were held prior to

fabrication, were shaped into finished products, and were stored prior to delivery to markets. The entire process, he said, was one that cut across the traditional lines of authority in the organization. He asserted, however, that adoption of the physical distribution concept could yield for an organization managerial results of a very great magnitude (14; 13).

The physical distribution concept has since been expounded upon and modified by a number of different sources. The term "logistics" has come to describe more accurately the entire process as presented by Drucker. Logistics, in turn, has been further subdivided into the processes of "physical supply" and "physical distribution." The former term refers to the series of activities surrounding the movement and storage of materials up to the production point. Physical distribution, on the other hand, embraces those functions which occur from the end of the production line to the customer. It includes, to name a few activities, procurement, order processing, transportation, inventory control, warehousing, material handling and packaging, location analysis, and related information systems (3; 5).

Transportation has thus evolved to be just one of the many elements that comprise the systems of physical supply and distribution. Effective transportation management, therefore, entails a coordination of this activity with the other elements of the system, in order to achieve the stated goals and objectives of the organization. Nevertheless, the

importance of transportation cannot be discounted, even in the systems context. On the contrary, by bridging the gaps of time and space between buyers and sellers, it constitutes the "bond " of the system, providing the vial linkage between the various elements. As mentioned before, its pervasiveness within the organization mandates a heightened level of managerial attention.

2. Elements of Effective Transportation Management

No two organizations are completely alike in character and purpose. Because of this, there is no single approach to management that will serve the livelihood of both organizations in the same manner. Nevertheless, there exist a number of general principles which, if observered in practice in an organization, ensure effective management, in both the various components, and in the organization as a whole.

A great deal has been said already about the goals and objectives of the organization. In pursuit of these, each component of the organization should also identify and establish its own goals and objectives. Those of transportation should be three-fold in nature; 1) to procure and utilize the most reliable and effective transportation services, 2) to incur the least cost in doing so, and 3) to provide the highest level of customer service.

The activities of the transportation function have to be directed to the achievement of these goals and objectives. There should be a thorough understanding of the nature and operation of the transportation industry, the ways in which

commodities are defined, and how interfaces are best effected. There should be the ability to draw the most pertinent information from the volumes of applicable tariffs and regulations, to properly define commodities, and to determine if restrictions apply to the commodities.

There should also be familiarity with all potential carriers, their characteristics, the relative costs of their services, and their inherent advantages and disadvantages. For example, while rail carriers may offer the least costly transportation service, commodities shipped by this mode may require more elaborate and costly packaging and preparation for shipment; air carriage, on the other hand, is much more expensive than rail, but requires less stringent packaging.

The needs of the customer also have to be considered. Oftentimes, the least cost transporation mode may not serve the customer in the optimal way. Access to such a mode may be impossible without additional and more costly linkage service.

In essence, no single objective should be allowed to dominate; all three have to be treated with equal importance. Trade-offs should be explored and implemented as the situation warrants.

The transporation function should also have access to the necessary resources to achieve its goals and objectives. Equally so, it has to be held accountable for whatever resources it actually does utilize. The function should be

established as a responsibility center within the organization; it should be an identifiable function in both the managerial and financial sense. Its manager, however, needs ample discretionary power to utilize the available resources as best seen fit. In seeing the available opportunities, he has to be able to make necessary trade-offs and changes.

As mentioned before, transportation activities must be coordinated with the other elements of the physical distribution system. The hierarchical relationships within the organization, therefore, have to be supportive of the desired coordination. Perhaps the best way to achieve this is if all of the physical distribution functions are grouped together under the supervision and control of a single logistics manager. With such an arrangement, the chances of suboptimization in any of the functions will be reduced. A manager who is knowledgable in all facets can better coordinate the various activities, realize the importance of trade-offs among the functions, and effect decisions and policies that are of the greatest benefit to the organization. In turn, he should also be spokesman for organizational logistics activities, stressing the importance of logistics in the decision processes that occur at higher managerial levels.

The actual structure of the organization will depend greatly upon the prevailing management philosophy. It may be centralized, decentralized, or some variation of the two.

Under centralization, all physical distribution functions have line responsibility to a higher level logistics

manager. Such a centralized, line-oriented concept is indicative of a management team that emphasizes integrated operations.

Decentralization, on the other hand, usually occurs after the organization has grown and branched out into a number of distinct operating centers. Factors, such as the nature of the organization, environmental influences, available managerial resources, the history of the organization, and the need for independence, will usually influence the extent of such decentralization.

A third possibility is some combination of the two concepts. A staff logistics department, consisting of the various physical distribution functions, may exist at the higher management level, lending necessary coordination and assistance to the various field functions at the working level. While the actual operational responsibility remains decentralized, this functional relationship serves to ensure some consistency of logistics operations in the organization as a whole (32; 37-42).

Regardless of the type of organizational structure, it is important that whoever is designated as logistics manager or coordinator possesses the necessary authority and control over the function. Unless lines of authority have been established and strengthened, and the necessary power relinquished and reassigned, effective logistics management will materialize only on paper, and not in fact.

The organization should be supported and complemented by a timely flow of management information. No single criterion exists as to what should be the content and amount of this information. However, it should be of such a nature that it enables the manager to monitor and detect whether or not the goals and objectives of the organization are being met. In the case of transportation, the information flows are external as well as internal to the organization, since the main concerns include customer satisfaction and carrier performance, as well as resource usage. Nevertheless, it should be realized that management information is only a tool; it exists to be supportive of management, and not the other way around. In the long run, it is the manager himself who can best determine his own information requirements.

III. THE COAST GUARD, PHYSICAL DISTRIBUTION AND TRANSPORTATION

The United States Coast Guard is an integral part of the transportation system in America. When viewed in the systems context, the activities of regulation and coordination that are performed by the Coast Guard in the marine sector constitute an essential element of the nation's transportation system. However, in order to carry out its responsibilities, it must also be a user of transportation. The Coast Guard must interface with transporation in much the same manner as organizations in the private sector; that is, with the intent to attain certain goals and objectives.

This chapter introduces the concept of the Coast Guard as a user of transportation. The discussion of the functions and responsibilities of the Coast Guard serves as a basis to establish the goals and objectives of the service. What then follows is a discussion of the role that physical distribution plays in the attainment of these goals and objectives. The special requirements and restraints imposed on the system are reviewed as well as service policies that address physical distribution, and the standards and procedures that have been established to facilitate system operation. The intent here is to describe how transportation constitutes an essential element of the Coast Guard Physical Distribution System, thus highlighting the need for attention to its existence and performance.

A. HISTORY OF THE UNITED STATES COAST GUARD

The U.S. Coast Guard was established by the Act of Congress of January 28, 1915 (14 USC 1) as one of the five components of the Armed Forces of the United States. Its origins, however, date back as early as 1790, with the formation of the Revenue Marine. This agency, originally under the auspices of the Treasury Department, had been tasked with the duties of Federal Maritime Law Enforcement during the early days of the nation. Many other responsibilities were added over the years, and today, as the nation's oldest continuous seagoing service, the Coast Guard performs a myriad of duties and responsibilities.

The Act of Congress of October 15, 1966 transferred the service from the Treasury Department to the Department of Transportation. Today, the Coast Guard acts as a component of this cabinet-level agency, except in time of war or at the direction of the President, when it operates under the Department of the Navy.

B. FUNCTIONS AND RESPONSIBILITIES OF THE COAST GUARD

1. Search and Rescue

The Coast Guard is tasked with the responsibility of saving life and property in and over the high seas and the navigable waters of the United States. Included in this function are flood relief and the removal of hazards to navigation.

2. Enforcement of Laws and Treaties

As the successor to the Revenue Marine, the Coast Guard continues to act in the capacity as the primary maritime law enforcement agency for the United States. It is responsible for the enforcement of federal laws relating to navigation, vessel inspection, port safety and security, and marine environmental protection. In addition, it cooperates actively with other agencies in the execution of their respective law enforcement duties. An example of this is the service's participation in the surveillance and interdiction of drug traffic along the coastal waters of the United States. The Coast Guard has also taken a primary role in the enforcement of the Fisheries Conservation and Management Act of 1977, which governs commercial fishing in the two hundred mile resources zone adjacent to the coastal areas.

3. Marine Safety

The service administers and enforces safety standards for the design, construction, equipping, and maintenance of commercial vessels of the United States. It conducts investigations of marine accidents, casualties, violations of law and regulations, misconduct, and negligence which occur on U.S. commercial vessels. The service also enforces those rules and regulations that govern the security of ports; the anchorage and movement of vessels in U.S. waters; the supervision, loading, and unloading of dangerous cargoes; the development and enforcement of fire prevention measures; and control of access to vessels and waterfront facilities.

4. Aids to Navigation

This function of the Coast Guard entails the establishment and maintenance of buoys, lighthouses, beacons, fog signals, radio beacons, and electronic navigation systems such as LORAN (Long Range Navigation System). These aids to navigation are situated along the coasts and inland waterways to ensure the safe passage of the mariner. LORAN Stations are found within and outside the United States to serve the needs of military and commercial navigation on an international scale. Included in this function is the administration of those federal statutes that regulate the construction, maintenance, and operation of bridges across the navigable waters of the United States.

5. Ice Operations and Marine Science

The Coast Guard operates the nation's icebreaking vessels for ice reconnaissance, to aid marine transportation, and to support U.S. scientific installations in the Arctic and Antarctic. It also administers and operates the International Ice Patrol, which provides an iceberg warning service in the area of the Grand Banks of Newfoundland.

6. Military Readiness

As required by law, the Coast Guard maintains a state of readiness in order to function effectively as a component of the armed forces of the United States. This is accomplished through individual and unit training, and an active participation in Naval training exercises. Coast Guard vessels maintain and utilize Naval ordnance systems and tactical

doctrines; close liaison is kept with the Navy in the drafting of service mobilization and contingency plans. This ensures a timely integration of the two forces should circumstances warrant (17; 434-437).

C. COAST GUARD RESOURCES

In order to effectively perform such diversified functions, the Coast Guard relies upon an inventory of approximately 250 ships, 720 land-based stations, 175 aircraft, and almost 46,000 military and civilian personnel, who are dispersed in a multitude of locations throughout the U.S., Europe, Asia, and the South Pacific.

An important aspect of the Service is the "multi-mission concept." This concept requires that Service elements be adept to function effectively in any number of the areas of responsibility. For example, Coast Guard cutters which service navigational aids or which perform law enforcement patrols are routinely dispatched to lend assistance to mariners in distress. The many lifeboat stations that dot the coastlines have to be equally capable of functioning in the areas of environmental protection and marine safety. A single aircraft sortie may result in performance in several Coast Guard mission areas. This integrated approach demands a high level of versatility from Service resources. Coast Guard men and women have to be familiar with all aspects of Service responsibilities. Service hardware, moreover, is subjected to substantial and diversified usage. As such, it has to be materially sound, exhibit a high state of material

readiness, and most importantly, have access to whatever means are available to maintain this state of readiness.

D. PHYSICAL DISTRIBUTION AND THE COAST GUARD

The combination of human and material resources that constitutes the U.S. Coast Guard is truly unique in character and scope. The quantitites of personnel and hardware appear significant in comparison to the other armed forces components, yet the expansiveness of the Coast Guard network easily rivals the other services in scope and extent. Coast Guard operations extend from the most populous regions of the nation to the most isolated and desolate corners of the globe. Their level of technological sophistication ranges from a simple navigational marker to a multi-million dollar electronics transmitting site. This combination of sparsity, diversity, and distance, when coupled with the multi-mission concept and the requirements for a solid operational posture, presents a set of formidable restraints and challenges to the formulation of an efficient and effective system of physical distribution.

Physical distribution and logistics in the Coast Guard, in essence, have to be as multi-faceted as the myriad of missions that is supported. In order to maintain the level of overall service readiness required, logistics support has to be timely and swift. Equally so, it should display versatility and flexiblity, with the ability to access a multitude of locations with a wide variety of materials. As an armed force with a viable defense role, the logistics

system has to display a reasonable degree of consistency and compatibility with the other services, in order to facilitate an integration of Coast Guard operations into the whole. Finally, the system has to be economically feasible, ensuring the requisite level of effectiveness without imposing too great a burden on the resources of the Service.

1. Logistics Policies

Existing Coast Guard logistics policy is a concession to the smallness of the Service and a realization of the limitations of available resources. An intense interaction is stressed, with a variety of organizations and functions within and outside the federal government, in order to maximize effective support of operating units. The main points of this policy are as follows:

First, it is Coast Guard policy to establish a single source of supply for each item used by the Service with a recurring or anticipated need. Such sources include the Department of Defense, the General Services Administration, other governmental agencies, and local procurement from commercial sources.

Secondly, attempts are made to utilize the resources of other government agencies to the maximum extent possible; this entails movement of goods and materials directly from the available source to the final Coast Guard user, without handling by an intermediary within the Service.

Finally, decentralization is encouraged whenever it may result in more economical and effective support agreements.

This includes entering into agreements with the Department of Defense at the local level when practicable (11; 1-2).

The efforts of the Department of Defense and the General Services Administration toward the development and implementation of a national supply system concept have had an important bearing on the effectiveness of Coast Guard logistics. Coast Guard interaction with a multi-faceted, uniform system has enhanced its ability to locate and procure many of the materials for operations, without having to resort to the establishment of its own supply channels. This, of course, contributes to the maximum effectiveness of the logistics system, through the elimination of duplicity and through efficient use of all available resources (11; 1-1).

2. Coast Guard Inventory Control Points

Despite the policy of dependency and interaction, there remains a need for the Coast Guard to establish in-house sources of supply. Instances arise when materials are continually unavailable through normal channels; materials are either obsolete, inferior, or available only in quantities unacceptable to Coast Guard requirements; or item cost is significantly higher than commercial prices.

For these reasons, the service has established its own Inventory Control Points (ICP) to stock, supply, and manage service-particular items. Three such ICP's currently exist: 1) the General/Electronics Inventory Control Point (G/EICP), located at the Coast Guard Supply Center, Brooklyn, New York; 2) the Aviation Inventory Control Point (AICP),

located at the Coast Guard Aircraft Repair and Supply Center, Elizabeth City, North Carolina; and 3) the Ships Inventory Control Point (SICP), located at the Coast Guard Yard, Curtis Bay, Maryland. Since the focus of this study is on the operations at Brooklyn and Elizabeth City, the exact nature of these operations will be highlighted in a subsequent chapter.

3. Standard Systems and Procedures

In order to promote the concept of the national stock system, ensure uniformity of operations on a government-wide basis, and contribute to overall logistics effectiveness, the Coast Guard ICP's have instituted standard systems and procedures to govern the issuance of their respective materials. The most important are the Military Standard Requisitioning and Issuing Procedures, or MILSTRIP. All materials stocked at the ICP's which experience a recurring need in the service are assigned a Federal Stock Number (FSN) and a standard unit of issue. Through MILSTRIP, clients of the ICP's can communicate their requests for materials in a standardized, abbreviated form, which can then be machine-processed on a single line item basis (9; 1-1).

Incorporated into MILSTRIP is the ability of the ICP client to express the level of need for the item being requisitioned. This system, known as the Uniform Material Movement and Issue Priority System (UMIPPS), establishes time standards for the processing of requests and their subsequent material movement. All Coast Guard units are assigned

a Force Activity Designator (FAD), which indicates the importance of the unit's actual mission. Three Urgency of Need Designators (UND) have been instituted to describe the need of the particular unit for the item. When the FAD and the UND are matched together according to the published service guidelines, the result is a Priority Designator, which is included in the basic MILSTRIP requisition. These designators are illustrated in Exhibit 1. UMIPPS also offers flexibility to the unit whose requirements may exceed the normal time frames. In such cases, the unit communicates a Required Delivery Date (RDD), which the ICP must try to meet through the exertion of maximum economic effort.

Another important system used by the Coast Guard is the Military Standard Transportation and Movement Procedures (MILSTAMP). MILSTAMP is used to translate the UMIPPS standards into a set of priorities for the movement of materials. Its use in the Coast Guard will be discussed in the subsequent chapters.

4. Transportation and Coast Guard Physical Distribution

Transportation is the backbone of the Coast Guard Distribution System. Although the service utilizes a multitude of sources to secure needed material, it is transportation that effects the movement of goods to where they are most needed. It therefore serves the Coast Guard in the same manner as the profit-oriented organization; that is, it diminishes the effects of time and space between the sources and users of goods, thus securing for the unit, in particular, and the organization, as a whole, the maximum possible utility.

PRIORITY DESIGNATORS

FORCE/ACTIVITY DESIGNATORS	URGENCY OF NEED DESIGNATORS		
	A	B	C
	PRIORITIES FOR ASSIGNMENT		
I	01	04	11
II	02	05	12
III	03	06	13
IV	07	09	14
V	08	10	15

UND CODE	EXPLANATION
A	MATERIAL NEEDED FOR IMMEDIATE USE, WITHOUT WHICH THE UNIT IS UNABLE TO PERFORM ITS MISSION, OR MAKE URGENT REPAIRS TO ESSENTIAL EQUIPMENT.
B	MATERIAL NEEDED FOR IMMEDIATE USE, WITHOUT WHICH THE UNIT'S MISSION CAPABILITY IS IMPAIRED; OR MATERIAL NEEDED FOR REPAIR OF AUXILIARY EQUIPMENT, OR TO REPLACE SAFETY LEVELS WHERE LAST SPARE HAS BEEN ISSUED.
C	MATERIAL NEEDED FOR SCHEDULED REPAIRS, REPLENISHMENT OF STOCK AND OTHER ROUTINE PURPOSES.

EXHIBIT 1

Moveover, given a physical distribution system that stresses the communication and satisfaction of a need for materials, transportation emerges as the variable that can best be manipulated to ensure maximum system effectiveness. The meeting of delivery dates, regardless of priority, is dependent upon selection of the most appropriate mode of transportation. Furthermore, the task of selection becomes even more formidable as the system proliferates. Under these circumstances, the requirement for knowledge of the customer's needs, awareness of available resources, and the ability to change and adapt become more apparent. In essence, the versatility and flexibility demanded of the system as a whole require that these same traits be ever apparent within the transportation element in particular.

What emerges, therefore, are two important points: 1) There has to be heightened managerial awareness of the function's pervasiveness in all facets of Coast Guard operations, and 2) there has to be efficient and effective management of transportation in the Coast Guard, in order to realize optimal use of service resources, and to achieve service goals and objectives.

IV. COAST GUARD PHYSICAL DISTRIBUTION AND TRANSPORTATION: ORGANIZATIONAL AND FINANCIAL ASPECTS

A. THE ORGANIZATION OF PHYSICAL DISTRIBUTION AND TRANSPORTATION

1. The Comptroller

The authority and responsibility for physical distribution and transportation in the Coast Guard is vested in the Office of the Comptroller. This office has purview over all functions in the service that involve the following activities: the maintenance of accounts, the disbursement of funds, the financial management of Comptroller responsibilities, supply systems management, computer systems support, and the general administration of non-appropriated funds (12; II-95). The chief of this office reports directly to the Commandant of the Coast Guard.

2. Logistics and Property Division

The Logistics and Property Division of the Office of the Comptroller is the organization responsible for the actual direction of the Coast Guard logistics effort. Its responsibilities encompass the following activities: materials provisioning, item identification, cataloging, inventory and plant property management, unit material allowances, storage, distribution, and disposal of materials, control over repairable materials, mobilization, professional training of personnel, and the utilization of Department of Defense logistics standards.

The division develops policies and plans, establishes objectives and standards, and prescribes systems and procedures in the areas of logistics and property. It evaluates operations at the service's ICP's and at the Coast Guard Supply Center; serves as the Coast Guard focal point for logistics in liaison with other government agencies; acts as the reviewing authority for the entire Coast Guard logistics system in terms of satisfying customer requirements, and capability of meeting long range objectives (12; II-105).

3. The Personal Services Division

The Personal Services Division of the Office of the Comptroller is responsible primarily for the direction of systems, policies, and procedures that govern the management and disbursement of all pay and allowances for Coast Guard members. However, this organization also has authority over all matters relating to Traffic and Transportation Management on a service-wide basis.

The division directs the development of traffic and transportation management plans and procedures; lends technical advice and guidance in these areas; conducts surveys of and plans transportation requirements for mobilization; and assists other program managers with cost estimates that concern the transportation of materials.

It also serves as the Coast Guard focal point in relationships with other government agencies concerning traffic and transportation. It maintains liaison with the General Services Administration, and also provides service

input into Department of Defense's Military Standard Transportation and Movement Procedures (MILSTAMP) (12; II-108).

4. Management Analysis Division

The Management Analysis Division of the Office of the Chief of Staff is responsible for all service postal affairs. This organization acts as director of the Coast Guard's official mail program; publishes guidelines that cover the use of the Postal Service for the distribution of materials; conducts periodic surveys of mail usage; provides the Postal Service with estimations of usage; and formulates budget estimates for postal costs on a service-wide basis.

5. U.S. Coast Guard Supply Center

The U.S. Coast Guard Supply Center, located at Brooklyn, New York, is the largest service-operated organization dedicated to logistics support for Coast Guard activities. It is established as a "Headquarters Organization," which means that administrative and operational control and authority extend directly to its Commanding Officer from the Commandant of the Coast Guard.

In rendering this support, the Supply Center performs these two major functions.

1) General/Electronics Inventory Control Point (G/EICP) - Over 13,000 line items of widespread use in the Coast Guard are stocked and managed by the Supply Center, with an aggregate value in excess of $23 million. They include the following types of items: electronics components, general usage items, administrative forms and supplies,

ordnance materials, aids to navigation materials, ships parts, civil engineering materials, OMEGA navigation program supplies, and other miscellaneous consumables. Approximately 75 percent of these items have been assigned Federal Stock Numbers; the remaining possess control numbers of a local origin. Forty percent of these items constitute the normal operating stocks of the ICP, with the remaining consisting of standby reserves or exchange and repair stock (24; 1).

The electronics components and general stores, which make up about 22 percent of the total value of the inventory, are procured and funded through the Coast Guard Supply Fund, which is a type of revolving capital account (27; 1). Units which request these materials reimburse the Supply Fund from their own operating allocations. The majority of the items, however, are Appropriated Purchase Account (APA) items, which are budgeted for and funded directly by the operating expenses of the Supply Center. These items are distributed upon request from units, on a non-reimbursable basis (25).

2) Special Projects - The Supply Center also acts as a procurement and transshipment point for materials ordered by service units from the General Services Administration (GSA) and from commercial sources. This function is essential for mission support to some of the Coast Guard's smaller units, especially the remotely located LORAN Stations, which have limited procurement authority and resources to perform such functions independently. Units which utilize this service

submit Purchase Requests to the Supply Center, together with authority to incur obligations against their operating allocations.

The Supply Center then performs the necessary solicitation and procurement procedures and, upon delivery of the items, ensures their transshipment to final distination.

6. U.S. Coast Guard Aircraft Repair and Supply Center

The U.S. Coast Guard Aircraft Repair and Supply Center (AR&SC), located at Elizabeth City, North Carolina, is the main focal point for logistics support to Coast Guard aviation activities. It is tasked with the management and inventory control of all Coast Guard Areonautical and Avionics materials. Like Brooklyn, it is established as a headquarters organization.

AR&SC has been designated as the Aviation Inventory Control Point (AICP) for all aviation material utilized by the Coast Guard Air Stations. In this capacity it has authority to acquire, dispose of, and develop quantitative and monetary data on such items. Its active inventory consists of over 26,000 line items with an aggregate value in excess of $83 million (24; 1).

The items controlled by AR&SC are divided into five classifications, according to price and/or acquisition source. This classification determines the actual degree or level of control to be used by all aviation units for material management. The five classifications are defined as:

Type I - Aeronautical material under individual serial number control by AR&SC such as aircraft engines, extremely high value component assemblies, and those items in critical supply and of sufficiently high cost and low volume to allow for individual management.

Type II - Aeronautical material for which AR&SC has servicewide support responsibility. This classification includes items with a unit cost in excess of $50, USCG peculiar material, USAF material not stocked by DLA, ground support equipment (GSE) identified in CG-298 (Aircraft Material Stocking List), and any litems considered difficult to acquire at the operating unit level.

Type III - Aeronautical material easily obtainable at the operating unit level and with a unit cost less than $50.

Type IV - All avionics material with a unit cost in excess of $200 or designated as a repairable assembly. AR&SC has direct inventory management control over all Type IV items.

Type V - All consumables avionics material with a unit cost of less than $200 (1; 4).

B. THE TRANSPORTATION FRAMEWORK

1. Basic Policy

The basic policy of the Coast Guard concerning transportation is that the means and the mode will be selected in a manner that will effect delivery of the material at final destination, on or before the required date, at the lowest total cost to the government (7; 3E0.1001).

2. Laws and Statutes

As a component of the Armed Forces of the United States, the Coast Guard acts under the authority of Section 6 (8) of the Interstate Commerce Act (49 USC 6(8)), which outlines the use of transportation in the interests of national defense:

> In time of war or threatened war, preference and precedence shall, upon demand of the President of the United States, be given over all other traffic for the transportation of troops and materials of war, and carriers shall adapt every means within their control to facilitate and expedite the military traffic. And in time of peace, shipment consigned to agents of the United States for its use shall be delivered by the carrier as promptly as possible and without regard to any embargo that may have been declared, and no such embargo shall apply to shipments so consigned (7; 3E01002).

The Coast Guard also acts as an agency of the United States Government in the procurement of transportation services. It is thus eligible to receive transportation services under Section 22 of the above mentioned Act. This statute, in part, permits all carriers operating modes of transportation governed by the Interstate Commerce Commission (motor vehicles, railroads, inland water carriers, and freight forwarders), to transport personnel and or materials for the United States Government at reduced rates, or for no charge at all, on a strictly voluntary basis (19; 1).

Federal Statute (39 USC) permits the Coast Guard and all other Federal Government agencies to use the Postal Service in the carrying out of official business. Transmission of such "official mail" is authorized without prepayment of postage. Furthermore, it states that departments and agencies..."shall transfer to the Postal Service...the equivalent amount of postage due, as determined by the Postal Service, for matter sent in the mails by or to them as penalty mail." The equivalent amount of postage due is that amount that government agencies would pay if postage and fees were prepaid using postage stamps, commercial postage

meters, and other prepayment methods used by non-Federal mailers (28; 1).

In carrying out this program, the Postal Service has developed a number of methods to monitor usage and secure the necessary reimbursement of funds from the various agencies of the Federal Government. The method applicable to the Coast Guard is presented in Appendix A. Coast Guard involvement in this program is discussed in detail in the next chapter.

3. Guidance and Directives

The duality of the Coast Guard as an Armed Force and as an agency of the Department of Transportation establishes the service as a unique entity in the organization of the federal government. One way in which this uniquity manifests itself is in the establishment of guidance and directives that govern the utilization of transportation. Coast Guard interfaces with transportation must be consistent with both military and civilian agency standards. Because of this, the service follows the guidance of several sources.

As an agency of DOT, the Coast Guard comes under the purview of the General Services Administration (GSA). GSA is responsible for all transportation management and traffic services in the civilian executive agencies, and it exercises this authority through its Office of Transportation. As defined in the Federal Property Management Regulations, the mission of this office is to require that all transportation

and traffic management functions be carried out on the basis most advantageous to the Government in terms of economy, efficiency, and service.

The agency engages in educative efforts throughout the Federal Government, publishes handbooks, and conducts periodic reviews of the transportation functions of the various agencies. It also maintains a library of tariffs, containing thousands of class and commodity tariffs and more than 5000 Section 22 rate tenders (16; 47). This library is available for use by all Federal Government agencies.

The service's role as an Armed Force requires that it also follow the guidance of the Department of Defense. As mentioned in the previous chapter, the Coast Guard has adopted MILSTRIP and the UMIPPS material movement standards to ensure uniformity with the other services. In addition, it utilizes DOD controlled transportation resources whenever feasible.

To effect this interface, the Coast Guard follows DOD procedures. These include the Military Standard Transportation and Movement Procedures (MILSTAMP). With MILSTAMP, materials can move from origin to DOD destinations which are in close proximity to service operating units, under uniform documentation and control. Because these services are provided to the Coast Guard on a reimbursable basis, special service Transportation Account Codes (TAC) have been incorporated into the MILSTAMP system. When included in the basic documentation, the Coast Guard is identified as the user of

the transportation service, and the ultimate charges made to the Service are thus facilitated (7; 3E06006).

Coast Guard guidance for transportation is largely contained in Volume 3 of the Comptroller Manual (CG-264). Included in this publication are the basic Coast Guard policies, instructions for the use of government and commercial bills of lading, and instructions for the use of MILSTAMP by Coast Guard operating units. Other guidance on shipment of materials is found in the service's Postal Manual (CG-492).

C. TRANSPORTATION COSTS

The Coast Guard defines transportation costs to be any expenditure made for the movement of material, equipment, or Supply Fund Inventory. As outlined in the Comptroller Manual, such costs may consist of any one of the following incurrences:

a. Charges by common carrier and contract carrier for freight and express, demurrage, recrating, switching, refrigerating, and other incidental expenses.

b. Expenses for local cartage and handling, including contractual transfer of supplies and equipment.

c. Expenses for local movement of household effects of military members due to conditions such as: moves required because of repair or destruction of Government quarters, termination of leases, command assignment to, or termination of assignment to Government quarters, not involving Permanent Change of Station (PCS).

d. Contractual transportation of mail by water, rail, air, or motor vehicle.

e. Expenditures for transportation of fuel, aeronautical, electronic, ordnance, recreation, medical and dental supplies and equipment, and small boats (7; 1803030).

Transportation costs are one of 17 identifiable line items, or object accounts, in the annual operating expenditures of the service. In fiscal year 1978, the service incurred transportation costs in excess of $19 million. This represents approximately 2 percent of the total service operating expenses for that year. In that same year, operating expenses alone made up approximately 67 percent of total Coast Guard expenditures (5; 0E-9).

The funds for operation of the Coast Guard are subdivided into operating guides (OG's). The OG system is an allocation scheme, internal to the service, designed to further identify the nature and purpose of various expenditures. OG's cover such areas as Military Pay (OG 01), Civilian Pay (OG 08), PCS Costs (OG 20), Operating Expenses (OG 30), Aviation Maintenance (OG 41), Electronic Maintenance (OG 42), Shore Facilities Maintenance (OG 43), and Training (OG 56).

Subsequent to appropriation by the Congress, service operating funds are allocated by the Commandant, according to OG's, to those service organizations at which they can be most effectively administered. Military Pay (OG 01), for example, is distributed among the 12 Coast Guard Districts or the various Headquarters Organizations. Operating Expense Funds (OG 30), the most common and widely used category, are generally allocated directly to individual Coast Guard units. The other funds may be assigned in similiar manner to the Districts, the Headquarters Units, or to program managers at the Headquarters level, if such action is deemed to be facilitative of more effective management.

Expenditures for transportation may thus appear in any of several of the OG's, in particular, those that are designated for PCS travel and for maintenance activities. However, since the scope of this study is limited to transportation activities at Brooklyn and Elizabeth City, this study deals only with those categories of funds actually made available to the two organizations.

Transportation funds for Brooklyn are allocated by the Commandant under OG 30. As outlined in the Manual for Budgetary Administration (CG-255) these funds are utilized for the procurement of material and services for ordinary operations and maintenance. Elizabeth City's funds, on the other hand, are allocated under OG 41. These are defined as funds used for the modification, alternation, and overhaul of aircraft, if 1) the total cost does not exceed $75,000 and 2) the change does not result in more than 75 percent renewal of the aircraft (6; 1-10). Present Coast Guard policy directs that all transportation expenses be charged to the shipping activity, provided that the shipment is made between service units (7; 1B03030). For this reason, the management, control, and accountability for all transportation costs are, for the most part, the direct responsibility of the two organizations. There are some notable exceptions, however, such as in the case of postal costs. These will be discussed in more detail in the next chapter.

V. TRANSPORTATION OPERATIONS IN THE COAST GUARD

The purpose of this chapter is to describe the actual process of interface with transportation that occurs in the Coast Guard, through an examination of the Traffic Management functions at Brooklyn and Elizabeth City. For both organizations, the function of traffic is an important one. As mentioned in Chapter I, it is the transportation phase of the physical distribution system that constitutes the crucial link between the source of supply, and the ultimate user of goods and materils. Furthermore, as mentioned in Chapter II, transportation constitutes the one variable that can best be manipulated to ensure overall system effectiveness.

The first part of this chapter reviews the situation of the traffic function in the hierarchy of the Brooklyn and Elizabeth City organizations. The duties and responsibilities of the function, as described in the current organizational schemes, are also presented.

The second part describes the actual operation of the traffic function. In many ways, traffic is like a production process; that is, it is an operation consisting of: 1) inputs, 2) a series of tasks connected by a flow of goods and information, and 3) the transformation of these inputs into outputs, which are of greater value to the organization than in their original form. In regards to traffic, the inputs into the system consist of: 1) materials and goods, 2) a requirement or need for these goods, and 3) a pool of transportation

resources. The series of tasks include: 1) selection of that mode which will meet all of the requirements, 2) procurement of the service, and 3) performance of the transportation service. The outputs, although of a less tangible nature, are nevertheless definable and measurable to a great degree. They consist of 1) the incurrence of the lowest possible transportation costs, and 2) the greatest possible customer satisfaction.

This process analogy, with its related information flows, will thus be utilized to attempt a clearer description of the Coast Guard Traffic Management Function. A detailed schematic of this process is contained in Exhibit 4 on page 57.

A. TRAFFIC FUNCTION ORGANIZATION AND RESPONSIBILITIES

1. Brooklyn

The responsibility for Transportation Management at the Coast Guard Supply Center, Brooklyn, New York rests with the Traffic Branch. Traffic is one of the five branches of the Material Handling Division, which is responsible for all aspects of material movement to and from the Supply Center. Its functions include receiving and shipping, stores, packing, and staging, as well as traffic. The Materials Handling Division, in turn, is one of our main divisions that report directly to the commanding officer. These organizational relationships are outlined in Exhibit 2.

As described in the Supply Center Organization Manual, the responsibilities of this traffic branch encompass

U.S. COAST GUARD SUPPLY CENTER
BROOKLYN, NEW YORK
ORGANIZATION CHART

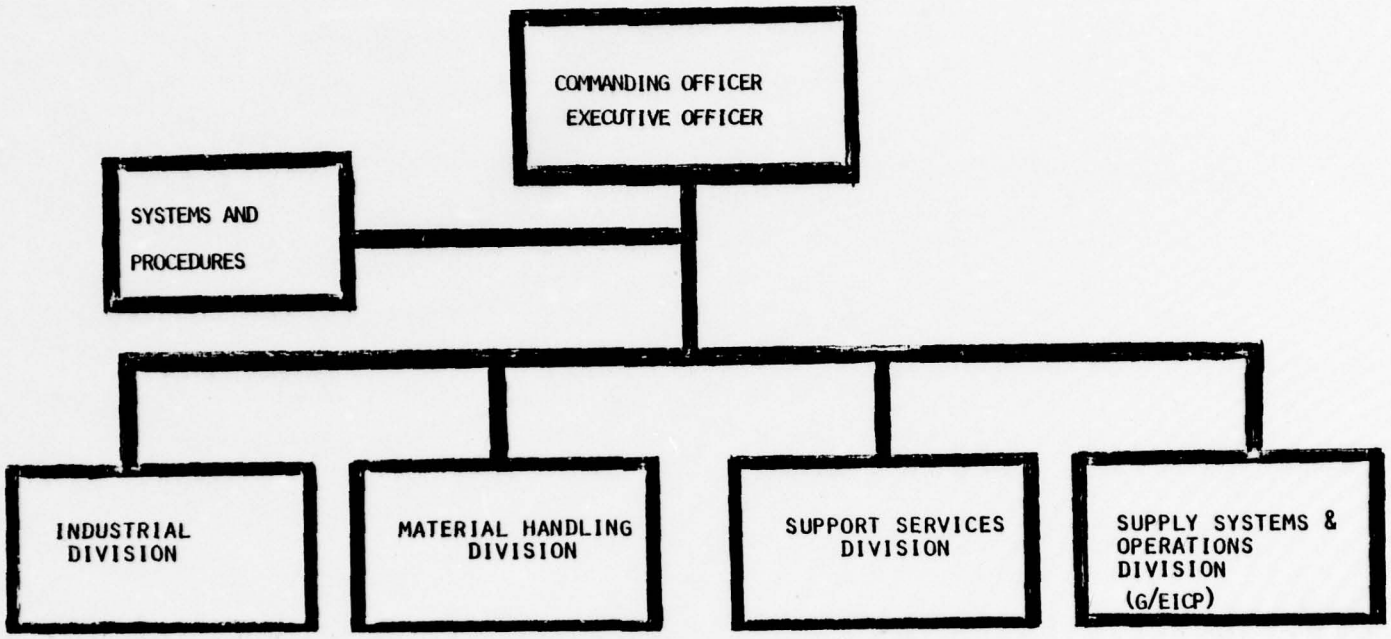


EXHIBIT 2

U.S. COAST GUARD SUPPLY CENTER
BROOKLYN, NEW YORK
MATERIAL HANDLING DIVISION

EXHIBIT 2 (con't.)

the following activities: preparation and processing of transportation documents, procurement of transportation services, shipment routings, carrier determination, shipment scheduling, tracing and expediting, and shipment records keeping. In addition, the traffic branch advises the Packing Branch on container requirements for the various modes, coordinates outloading schedules and equipment requirements with the Receiving and Shipping Branch, and coordinates the activities of the Staging Branch. Finally, it controls the utilization and movement of Coast Guard owned vehicles assigned to the Supply Center (26; I-27).

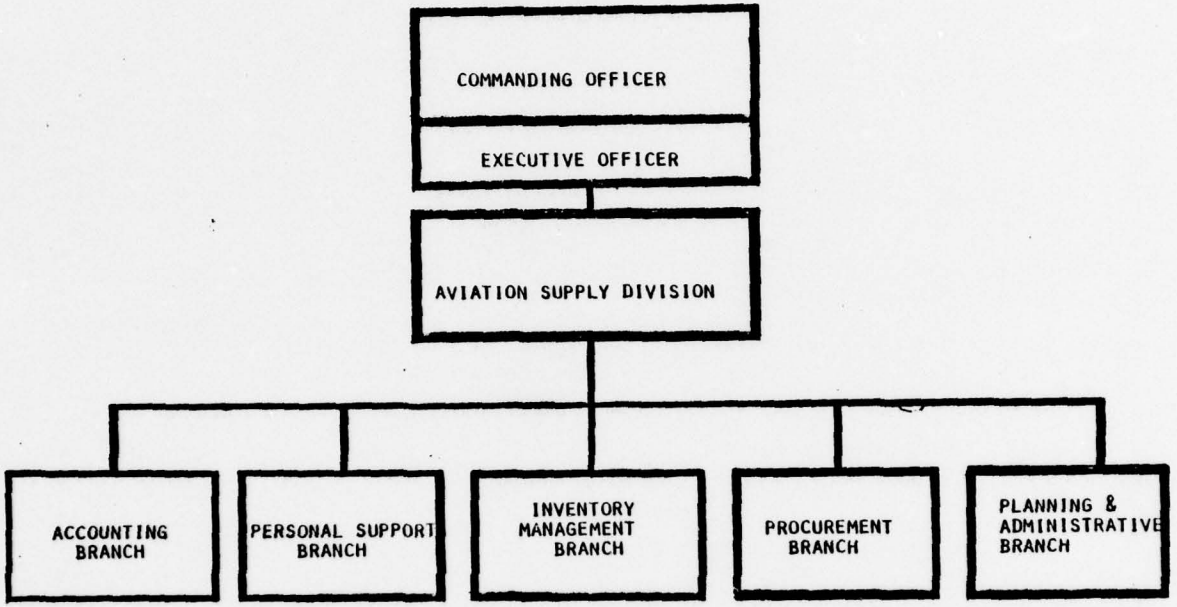
2. Elizabeth City

The U.S. Coast Guard Aircraft Repair and Supply Center, Elizabeth City, North Carolina, is in reality a complex of four separate, independent Coast Guard organizations that share common facilities. This discussion, however, deals only with that element directly responsible for the logistics and supply activities in support of Coast Guard Aviation. The organization of the Aviation Supply Division is outlined in Exhibit 3.

Transportation management responsibility at Elizabeth City is vested in the Traffic Section of the Inventory Management Branch. The Inventory Management Branch, in turn, is one of the six components of the Aviation Supply Division of AR&SC. Its responsibilities embody all activities related to the operation of the AICP. It is responsible for the apportionment and control of inventory procurement funds;

EXHIBIT 3

U.S. COAST GUARD AIRCRAFT REPAIR AND SUPPLY CENTER
ELIZABETH CITY, NORTH CAROLINA
AVIATION SUPPLY DIVISION



U.S. COAST GUARD AIRCRAFT REPAIR & SUPPLY CENTER
INVENTORY MANAGEMENT BRANCH
ORGANIZATION

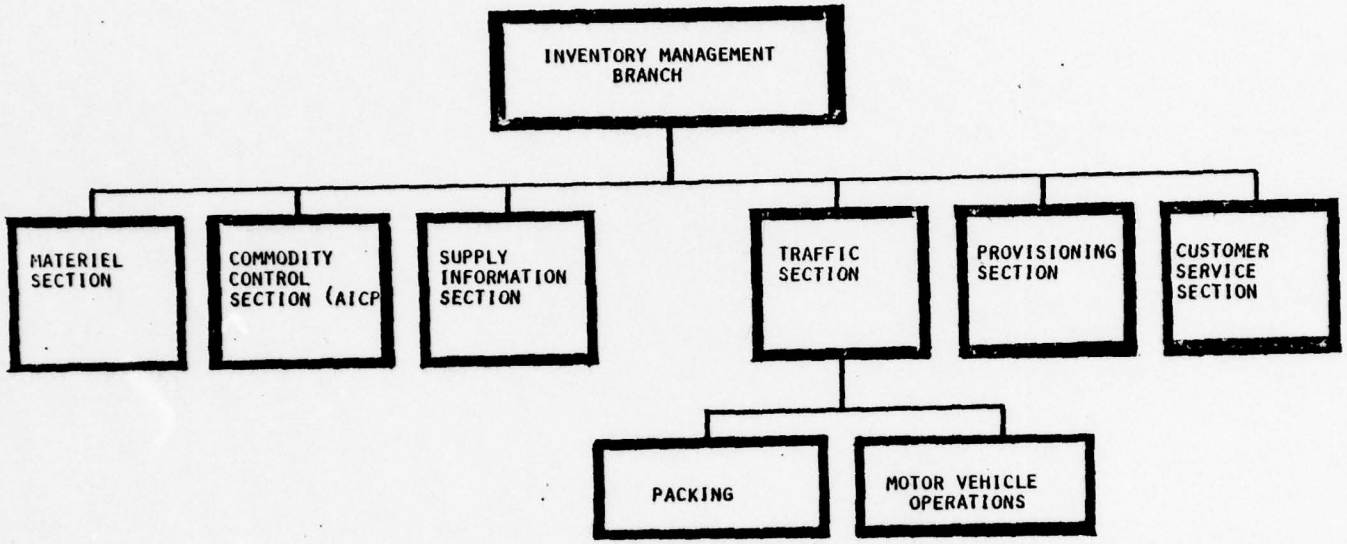
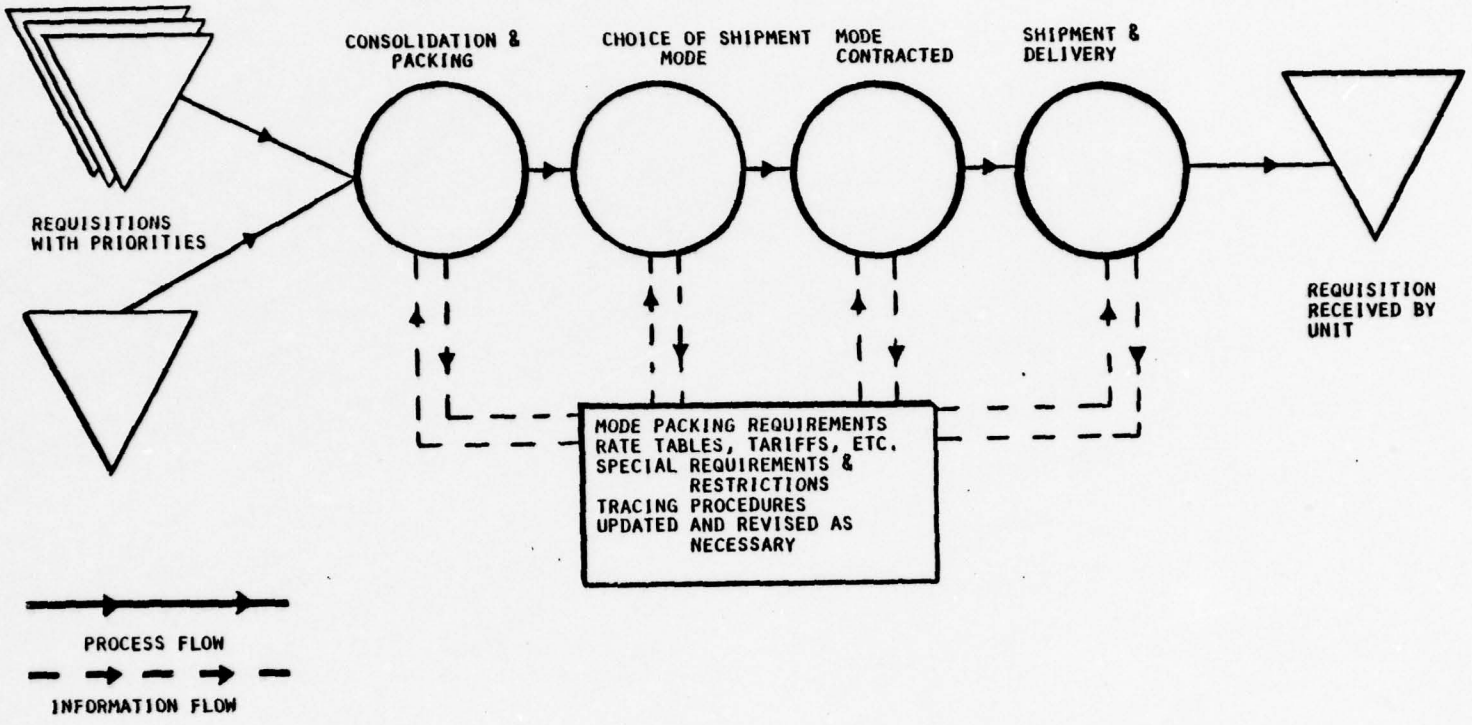


EXHIBIT 3 (con't.)

EXHIBIT 4

UNITED STATES COAST GUARD TRAFFIC MANAGEMENT

BASIC PROCESS FLOW



control of requisitions from field units; dissemination of supply management information; cataloguing and standardization of commodities, and physical distribution and movement of materials from AICP inventory to field units and those located in the Elizabeth City complex (23; 4-10).

While organizationally part of the Aviation Supply Division, the Traffic Section supports all activities located at Elizabeth City. Its duties and responsibilities encompass the following activities: delivery of aviation material; scheduling all shipments of government property; arranging for pickup and delivery of all shipments; packing and preparation of materials for shipment; and dispatching of all Coast Guard owned vehicles (23; 4-13).

B. TRAFFIC PROCESS INPUTS

1. Materials

The Brooklyn Supply Center received and processed more than 84,000 requisitions for materials in Fiscal Year 1978 (27; 5). Elizabeth City's figure for the same year was over 94,000 (24; 7). In both cases, all materials, regardless of whether their origins were from an ICP stock or from a commercial procurement, were processed through a single traffic function for shipment. Given the variety of materials stocked at each location, as well as the active commercial procurement programs, a very heterogeneous flow of goods is inputed into the traffic process. It is thus difficult to describe the characteristics of a typical shipment.

Despite this almost infinite variety, one commonality exists among shipments: the vast majority of them are small in size and weight. Two important consequences accrue from this characteristic.

First, it is oftentimes difficult to achieve any significant economies of scale in transportation procurement. Nearly all materials must be shipped either as Less than Truckload (LTL) lots, or as small packages. Few opportunities exist at each location to take advantage of full Truckload Shipments, (TL), which are less expensive per unit. Secondly, this particular restraint would dictate that shipments must be consolidated whenever possible to help reduce transportation costs.

Both Elizabeth City and Brooklyn have developed procedures to effect consolidation of shipments. Given the time constraints imposed by the UMIPPS standards, both units engage in the staging of materials for the maximum allowable amount of time. Elizabeth City, which distributes to fewer clientele, merely sets aside the various requisitions according to unit, then packs and releases each group as a single shipment (22).

The procedures are more elaborate at Brooklyn. There, the computer hardware that processes MILSTRIP requisitions has been adapted to automatically consolidate the requisitions of a single unit, prior to their preparation for shipment. This greatly facilitates the order picking and packing function, and assures a higher level of consolidation.

Furthermore, where time permits, the lower priority items are first staged, then grouped together according to the geographic location of their destinations. If enough materials can be grouped together, and if the requisitioning units are located relatively close to each other, a consolidated shipment to a single location is made (25).

2. The Need for Materials

The level of staging and consolidation that is achieved depends entirely upon the amount of time available. As mentioned in Chapter II, it is the requisitioner with a need for material who communicates the actual time factor, through indication of a priority for the requisition.

The priority designation of course, depends upon the Force Activity Designator of the requisitioning unit. In the Coast Guard, units have been assigned FAD's that range from II to V. Because of this, Brooklyn and Elizabeth City receive requisitions that indicate any one of 12 possible priority designators.

For purposes of handling and shipment, however, the 12 designators are subdivided into basic categories, also called priorities, which range from 1 to 3 (See Exhibit 5). The lower the priority number, the greater the effort expended to expedite the processing of the requistions. Furthermore, a low priority number means that fewer opportunities will exist to consolidate it with other shipments, and a swifter, more costly means of transportation will have to be procured to effect delivery on time.

UMIPPS DELIVERY DATES

		TIME STANDARDS (IN CALENDAR DAYS) 01-03	04-08	09-15	
A.	REQUISITION SUBMISSION (DATE OF TRANSMISSION FROM REQUISITIONER TO RECEIPT BY INITIAL SUPPLY SOURCE	1	1	2	SEAVAN CONSOLIDATIONS ONLY
B.	DETERMINING AVAILABILITY OF MATERIEL AND STORAGE SITE PROCESSING	3	4	13	23
	ICP AND STOCK POINT ACTION:				
	1. ICP SUPPLY DETERMINATION (ICP PROCESSING TO DATE MRO RECEIVED BY ISSUING ACTIVITY)	2	2	5	
	2. STOCK POINT/STORAGE SITE PROCESSING (MRO RECEIVED TO DATE MAT'L AVAIL TO TRANSPORTATION OFFICER)	1	2	8	23
C.	CONUS SHIPMENTS (INCLUDE TRANSPORTATION HOLD, IN-TRANSIT TO REQUISITIONER, CANADA, OR TO PORT OF EXIT (POE))	3	6	13	13
D.	OVERSEAS SHIPMENT/DELIVERY: (INCLUDES POE HOLD TIME, LOADING, TRANSIT, UNLOADING, PORT OF DESTINATION (POD), HOLD TIME, AND DELIVERY TO COSIGNEE).				
	1. TO ALASKA, HAWAII, N. ATLANTIC, N. EUROPE, CARIBBEAN, OR CENTRAL AMERICA	4	4	38	23
	2. TO S. AMERICA OR W. MEDITERRANEAN	4	4	43	28
	3. TO E. MEDITERRANEAN OR AFRICA	4	4	30	35
	4. TO FAR EAST, SE ASIA, OR AUSTRALIA	5	5	62	47
	5. TO MIDDLE EAST (PERSIAN GULF, RED SEA)	4	4	67	52
E.	RECEIPT BY REQUISITIONER (DATE OF RECEIPT AT DESTINATION UNTIL DATE PICKED UP ON INVENTORY RECORD)	1	1	3	

EXHIBIT 5

Of the more than 84,000 requisitions processed by Brooklyn in Fiscal Year 1978, 4 percent were handled and shipped under Priority 1; 13 percent under Priority 2; and 83 percent under Priority 3 (27; 5). The Supply Activity Report of Elizabeth City does not contain this same breakdown, so similiar data are not available. One inference, however, can be made. Nearly all of its clientele, which are Air Stations, have FAD II designators. These units must maintain a high operational posture at all times, and the materials that AR&SC supplies are essential to this posture. As such, a greater percentage of the total requisitions handled by Elizabeth City would be under Priorities 1 and 2, than is the case at Brooklyn. The latter serves the full range of FAD's, with material that is both essential and ancillary to mission performance.

3. Transportation Modes

At Elizabeth City and Brooklyn, an extensive variety of transportation modes must be available to satisfy all possible shipping requirements. The basic Coast Guard policy (7; 3E01001), when considered with the diversity of the materials shipped, the need in many cases for special handling, and the world-wide location of service operating units, establishes a need for diversity and flexibility in transportation.

The variety of services that both organizations utilize, therefore, are quite extensive, encompassing all modes of the transportation industry, with the exception of pipeline. They include the following:

a. U.S. Postal Service (USPS) - Both organizations use the Postal Service for the shipment of materials. The USPS offers several classes of service; these include Fourth Class Parcel Post, Priority Mail, Air Parcel Post, and Express Mail. The last is an expedited service offering overnight delivery to a large number of locations within the continental United States. The weight and girth limitations on materials shipped by the USPS are 70 pounds and 100 inches, respectively (22, 25).

b. United Parcel Service (UPS) - UPS is a common carrier that specializes in the delivery of small packages, offering service to all locations within the continental United States, and parts of Alaska and Hawaii. Two classes of service are available: 1) regular surface, and 2) "Blue Label Air," which is an expedited air freight forwarding service. UPS rates are generally competitive with those of USPS. Materials shipped by this mode must be no heavier than 50 pounds and no larger in girth than 108 inches. Other restrictions also apply in regards to the type of materials and the method of packing (22,25).

c. Bus Package Express (BPX) - The commercial bus companies, most notably Greyhound and Trailways, provide small package delivery service along their regular scheduled routes. This service has proven to be an efficient and expiditious means of moving small shipments for distances of up to 1000 miles. Rates are generally competitive with USPS and UPS over shorter distances (22,25).

d. Motor Carriers - Both Elizabeth City and Brooklyn make extensive use of the services of regular route common carriers (trucks). These include both direct movement by a single carrier to a destination, as well as movement for linkage with other transportation modes. Rates vary with the distance, weight [measured in hundredweight (CWT)], and with the rating of the particular commodity, as defined in the National Motor Freight Classification (NMFC). All materials handled by Brooklyn and Elizabeth City can be moved by these carriers (22,25).

e. Freight Forwarders - Freight Forwarders are companies that collect large numbers of small shipments, consolidate them, and then secure their movement at Truckload rates. Rates are generally competitive with those of motor carriers, and like the latter, vary with distance, weight, and the type of commodity being shipped (22, 25).

f. Air Freight - All of the major airline companies which service the localities of the Supply Center and AR&SC offer freight movement services. This is the most common mode used for movement of high priority items, but it is considerably more costly than surface transportation. Most of the items supplied by Brooklyn and Elizabeth City can be moved by this mode, with the exception of certain hazardous materials. Weight limitations vary with the particular carrier; some will accept only small shipments of up to 150 pounds, while others will accept items as large as 2000 pounds. Rates vary with weight and distance, and a minimum charge is often imposed, regardless of shipment size (22, 25).

g. Department of Defense (DOD) Transportation - As an Armed Force, the Coast Guard is authorized to use DOD controlled transportation resources. These include the Military Airlift Command (MAC), the Military Sealift Command (MSC), and QUICKTRANS, which is a high priority material movement system operated by the Naval Supply Systems Command (NAVSUPSYSCOM). Brooklyn, for the most part, forwards material destined for these modes through the Military Ocean Terminal at Bayonne, New Jersey (MSC), Dover Air Force Base, Delaware (MAC), or the Naval Air Station at Norfolk, Virginia (QUICKTRANS). Elizabeth City largely uses the facilities at Norfolk. Linkage between the two organizations and these DOD facilities is usually accomplished either through common earrier or through Coast Guard owned resources (22, 25).

h. Coast Guard Resources - The service's own resources are used whenever possible for the movement of materials. As mentioned above, Coast Guard vehicles are used to move material to DOD facilities. In addition, Brooklyn utilizes such resources to effect delivery to units located in close proximity to the New York City area. Elizabeth City, which also functions as a Coast Guard Air Base, also effects shipment in service-owned aircraft, if and when available (22, 25)

C. TRAFFIC PROCESS TASKS

1. Choice of Shipment Mode

The choice of an appropriate mode of shipment is perhaps the most involved task of the entire Traffic

Management Process. It is at this stage that all of the important variables, as well as a number of external, environmental concerns, are weighed together and carefully scrutinized. While the priority for the material is the first consideration, the nature of the requisition is equally important, as highlighted by the following factors:

a. Physical Characteristics - The weight, volume, and material makeup of the item serve to narrow the number of potential modes. As indicated above, restrictions abound as to what may or may not be shipped by the various modes. Some carriers, having the equipment and facilities to effect shipment more efficiently than others, may specialize in moving particular commodities.

b. Destination - While the Supply Centers may have at their disposal a large number of potential shipment modes, only a few of these may be appropriate to serve the destination under consideration. Access to the more remote Coast Guard units, for example, can be accomplished only through DOD controlled resources. Since the UMIPPS time standards are uniform for all destinations within the continental United States, certain modes may be appropriate for shipment to one area, but inappropriate or time-consuming for shipments to another. Every destination involved, therefore, requires special consideration.

c. Cost and Service - Accurate, up-to-date rate tables and knowledge of a carrier's ability to make a shipment on time are necessary whenever a decision is to be made.

The later is essential in situations where more than one alternative is possible at the same cost. Equally important are the quality of service and attention rendered to the shipment. The past performances of the carrier usually serve as reliable indicators in such circumstances.

d. Environmental Considerations - Weather, holidays, weekends, and labor strikes are other factors that affect a carrier's performance. Timely and up-to-date information on such matters, therefore, is essential and must be continuously sought.

The effective evaluation of all of these considerations requires the availability of seemingly large and complex amounts of information in the form of operating tariffs, schedules, rate charts and tables, as well as data on the past performances of the various modes. At first thought, it may appear that this task is enormous and time-consuming; however, procedures have been developed to simplify and streamline the process.

The first procedure involves the ability to accurately define the commodities to be shipped. The National Motor Freight Classification (NMFC) lists literally thousands of commodities that may be shipped by common carrier. All of these commodities, however, have been divided into a series of 23 "ratings," which range from 35 to 500. These ratings are assigned to a particular commodity based upon a host of considerations, such as the commodity's weight per cubic foot, its liability to loss, damage, or theft, or its ease

or difficulty in loading or unloading (31; 297). Generally speaking, the higher the rating, the more costly is to transport the material. Each item, moreover, has 2 ratings assigned to it: 1) a Truckload (TL) rating, and 2) a Less than Truckload (LTL) rating. Invariably the TL rating will be lower than the LTL rating, indicating that the latter type of shipments are more expensive per unit to ship.

The actual transportation cost, however, can only be determined through further research. First, a "rate base" must be established. This is a special number assigned to the particular origin-destination involved, and it is determined by consulting the appropriate carrier's operating tariff. Secondly, this rate base is cross-referenced with the rating on a special table contained in the tariff. The result is the cost in cents per hundredweight (CWT) to ship the particular item or materials.

Given the thousands of commodities handled by Brooklyn and Elizabeth City, and the many destinations involved, a multitude of possible prices for transportation exist. The research necessary for such determinations can easily evolve into a time-consuming task.

To facilitate the research process, both Elizabeth City and Brooklyn have developed listings of all items that are shipped routinely from inventory operations. These contain the Coast Guard description for the item, the NMFC nomenclature, and the LTL rating for the item. Since TL shipments are rare, this particular rating is omitted. Examples of these listings are contained in Exhibits 6 and 7.

EXHIBIT 6

U.S. COAST GUARD SUPPLY CENTER

COMMODITY LISTINGS (SAMPLE)

COAST GUARD DESCRIPTION	TO BE SHOWN ON GBL	NMFC. ITEM NR.	LTL RATE
A FRAMES	SIGNBOARDS STEEL W/O ADVERTISEMENT	23480	77 1/2
AMPLIFIER	ELECTRICAL INSTRUMENT NOI NOT EXC $1.50 LB.	61700	100
ANCHORS (GRAPNEL)	ANCHORS NOI IRON	14300	65
BAROMETER	BAROMETERS	57730	175
BATTERY BOXES	BATTERY BOXES NOI PLASTIC	60740	150
BAYONETS	BAYONETS IN BOXES	22970	100
BELL STRIKER	CIRCUIT BREAKERS OR PARTS THEREOF NOI	61300	77 1/2
BLOCK SNATCH	SNATCH BLOCKS	127300	60
BLOWER MOTOR	FANS NOI	64580	100
BOOKS	BOOKS NOI	161560	70
BOWLS SALAD	CHINAWARE NOI NOT EXC $20 CWT	47500	70
BOAT COVER CANVAS	BOATS COVER CANVAS		
CABINETS (EEE)	CABINETS NOI O/T FURNITURE W/O GLASS	39270 SUB 3	110
CAPACITOR	CAPACITORS	61400	77 1/2
CHAIN BUOY	CHAIN NOI IRON OR STEEL	94050	50
CLOCK MASTER REGULATION (EEE)	CONTROLLERS NOI	61480	77 1/2
CONTAINER STORAGE	PLASTIC FORMS NOI 4 LBS. CU FEET LESS	157320 SUB 4	150
CUPS COFFEE	CHINAWARE NOI NOT EXC. $20 CWT	47500	70
DEPTH SOUND DEVICE	DEPTH SOUNDING DEVICES LEAN & ALUM COMB.	24780	85
DUCK COTTON	DUCK COTTON CANVAS WATERPROOFED	49570	85
ENVELOPES	ENVELOPES NOI PRINTED	153040	70
EMERGENCY FLOTATION BAGS	PONTOONS, RUBBERIZED FABRIC DEFLATED COMPRESSED GAS, NON-FLAMMABLE	160710	100
FIREARMS	FIREARMS NOI	69300	100
FLOATS LIFE	LIFE RAFT NOI	25000	200
FORMS	PAPER FORMS PRINTED NOI	153250 SUB 1	70
GASOLINE CONTAINER	CONTAINER FUEL STORAGE LIQ. CAPACITY NOT. EXC. 2 1/2 GAL.	40215	92 1/2
HORN FOG MOUTH	HORNS SOUND WARNING NOI	100080	85
INHIBITOR CORROSION	COMPOUND WATER TREATING LIQUID CORROSIVE	50227	60

U.S. COAST GUARD AIRCRAFT REPAIR & SUPPLY CENTER

COMMODITY LISTINGS

(SAMPLE)

COAST GUARD NAME	NMFC NOMENCLATURE	NMFC ITEM #	LTL RATE
JACKS	JACKS, LIFTING, NOI, WHEELED	184990	70
LANDING GEARS	LANDING GEARS, NOI, HYDRAULIC W/O WHEELS	12190-2	100
LIFE PRESERVERS	LIFE PRESERVERS, O/T CUSHIONS	111205	150
LIFE RAFTS	*LIFE RAFTS, PNEUMATIC, RUBBERIZED CLOTH DEFLATED, NON-FLAMMABLE GAS	24660	85
LIGHTS	LAMPS, ELECTRIC, ARC, W/O SHADES	109440	100
LITTERS	LITTERS, O/T WHEELED, SU, NOT NESTED	56920-1-2	200
MAGNETOS	MAGNETOS, NOI	62460	85
MAIN ROTOR HEAD	MACHINES, NOI, SU	133300-1	92 1/2
MOTORS	GENERATORS OR MOTORS, NOI, WT. 5# OR MORE	62120-1	70
MOUNTS	MOUNTS, SHOCK OR VIBRATION ABSORBING	138560	77 1/2
NACELLES	AIRCRAFT PARTS, NACELLES	11760	200
NOZZLES	NOZZLES, FUEL OIL DISPENSING, ALUM., BODY	13535	77 1/2
OSCILLATOR	ELECTRICAL INSTRUMENTS NOI	61700	100
OIL COOLERS	COOLERS, FOR AIR, GAS, OR LIQUIDS, NOI	118240	85
OXYGEN	*OXYGEN, LIQUID, IN STEEL CYLINDERS, NON-FLAMMABLE GAS	86120-1	70
PAINTS	*PAINT, STAIN OR VARNISHES, NOI, LIQUID OR PASTE IN KITS OR PAILS, FLAMMABLE LIQUID	150070-2	55
PANELS	AIRCRAFT PARTS, PANELS, WING	11760	200
PARACHUTES	PARACHUTES, NOI	154610	150
PLATFORMS, KD	STANDS, AIRCRAFT, SERVICE, KD	178160-2	125
PLATFORMS, SU	STANDS, AIRCRAFT, SERVICE, SU	178160-1	300
PROP ASSY	PROPELLERS, KD	12280	85
PUMPS	PUMPS, POWER, NOI	128000	85
RADOMS	RADAR HOUSINGS, NOI, O/T METAL W/METAL MOUNTING	14440	400
RECEIVERS	SETS, RADIO RECEIVING, NOI	63035	125
REC-TRANSMITTER	RADIO TRANSMITTING & RECEIVING SETS COMB. "VALUE NOT EXCEEDING $1.50 PER LB"	62820	100
REGULATOR	PRESSURE REGULATORS, NOI	127220	77 1/2
RESCUE BASKETS	BASKETS, RESCUE, ALUM. W/ATTACHMENTS, SU	56500	200
RUDDER	AIRCRAFT PARTS, RUDDERS	11760	200
SCRUBBER	FLOOR SCRUBBER, ELECTRIC, SEPARATE, NOI	121270	85
SEALS	SEALS, NOI, O/T PACKING DEVICES	172640	70
SEATS	SEATS, AIRCRAFT, ATTENDANT, CREW, SU	12340-2	150
SERVO	MACHY PARTS, NOI, I/S	133450	85
SEXTANT	OPTICAL GOODS OR INSTRUMENTS NOI	58110	200
SHAFT	SHAFTS, STEEL O/T CRANK W/FITTINGS	126900-1	85
SIGNAL FLARES	*FLARES, SIGNAL CLASS C EXPLOSIVES		
S.M.O.	ELECTRICAL INSTRUMENTS, NOI	61700	100
SPINNER	AIRCRAFT PARTS, NOI, O/T CLOTH & METAL OR WOOD COMBINED	11800	150
SPONSONS	PONTOON BOATS, SU, W/O POWER INSTALLED	24540-3-3	300
STABILIZERS	AIRCRAFT PARTS, STABILIZERS	11760	200
STACK	DUCT, EXHAUST SYSTEM, I/S	51590-3	125

EXHIBIT 7

Another procedure is used to further facilitate the selection process through better management of the applicable data. At Brooklyn, a manual information system has been devised, consisting of a series of index cards, maintained and filed according to geographic location. Each card lists all motor carriers, air carriers, and freight forwarders that offer service to the area, the respective Postal Service or UPS zones, as well as any special instructions or restrictions that may be applicable. Exhibit 8 contains samples of these cards. Reference to them enables the decision maker to consult the appropriate tariffs in determining the appropriate mode. Elizabeth City, which serves fewer clientele, maintains listings of units and the carriers that serve them. These listings, depicted in Exhibit 9, are utilized in the same manner as the index cards are utilized at Brooklyn.

2. Contracting the Mode

Securing the services of the selected carrier is a much simpler task than that of mode selection. Depending upon the mode selected, the actual procedure will vary.

a. The Postal Service - If movement by the Postal Service has been chosen, then the only procedure is to apply the franked penalty "indicia" to the shipment, along with an indication as to the particular type of service desired - Priority Mail, First Class, Fourth Class Parcel Post, or Registered Mail. Controls over movement of materials by this mode are largely left to the discretion of the individual

U.S. COAST GUARD SUPPLY CENTER
TRAFFIC BRANCH
DESTINATION DATA CARD (SAMPLES)

ELIZABETH CITY, NC.

PARCEL POST ZONE 4 :

SURFACE AND AIR PARCEL POST LIMITATIONS:
70 POUNDS - 100 INCHES

UNITED PARCEL SERVICE (SURFACE) ZONE 4 :
WEIGHT LIMIT PER CONSIGNMENT 100 POUNDS
WEIGHT LIMIT PER PACKAGE 50 POUNDS
SIZE LIMIT PER PACKAGE 108 INCHES

ESTIMATED SURFACE TRANSIT TIME 2-3 DAYS

MOTOR CARRIERS

OLD DOMINION FRT LINES
McLEAN TRUCKING CO
PILOT FREIGHT CARRIERS
TURNERS EXPRESS
SPECTOR FREIGHT SYSTEM
CAROLINA FREIGHT CARRIERS

FREIGHT FORWARDERS:

NO SERVICE

AIR FREIGHT CARRIERS:

PIEDMONT AIRLINES (LA GUARDIA,
UNITED AIRLINES HANGAR #2
WEIGHT LIMIT 150 LBS./ PIECE

ESTARTIT, SPAIN

ROUTINE FREIGHT SHIPMENTS PRIORITY 9 THRU 15, SHIP VIA MSC, THRU MILITARY OCEAN TERMINAL, BAYONNE, NJ, MOVING ON TCMD, POE CODE 1GC POD CODE KJI

PRIORITY FREIGHT SHIPMENTS (1-8)

CONSIGN DIRECT TO:
240110
COMMANDING OFFICER
USCG LORAN STATION ESTARTIT
c/o 401 TAC FTR WG
TORREJON AB, SPAIN

SHIP VIA MAC. DO NOT SHIP VIA COMMERCIAL AIR FREIGHT DUE TO CUSTOMS DELAYS

SURFACE AND AIR PARCEL POST:

WEIGHT LIMIT: 70 POUNDS

DIMENSIONS: 100" IN LENGTH AND GIRTH COMBINED.

EXHIBIT 8

U.S. COAST GUARD AIRCRAFT REPAIR & SUPPLY CENTER

DESTINATION DATA LISTING

	PRIORITY SHIP APP TO 70#			ALL OTHER	ROUTING SHIP SURFACE
	150#	550#	4000#		*MAX. 250 ROUTE ALASKA AIR.
ARCATA	UA	--			WCC E** FOR SEATTLE
ASTORIA	UA	UA	--	TRI	E*
BARBERS POINT	UA	UA	UA	QT	--
BRIDGEPORT	AL	AL	--	SEMCA	MCL
BROOKLYN	PI	NA	AA	SEMCA	OD
CALIFORNIA STATE	UA	UA	--	TRI	WCC E**
CAPE COD	AL	AL	--	SEMCA	E**
CHICAGO	PI	UA	AA	TRI	MCL
CLEARWATER	UA	UA	AA	LEONARD	PILOT
CORPUS CHRISTI	UA	UA	AA	LEONARD	MCL
DETROIT	UA	UA	AA	TRI	MCL
HOUSTON	NA	NA	AA	LEONARD	MCL
JACKSONVILLE, FLA.	--	--	--		PILOT
INDIANAPOLIS, IND.	--	--	--		E*
KODIAK	UA	UA	--		--
LOS ANGELES	UA	UA	UA	TRI	E/FOR WATKINS MOTOR LINES
MARIETTA	PI	PI	--		T
MCAS CHERRY POINT	--	--	--		E
MOBILE	NA	NA	--	TRI	E**
NEW ORLEANS (UA DIRECT)	NA	NA	DL	LEONARD	MCL
NORFOLK	--	--	--		E
NORTH BEND	UA	UA		TRI	E**
OKLAHOMA CITY	UA	UA	--		E*
OPA LOCKA (UA DIRECT)	NA	NA	AA	LEONARD	PILOT
PENSACOLA	--	--	--		T
PORT ANGELES	**UA	UA	UA	TRI	E**
PUERTO RICO	NA				--
SAN ANTONIO	--	--	--		E*
SAN DIEGO	UA	UA	UA	TRI	WCC OR E**
SAVANNAH	NA	NA	--	TRI	T
SEATTLE	UA	UA	UA		E**
SITKA	UA	UA*	--		--
S. SAN FRANCISCO	UA	UA	UA	QT	WCC OR E**
TRAVERSE CITY	UA	UA	--	TRI	MCL
WARNER ROBINS	--	--	--		T
WASHINGTON, D.C.	PI	PI	--		E OR OD
WINDSOR LOCKS	--	--	--		MCL

** FOR OLYMPIC FILM SERVICE, DELIVERY FROM SEATTLE

MOTOR FREIGHT
E - ESTES EXPRESS LINES
E* - ESTES EXPRESS LINES (ROUTE TO ROADWAY AT WILSON, N.C.
E** - FOR YELLOW FREIGHT SYSTEMS AT WILSON, N.C.
MCL - MCCLEAN TRUCKING CO.
OD - OLD DOMINION FREIGHT LINE
PILOT - PILOT FREIGHT CARRIERS
T - THURSTON MOTOR LINES

RAIL FREIGHT
WCC - WESTERN CAR-LOADING CO.

AIR FREIGHT
AA - AMERICAN AIRLINES
AL - ALLEGHENY AIRLINES
DL - DELTA AIRLINES
NA - NATIONAL AIRLINES
PI- PIEDMONT AIRLINES
UA - UNITED AIRLINES

EXHIBIT 9

activity; however, Service postal regulations do require accountability and control over Registered and Certified Mail, and both Brooklyn and Elizabeth City comply with this requirement.

b. DOD Modes - As mentioned in Chapter IV, the Coast Guard complies with the Military Standard Transportation and Movement Procedures (MILSTAMP), when utilizing these modes. As established in DOD Regulation 4500.3R-R, these guidelines involve completion of necessary documentation, assignment of transportation control numbers (TCN), proper identification of materials requiring special handling, and securing of cargo clearances prior to shipment release, if necessary (10; 2-17).

c. Commercial Carriers - The basic instrument used in the procurement of transportation services from most commercial carriers is the Government Bill of Lading (GBL). Its use has been prescribed by the Comptroller General of the United States for all federal government agencies. When rendered to a carrier, the GBL constitutes a draft on the Treasury of the United States. Once the terms contained in it have been properly executed, it becomes an order on the government for the payment of charges legally due to the carrier for the fulfillment of the service (30; 419).

In the preparation of this document, both Elizabeth City and Brooklyn follow the procedures outlined in Chapter 3 of the Comptroller Manual. One important aspect in its preparation is correct definition of the commodities

to be shipped. This is to ensure that the Coast Guard is billed for transportation services according to the applicable tariff.

While the GBL serves as the basic document at Brooklyn and Elizabeth City, a move is presently underway to simplify the procurement procedures, in the interest of both expediting shipments and easing the paperwork burden. The Coast Guard and other government agencies are now permitted to utilize commercial forms and procedures to effect shipments within the continental United States, provided that the overall charge does not exceed $100 (30; 419). This authorization has greatly facilitated use of such modes as United Parcel Service, which as a policy does not accept GBL's, as well as the regular route motor carriers that service the two organizations. As of the first quarter of fiscal year 1979, 54 percent of the outgoing freight at Brooklyn was shipped on Commercial Bills of Lading (25). Elizabeth City now employs such procedures for approximately 50 percent of all shipments (21; 2).

It was mentioned that opportunities to effect TL shipments are rare. Nevertheless, both Brooklyn and Elizabeth City do take the opportunity to effect such shipments as the situation warrants. This involves the calculation of a "break-even" weight for a particular commodity, at which the cost is the same for both TL and LTL shipments.

An example will better serve to illustrate the mechanics of this calculation. Suppose that Brooklyn is

about to ship 19,000 pounds of printed paper forms to Cleveland, Ohio. From the National Motor Freight Classification, it has been determined that the LTL rate for this particular commodity is 70, the TL rate is 50, and the minimum size of a TL shipment is 20,000 pounds. Assume that after consulting the applicable operating tariff, the base rate for Booklyn and Cleveland is found to be 550. Furthermove, the tariff indicates that for the base rate of 550, an LTL shipment for commodity rate 70 will cost $3.50 per hundredweight, and $3.20 per hundredweight for commodity rate 50. Thus, to find the "break-even" weight, the following equation is set up:

$$(\text{TL rate})\text{TL minimum weight} = (\text{LTL rate})Y$$

where Y is the break-even weight. Therefore:

$$(\$3.20/\text{cwt.})\frac{20{,}000}{100} = (\$3.50/\text{cwt.})\frac{Y}{100}$$

$$Y = 18{,}286 \text{ pounds.}$$

Since the shipment weight is greater than this break-even weight, it can be tendered as a TL shipment, and a cost savings over the normal LTL rate can be realized. Such savings can oftentimes be substantial; for example, Elizabeth City has estimated that it has effected shipments in this manner for as low as one third of the normal LTL cost (22).

3. Shipment and Delivery

The final task of the traffic process encompasses the time period from when the shipment is tendered to when delivery to the ultimate destination is effected. The main concerns at this stage are those of coordination and

oversight, since the responsibility for movement of the requisition then rests largely with the carrier.

With respect to coordination, the monetary savings that are wrought by staging and consoldation of shipments can only be realized if there is coordinated and reliable access to the various carriers. The advent of commercial forms and procedures has greatly improved this interface between the two organizations and the modes. Through these procedures, daily pickup and delivery service is contracted for with UPS, certain air freight carriers, and all of the regular route motor carriers. The contracting and scheduling of TL shipments or shipments of an unusual nature must normally be done in advance; however, the lead time required in such instances does not exceed 48 hours. At Brooklyn, deliveries to local units by Coast Guard controlled vehicles are normally scheduled weekly (25).

The oversight function consists mainly of tracing and monitoring shipments. An action of this nature is usually triggered by a telephone or message inquiry from a unit about the status of a shipment or reporting a non-delivery. Inquiries are then initiated to the respective carrier, and the information relayed back to the unit, along with any additional instructions, if necessary.

D. TRAFFIC PROCESS OUTPUTS

1. Efficient Resource Usage

To determine whether the lowest possible costs have been incurred in the procurement of transportation services,

it is first necessary to understand the existing financial controls in operation at Brooklyn, Elizabeth City, and at higher organizational levels. It was mentioned in Chapter IV that, for the most part, transportation costs are treated as expenses incident to the operation of the two organizations. In other words, the management of, control of, budgeting for, and accountability for these funds are the responsibility of Elizabeth City and Brooklyn. There are, however, some notable exceptions.

When services are procured from commercial sources on either Government or Commercial Bills of Lading, the government becomes "obligated" for their liquidation and settlement. This action of obligation earmarks, or "targets," an amount of funds equal to the estimated shipping cost for eventual payment to the carrier. Upon satisfactory completion of the service, the carrier submits an invoice to the shipping activity and, if no discrepancies exist, disbursement of funds is effected. Discrepancies, such as a bill in excess of $100 for services rendered on a commercial bill of lading, will usually be reviewed by the Traffic Manager prior to payment.

The accounting and control of costs incurred in the use of DOD transportation is handled in a different manner. In these cases, the respective organization (MAC, MSC, NAVSUPSYSCOM) submits a bill directly to the accounting office at Coast Guard Headquarters. These bills are cumulative in nature; that is, they represent charges for use of the

respective mode on a service-wide basis. Payment is made at the Headquarters level, and if the necessary supporting documentation is available, the expense is chared back to Brooklyn's or Elizabeth City's operating funds. At the present time only Brooklyn targets funds destined for DOD at the time of their incurrence. Because DOD submits these bills on a quarterly basis, there often is a lag of several months between the time costs are incurred and they are reconciled in the accounts of the service.

The procedures for the handling of costs incurred through the use of the Postal Service represent a complete departure from the usual process of obligation, disbursement, and reconciliation. Postal bills to the Coast Guard are calculated from data gathered under the Revenue, Pieces, and Weights (RPW) sampling system. A complete description of the mechanics of this system is contained in Appendix A.

To facilitate the billing process, the Management Analysis Division of Coast Guard Headquarters reports to the Postal Service an Annual Estimate of Anticipated Penalty Mail Usage. The purpose of this estimate is to provisionally bill the Coast Guard at the beginning of the fiscal year, subject to reimbursement when actual volume data are available (28; 5). This estimate also serves as the basis for the formulation of budget estimates for service-wide postal costs.

Billings to the Coast Guard are submitted on a quarterly basis; they are then charged as an operating expense (OG 30) at the Headquarters level. No attempt is made to

allocate these costs among the various units of the service. The only exception to this are charges for Express Mail (2; 1). Since these are incurred under numbered accounts at individual post offices, they are easily identifiable in the quarterly billings. These are eventually charged to the operating funds of the units that incurred them.

The existence of the system described above means that Elizabeth City and Brooklyn exercise control over only a portion of transportation costs. All other costs are subject to management and control outside of the two organizations. This complex flow of information among various organizational entities, within and outside the Coast Guard, and the accumulation of financial data in several separate accounts make a complete and thorough review of transportation costs difficult.

The only viable method, therefore, of determining whether to not the lowest possible costs have been incurred is through an examination of the actual mode selection process at the working level. If there are signs that transportation rates are effectively monitored, and changes noted and implemented in a timely fashion, then it can be assumed that the costs incurred are, in fact, the lowest possible. At the present time, however, review is done largely by the Traffic Managers themselves.

2. Customer Service

The second output of the traffic function is customer satisfaction. Specifically, this means arrival of materials

at the requisitioning unit within the time frames communicated in the original request. Usually, the amount of shipment monitoring that occurs in response to customer inquiries is in itself a reliable indicator of carrier performance and customer satisfaction.

In general, however, it appears that the best measurement of customer satisfaction at Brooklyn and Elizabeth is the rule of exception: no complaints, therefore, the system is performing as it should.

At the present time, no system exists in the Coast Guard to measure transportation effectiveness, nor has any data base been developed to effect such evaluation. Initiatives, however, have been taken. At Elizabeth City, a copy of the GBL or commercial form is enclosed in the shipment, and the cosignee is requested to note the date of material receipt and return it. This information enables the Traffic Manager to analyze the ability of the carrier to perform within the specified constraints, and also serves as a reference for future decision making. Such efforts, however, do not extend to an on-going analysis of overall system effectiveness. Both Brooklyn and Elizabeth City comple statistics on the number of requisitions received, processed, and released for shipment. Although this information provides a measure of supply and inventory control effectiveness, it does not measure transportation effectiveness (24; 1, 27; 1).

VI. ANALYSIS

A. THE ORGANIZATION OF TRANSPORTATION AND PHYSICAL DISTRIBUTION

The present organization of Transportation and Physical Distribution in the Coast Guard reflects a combination of the centralized and decentralized concepts presented in Chapter II. There is basically operational decentralization, but a certain amount of centralized coordination stems from a higher management level.

When compared to each other, the operations at Brooklyn and Elizabeth City are essentially different in character and scope. Brooklyn is responsible for a wide range of materials, which support a number of Coast Guard mission areas. While some items, such as electronic materials, may be essential to direct mission performance, others are needed primarily for administrative functions that accompany Coast Guard operations. Moreover, virtually every unit in the Service depends upon Brooklyn for some type of support; because of this, the Supply Center must develop and interface with a large number of distribution channels.

Elizabeth City, on the other hand, represents an organization that is almost exclusively aligned to a single aspect of the Coast Guard, in that it constitutes an integral part of the Service's aviation program. It deals with items of a narrow scope, but of a highly specialized nature. Accordingly, it has fewer clientele, and thus fewer distribution

channels. These factors have apparently fostered the existing efforts toward a more integrated approach to aviation material management on a service-wide basis.

The Logistics and Property Division of Coast Guard Headquarters represents the higher level managerial component responsible for ensuring that consistency exists between the two decentralized organizations. It directs the implementation and use of the MILSTRIP and UMIPPS standards, which apply uniformly to both Brooklyn and Elizabeth City. Reporting requirements, moreover, are uniform in format and scope for the two organizations. Through the Supply Activity Reports, which are submitted on a quarterly basis, this Division is able to monitor their operations, and effect a direct comparison between them in terms of inventory value, activity levels, and overall supply effectiveness.

However, in order for this organizational scheme to be effective, adequate staff support should exist at the higher level to coordinate and direct operations as necessary. While the Logistics and Property Division has been vested with this responsibility, it may be impaired in the performance of these duties because of a lack of authority for transportation activities.

Transportation management within the Coast Guard bears no relation to Physical Distribution Management. The organizational responsibilities presented in Chapter IV attest to the fact that transportation authority is fragmented and dispersed throughout the Service. For the most part, available

expertise in the function has been located in the Personal Services Division of Coast Guard Headquarters. Although this division is, in fact, part of the Office of the Comptroller, its purview of activities relates more to personnel matters, in particular, PCS transfers and personnel movements. In the case of postal activities, which are managed by the Office of the Chief of Staff, no organizational interface exists with the logistics effort of the Service.

The reasons that the transportation authority is so fragmented are beyond the scope of this study. However, this fragmentation may have resulted from the manner in which physical distribution activities came to be defined in the Service. For exapmle, had the bulk of the transportation dollar been used in the movement of personal property incident to personnel transfer, it would have been appropriate to identify transportation primarily as a personnel function. Postal activities, on the other hand, may never have been regarded as a physical distribution function; this may explain why they are organizationally remote from the mainstream of physical distribution activities.

The organizational entity within the Coast Guard that is responsible for physical distribution coordination should be assigned an identifiable transportation responsibility. Such assignment would be a realization that the present policies and practices within the Service warrant the presence of such a responsibility and the necessary expertise. The entire system of supply support in the Service is established

to meet time standards between customer and supply source. These standards are bridged through transportation; thus the ability to implement and monitor the standards requires an awareness and understanding of the transportation function. Transportation bears upon the meeting of customer service standards and must be a major consideration in any type of long range logistics planning. In short, the transportation function is inseparable from the task of physical distribution in the Coast Guard. However, given the present lines of authority and responsibility over the function, the significance of this interrelationship is not being recognized.

B. FINANCIAL MANAGEMENT OF TRANSPORTATION

The organizational fragmentation of transportation is reflected in the present financial management and accounting structure of the Service. While current Coast Guard policy dictates that the shipping activity bear the cost of transportation, existing financial practices make it difficult to hold an activity completely responsible for all transportation usage.

This is especially true in the cases of Brooklyn and Elizabeth City. Both units effect thousands of shipments annually; however, only a portion of overall transportation costs are traceable back to them. For the most part, these are the costs related to the procurement of commercial transportation on GBL and commercial forms. Here, the cycle of procurement and funds disbursement begins and ends at the individual organization; hence, the opportunity exists to

monitor and review expenditures. However, as was seen in the case of DOD controlled resources, the cycle often extends outside the individual organization to activities at a higher level. The resultant lag between incurrence and reconciliation created by this cycle hampers the ability to formulate a timely and accurate cost pattern.

The greatest disparity, however, exists in the handling of postal costs. Here, the relationship between usage by Elizabeth City and Brooklyn, and the resultant cost to the Service, is at best only a casual one. The billing system utilized by the Postal Service (Appendix A) is based upon projections of point of delivery volume. While the resultant information is Service-wide in scope, it displays a paucity of detail that is of little management value. Furthermore, since Brooklyn and Elizabeth City are not the only users of the Postal Service, it would be difficult to determine how prudent and careful utilization on their part would be reflected in the eventual charges made to the Service. Their efforts can be offset quite easily by abuses that occur elsewhere. On the other hand, the potential exists for the same type of abuse on the part of the two organizations, especially as a convenient buffer against excessive operational expenses. While the existence of such practices is neither implied nor suggested in this discussion, it appears obvious that the inconsistencies of the present structure make effective management of transportation an impossible task.

The practice of treating transportation costs as an operating expense of the shipping activity has certain disadvantages. The present requisition system allows a field unit to communicate the need for materials, yet the supply source must expend its own resources to meet the demand. While it is recognized that the mission of both Brooklyn and Elizabeth City is to support the operational units of the Service, the present system removes an important logistics consideration from the purview of the requisitioner. The requisitioner need not worry about transportation costs, because, in effect, "someone else is paying for it." The supply activity, on the other hand, may face increased operational costs, but can only justify them in the name of someone else's need, or perceived need, for material. Unlike the profit-oriented organization, which must contain transportation costs in order to stay competitive, no motivation for cost containment exists in this situation.

Perhaps efficiency is better served by the present treatment. However, given the potential for misuse of the priority system, corrective measures are made difficult when expenditures for premium transportation are not charged to the requisitioner.

C. TRAFFIC ORGANIZATION AND OPERATIONS

The organizational structure of both Brooklyn and Elizabeth City contains established and identifiable transportation functions. The responsibilities for the execution of these functions appear similiar, although organizational differences

do result in minor variations. Elizabeth City, for example, lists the packing operation as a subsection of traffice, while at Brooklyn it is listed as a function distinct and separate from traffic. However, it appears that sufficient coordination exists at Brooklyn so that such structural differences become insignificant. The important point is that the need has been recognized for the institution of an organizational component responsible for the transportation interface, and that the scope of activities and authority for transportation functions have been enumerated and delegated accordingly.

The traffic organizations at both Brooklyn and Elizabeth City are subject to a number of limitations. Neither organization generates a high volume of shipments. As mentioned in Chapter V, most shipments are small in size and weight, and must be shipped as LTL lots or as small packages. Destinations, moreover, are varied and widespread. It is thus impossible for both activities to realize any significant economies of scale with regard to size of shipments. Neither can they ensure a carrier a high volume of traffic in return for more favorable rates.

Despite these limitations, it appears that both Elizabeth City and Brooklyn are making concerted efforts to apply sound management principles to the transportation function:

1) Shipments as staged and consolidated whenever possible.
2) In order to secure optimal rates, commodities are being defined in accordance with transportation industry

standards. There is an understanding of tariff structure and rates, as evidenced by the occasional rendering of TL shipments whenever circumstances permit.

3) Simple but effective management information systems have been devised to expedite tariff research and mode selection.

4) Rudimentary attempts at evaluation have been made to close the information loop between requisitioner and shipping activity.

5) Commercial forms and procedures are being used whenever possible in place of GBL's to facilitate the procurement and disbursing cycle.

In short, the internal organization and performance of the various tasks associated with transportation interface do appear supportive of stated Service policy.

What is important to point out, however, is that the current practices and procedures have been developed and implemented largely by the organizations themselves. Little exists in the way of higher level management and control over the functions.

For example, no ongoing program exists to audit GBL's and other freight documents for accuracy of charges; activities of this sort have often yielded considerable cost savings for organizations in the private sector (15; 22). Neither function, moreover, is subject to any type of performance measurement, such as the percentage of requisitions per period that arrive at final destination on time. While Brooklyn has instituted a system for the monitoring of freight volume (see Exhibit 10), nothing similar exists at Elizabeth City. The Logistics and Property Division, as mentioned earlier, reviews supply activity and performance,

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD
CGSC FORM 101 (Rev. 6/76)

RECORD OF OUTGOING FREIGHT SHIPMENTS

MONTH OF Dec. YEAR 78

	GBL SHIPMENTS			CBL SHIPMENTS			TCMD SHIPMENTS			CG TRUCK			GRAND TOTALS		
DATE	NO.	PCS.	WGHT.	NO.	PCS	WGHT.	NO.	PCS.	WGHT.	NO.	PCS.	WGHT.	NO.	PCS.	WGHT.
12-1	7	44	6186	12	46	2625	5	8	2012	2	4	10	26	102	10,833
12-4	1	34	1174	19	20	706	Ø	Ø	Ø	Ø	Ø	Ø	20	54	1880
12-5	4	4	387	7	12	517	Ø	Ø	Ø	2	15	182	13	31	1086
12-6	5	24	894	11	15	1169	Ø	Ø	Ø	7	59	1716	23	98	3779
12-7	1	3	126	11	57	3481	Ø	Ø	Ø	1	2	16	13	62	3625
12-8	3	10	711	4	8	2141	Ø	Ø	Ø	Ø	Ø	Ø	7	18	2852
12-11	5	9	285	13	39	1898	Ø	Ø	Ø	1	186	5885	19	234	8068
12-12	7	58	5,290	16	64	4157	Ø	Ø	Ø	6	13	447	29	2	9894
12-13	1	151	19,864	3	20	1565	Ø	Ø	Ø	1	1	1	5	172	21681
12-14	1	30	16,995	17	39	2009	6	30	16995	4	75	3491	28	174	34490
12-15	4	49	3,011	9	25	847	5	5	651	4	18	2651	22	97	7168
12-18	1	28	2,518	12	49	1655	Ø	Ø	Ø	3	5	65	53	82	4238
12-19	6	17	3,812	11	35	1019	Ø	Ø	Ø	Ø	Ø	Ø	17	52	4831
12-20	6	33	1,530	2	2	240	Ø	Ø	Ø	8	50	410	15	82	2880
12-21	1	1	455	19	45	3006	Ø	Ø	Ø	1	1	6	21	47	3467
12-22	Ø	Ø	Ø	Ø	Ø	Ø	2	4	1283	Ø	Ø	Ø	2	4	1283
12-25	Holiday			Routine											
12-26	2	62	2840	8	39	1598	Ø	Ø	Ø	1	1	25	11	102	4,463
12-27	1	1	120	6	33	1242	Ø	Ø	Ø	2	14	863	9	48	2225
12-28	2	13	550	4	4	85	3	3	210	8	46	1461	17	66	2306
12-29	7	38	3602	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	7	38	3602
Month. Totals	64	609	70350	184	552	29960	21	50	21151	51	490	20929	357	1698	134651

EXHIBIT 10

but transportation is not subject to the same type of scrutiny.

In essence, with respect to transportation management functions at Brooklyn and Elizabeth City, the overwhelming emphasis seems to be placed on their operational and procedural aspects, that is, whether or not the goods "go out of the door on time." Higher level managerial attention has yet to be drawn to the importance of the relationship between physical distribution and transportation in the Coast Guard.

VII. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

This study has focused upon the role of transportation in the system of physical distribution of the United States Coast Guard. In terms of total resource expenditures, transportation is a relatively small part of the Service's budget; nevertheless, its pervasiveness throughout the whole spectrum of Service activities is significant.

Transportation is an integral part of physical distribution. It constitutes the system element that effects time and space utility for goods and materials; it is, in reality, the bond of the entire system. This relationship, however, is not readily apparent within the Coast Guard.

The present organizational, managerial, and financial structures of the Service have dispersed the responsibility and accountability for transportation among several organizational components, some of which are not responsible for physical distribution activites. While some implicit recognition may exist of its importance in the achievement of Service goals and objectives, the tendency may be to take transportation for granted as an integral part of physical distribution.

This study has examined the transportation interface that occurs at the working level within the Service, by focusing upon the traffic management functions at the U.S. Coast Guard Supply Center, Brooklyn, New York, and the U.S. Coast Guard

Aircraft Repair and Supply Center, Elizabeth City, North Carolina. Both of these organizations have made concerted efforts to effectively manage the activities of transportation procurement and utilization. However, little attention has been paid by higher management to the review and control of these activities. Despite the importance of these activities in the physical distribution scheme, management attention has yet to be focused on them in the form of a consistent oversight.

What is necessary, therefore, is an elevated status for transportation in the organization of the Coast Guard.

B. RECOMMENDATIONS

The organizational relationships within the Coast Guard should be more supportive of the physical distribution concept; responsibility for transportation, therefore, should be located in the organizational component that is responsible for physical distribution. Given that this responsibility has been assigned to the Logistics and Property Division of Coast Guard Headquarters, transportation activities, as well as Service postal affairs, should be reassigned under the cognizance of this organization.

Such a realignment of responsibility would offer several advantages. It would place under single management and control all of those functions that relate to the entire logistics effort of the Service; systems planning and coordination would thus be greatly enhanced. By establishing a

single focal point for Coast Guard logistics, the task of liaison with other agencies would be simplified. Another long term advantage would be the establishment of more consistent guidance and policies concerning the use of transportation by Service units.

With transportation expertise assigned under its purview, the Logistics and Property Division could undertake efforts to extend its evaluative functions to include traffic and transportation activities. Such evaluation, of course, should be consistent with the present range of oversight functions; it should include measurements of effectiveness in terms of meeting established delivery dates and customer service levels. The important point is that the entire chain of events that occur in the movement of material from supply source to customer should be subject to the same consistent review.

The present organization of physical distribution in the Coast Guard emphasizes decentralization of operations. Given the inherent differences between Elizabeth City and Brooklyn, no recommendations are made to alter this scheme. However, the Logistics and Property Division should pursue a more active role in the area of operations review: for example, activities such as commodity classification could be assumed by the Division, in order to ensure consistency between the two organizations. The Division could also act as a periodic auditor of GBL's and other freight bills, ensuring that transportation is being procured at optimal rates. While

actual traffic activities should remain the responsibility of Brooklyn and Elizabeth City, the Division could act as focal point for new transportation developments, and make recommendations and suggestions to the organizations as necessary.

Greater accountability for transportation costs, however, needs to accompany the continued decentralization of operations at Brooklyn and Elizabeth City. In particular, the costs incurred in the use of the Postal Service have to be made traceable to these organizations. The Postal Service now offers several alternatives to the Revenue, Pieces, and Weights Program that enable agencies to facilitate the internal allocation of costs; they include the use of meters and other devices to identify and monitor particular users of the service. These avenues should be explored in the interests of finding an alternative that would be consistent with Coast Guard needs for better cost allocation. The need to develop this accountability is essential to efficient resource utilization at the working level; at the same time, however, it is equally important that the Postal Service be treated as just one of several alternatives available to the shipper. The notion that "someone else is paying for it" has to be discredited and eliminated. With the Logistics and Property Division assuming responsibility for auditing of postal activities, the proper perspective might be developed and maintained.

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AN ANALYSIS OF THE ROLE OF TRANSPORTATION IN THE U.S. COAST GUA--ETC(U)
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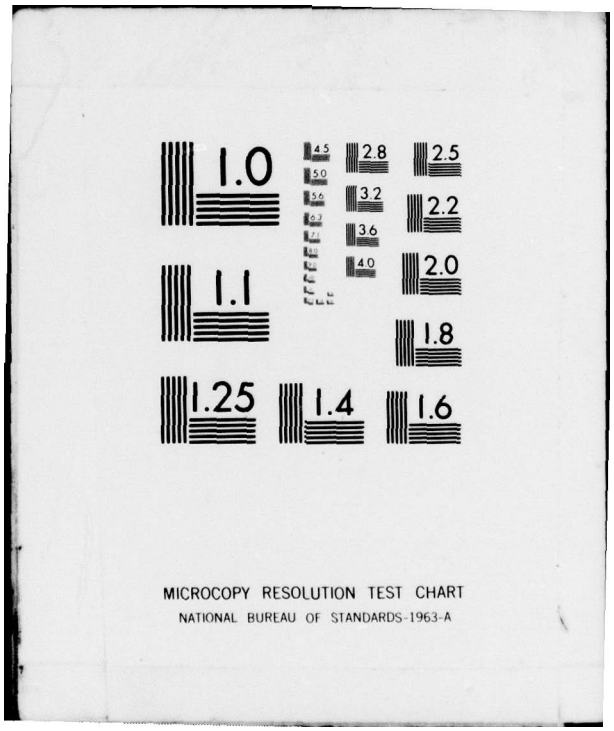
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Finally, the current practice of treating transportation costs as an expense of the particular supply point should be reviewed. A formidable case can be made for the fact that the requisitioner, by communicating a need for expedited processing and shipment of materials, is responsible for the incurrence of the resultant costs, and should thus be held directly accountable. Admittedly, this would be difficult to achieve in the short run, given the sheer complexity of Service interface with transportation, the complicated billing cycle for DOD transportation usage, and the limitations of the Service's accounting system. However, the concept bears merit in and of itself, and should thus be a consideration in long range logistics planning in the Coast Guard.

The proposals outlined in this discussion are far-reaching, since they involve the spanning and dissection of many of the present organizational, managerial, and financial lines of authority and control within the Coast Guard. However, it is hoped that they will at least illuminate the necessity for increased attention to the importance of transportation to the Service; that as more information becomes available, further study and review will be fostered by them. The time is right for a reevaluation of transportation in the Coast Guard, proper recognition of the role it plays, and its greater integration into a scheme of more effective physical distribution management.

APPENDIX A

U.S. POSTAL SERVICE DOMESTIC REVENUE PIECES AND WEIGHTS SAMPLING PROGRAM

A. SAMPLE DESIGN

The sample design for this program is comprised of three stages: Primary Stage (sample of post offices), Second Stage (sample of delivery units such as Regular Foot Residential Route, Firms, Rental Box Sections, etc.) and Third Stage (sub-samples of mail of high volume delivery units).

1. Primary Stage

During Postal Quarter I of Fiscal Year 1979, 575 post offices were sampled out of a total of 30,284 offices. Post Offices are stratified into eleven groups determined by the amount of revenues received by the offices. Offices in the two highest revenue groups participate in the sampling program on a 100% basis. The percentage of participation declines for the remaining nine groups.

2. Second Stage

The second stage of sampling involves the selection of delivery units within the 575 primary stage offices. Complete and current lists of the delivery units are maintained by means of computers at USPS Headquarters. Each quarter the computer randomly selects the delivery units that are to be sampled on a given workday.

3. Third Stage

The third stage of sampling, sub-sampling, is employed for those delivery units having vary large volumes of mail, making a complete count impracticable. As an example, assume that a given delivery unit receives 6,000 pounds of letter mail on the assigned sample day within a 24 hour period. During each of two expected peak mail processing periods, a 15 pound sample of amil is counted and recorded on the data collection forms. An expansion factor is computed by dividing the total weight processed by the 30 pound sample - in this case a factor of 200 (6,000 divided by 30). The total values on the form for revenue, pieces and weight of the subsample are multiplied by the expansion factor to determine the aggregate totals for revenue, pieces and weight for this class of mail for this delivery unit.

4. Expansion factors

To further illustrate the use of expansion factors, assume that a Regular Foot Residential Route was the selected delivery unit at a group 9 office and that 200 pieces of first-class non-local mail were counted. Assume that the number of delivery units (in this case, Regular Foot Residential Rout) available for selection was 31,058 and the number of work days available for selection was 94 days. The number of total delivery unit days available for selection was 2,919,452 (32,058 times 94). The number of units actually selected was, say, 1,076. The expansion factor for the delivery unit is then 2,713 (2,919,452 divided by 1,076). This

expansion factor is applied to the 200 pieces counted, for a total of 542,600 pieces for the second stage of sampling.

The primary expension factor of 28.2 would then be applied, since the delivery unit was sampled at a group 9 office (assuming 47 of 1,329 available group 9 offices were selected for the quarter). The figure 15,301,320 (28.2 times 542,600) then becomes a part of the estimate of the national volume for first-class non-local mail for the quarter.

Had the sampling been conducted on a delivery unit requiring sub-sampling, a third stage expansion factor would have been applied.

B. DATA COLLECTION AND QUALITY CONTROL PROCEDURES

1. Data Collection-Sampled Mail

Computer printouts of the post offices and delivery units selected for the quarter are disseminated to each of the participating offices. The offices identify the delivery units and day, assigning personnel to conduct the sampling. From the printout information, the offices order an adequate supply of reporting forms from their supply centers.

Various forms are used in the data collection for this program. Some forms (PS 1120A, 1120B, 1126) are specifically designed to collect data on the postage revenue, pieces and weights for all delivery units for all the mail classes included in the program. Other forms (PS 1121, 1122A, 1122B, 1123, 1124, 1125, 1127) are designed to collect data on the number of pieces of mail requiring fees for special services such as Special Delivery, Certified Mail, Registered Mail, Insured Mail, etc.

APPENDIX A

The recording of data from Federal Government Agencies for First-Class, Priority Mail, Third-Class (single piece rate) and Fourth-Calss mail is recorded on form PS 1120A. When sub-sampling is applicable, form PS 1120B is used. In addition to the usual entries of number of pieces and weight, the forms require an entry for the agency's code number.

As an example, assume a delivery unit is sampling mail and finds a piece of amil from the U.S. Coast Guard weighing 14 ounces. A single line entry for Third-Class mail would be made on page 17 of form PS 1120A. The single line entry would show a "1" in the Pieces column, "0 lbs. 14 ozx." in the Weight column and "514" in the Agency Code column. (The form also categories this mail as Local or Non-Local mail.) All such single line entries for pieces and weight are totaled and the totals entered on the form in the spaces for Total Pieces and Total Weight for local and non-local categories. The data is processed as described in Section A .

It should be noted that for Government Agencies, mail is recorded "as endorsed." If the above piece of mail had been endorsed as Priority Mail, the data would have been recorded in the appropriate portion of the form and not recorded as Third-Class mail. Mail weighing 16 oz. and over is recorded as Fourth-Class unless endorsed as Priority Mail. Endorsements such as Third-Class Bulk Rate, Presorted First-Class Rate and Presorted Special Fourth-Class Rate must be specifically authorized and require formal application to the U.S. Postal Service.

2. Data Collection-Accountable Mail (Not Sampled)

Postage volume and revenue for those classes and subclasses of mail which are not included in this program are shown in the attachments entitled Part III, Exhibit A. The majority of this mail is accepted via permit imprint. The data is collected on forms PS 3541, 3541A, 3602 and 3602-PC. Other forms (PS 3547, 3579, 3605, 3877, and 3877A) are used in reporting fees for special services.

As an example, an agency sending a mailing of First-Class Letters at the single piece rate using a permit imprint must submit a form PS 3602 at the post office of entry. This form describes the makeup of the mailing such as the number of pieces in a pound, the total pounds and pieces in the mailing, the applicable postage rate and the total revenue.

Data is collected for all mail classes and services for these types of mailings, referred to as the accountable portion of data collection for revenue, pieces and weights. This accountable mail portion would include mailings such as presort discounts, business reply mail, bulk mailings, 2nd class and controlled circulation publications, etc.

3. Quality Control

The completed forms are forwarded to the responsible organization within the post office where they are reviewed for completeness and accuracy. The forms are forwarded to the applicable Regional Management Information Branch (RMIB) where the forms are checked in to assure that all selected

offices and delivery units have been sampled. Forms re edited for completeness and accuracy. The RMIBs maintain a record of errors by type and post office, issuing a memorandum to the post offices on a quarterly basis as to the most frequently occurring error types. The RMIBs in conjunction with Headquarters maintain a continuous training program to assure consistent, accurate reporting.

Having received the forms from the RMIBs, the Statistical Operations Division at USPS Headquarters check-in the forms to assure that each selected delivery unit is identified as having been sampled. The data recorded on the forms are keytaped and subjected to a series of edit checks by the computer with manual intervention to correct process rejects. After all corrections are made and reprocessed through the computer, estimates of revenue, pieces and weights are computed for each accounting period and each quarter.

C. REVENUE ESTIMATION

For Government Agencies the data collection forms in the program provide for the number of pieces, weight and agency code number. Each line entry on the form is processed by computer to determine the minimum revenue at which the pieces and weight could be mailed.

As an example, a line entry on a form for a given agency may show 100 pieces of first-class non-local mail as weighing 6 lbs., 4 ozs. This is a total of 123 ozs. for the 100 pieces, or 1.23 ozs. per piece. The computed revenue would be

$15.00 for that line entry (100 pieces times 1 oz. rate of .15 cents each). The breakdown of the 100 piece sample could have been comprised of 60 pieces weighing 2 oz. each and 40 pieces weighing 1 oz. each. On this basis the total revenue could have been $22.80 (60 pieces times the 2 oz. rate of 28 cents each and 40 pieces times the 1 oz. rate at .15 cents each).

Each line entry is totaled for each class and type of mail included in the program for each agency. The computer applies the applicable inflation factors to these totals and prints out the aggregate totals for revenue, pieces and weight for the class of mail for each agency (29).

APPENDIX A

PART III

DOCUMENTATION OF EQUIVALENT POSTAGE FOR OFFICIAL MAIL REQUIRING DIRECT ACCOUNTABILITY (NOT SAMPLED)

MAIL CATEGORY	ANNUAL VOLUME	ANNUAL POSTAGE AMOUNT
A. PRESORT DISCOUNT MAILINGS (Permit Required)		
1. First-class Letters		
a. Pieces Entitled to Discount	_____	_____
b. Pieces Not Qualifying for Discount	_____	_____
a.1. SUBTOTAL:	_____	_____
2. First-class Cards		
a. Pieces Entitled to Discount	_____	_____
b. Pieces not Qualifying for Discount	_____	_____
a.2. SUBTOTAL:	_____	_____
3. Special Fourth-Class Pieces		
a. Pieces at Level "A" Rate	_____	_____
b. Pieces at Level "B" Rate	_____	_____
a.3. SUBTOTAL:	_____	_____
SECTION "A" TOTAL:	_____	_____

MAIL CATEGORY	ANNUAL VOLUME	ANNAUL POSTAGE AMOUNT
B. BULK THIRD-CLASS MAILINGS (Permit Required)		
1. Pieces at book and catelog rate ($.084 minimum per piece or $.36 per pound)	_____	_____
2. Pieces at rate for ordinary matter ($.084 minimum per piece or $.41 per pound)	_____	_____
SECTION "B" TOTAL:	_____	_____
C. SECOND-CLASS CONTROLLED CIRCULATION (Permit Required)		
1. Second-class Publications	_____	_____
2. Controlled Circulation Publications	_____	_____
SECTION "C" TOTAL:	_____	_____
D. INTERNATIONAL MAIL		
(Report total volume and postage by category below. Attach backup data showing how charges were computed.)		
1. Airmail		
a. Letters	_____	_____
b. Cards	_____	_____
c. Aerogrammes	_____	_____
d. Printed Matter and Small Packets	_____	_____
e. Parcel Post	_____	_____
D.1. SUBTOTAL:	_____	_____

MAIL CATEGORY	ANNAUL VOLUME	ANNUAL POSTAGE AMOUNT
2. Surface Mail		
a. Letters	_____	_____
b. Cards	_____	_____
c. Regular Printed Matter	_____	_____
d. Books and Sheet Music	_____	_____
e. Second-class/Controlled Circulation	_____	_____
f. Small Packets	_____	_____
g. Parcel Post	_____	_____
D.2. SUBTOTAL:	_____	_____
SECTION "D" TOTAL:	_____	_____

E. BUSINESS REPLY MAIL
(permit required)

1. Letters and Packages	_____	*_____
2. Cards	_____	*_____

*Include $.035 per piece surcharge in addition to appropriate First-class postage.

F. CONTRACTOR MAILINGS
(Permit required. Record totals by class below. Attach backup data showing how postage amounts were developed.)

1. First-class	_____	_____
2. Priority Mail	_____	_____
3. Third-class Single Piece	_____	_____
4. Fourth-class	_____	_____
SECTION "F" TOTAL:	_____	_____

MAIL CATEGORY	ANNUAL VOLUME	ANNUAL POSTAGE AMOUNT
G. GOVERNMENT PRINTING OFFICE MAILINGS (Record totals by class below. Attach backup data showning how postage amounts were developed.)		
1. First-class	_____	_____
2. Priority Mail	_____	_____
3. Third-class Single Piece	_____	_____
4. Fourth-class	_____	_____
SECTION "G" TOTAL:	_____	_____
H. AGENCY SUPPLEMENTAL MAILINGS (Record totals by class below. Attach backup data showning how amounts were developed.)		
1. First-class	_____	_____
2. Priority Mail	_____	_____
3. Third-class Single Piece	_____	_____
4. Fourth-class	_____	_____
5. Incoming Reply	_____	_____
SECTION "H" TOTAL:	_____	_____

APPENDIX A

MAIL CATEGORY	ANNAUL VOLUME	ANNUAL POSTAGE AMOUNT
I. SPECIAL SERVICES		
1. Address Correction @ $.25 each (Incoming forms 3547 and 3579)	_____	_____
2. Postage due/Return Mail	_____	_____
3. Forwarded Mail (other than First-class)	_____	_____
4. Certificates of Mailing		
a. Form 3877 or 3877-A @ $.15 per piece mailed)	_____	_____
b. Form 3606 @ $.75	_____	_____
I.4. SUBTOTAL:	_____	_____
5. Mailing List Corrections		
a. 10 or fewer addresses @ $1.00/list	_____	_____
b. More than 10 addresses/list @ $.10 per address	_____	_____
I.5. SUBTOTAL:	_____	_____
SECTION "I" TOTAL:	_____	_____

APPENDIX A

MAIL CATEGORY	ANNAUL VOLUME	ANNAUL POSTAGE AMOUNT
J. ANNUAL FEES		
1. Presort Discount Number of Post Offices (First-class) ____@ $30 =		_____
Number of Post Offices (Special Fourth-class)_____@ $30 =		_____
2. Bulk Third-class Number of Post Offices_____@ $40 =		_____
3. Business Reply Mail		
a. Number of Permits ____@ $30 =		_____
b. Number of Post Offices where BRM Returned ____@ $75 =		_____
SECTION "J" TOTAL:		_____
GRAND TOTAL PART III (SECTIONS "A" THROUGH "J")	_____	_____

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