NAVAL POSTGRADUATE SCHOOL
Monterey, California

THESIS

DATA ANALYSIS TECHNIQUES FOR A CONTAINERIZED
EXPORT CARGO TRANSPORTATION SYSTEM

by

Thomas Joseph McCarthy
and
James Jefferies Carter

June 1974

Thesis Advisor: J. P. Hynes

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This thesis explains various analytical techniques utilized during research work on the containerized export cargo transportation system at the Military Ocean Terminal, Bay Area, Oakland, California (MOTBA). A series of six computer programs were written in order to summarize data for a distribution audit, while another two programs summarized the data generated from a container stuffing simulation model. The nature of the

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ABSTRACT

This thesis explains various analytical techniques utilized during research work on the containerized export cargo transportation system at the Military Ocean Terminal, Bay Area, Oakland, California (MOTBA). A series of six computer programs were written in order to summarize data for a distribution audit, while another two programs summarized the data generated from a container stuffing simulation model. The nature of the containerized export cargo transportation system is first described to provide a basis for the identification of relevant variables. A distribution audit is then accomplished to analyze significant variables. Following this, the simulation model provides data for an analysis of the variations and interrelationships among performance variables. The result of these procedures shows that the average age of cargo at stuff is determined by a combination of variables, each of whose significance is related to the degree of activity at the container stuffing station for an individual POD or consignee.

TABLE OF CONTENTS

I. INTRODUCTION 17

II. BACKGROUND 22

A. HISTORY OF CONTAINERS 22

B. CONTAINERS AND THE SHIPPING INDUSTRY 23

C. THE INCEPTION OF CONTAINERIZATION 24

D. CONTAINERIZATION AND THE DEPARTMENT OF DEFENSE 25

E. WESTERN AREA, MILITARY TRAFFIC MANAGEMENT AND TERMINAL SERVICE 27

F. MILITARY OCEAN TERMINAL, BAY AREA 29

G. TIDEWATER CONTAINER STUFFING STATION 29

III. NATURE OF CONTAINER STUFFING OPERATIONS AND STUDY OBJECTIVES 31

A. CARGO FLOW AND CONTROL 31

1. Mechanized Export Traffic System 31

2. Surface Export Cargo System 32

B. GENERAL DESCRIPTION OF PROCEDURES 33

C. DEFINITIONS OF TERMS AND VARIABLES 35

1. Age of Cargo at Stuff 35

2. Average Age of Cargo at Stuff 35

3. Single Consignee Proportion 36

4. Cube Utilization 36

5. Average Cube Utilization 36

6. Water Commodity Code 37

7. Type of Cargo Code 37

8. Days Between Lifts 37

9. Average Days Between Lifts (ADBL)........ 37

IV. DATA ANALYSIS PROCEDURES........................... 38

A. DISTRIBUTION AUDIT........................... 38

B. CONTAINER STUFFING PERFORMANCE VARIATION ANALYSIS.. 40

1. The Simulation Model........................ 42

a. The Stuffing Routine................. 43

2. Obtaining Realistic Results............... 45

C. REGRESSION MODEL.............................. 46

V. PRESENTATION OF RESULTS............................ 48

A. DISTRIBUTION AUDIT PHASE...................... 48

1. Computer Program One...................... 48

2. Computer Program Two...................... 49

3. Computer Program Three.................... 50

4. Computer Program Four..................... 51

5. Computer Program Five..................... 51

6. Computer Program Six...................... 52

B. PERFORMANCE VARIATION ANALYSIS PHASE......... 53

1. Computer Program Seven.................... 53

C. REGRESSION ANALYSIS........................... 54

VI. EVALUATION OF PROCEDURES........................... 64

A. CRITIQUE OF THE PHASES EMPLOYED.............. 64

1. Distribution Audit........................ 64

2. Container Stuffing Performance Variation Analysis................................ 65

a. Critique of the Simulation Model...... 65

3. Regression Analysis....................... 67

B. RELATED RESULTS.............................. 69

VII. CONCLUSION.................................... 71

APPENDIX A, TABLE I, CONTAINER DESCRIPTION............. 75

APPENDIX B, FIGURE 1, EXPORT CARGO MOVEMENT............ 91

COMPUTER OUTPUT ONE-1................................ 93

COMPUTER PROGRAM ONE................................. 110

LIST OF REFERENCES................................... 139

INITIAL DISTRIBUTION LIST............................ 141

LIST OF TABLES

APPENDIX A Page

I. Container Description.............................. 75

II. Sample Formulae...................................... 76

III. Alphabetized Raw Data............................ 77

IV. Data Summary for Distribution Audit............. 78

V. Information Obtained from Data.................. 79

VI. Container Stuffing Station Daily Summary........ 80

VII. Container Stuffing Station Weekly Summary....... 81

VIII. Type of Cargo Code.............................. 82

IX. Water Commodity Codes........................... 83

X. Tabular Data - 13 Major PODs.................... 84

XI. Sample Simulation Data - 1....................... 85

XII. Sample Simulation Data - 2....................... 86

XIII. Sample Simulation Data - 3....................... 87

XIV. Consignee Activity Levels........................ 88

XV. Large Consignee Breakdown........................ 89

XVI. Regression Summary Table......................... 90

LIST OF DRAWINGS

APPENDIX B | Page

1. Export Cargo Movement.................................. 91

2. General Information and Record Flow in the Simulation Model.................................... 92

COMPUTER OUTPUT

Page

Computer Output One-1 93

Computer Output One-2 94

Computer Output One-3 95

Computer Output One-4 96

Computer Output Two-1 97

Computer Output Two-2 98

Computer Output Two-3 99

Computer Output Two-4 100

Computer Output Three 101

Computer Output Four 102

Computer Output Five 103

Computer Output Six-1 104

Computer Output Six-2 105

Computer Output Seven-1 106

Computer Output Seven-2 107

Computer Output Seven-3 108

Computer Output Eight 109

COMPUTER PROGRAMS

Page

Computer Program One.. 110

Computer Program Two.. 117

Computer Program Three.. 124

Computer Program Four... 125

Computer Program Five... 127

Computer Program Six.. 129

Computer Program Seven.. 134

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TABLE OF DEFINITIONS

Break-Bulk Point - Overseas facilities that unstuff mixed cargo shipping containers and distribute the cargo to consignees.

Checker, receiving - Employee of stuffing contractor who receives cargo, signs source documents, matches and verifies documentation (CARDPACS) with cargo, and annotates any discrepancies or omissions on CARDPACS and source documents.

Checker, vanning - Employee of stuffing contractor who tallies cargo loaded into containers, collects and verifies CARDPACS, and prepares TCMD for van master and for splits.

Coder - CDD employee responsible for screening of source documents and for extracting and/or verifying data for preparation of CARDPACS and for computer input.

Consignee - Government facility or installation overseas that is final recipient of exported cargo.

Consignor - Commercial vendor or DOD Depot that originates the shipment of export cargo.

Consolidation - Loading of a shipment unit by stuffing contractor into a container, usually a seavan.

Contractor, stuffing - Firm with responsibility by written contract for stuffing the containers.

Disposition - Refers to type of transaction which terminates MOTBA's accountability for the shipment. Normally refers to lifts, consolidations, and diversions.

Diversions - Movement of cargo to a facility not in the manifesting responsibility of MOTBA.

Expected Receipt Listing - Computer printout which lists TCMD information for each CARDPAC. Produced at the same time as the CARDPAC.

Inventory, computer - Record created in the SURS files on submission of the receipt card.

Inventory, physical - Inventory of cargo actually located on the warehouse floor.

Job Bag - Envelope containing source documents, CARDPACS, ERL, and MOTBA Form 39A prepared by CDD at time of pre-lodge and sent to CFD to await arrival of truck or railcar.

Lift - Loading of cargo aboard a vessel.

Load Sheet (MOTBA Form 18) - Listing, by TCN and pieces, prepared by stuffing contractor or CFD for each truck-load of shipments transferred or diverted from the warehouses.

MOTBA Form 39A - Form requesting production of the CARDPAC. May be placed in job bag by CDD to be filled in by receiving checker when information on source documents is inadequate. Also prepared by stuffing contractor to request CARDPAC for undocumented shipments. Used to represent the source document for telephone prelodge

(i.e., information on enroute cargo received via telecon with the delivering driver).

MOTBA Receipt Stamp - Stamp placed on back of source documents for each shipment which has been prelodged. Signed by checker acknowledging piece count and condition of cargo received.

Segment - A shipment or part of a shipment if the shipment was split.

Source Documents - The four documents, listed below, which are commonly used to account for cargo shipments.

1. GBL - Government Bill of Lading.
2. CBL - Commercial Bill of Lading.
3. Dray Tag.
4. TCMD - Transportation Control and Movement Document.

Stuffing - To load cargo into shipping containers.

Transfer - Intra-facility movement of cargo. MOTBA accountable for shipment movement.

TABLE OF SYMBOLS AND ABBREVIATIONS

ADBL	-	Average days between lifts.
BBPV	-	Break-bulk point volume.
CDD	-	Cargo Documentation Division, MOTBA.
CFD	-	Container Freight Division, MOTBA.
CFS	-	Container Freight Station, MOTBA.
CV	-	Consignee volume.
ERL	-	Expected Receipt Listing.
F	-	"F" Value.
MOTBA	-	Marine Ocean Terminal, Bay Area.
No. Ship.	-	The number of shipments received by a consignee.
POD	-	Port of Debarkation
POE	-	Port of Embarkation
R	-	Regression coefficient of correlation.
R^2	-	Regression coefficient of determination.
SCP	-	Single Consignee Proportion.
SE-DPV	-	Standard error of dependent variable (sometimes called the standard error of estimate).
SERC	-	Standard error of the regression coefficient(s).
SU	-	Shipment unit.
t	-	Average age of cargo at stuff.
TCN	-	Transportation Control Number.
TVSCC	-	Total volume of cargo received in single consignee containers.
u	-	Cube utilization of cargo containers.
WAMTMTS	-	Western Area, Military Traffic Management and Terminal Service.

I. INTRODUCTION

For years the War Department and then the Department of Defense has made extensive use of the high seas for the rapid, inexpensive, and relatively secure transportation of the supplies and equipment necessary to maintain the overseas defense installations of the United States. As the American presence abroad has intensified in the twentieth century, so have the problems associated with the transportation of these vital materials.

The maritime shipping industry, upon whom the Department of Defense relies heavily for the movement of its cargo, has experienced many changes in its methods of operation. As the shipping industry has adopted the containerization concept, DOD has been forced to comply with the modus operandi of using containerization for a high percentage of its export cargo rather than break-bulk shipment in order to achieve the objectives of low cost, high volume shipping.

The problems faced by the Defense Department during the transition to containerization are complex and difficult to grasp because of the numerous and varied elements involved. To maximize the cost-benefits in containerized shipping, it is essential that the Department of Defense examine all aspects of the containerized transportation problem. The element of the system isolated for study in this work is the container stuffing station operation at MOTBA.

There are many performance measures that could be considered when examining an operation as complex and diverse as the containerized stuffing operation. One factor, because of its importance in influencing the overall time delay in shipping from consignor to consignee, is considered essential to the maintenance of the desired shipping objectives. This factor is the age of cargo at stuff and it is examined by various data analysis techniques in order to ascertain what, if any, relationships exist between it and the other relevant factors that influence the containerized export cargo transportation system's performance.

This thesis is concerned with one aspect of the shipping problem faced by DOD. That is, the thesis attempts to answer the following questions: 1) can one quantitatively evaluate the performance of the system given the raw data that is derived from actual operations at the stuffing station, and 2) given the system as it presently exists, what influences the age of cargo at stuff.

In arriving at answers to these two pertinent questions, three phases of data analysis were utilized: the distribution audit for the dissection and examination of raw data, the variation analysis to analyze the variations experienced by certain variables, and the regression analysis to determine which of the variables influenced the age of cargo at stuff. The latter two used for inputs the outputs of a simulation model which through use of a modular concept and various routines allowed for the emulation of the container stuffing station operation.

In conducting the distribution audit, raw data, which contained information on approximately 44,000 shipments, was extracted from a four month operating period at the Container Stuffing Station, MOTBA, and systematically dissected by six computer programs into basic components that could be isolated for further examination. This audit identified important characteristics, e.g., volume, weight, density, and number of shipments, on both a consignee and POD basis, of the cargo moving through the stuffing station.

The variation analysis of variables was concerned with the range of values calculated by the computer program for the important variables which relate to the containerized stuffing operation, viz., the average age of cargo at stuff, the average cube utilization of the cargo containers, and the single consignee proportion. The variation analysis was conducted on thirteen major PODs. By utilizing the simulation model and using six repetitions of the four months of data, information was generated which delineated results for twenty-four thirty-day increments as well as the entire two year time span.

The regression analyses were conducted using the average age of cargo at stuff as the dependent variable. A number of analyses were performed on various sizes or groups of consignees. In producing a fit, the regression model utilized some of the following independent variables. They were: the proportion, by volume, of the total POD cargo going to a single consignee; the consignee volume; the number

of shipments going to a consignee; the total volume in single consignee vans; the single consignee van proportion; the break-bulk point volume; the average days between lifts; and several transformations of these variables.

To appreciate the overall concept of containerization, including its background and inception, as well as the MOTBA facility at Oakland, California, from where the raw data used throughout the thesis work was generated, it was deemed essential that such information should be included in the thesis. Chapter II is the vehicle used to convey this general information.

The nature of the problem which the thesis answers is contained in Chapter III along with the identification and subsequent definition of the various performance measures examined.

The three phases, including the computer program that were used to conduct them, are discussed in detail in Chapter IV. The actual programs are found in the back of the thesis in a separate appendix.

Chapter V is concerned with the explanation of the results of these three phases. The discussion includes the use of tables found in Appendix A as well as samples of the computer outputs of the various programs. These sample computer outputs are found in a separate section immediately preceding the Computer Program Section.

Chapter VI is used to evaluate the three phases as to their relevance and significance. It also is used to discuss

the validation, as well as the important advantages, of the simulation model.

The concluding chapter, Chapter VII, is a brief summary that highlights the results obtained by the utilization of the three phases of the data analysis techniques. It also contains a short explanation of the possible importance of these results to those most concerned with the performance of the container stuffing station, the monitoring element at MOTBA, whose task it is to oversee the activity of the contractor, and the individual consignee, whose livelihood is dependent upon the containerized export cargo transportation system.

II. BACKGROUND

A. HISTORY OF CONTAINERS

The term "containerization" is a static one and denotes nothing more than the use of a container into which something is put. This particular concept of packaging is not new; containers are as old as man. And yet, containers are as new as today, holding men and products as they cross a continent, circle the world, or penetrate the vast reaches of outer space. Some serve sophisticated, specific purposes; some have a multiplicity of general uses, yet each has its own unique efficiency.

The significance of the term "containerization" has changed greatly since the turn of the century. In the years following World War II it was realized that improved handling of general cargo in and out and within the ship was an economic necessity. Consequently, during the decade of the 1950's a great deal of money and effort was spent in research of the problem. Thorough detailed studies were made of existing methods of handling break-bulk cargo, palletization, forklift operation, improved cargo gear, hatch configuration, containers, etc. This research clearly demonstrated the costlines of existing cargo-handling methods and pointed to various means by which improvements could be effected.

B. CONTAINERS AND THE SHIPPING INDUSTRY

No single component of the transportation complex has been more affected by nor more responsive to the container concept than the steamship industry. The principal American-flag operators and many of their foreign-flag competitors have invested heavily of their corporate funds to obtain the specialized ships, the terminals, the road equipment, and the containers themselves, which this far-reaching program requires.

Perhaps the most exciting challenge which containerization offers is to the 'status quo' by which old line methods and old line thinking must give way before the new concept. New laws, new documentation, new interline agreements and new handling methods are being devised every day. The emphasis on intermodularity requires that management eliminate parochial thinking at every level of the transportation industry.

Improved efficiency in cargo handling, more economical terminal handling, reduced requirements for terminal facilities, and improved protection for cargo against weather, damage, and pilferage are made possible by the development of container usage. Additionally, interchangeability between modes of transportation and improved utilization of equipment are benefits made possible by the inception of containerization. The use of containers is the key to a whole new era in transportation in general and the shipping industry in particular.

C. THE INCEPTION OF CONTAINERIZATION

Modern containerization and the major breakaway from conventional cargo-handling systems in the maritime shipping industry dates from 1957 when Pan Atlantic Steamship Company, a forerunner of the present Sea-Land Service, Inc., installed container cells in the hold of the first of six conventional cargo ships and installed special-purpose cranes aboard ships to load and unload eight-foot square, thirty-five feet long, twenty-five long ton containers. The containers were built with extra structural reinforcing to permit them to be stacked four high in the ship, and to be lifted at the four corners by a lifting device that was attached to the crane. New devices were developed to connect and lash the containers on deck for the sea voyage. The gantry crane and its lifting device were built with the ability to place a container into any cell and to reach over the side of the ship to load and unload highway trailers on the quay. Each item of equipment was compatible with the other to form an integrated system. The first system was self-contained and could only expand through extension of its own facilities and not through the use of others in a normal cargo interchange.

Early in 1959, Matson Navigation Company, serving Hawaii from the West Coast of the United States, inaugurated a major container operation also using equipment especially designed for handling containerized cargo. At the same time Matson moved to containerization, Grace Lines converted two

ships to cellular design to transport containers from the East Coast of the United States to South America.

Containerization is the technical outgrowth of the understanding that all forms of transportation have the same common purpose of moving cargo in the most efficient, expeditious and safe manner. The use of containers compels closer integration of the multi-mode transportation system, and a more integrated system that will best serve the public and the transportation industry.

D. CONTAINERIZATION AND THE DEPARTMENT OF DEFENSE

Commercial containerships have become the primary means for transporting United States Department of Defense (DOD) general ocean cargo in recent years. Many millions of dollars have been saved by the utilization of containers and containerships vis-a-vis the use of traditional break-bulk cargo ships. As with their commercial counterparts, containerization has created some new operational problems for the DOD transportation managers responsible for the general ocean cargo destined for ports of debarkation (POD) and the individual overseas commands that they serve around the world.

The segment of the DOD transportation system which was examined in this thesis research has the structure depicted in Figure 1. Overseas commands, known as consignees, place orders with various vendors, referred to as consignors, for the purchase of items which are needed to carry out their

mission. Thus a requirement for transportation of these items from the consignor to the consignee exists.

There are two general categories into which the cargo can fall as it leaves the consignor enroute to the consignee: containerizable or break-bulk. Break-bulk cargo is sent directly to the POE where it is loaded aboard conventional cargo ships for the ocean voyage. If the material to be transported is containerizable and ordered in large enough quantities by the consignee, ocean shipping containers might be source stuffed, that is, the cargo will be placed into containers at the consignor's warehouse, sealed and shipped directly to a port of embarkation (POE) for lift aboard a container ship for ocean transport to the consignee. Smaller quantities of containerizable cargo are shipped from the consignors to container stuffing stations where cargo for particular PODs or consignees is collected and stuffed into containers after certain minimum volume or maximum weight restrictions have been met. These stuffing stations may be located near the port facilities or many miles inland. Again, as with the source stuffed containers, after loading is completed, the containers are transferred to a commercial shipping company for lift aboard container ships.

Containerized cargo arriving at the port of debarkation is handled in one of two ways. Containers that have cargo for only one consignee, i.e., single consignee containers, are off loaded and sent directly to the consignee; containers

holding cargo for more than one consignee are routed to break-bulk stations (BBS) that service the particular consignee and the containers are unstuffed. The cargo is then segregated by consignee for further shipment to the individual overseas commands.

E. WESTERN AREA, MILITARY TRAFFIC MANAGEMENT AND TERMINAL SERVICE

Export cargo sponsored by the Department of Defense or other government agencies destined for overseas commands falls under the cognizance of Western Area, Military Traffic Management and Terminal Service (WAMTMTS). Western Area, Military Traffic Management and Terminal Service is a jointly-staffed field organization under Headquarters, Military Traffic Management and Terminal Service (MTMTS), Washington, D. C., which in turn is a major field command of the Department of the Army, under the Secretary of the Army. WAMTMTS was established on 15 February 1965 at the Oakland Army Base, Oakland, California, and is staffed by military personnel of the three services and civil service employees.

The mission of WAMTMTS is: (1) to command assigned installations and activities; (2) provide for area-wide implementation of MTMTS Single Manager responsibilities for traffic management, ocean terminal operations and related transportation services involved in the movement and transshipment within and through CONUS of cargo sponsored by the Department of Defense and other government agencies; (3)

develop and maintain plans for operational readiness under mobilization, emergency, or special contingencies; (4) train related military units, military personnel, and civilians as assigned; and (5) provide administrative and logistic support to tenant and satellite agencies.

WAMTMTS is responsible for transportation management of domestic and export shipments in the fourteen (14) western states of Arizona, California, Idaho, Montana, Nevada, Oregon, Utah, Washington, Colorado, Nebraska, New Mexico, South Dakota, North Dakota, and Wyoming. All export cargo destined for shipment to installations within the Pacific Area is routed to one of the three Military Ocean Terminals operated by WAMTMTS on the West Coast. Military Terminal Unit, Pacific Northwest, Seattle, Washington (PNW) handles export cargo for Puget Sound while Military Ocean Terminal, Bay Area, Oakland, California (MOTBA) controls the export cargo for San Francisco Bay and Northern California while Southern California Outport, Long Beach, California (SCO) is charged with responsibility for export cargo departing CONUS from the Southern California area. In addition to these three ocean terminals, WAMTMTS operates the Military Airlift Clearance Authority (MACA) Agency which is the single air clearance authority for control of military cargo into the nine (9) U.S. aerial ports of embarkation for worldwide airlift. Except for special emergency shipments, it directs the flow of all air cargo in the Military Airlift Command's transportation system.

F. MILITARY OCEAN TERMINAL, BAY AREA

Military Ocean Terminal, Bay Area (MOTBA) is by far the largest operating element of WAMTMTS. It was originally established on 1 July 1964 by DOD to consolidate the terminal facilities of the Army and Navy in the San Francisco Bay Area. MOTBA operates the large cargo terminal facilities at the Oakland Army Base and the Alameda Reefer Facility. Between the two installations, it controls seven (7) deep water berths in addition to an 84 acre tidewater container stuffing area located on the Oakland Army Base. The ports of Stockton, Sacramento, and Eureka also fall under MOTBA's control.

The two general classifications of export cargo that are received by MOTBA are break-bulk cargo, that which cannot be containerized because of its size or weight and containerizable cargo which can be placed in containers for shipment aboard commercial container ships.

G TIDEWATER CONTAINER STUFFING STATION

The Container Stuffing Station (CSS) operates under the Container Freight Division (CFD) at MOTBA and is referred to as a tidewater station to distinguish it from an inland stuffing station. The operations conducted at both installations are similar in that containerizable cargo is loaded into the ocean shipping containers that are then transferred to commercial shipping companies for overseas shipment aboard one of their container vessels.

The CSS is operated for MOTBA by a civilian contractor under a contractual arrangement. The cargo received by MOTBA that can be containerized is routed to the large warehouses that comprise the bulk of the CSS's operation. Here the cargo is loaded into containers for shipment to the various ports of debarkation overseas. Various restrictions are placed upon the contractor as to how the vans are to be loaded. Governmental cube utilization standards, cargo mix restrictions, and various individual POD and consignee stipulations are only a few examples of the constraints under which the contractor is obligated to work.

As a general practice, the cargo remains in the warehouses until shipping vans can be obtained from the commercial shipping company that will transport the cargo overseas. Some military vans are used, but most of the cargo is transported in commercial containers. These commercial and military shipping containers range in approximate size from the small 8x8x20 foot vans with volumes in the neighborhood of 1100 cubic feet and weight capacities around 40,000 pounds to the large 8x8x40 foot containers which have volumes in the 2,400 cubic foot range and weight capacities of around 46,000 pounds. The size, volume, and weight restrictions vary from commercial carrier to commercial carrier and in general the container ships are designed so that they are only capable of carrying the company's containers. Figure 2 delineates the sixteen (16) container types presently in use.

III. NATURE OF CONTAINER STUFFING OPERATIONS AND STUDY OBJECTIVES

A. CARGO FLOW AND CONTROL

Western Area, Military Traffic Management and Terminal Service has management responsibility for controlling the flow of export cargo to overseas commands while it is within the continental United States. To aid in accomplishing this mission, WAMTMTS has two management information systems, both of which utilize a Burroughs 5500 computer: The Mechanized Export Traffic System (METS) and the Surface Export Cargo System (SURS).

1. Mechanized Export Traffic System

METS monitors the flow of cargo within CONUS. It is the offering/releasing system which WAMTMTS utilizes to control and monitor the flow of DOD cargo from consignor to stateside port of embarkation (POE), i.e., one of the three ocean terminals under WAMTMTS's control. The basic input to the system comes from the consignor, viz., a commercial vendor or a military depot, and includes shipment data, means of transportation, destination, etc., on a particular shipment. Since these individual consignors are under no control from WAMTMTS, the data received is oftimes improperly formatted thereby causing the generation of documentation errors which require purging by manual methods.

2. Surface Export Cargo System

SURS, also referred to as SURS/CARDPAC, is tasked with the accounting for export cargo once it is within the confinement of one of the three west coast ocean terminals. CARDPAC refers to a package of eight (8) IBM cards which are prepunched by terminal personnel from data supplied by METS plus any additional information extracted from shipping forms, which is obtained during prelodge of the shipment by delivery truck drivers or employees of shipping companies.

The CARDPAC, which has a variety of data coded on it, together with the Expected Receipt List (ERL), a list of the cargo expected in a particular vehicle, form the "Job Bag". The "Job Bag" along with the applicable source document, e.g., Government Bill of Lading (GBL), Commercial Bill of Lading (CBL), Dray Tag, or Transportation Control and Movement Document (TCMD) are forwarded to the cargo receiving area of the terminal. There the checker inspects the cargo as it is unloaded and corrects the CARDPAC if necessary. If corrections are required, processing is delayed until correct information is obtained; otherwise, the CARDPAC is attached to the shipment immediately. In either case, the CARDPAC is ultimately utilized to monitor the flow of that particular shipment throughout its many movements within the terminal facilities.

In summary, the two systems, with a compatible interface, work in unison providing WAMTMTS with a monitoring

capability. Unfortunately, problems have arisen with both of the systems involved and with the top management reports which these systems help to generate. These problems have made the mission of WAMTMTS more difficult.

B. GENERAL DESCRIPTION OF PROCEDURES

Many different factors could have been analyzed at a facility like MOTBA, Oakland. A cursory look at the amount of data generated during an actual operational period like the four months under consideration in this thesis reflects the volume and diversity of the export cargo traffic handled. However, the specific problem to be discussed in this thesis is that of determining by means of a combination of statistical and analytical techniques how the average age of cargo at stuff (t) is influenced by the various relationships/interrelationships it enjoys with the other variables involved in the container stuffing operation.

In short, the problem that had to be dealt with was how to most effectively and efficiently take raw data from the operation specified and systematically and clinically summarize it in order to ascertain meaningful, productive conclusions.

Three separate and distinctly different phases were employed to achieve the objective. These were: a distribution audit, an analysis of variation in performance variables, and an investigation of factors related to consignee cargo aging.

A logical flow of analytical-oriented work generally proceeds from a broad, general spectrum to a well-defined, more exacting one. In this thesis, that same format was used. In the first phase, the distribution audit, raw data was taken from a four-month actual operational period at the container stuffing station and systematically dissected by six computer programs into basic components that could be isolated and more easily analyzed. This audit identified important characteristics, e.g., volume, weight, density, number of shipments, etc., of cargo moving through the stuffing station.

The second phase utilized the simulation model to determine variations in the average age of cargo at stuff, the average cube utilization, and the single consignee van proportion for thirteen major PODs. The simulation model provided data for individual PODs for twenty-four thirty-day increments, a two year span.

The simulation model was employed to measure the variations that exists among important variables, viz., average age of cargo at stuff, cube utilization, and single consignee proportion. This is considered essential to MOTBA as contractual agreements are based upon these variables and other factors which evaluate a contractor's performance and aid MOTBA in performing a sound monitoring program.

The third and final phase was accomplished by the implementation of regression analyses which utilized simulation output data for measuring factors that influence cargo aging.

It should be emphasized at this point that the basic data employed throughout the thesis was gleaned from actual operations at the container stuffing station and pertained only to containerizable cargo. Hence, no effort was made to ascertain information about, or use data concerning, break-bulk operations.

C. DEFINITIONS OF TERMS AND VARIABLES

Numerous factors and variables are analyzed in this thesis. Major variables and terms are defined in the following paragraphs to avoid ambiguity.

1. Age of Cargo at Stuff

This factor is the duration of time (in days) between a shipment's arrival at the stuffing station and its being stuffed in an assigned container. The figure is computed on a shipment basis.

2. Average Age of Cargo at Stuff

This factor is likewise computed on a shipment basis, but at the same time it can be computed either on a POD or consignee basis. It is the total age of all shipments being sent to a POD or consignee divided by the number of shipments. Utilizing the shipment as the unit of computation, vis-a-vis a unit of volume or weight, better reflects to the individual PODs or consignees, the users of the system, the delays which accrue to complete shipments. Shipments may be divided or "split" into segments while being loaded into the containers in order to stay within the volume or weight limitations of the container. It should be noted

that those shipments with several segments are assigned an age equal to the age of the last segment to be stuffed.

3. <u>Single Consignee Proportion</u>

This measure is the proportion of the cargo volume which is moved in containers that are stuffed with goods for only one (1) consignee. Volume was used as the unit of calculation in the thesis because it showed the quantity of volume that does not have to be shipped to, and handled by intermediate break-bulk stations. Calculation of the single consignee proportion is accomplished by dividing the volume of cargo (measured in cubic feet) in single consignee vans by the total volume of cargo that is received by the particular POD or consignee.

4. <u>Cube Utilization</u>

This is the volume proportion of the individual container that is displaced by cargo. This measure is calculated by dividing the volume of cargo by the total displaceable volume of the container.

5. <u>Average Cube Utilization</u>

This figure is computed by dividing the total volume of cargo by the total available space in the containers used to transport cargo to the POD during the time frame under consideration. However, mixed containers, those with cargo for more than one consignee, require some deliberation. In this case, assignment of the cube utilization is made to each consignee based upon their percent usage (by volume) of the container.

6. <u>Water Commodity Code</u>

Eleven (11) number intervals which categorize the cargo. Table VII, Appendix A, delineates the individual intervals and their meaning.

7. <u>Type of Cargo Code</u>

Twenty-two (22) codes for categorizing the cargo. Table VI, Appendix A, provides a detailed listing of the alphabetical codes and their specific meaning. These codes are utilized to establish mixing of cargo restrictions, and are sometimes referred to as exception handling codes.

8. <u>Days Between Lifts</u>

The period of time, in days, that transpires between the successive departures of vessels servicing a particular POD.

9. <u>Average Days Between Lifts (ADBL)</u>

The average length of time that accrues from the departure of one vessel to the departure of the next vessel destined for a POD. It is calculated by dividing the number of days in the period under consideration by the number of such defined departures.

IV. DATA ANALYSIS PROCEDURES

A. DISTRIBUTION AUDIT

Raw data was taken from computer tapes supplied by MOTBA for the 123 day operating period from 1 July to 31 October 1973. This data contained information on 43,984 shipments received at MOTBA's Container Stuffing Station during the period under consideration. The information available for each shipment, with some items in coded format, included the POD, consignee, type of cargo code, volume, weight, number of pieces, receipt data in serial form from 1 to 123, water commodity code, and the transportation accounting code. A computer program selected this raw data from the MOTBA tapes and placed it in alphabetical order by POD and consignee in a data file. Table III, Appendix A, depicts an example of how the data was arranged. Various segments of the data in this form were then used in the additional computer work described below. Table IV, Appendix A, shows a summary of raw data that was compiled as a result of the operations at MOTBA's CSS during the 123-day period. It should be noted that although 110 PODs and 1822 consignees were identified as having received shipments during this period, some erroneous data may have been present due to key punching errors at the terminal. For this thesis work, the observed data was assumed to be correct and subsequent calculations were based on the given information.

During the course of the distribution audit, six computer programs were written to tabulate essential data. Table V, Appendix A, delineates the pieces of information generated by these six programs; they are explained below.

The first program (Computer Program One) was written to determine the number of shipments, the total volume, the average volume, the standard deviation of the volume, the total weight, the average weight, the standard deviation of the weight, the average density and the standard deviation of the density by individual consignee. Also, the program established the intervals of volume, weight, and density into which each of the 43,984 shipments fell.

The second program (Computer Program Two) provided an identical output to that of the first except that with this program the information was generated for the POD vis-a-vis the consignee.

The third program (Computer Program Three) delineated the number of shipments as well as the total volume and weight that arrived at the Container Stuffing Station for each of the 123 days under consideration. As might be expected a very small amount (less than one percent) of the shipments arrived at the stuffing station on the thirty-five (35) weekend days and four (4) holidays that occurred during the four-month period. Tables VI and VII, Appendix A, show a summary of the Container Stuffing Station's activity for the period.

The fourth program (Computer Program Four) was designed to illustrate the diversity of the shipments that went to each consignee by examining the type of cargo codes assigned. The number of shipments within any one of 26 categories was listed on the computer output. Although only eighteen (18) of the twenty-six (26) codes are actually assigned at this time, the computer program was written in a general manner to accept future additions to the list. Table VIII, Appendix A, gives a listing of the cargo codes along with a brief description of what they mean.

The fifth program (Computer Program Five) was similar to the fourth program both in design and content. In this program the diversity of the shipments was displayed by water commodity codes which are delineated in Table IX, Appendix A.

The sixth program (Computer Program Six) was formulated with the purpose of providing a table showing the daily activity by consignee — of the volume, weight, and density of shipments — received at the stuffing station. This result illuminated the wide dispersions in activity among the consignees. It also provided the mechanism whereby a ranking could be established for the individual consignees based upon the daily activity.

B. CONTAINER STUFFING PERFORMANCE VARIATION ANALYSIS

A container stuffing simulation model, developed by Dr. James P. Hynes, Assistant Professor, Department of Operations Research and Administrative Sciences, Naval Postgraduate

School, Monterey, California, simulated operations at MOTBA's Container Stuffing Station and generated data for this analysis as well as the third and final phase of the data analysis procedures. The cargo data input to the model was that supplied by MOTBA for the 123 day period from July through October of 1973.

The second phase of this analysis was the examination of the variation in the performance variables. In this phase, output generated by the simulation model was utilized to ascertain important data about the containerized export cargo transportation system. During this part of the analysis, only thirteen major PODs were examined.

There were fourteen (14) pieces of information generated by the simulation model that were retrieved and manipulated by the utilization of a computer program. Computer Program Seven accomplished this task. The following data was available for each container loaded: record identification, the current day (from 1 to 738), the POD (coded from 1 to 13), the container type (coded from 1 to 16), volume loaded in the container (in cubic feet), the cube utilization (percent), the weight loaded in the container (in hundred weight), the weight utilization (percent), the serial number assigned to the container (the number being either positive or negative to indicate a single consignee van or mixed van respectively), the stuffing list identification number, the number of consignees whose shipments were loaded into the van, the number of dated shipment segments (only the last

segment of a shipment stuffed is dated), and the total age of these dated shipment segments.

Since the simulation model was instrumental in this and the final phase, a brief discussion of its principles and functions is considered imperative at this point in order to clarify its capabilities and elaborate on its methodology.

1. The Simulation Model

Space and time restrictions prohibit a complete description of the simulation model and all of the assumptions that were made. Thus, only the important features of the model are discussed. For complete documentation of the model see reference 16.

The simulation model replicates the major factors influencing waterfront operations at the container stuffing station. This includes variations in vessel departures, shipment inputs, booking containers aboard vessels, and stuffing restrictions.

The program is divided into modules; the modules and their interrelationships with the data files and information stacks are depicted in Figure 2, Appendix B. Shipment arrivals, volumes, and weights are fed into the program on a daily basis and stored. Information on future vessel arrivals, container types, and container availability are also fed into the computer program. The booking routine begins reserving containers aboard vessels according to accumulated cargo volumes and forecasted POD volume inputs. Several days before a vessel's arrival, the container stuffing

routine begins cargo stuffing into the containers that can be loaded into the reserved spaces on the vessel. Containers are drawn from the empty container pool which is replenished by the container dispatch routine, which is keyed to the containers booked on arriving vessels. The container lift routine transfers stuffed containers on to the arriving vessels.

a. The Stuffing Routine

The stuffing algorithm was formulated to include the following factors:

1. Maximum usable volume for cargo in each type of container.
2. Maximum cargo weight for each type of container.
3. Minimum load requirements in terms of the minimum volume of cargo that must be on hand before cargo stuffing into the container can begin.
4. Consignee mixing restrictions in terms of which consignee cargos (if any) can be mixed when necessary.
5. Minimum shipment splitting restrictions in terms of the minimum allowable size to which shipments can be split when necessary for stuffing.
6. The stuffing procedure is vessel oriented vis-a-vis cargo oriented. In short, the

procedure used here initiates stuffing activities to meet vessel arrivals/departures, whereas a cargo oriented one would initiate stuffing activities solely on the basis of cargo accumulations.

Stuffing procedures are governed by two factors: the minimum load requirement and the stuffing list. For this simulation the minimum load requirement was set at 50% of container volume. The stuffing lists are inputs to the simulation program which define the sequence in which the stuffing routine attempts to load cargo into containers, and at the same time also specifies which consignee cargos can be mixed. For this simulation no consignees were forced to take only single consignee containers, but every effort was made to stuff single consignee vans before mixing cargo. For each POD, there are a set of stuffing lists, which delineate the combinations of consignees where cargos can be mixed in a single container. The placement of consignees on a list, and the order in which each list is sequenced as input data controls how cargo will be stuffed by the routine. Also, each stuffing list specifies an adjustment factor which is used in conjunction with the breakeven point to determine the minimum load requirement. The stuffing list inputs to the simulation program provide the ability to influence the proportion of containers which are loaded with single consignee cargo, the level to which containers must be filled before being closed out, and the various ways in which consignee cargos can be mingled.

The minimum load requirement controls the initiation of cargo stuffing into a container. Specifically, it represents the volume of cargo that must be available for the consignees on a stuffing list before the algorithm will implement the stuffing list to load cargo into the container. The minimum load requirement value is determined by taking the breakeven volume of the container at hand and multiplying it by the breakeven adjustment factor on the stuffing list being used. The breakeven volume is the minimum economically acceptable cargo volume that must be stuffed into a container before it can be closed out and is derived from a comparison with non-containerized ocean shipping costs. It is a self-imposed military restriction. For most PODs in the Pacific, the breakeven volume is roughly fifty percent of the container volume.

2. Obtaining Realistic Results

In order to obtain realistic results, the simulation model was used to simulate operations at MOTBA's Container Stuffing Station for approximately a two year period (738 days). The actual shipment data that was available for the 123 day period was repeated six consecutive times in the model to cover this time frame. However, the routines that govern the functioning of the model were supplied with data that had a different time base. For example, the ship schedule routine has a base of 200 days which meant that different ship arrivals, different container reservations, and different container types would be available for each

repetition of the 123 day stuffing cycle. Thus, any unusual evolutions that occurred during one period would not be repeated in the next, providing results that were not dependent upon input sequences.

C. REGRESSION MODEL

The final analysis was a regression model. The objective was to measure relationships between the several concomitant variables and the dependent variable which is defined as the average age of a consignee's cargo at stuff.

As mentioned in the preceding section, input for the regression phase of the data analysis procedures was generated by the simulation model. These inputs, which comprised the seven independent variables plus the dependent variable, were: the proportion, in percent, of the volume of the POD going to an individual consignee; the volume, in cubic feet, going to an individual consignee; the total number of shipments being sent to a consignee; the average age of a consignee's cargo at stuff; the total volume shipped in single consignee vans to a consignee; the proportion, in percent, of cargo going to a consignee in a single consignee vans; the volume, in cubic feet, going to the break-bulk station serving a consignee; and the average days between lifts for a particular POD.

The implementation of the regression model utilized 556 consignees which are served by the thirteen major PODs. The consignees were arbitrarily divided into small-, medium-,

and large-volume categories and finally mixed in a group of 400 in order that the regression model could be employed to determine interrelationships among variables for various types of consignees.

In summary, three phases were utilized in the overall data analysis procedures. Firstly, the raw shipment data was reduced and summarized in the distribution audit which employed six computer programs. Secondly, an analysis of the variation of certain performance variables was conducted for thirteen major PODs by utilizing another computer program which used the output generated by the simulation model. Finally, a regression model, whose inputs had also been generated by the simulation model, was developed, and the results analyzed through a series of step-wise linear regressions using the SNAP/IEDA statistical package to establish relationships among the variables and to determine the degree of correlation between each of them.

V. PRESENTATION OF RESULTS

This chapter draws together for display and explanation the empirical findings of the analysis procedures described in Chapter III. Computer Outputs One-1 through Eight are enclosed to help the reader visualize the output format and represent only a sample of the computer printout for the various segments of the programs discussed below.

The seven computer programs used in this thesis were programmed in FORTRAN IV for the IBM-360 computer. Complete computer outputs are in the custody of Professor James P. Hynes at the Naval Postgraduate School, Monterey, California.

A. DISTRIBUTION AUDIT PHASE

1. Computer Program One

The first program, which was done on a consignee basis, had for an output (Computer Output One-1,-2,-3,-4) four separate types of information. The first three sections of output delineate in interval format the number of shipments that are described by each of the various intervals of volume, weight, and density respectively for each of the 1822 consignees during the four-month time frame. The fourth and final segment of the output shows in tabular form the computation of total volume and weight and the average and standard deviation for all three quantities, viz., volume, weight, and density.

A look at the output, therefore, gives an insight into the range of activity for each consignee. Many consignees receive an infinitesimally small part of the total shipments, while others receive thousands of cubic feet of volume and hundreds of thousands of pounds in weight. A detailed look at the density (weight/volume) figures also shows some disparity. While the average density for most consignees hovers in the area of 20-25 lbs./cu.ft., a few do receive extremely dense shipments.

A closer look at the printout revealed that 783 consignees (43%) received only one shipment during the four month period. Moreover, 1448 consignees received less than ten shipments, meaning that approximately four-fifths (79.8%) fell into this category. Finally, only 8 received over 1000 shipments during the same time frame. The program further showed that 40 of the 1822 consignees (2.2%) contributed 60% of the total activity during the period under consideration.

Number of Shipments	1	2-9	10-99	100-999	over 1000
Number of Consignees	783	665	303	63	8
Percentage	43.0	36.5	16.6	3.5	0.4

2. Computer Program Two

The second program output (Computer Output Two-1,-2, -3,-4) follows the exact format of the first except that it is calculated on a POD basis. The breakdown here is to illustrate the wide disparity in activity among the 110 PODs. Once again the range is great with a small number of PODs

providing most of the activity. As Table X, Appendix A, illustrates the thirteen major PODs, which comprise slightly more than 10% of all PODs, contribute approximately 80% of the activity.

Inspection of the computer printout showed that 29 of the PODs (26.4%) received only one shipment during the four month period while 59 of the PODs (53.6%) were recipients of less than 10 shipments. Of the remaining 51 PODs, 23 (20.9%) received between 10 and 100 shipments, 15 (13.6%) received between 100 and 1000 shipments, 8 (7.3%) received between 1000 and 2500 shipments, while 5 (4.5%) received more than 2500 shipments.

Number of Shipments	1	2-9	10-99	100-999	1000-2500	over 2500
Number of PODs	29	30	23	15	8	5
Percentage	26.4	27.3	20.9	13.6	7.3	4.5

3. <u>Computer Program Three</u>

The third program output (Computer Output Three) displays the amount of cargo in shipments, volume, and weight that arrived at container stuffing station for each of the 123 days under consideration. Table VI, Appendix A, is a tabular summary showing the total and range for shipments, volume, and weight for each of the days of the week plus the four holidays that occurred during the period. As might be expected, the weekend days plus the four holidays provided the least activity.

A declining trend could be discerned in the series of the seventeen (17) normal five-day work weeks. Table VII, Appendix A, shows a weekly breakdown for the activity at the container stuffing station.

4. Computer Program Four

The fourth program output (Computer Output Four) shows the number of shipments in each of the twenty-six types of cargo letter-coded categories. As can be seen by the sample of data presented, the preponderance of cargo is of type Z (general cargo). A complete analysis of the program printout revealed the information presented in the table below.

Number of Errors in Documentation (no code)	1,324
Percentage of Errors	3.01
Total Number of Z-Type Shipments	36,533
Percentage Z-Type Shipments	83.06
Number of Consignees Receiving No Z-Type Cargo	167
Percentage of Consignees Receiving no Z-Type Cargo	9.17

5. Computer Program Five

The fifth program output (Computer Output Five) displays the number of shipments in each of the eleven water commodity number-coded categories. Once again the preponderance of all cargo, as illustrated by the sample of data presented, fell into the general cargo area. A complete breakdown is found in the following table.

Number of Errors in Documentation (no code)	506
Percentage of Errors	1.15

Total Number of Shipments by Type

Chill	6	Freeze	2
Bulk	0	POV	24
Baggage	228	HH Goods	1141
Ammo	147	Rad. Act.	0
General	41918	Special	10
A/C Assd.	2		

Percentage of Cargo Not General	3.56

6. Computer Program Six

The sixth program output (Computer Output Six-1,-2) displays by intervals of volume and weight the number of days shipments arrived at the container stuffing station for a particular consignee. Also listed immediately under the number of shipments by interval is the percentage of days (N/123) for that type of shipment.

Once again, this program output illustrates the fact that, relatively speaking, very few consignees are really active users of the containerized export cargo transportation system. For example, in program six a printout was displayed to show activity at the container stuffing station by consignee. This printout showed that 84.7% of the consignees received shipments at the station only 10% of the time. At the other extreme only 38 (2.1%) of the consignees received shipments at the station more than 50% of the 123 days under

consideration. Thus, while the aggregate of 1822 consignees uses the container stuffing station, a relatively small number receive a very large percentage of the stuffing operation cargo. The following table displays a breakdown of the information gleaned from this computer printout as to the percentage of time that the various consignees had actual input activity at the container stuffing station.

Activity Rate (Percent)	0-10	11-20	21-30	31-40	41-50	51-100
Number of Consignees	1544	135	49	40	16	38
Percentage of Consignees	84.7	7.4	2.7	2.2	0.9	2.1

B. PERFORMANCE VARIATION ANALYSIS PHASE

1. Computer Program Seven

The seventh program output (Computer Output Seven-1, -2,-3) was the result of the retrieval and subsequent manipulation of the data from the simulation model as delineated in Chapter III. The output was divided into two parts: the printout listing the activity of the thirteen (13) major PODs for each of the twenty-four (24) thirty day increments (Computer Output Seven-1,-2) and the summarized activity of the thirteen (13) PODs for the entire 720 day (approximately two years) span (Computer Output Seven-3).

Several key output items are listed in the printouts. Among these are: the number and type of containers received by the PODs, the average and standard deviation of the cube utilization of these containers by type; the single consignee proportion by container type; the average and standard

deviation of the age of cargo at stuff; and the number of single consignee containers by container type.

By comparison of these parameters from month to month, one can see quite readily the variation that was experienced by the different PODs. Tables XI, XII, and XIII, Appendix A, delineate this information for POD 1, 7, and 13 respectively. From these tables one can realize the wide range that does occur during the two year period.

For example, POD 1 has, for an average, 42 containers of type 10 sent to it per month, but the range is from 19 to 67 for the twenty-four month period. Moreover, POD 7 averaged 38 containers of type 8 per month, but in fact had zero (0) containers of that type one month and only two (2) another month. POD 7 also showed the greatest disparity in average age of cargo at stuff with a range in excess of 12 days. Furthermore, POD 13 had the largest disparity of the three PODs shown in the tables with regard to average cube utilization. Using container type 6, the average cube utilization varied from 69.583% to 87.000% or about 20% variation over the two year period under consideration. Thus, one is able to quickly ascertain that a wide variation does indeed exist in the significant performance variables that govern the operational performance at the container stuffing station.

C. REGRESSION ANALYSIS

With the eight variables listed in Chapter III, several regression analyses were performed using the SNAP/IEDA

Computer Package with its stepwise multiple regression routine in an effort to ascertain results that would help to explain the interrelationships among the seven independent variables and the dependent variable, the average age of cargo at stuff.

SNAP/IEDA produces a stepwise linear fit for the variables specified and prints the results out in tabular form with coefficients for each of the independent variables and the related calculations for each step in the regression. An R^2 value (M-R2), which is the square of the multiple correlation coefficient of the regression, along with the standard errors of the regression coefficients, and the standard error of the dependent variable (SE-DPV) are displayed for each step of the regression. SE-DPV is used to denote the standard error of the dependent variable after removing the effects of the independent variables in the regression, and SERC is used to denote the standard error of the regression coefficients for the particular regression step.

The 556 consignees were arbitrarily divided. The division was made using the basis of the individual consignee's percentage of total volume of the POD which served the consignee. The three categories were small-volume, medium-volume, and large-volume.

The small-volume consignees consisted of those with a volume percentage of less than .1%; the medium, .1%-.99%; and the large, 1% and greater. The large-volume category

was further subdivided into ten intervals and placed in a tabular format to better illustrate the wide range of activity enjoyed by the consignees in this category. Table XIV, Appendix A, delineates the number of consignees in each of these groupings. Furthermore, Table XV, Appendix A, displays another breakdown of the large-volume consignees by exhibiting the number of such consignees that are serviced by each of the thirteen PODs and the interval into which each of the individual consignees fall. For example, POD SA1 had thirteen (13) consignees in the large volume category and of those, eight (8) are in the 1% - 2% interval, two (2) in the 2% - 3% interval, two (2) in the 20% - 30% interval, and one (1) in the over 30% interval.

At this point, a study of the scatter plots of the independent variables versus the dependent variable suggested that a transformation of certain of the variables might improve the regression fit. A sample of the scatter plots is presented as Computer Output Eight. The consignee volume, number of consignee shipments, and the break-bulk point volume were all manipulated to form new variables by forming the following ratios: 1/CV, 1/No. Ship., and 1/BBPV.

Utilizing the various factors, equations were formulated and the significance of the regression coefficients was evaluated. In general, the following held true; for large-volume consignees, the average days between lifts (ADBL) factor was the most significant; for medium-volume, the single consignee van proportion; and for small-volume

consignees, the break-bulk point volume (BBPV). Table XVI, Appendix A, displays this data.

The reason for this can be explained intuitively. In the case of the large-volume consignees, the average days between lifts (ADBL) was the most significant single factor because it is this variable that represents the frequency of ship departures to the various PODs serving the consignees of the large-volume category. Obviously, the large-volume group will generally have sufficient numbers of shipments on hand for every ship departure. Having this amount of volume to ship will not necessitate the need, in most cases, for the shipments to be routed via a break-bulk station in a mixed van.

A different explanation must be used for the medium-volume group. For this grouping a higher than average single consignee proportion indicates the necessity of the consignee to receive single consignee vans because of break-bulk point conditions. Unlike the large-volume category, the medium-volume group frequently does not have enough shipments on hand when a ship arrives. It must depend upon other cargo going through the break-bulk point. However, if there is no other cargo going through the break-bulk point, then the cargo must accumulate and eventually move in single consignee vans at a considerable age. Hence, if due to mixing restrictions the cargo must move in single consignee vans, then average age of cargo at stuff (t) will be increased significantly as is illustrated by the positive sign

associated with the regression coefficient for the single consignee van proportion in Table XVI, Appendix A.

The small-volume consignee group has still another variable governing their average age of cargo at stuff. Much, if not all, of the shipments going to these consignees is shipped in mixed vans. Therefore, the break-bulk volume is of paramount importance to the small-volume consignees. For example, if the POD serving these consignees is very active and receives a lot of shipments by mixed vans, the average age of cargo at stuff will be effectively decreased as is illustrated by the aforementioned table. Likewise, if there is little activity at the break-bulk point (break-bulk volume is low), the age will tend to increase.

Two things should be noted about this phase of the regression analysis and the preceding explanation of results. Firstly, it is intuitively obvious that the average days between lifts will affect the average age of cargo at stuff for all consignees, no matter what category they are in. Secondly, the single consignee proportion indicates how mixing restrictions influence age of cargo at stuff after other effects have been removed.

Another step taken with the large-volume consignee group was a further sub-division in which the largest 52 consignees were separated from the original 136, and a separate regression analysis was performed on this group. These 52 consignees, which comprise less than 10% of the entire group, account for 57.2% of all shipments and 65.5%

of the total volume. The following pertinent data applies to this particular regression analysis.

52 Largest Consignees $R^2 = 0.768$ SE-DPV = 1.479

Equation $t = -11.009 + 0.329\ (1/CV) + 15.481\ (SCP) + 0.363\ (ADBL)$

SERC	(0.044)	(3.289)	(0.058)

The regression equation that relates to the fifty-two (52) largest (by total volume) consignees shows that three values determine the average age of cargo at stuff (t) for this group. They are: 1/CV (the inverse of the consignee volume), the single consignee van proportion (SCP), and the average days between lifts (ADBL). All three are considered significant. What is interesting in this equation is that the single consignee proportion causes an increase (shown by the positive sign on the regression coefficient) in the average age of cargo at stuff. This result is similar to that for the medium-volume group discussed earlier. This result is explained by the fact that other regression data showed an inverse correlation between the break-bulk point volume and the single consignee proportion. Thus, if the break-bulk point volume is low it means that there are very few consignees served by that station with whom the large consignee could mix its shipments in mixed consignee vans. Therefore, the shipments must wait to go single consignee vans thereby raising the single consignee proportion value for the large consignee while at the same time adversely affecting (increasing) the average age of cargo at stuff as reflected by the aforementioned equation.

The other two factors are much more obvious. Once again the age is increased by an increase in the average days between lifts (ADBL). Also the age decreases as the amount of consignee volume increases. This certainly is plausible since the more volume a consignee has shipped to it the less delay there will be in meeting the minimum load requirements and, therefore, the quicker the large consignee will receive his containerized cargo.

Since the objective of the regression analysis work was to establish interrelationships for the entire group of consignees, further work had to be done. Examining the data that had been compiled from the regression analyses that had already been performed, it was obvious that small, medium, and large-volume consignees were affected by different variables. To examine aggregate effects, a mixture of 400 consignees (the largest that the SNAP/IEDA package could accommodate) was selected for analysis. Selection of the 400 consignees to be used was accomplished in a random manner while maintaining the percentage of small, medium, and large-volume consignees at the same level that was present in the original sample of 556 consignees. The results of this regression are listed below.

400 Consignee Mix $R^2 = 0.596$ SE-DPV = 7.318

Equation	t = 9.808 - 8.563 (SCP)	+ 1.271 (1/BBPV)	+ 0.339 (ADBL)
SERC	(1.061)	(0.057)	(0.095)

Examination of the regression equation reveals several interesting facts. Firstly, the average age of cargo at stuff (t) is dependent upon three variables: the single consignee volume proportion; the break-bulk point volume; and the average days between lifts.

This result was expected. To begin, the value 1/BBPV was most significant in the small-volume consignee regression analysis. Since, as previously discussed, the mixture of 400 was done on a proportional basis, a plurality of the 400 consignees are of the small-volume category. Therefore, the effect of 1/BBPV is an integral part of the regression equation signifying that the larger the break-bulk point volume, the smaller will be the value of the average age of cargo at stuff.

The single consignee proportion was most significant in the medium-volume category and, as expected, entered the regression analysis. Surprisingly, however, the single consignee proportion in the mix of 400 tends to decrease the average age of cargo at stuff instead of increasing that value as it did previously in both the medium-volume category and the fifty-two largest group. Apparently, other factors have an effect on this variable when analyzing the mixture of small, medium, and large-volume consignees together.

Lastly, the average days between lifts entered the equation. While this variable was found to have its most profound effect on the large-volume consignees, it did, however,

affect all categories adversely, i.e., it increased the age. This same effect held true in the analysis of the four hundred.

In summary, it can be seen quite readily that the average age of cargo at stuff (t) increases as the break-bulk point volume decreases and the average days between lifts increases, and t decreases as the single consignee proportion increases.

Other transformations were attempted with the data in an effort to generate a better fit. These included: the break-bulk volume was divided by the consignee volume in the first trial while this same transformation plus the product of the single consignee proportion and the consignee volume were utilized in the second attempt. Both attempts resulted in poor fits with high standard errors for the dependent variable and the regression coefficients and R^2 values of 0.102 and 0.078 respectively.

The various regression analyses performed in this third phase of the data analysis procedures illustrated some interesting points. They showed that the single consignee proportion affected t differently for different types of consignees. They showed that the average days between lifts was an important and significant variable in all of the groups analyzed. Most importantly, however, the analyses demonstrated that relationships among variables can be more clearly understood by dividing the consignees into volume

groups vis-a-vis aggregating them across the small to large spectrum.

VI. EVALUATION OF PROCEDURES

A. CRITIQUE OF THE PHASES EMPLOYED

The various procedures utilized during the work on this thesis have been described in some detail on the preceding pages. An evaluation of these procedures will be discussed in this chapter.

1. Distribution Audit

The initial step in the thesis work was the distribution audit. It is important to realize how essential this step is for understanding the nature of the transportation system being examined. Without a thorough and intelligent dissection of all the data, it is quite easy to proceed down blind alleys and never comprehend the major problems in the system. Therefore, the distribution audit is conducted with the knowledge that more advanced and expansive work based upon these results will follow.

In accomplishing this part of the work, several programs were developed in an effort to cover major aspects of the data, and to lay bare the variables that might in some particular circumstance have a bearing on the overall operation of the container stuffing station and the type of performance that the individual consignee could expect. In short, the distribution audit is the starting point and the foundation on which other analysis techniques are built.

2. <u>Container Stuffing Performance Variation Analysis</u>

The analysis of the variation in the variables constituted the second major phase of the analysis procedure and made extensive use of the output of the simulation model.

a. Critique of the Simulation Model

A general definition of simulation is: a quantitative technique used for evaluating alternative courses of action based upon facts and assumptions with a computerized mathematical model in order to represent actual decision-making under conditions of uncertainty.

The ability of the simulation model to replicate stuffing station activities was obviously a principal factor influencing the results of this thesis work. Several steps have been taken to validate the model. Reference 16 refers. Among these are the following: subjective comparison of the assumptions of the model and trial simulation outputs with actual container stuffing station operations, consultation with experienced managers, adjustment of parameters to conform with real world operations, and the performance of test cross-checking of individual program modules to insure integrity of program logic and coding. Nevertheless, the model is still an approximation of actual operations. Hence, in order to work with this realized deficiency and at the same time obtain meaningful results, it was decided that the model could best be utilized in the role of a vehicle that measured relative impacts vis-a-vis

absolute ones. It is in this framework that the simulation model was utilized as an integral part of the applied procedures cycle.

There are several features of simulation that make it the best method. Simulation involves the construction of some type of mathematical model that describes the system's operation in terms of individual components and events. Moreover, it is a means of dividing the model building process into smaller component parts and then combining them in their natural, logical order so that the computer can be programmed to present the effect of their interactions with one another. In essence, the simulation model performs experiments on the sample data inputs rather than on the entire operation, since the latter would be too time-consuming, inconvenient, and expensive.

Computer simulation allows one to incorporate time into an analysis of an essentially dynamic situation. In a computer simulation of business operations such as the container stuffing station, one can compress the results of several years of operations into a few minutes of running time on the computer. A computer simulation study is completely repeatable, i.e., the user exercises complete control over development of the model and the use of simulation routines. It is ideal for the collection and processing of quantitative data and free from the physical limitations on the system being studied since the system is represented in purely symbolic terms.

With these points in mind, the output from program seven was analyzed. As stated previously, inordinate variations do exist for the thirteen major PODs in all of the performance variables. These variations were considered significant to the problem identification in the thesis work. In other words, the ability to accurately predict is greatly affected by the size of the variations in the independent variables that determine/affect the predicted value (the dependent variable). Thus, a large amount of variation, as that realized in the second phase, points out clearly the inability one would have in predicting with a high degree of confidence and low standard error the average age of cargo at stuff.

3. Regression Analysis

There are several limitations and pitfalls associated with linear regression and correlation analysis that need to be given special attention. These may be categorized as being due to: (1) violations of the theoretical assumptions; (2) improper use of the regression equation and correlation coefficient; and (3) misinterpretation of these coefficients. It should always be kept foremost in the mind of the user of this technique that regression and correlation are powerful tools, but must be used with care.

Care must be taken in using past data to determine a future relationship. When regression is used for forecasting, as it often is, the source of the data is history, so that often a time span of many years is encompassed by

the observed dependent variable values. Thus, if there is reason to believe that the values of the dependent variable are becoming more or less volatile over time, a critical assumption of regression analysis is violated. The net effect of such violations is that probabilistic interpretations of inferences are invalid and cannot be used.

In establishing a regression equation, a set of observations is used that covers a limited range of values for the independent variables. Cautions must be exercised when making predictions of the dependent variable whenever the independent variables fall outside of this range. Regression analysis is limited only to the range of actual observations. It is these observations, not qualitative reasoning, that are used to quantify the relationships between the independent variables and the dependent variable.

Good common sense must be exercised in selecting variables for which there is good, meaningful nonstatistical explanation of their influence on the dependent variable.

In measuring the strength of the association between two variables in multivariate analysis, the partial coefficient of determination is of principal importance. This index expresses the correlation between two variables after the effect of all other variables has been considered.

One point of special emphasis should be made at this point. No results from the generation of the technique utilized and described throughout this thesis are any better than the sound, intelligent judgment utilized in their

translation and interpretation. No method, no matter how reliable, can be substituted for the human element and that particular entity's ability to think, use good judgment, and, at the same time, maintain a continuous ability to remain flexible to changes in the environment in which he knows his decisions must be made.

B. RELATED RESULTS

The results obtained by this thesis, could be used effectively by the management at MOTBA in many ways.

For example, in achieving their assigned mission of monitoring the operations at the container stuffing station, top management might find it beneficial to develop control charts for the individual PODs and consignees so that they would know the ranges of performance to expect. Utilization of such charts in regularly scheduled conferences with representatives of the consignees could prove informative to all concerned. The development of simple, concise reports for top management using the information would perhaps improve the quality of the reports and at the same time make them more operationally effective.

In any type of a service-oriented business, it is imperative that both the provider and recipient of said service be aware of the product that they are marketing and the way in which it is being sent and received. Therefore, anything that can improve this communication should be considered in the light of limited budgets and cost-effectiveness.

While this thesis divorced itself of any cost considerations, it certainly is common sense to assume that some type of intelligent, meaningful liaison that utilizes the information presented in this paper would have beneficial effects on the overall operation of the export cargo transportation system at MOTBA.

VII. CONCLUSION

This thesis concerned itself with one element, the container stuffing station, of the containerized export cargo transportation system. No changes or variations were made to the system which would in any way affect its operation. The data used for all phases of the analysis was that obtained through actual operations at the Container Stuffing Station, MOTBA, for a four-month period of 1973.

Data analysis techniques were utilized to determine how to effectively evaluate the performance of the container stuffing station and what factors influence the age of cargo at stuff. To accomplish these two goals, three separate phases of data analysis techniques were employed: the distribution audit, the variation analysis of variables, and regression analysis.

The distribution audit employed six computer programs to systematically dissect the large volume of raw data in order that the complex and diverse activities at the container stuffing station might be viewed. The following information illustrates this diversity. During the 123 day period for which data was available, a total of 43,984 shipments were processed through the container stuffing station for shipment to 110 PODs servicing 1822 consignees. These shipments had a total volume of 3,620,506 cubic feet and a combined weight of 65,695,580 lbs. Forty major

consignees (2.2%) accounted for 60% of the total activity during this period while four-fifths (79.8%) received less than ten shipments.

The variation analysis of the variables, which was conducted by means of a computer program and employed data generated by a container stuffing station simulation model which considered thirteen (13) major PODs, illustrated the wide disparity found on a monthly basis among three important factors of concern to managers of a containerized export cargo transportation system, namely, the average age of cargo at stuff, cube utilization of the containers, and single consignee proportion. This phase demonstrated that wide ranges could be expected for these relevant performance measures over an extended operating period.

Thus, the first two phases demonstrated, by the use of seven computer programs, that it was possible to quantitatively evaluate the container stuffing station operation.

Several interesting points can be extracted from the regression analysis concerning the average age of cargo at stuff. For the 277 small-volume consignees, this value was affected by two variables, the break-bulk point volume (the most significant) and the average days between lifts; for the 143 medium-volume consignees, by three variables, the total volume in single consignee vans, the single consignee proportion (the most significant), and the average days between lifts; and for the 136 large-volume consignees, by

two variables, the consignee volume and the average days between lifts (the most significant).

Thus, while the small and medium-volume consignees can, through a variety of methods involving ordering and mixing of cargo, alter the average age of cargo at stuff, the large-volume consignees have little control over this variable because the age of cargo for them is determined primarily by the frequency of ship arrivals, viz., the average days between lifts variable.

Furthermore, the regression analysis illustrated that a much better fit can be produced when the consignees are divided on some common basis such as total volume instead of being aggregated into one general grouping. When mixing of the consignees was done, the SE-DPV and SERC values increased and the R^2 value decreased making it much more difficult to determine the relationship between the various independent variables and the average age of cargo at stuff.

The end result of the data analysis techniques is two-fold. Firstly, a quantitative evaluation can be conducted in which raw data is examined and analyzed for pertinent information. Secondly, the age of cargo at stuff, an important performance parameter at the container stuffing station, can be employed as the dependent variable and through regression analyses, a determination can be made as to what variables affect it.

These two points are important to both the monitoring element at MOTBA whose mission it is to oversee the activities

at the stuffing station and the individual consignee whose well-being is directly related to the ability of the stuffing station to accomplish its objective of responsive, inexpensive, and secure shipping to the numerous overseas commands of the United States.

APPENDIX A

Table I. CONTAINER DESCRIPTION

CARRIER	SIZE	MAX. CUBE	MAX. WEIGHT	NUMBER
AML	20	1119	40,000	1
AML	40	2565	46,000	2
APL	20	1134	40,300	3
APL	40	2394	45,000	4
MTSN	20	1100	40,000	5
MTSN	24	1427	46,200	6
MTSN	40	2386	46,200	7
PFEL	20	1157	40,300	8
PFEL	40	2398	46,000	9
SLND	35	2090	45,000	10
SSC	20	1144	38,000	11
SSC	40	2383	46,000	12
STLZ	27	1791	46,000	13
STLZ	40	2381	46,000	14
USLX	20	1105	40,000	15
USLX	40	2398	46,000	16

Note: (1) Size is length in feet.

(2) Max. Cube is in cubic feet.

(3) Max. Weight is in pounds.

(4) Number is the number used by computer for simulation runs.

(5) AML - American Mail Line;

APL - American President Lines;

MTSN - Matson Navigation Company;

PFEL - Pacific Far East Lines;

SLND - Sea-Land Service;

SSC - States Steamship Company;

STLZ - Seatrain Lines;

USLX - United States Lines.

Table II. SAMPLE FORMULAE

Average age of cargo at stuff (t) for a POD or consignee.

$$t = \frac{\sum t_i}{\sum x_i}$$

x_i = individual shipments $i = (1,\ldots,n)$.

t_i = age of individual shipments in days $i = (1,\ldots,n)$.

Standard deviation of age of cargo at stuff (t_{sd}).

$$t_{sd} = \frac{\sum (t_i)^2 - \frac{(\sum t_i)^2}{n}}{n}$$

n = number of last shipment segments.

Cube utilization by container type (u) for a POD.

$j = (1,\ldots,16)$ for the 16 different types of containers available.

$$u_j = \frac{\sum V_i}{C_j N_j}$$

V_i = Volume of individual shipments $i = (1,\ldots,n)$.

N_j = number of containers of type j that are used $j = (1,\ldots,16)$.

C_j = total volume available for that type container $j = (1,\ldots,16)$.

Standard deviation of cube utilization ($u_{j_{sd}}$) for a POD.

$$u_{j_{sd}} = \frac{\sum (V_i)^2 - \frac{(\sum V_i)^2}{C_j N_j}}{C_j N_j}$$

Single consignee proportion (p) by container type for a POD.

$$p_j = \sum \frac{V_{js}}{V_{jt}}$$

V_{js} = volume (cu. ft.) in single consignee vans.

V_{jt} = total volume shipped to individual consignee.

Table III. ALPHABETIZED RAW DATA

The following table is an example of the raw shipment data collected by MOTBA on the Container Stuffing Station operation for the period under consideration after it was arranged in alphabetic order by the computer.

POD	CONSIGNEE	TYPE CARGO	VOLUME Cu.Ft.	WEIGHT lbs.	NUMBER PIECES	RECEIPT DATE	WATER COMM. CODE	TRANS. ACCOUNTING CODE
	CX4872	Y	48	2688	96	108	645	A000
AF4	FE4684	Z	184	4725	1	13	518	F8A0
BA1	AF6102	Q	394	10640	7	32	532	A205
BA1	AF6149	Z	150	4140	3	87	508	A205
BA4	M95121	Z	1300	5806	358	108	729	M311
CKA	AF3225	Z	184	3680	1	13	518	A240
CK2	N00389	Z	450	15750	450	61	518	N104
HA4	FB5587	Z	5	42	1	53	700	F8A0
JF1	AK4733	Z	166	1252	1	27	390	A13E
JF1	FG5621	Z	2	36	1	79	700	F8A0
JG1	FB5620	N	23	526	1	59	635	F8A0
RA3	AT0499	Z	12	90	2	109	700	A205
RA3	BTHB01	Z	31	1238	2	44	590	A452
RA3	CT0911		123	2847	3	5		A209
RA3	CT0911	G	7	234	3	11	543	A209
RA3	CT0911	R	2	44	2	34	705	A209
UD6	AT4213	Z	140	6600	200	81	51W	A000

Table IV. DATA SUMMARY FOR DISTRIBUTION AUDIT

Period Analyzed - 1 July to 31 October 1973	123 days
Shipments	43,984 shipments
Volume of Cargo	3,620,506 cubic feet
Weight of Cargo	65,695,580 pounds
Number of PODs	110
Number of Consignees	1,822

Table V. INFORMATION OBTAINED FROM DATA

The specific items that were identified during the distribution audit are listed below.

ITEMS IDENTIFIED	BASIS POD	BASIS CONSIGNEE
Volume - by Shipment		
Total for period	X	X
Average per shipment	X	X
Std. Deviation	X	X
Intervals for shipments	X	X
Weight - by Shipment		
Total for period	X	X
Average per shipment	X	X
Std. Deviation	X	X
Intervals for shipments	X	X
Density - by Shipment		
Average per shipment	X	X
Std. Deviation	X	X
Exception Handling Codes	X	
Commodity Codes	X	
Consignee activity at Container Stuffing Station (Volume and Weight Intervals and Percentage breakdown)		X
Daily operational activity at Container Stuffing Station (Daily Volume, Weight, and Shipment breakdown)		

Table VI. CONTAINER STUFFING STATION DAILY SUMMARY

DAY	NO. DAYS	NUMBER SHIP.	AVERAGE NO. SHIP.	TOTAL VOLUME	AVERAGE VOLUME	TOTAL WEIGHT	AVERAGE WEIGHT
Sunday	18	165	9.16	15,539	863	185,244	10,291
Monday	15	7,361	490.73	619,571	41,305	10,620,776	708,052
Tuesday	18	9,087	504.83	729,762	40,542	12,689,115	704,951
Wednesday	17	8,491	499.47	702,719	41,336	13,492,636	793,684
Thursday	17	9,701	570.64	779,457	45,850	14,695,248	864,426
Friday	17	8,979	528.17	754,007	44,353	13,716,614	806,859
Saturday	17	152	8.94	12,036	708	146,236	8,602
Holiday	4	48	12.00	7,415	1,854	149,711	37,428
Daily Averages		358			29,435		534,110

Table VII. CONTAINER STUFFING STATION WEEKLY SUMMARY

WEEK	NUMBER SHIPMENTS	VOLUME	WEIGHT
1.	2,444	261,448	3,921,219
2.	2,797	287,444	4,527,403
3.	3,141	278,591	4,997,751
4.	2,758	232,296	3,571,542
5.	3,414	284,814	5,151,369
6.	4,044	308,446	5,844,244
7.	965	88,024	1,484,204
8.	2,805	208,179	3,908,164
9.	2,641	196,694	3,625,615
10.	1,994	164,170	3,071,826
11.	2,425	206,833	3,837,876
12.	2,787	215,422	4,308,528
13.	2,485	199,702	4,533,720
14.	2,521	192,863	3,600,097
15.	1,784	135,552	2,378,525
16	2,653	194,328	3,842,275
17.	1,983	140,028	2,857,312
Weekly Average	2,503	206,054	3,738,773

Table VIII. TYPE OF CARGO CODE

CODE	TYPE OF CARGO
A	Radioactive
B	Unassigned
C	Concurrent HHG or POV
D	Contaminated Cargo (other than Label)
E	Dangerous Articles (Empty Label)
F	Fireworks
G	Green Label (Nonflammable Gases)
H	Subject to damage from heat
I-L	Unassigned
M	Magnetic
N	Dangerous Articles (no label required)
O	Unassigned
P	Poison
Q	Subject to damage from freezing
R	Red Label (Explosives, Inflammable Liquids or Gases)
S	Poison Gas Label
T	Tear Gas Label
U-V	Unassigned
W	White Label (Acids, Alkaline Caustic Liquids)
X	Unassigned
Y	Yellow Label (Inflammable Solids or Oxidizing Material)
Z	No special type of cargo code applicable

Note: "Label" means the caution label that is required to be placed on the cargo by government regulations.

Table IX. WATER COMMODITY CODES

CODE SERIES	COMMODITY GROUP
100-149	Chill
150-199	Freeze
200-299	Bulk
300-359	Privately Owned Passenger Veh.
360-389	Baggage
390-399	Household Goods
400-489	Ammunition and Explosives
490-499	Radioactive Waste
500-799	General Cargo
800-899	Special Cargo
900-999	Aircraft (assembled)

Table X. TABULAR DATA - 13 MAJOR PODS

SHIPMENTS	
Total Shipments of 13 PODS	36,537
Total Shipments of all PODS	43,984
Percentage of Total Shipments (13 PODS)	83.07%
VOLUME	
Total Volume of 13 PODS	2,989,037 cu.ft.
Total Volume of all PODS	3,620,506 cu.ft.
Average Volume/Shipment (13 PODS)	72.903 cu.ft.
Percentage of Total Volume (13 PODS)	82.56%
WEIGHT	
Total Weight of 13 PODS	51,777,785 lbs.
Total Weight of all PODS	65,695,580 lbs.
Average Weight/Shipment (13 PODS)	1,167.435 lbs.
Percentage of Total Weight (13 PODS)	78.81%
DENSITY	
Average Density of 13 PODS	22.776 lbs./cu.ft.

Table XI. SAMPLE SIMULATION DATA-1

Container Type No. 10 POD No. 1

MONTH	NUMBER OF CONTAINERS	AVERAGE AGE	AVERAGE CUBE UTILIZATION	SINGLE CONSIGNEE PROPORTION
1	55	6.282	76.836	1.000
2	37	5.530	68.459	0.865
3	29	3.982	69.898	0.828
4	26	5.752	77.692	0.846
5	67	8.798	75.313	0.925
6	56	8.806	75.429	0.929
7	45	6.943	74.978	0.889
8	33	9.673	78.212	0.758
9	35	7.376	79.229	0.943
10	34	8.855	74.235	0.794
11	38	4.988	73.500	0.921
12	42	6.920	77.452	0.810
13	43	7.517	72.930	0.907
14	53	11.456	74.302	0.868
15	19	7.820	78.474	0.789
16	42	7.572	73.405	0.714
17	49	6.466	74.694	0.918
18	51	7.756	75.529	0.882
19	44	5.161	74.795	0.886
20	41	7.539	76.122	0.854
21	38	8.170	73.658	0.711
22	45	7.946	73.067	0.911
23	35	9.630	75.457	0.857
24	49	7.118	72.367	0.857
Totals Two Yr. Period	1006	7.610	74.769	0.870
Range of Obs.	19 to 67	3.982 to 11.456	68.459 to 79.229	0.711 to 1.000

Table XII. SAMPLE SIMULATION DATA-2

Container Type No. 8 POD No. 7

MONTH	NUMBER OF CONTAINERS	AVERAGE AGE	AVERAGE CUBE UTILIZATION	SINGLE CONSIGNEE PROPORTION
1	33	5.741	76.879	0.909
2	109	9.878	79.037	0.982
3	36	5.000	78.917	0.917
4	48	12.353	79.354	0.938
5	18	13.378	82.500	0.833
6	-	-	-	-
7	26	5.959	82.346	0.932
8	69	9.875	79.478	0.942
9	46	11.495	81.413	0.978
10	36	10.191	79.222	0.972
11	9	5.487	73.222	0.889
12	27	2.614	80.852	0.926
13	47	6.397	77.915	0.979
14	85	10.255	78.788	0.976
15	41	4.153	81.512	1.000
16	47	11.188	79.128	0.936
17	21	2.162	80.429	1.000
18	37	10.878	78.811	0.946
19	2	4.652	71.000	0.500
20	53	11.217	79.774	0.943
21	67	14.436	81.776	0.940
22	31	6.655	80.161	0.968
23	15	13.676	77.600	0.867
24	19	3.718	75.263	0.895
Total Two Yr. Period	922	9.405	79.505	0.950
Range of Obs.	0 to 109	2.162 to 14.436	71.000 to 82.500	0.500 to 1.000

Table XIII. SAMPLE SIMULATION DATA-3

Container Type No. 6 POD No. 13

MONTH	NUMBER OF CONTAINERS	AVERAGE AGE	AVERAGE CUBE UTILIZATION	SINGLE CONSIGNEE PROPORTION
1	31	8.425	87.000	1.000
2	41	6.180	81.439	0.902
3	21	5.120	81.667	0.857
4	14	7.693	84.786	1.000
5	30	8.089	85.233	1.000
6	50	2.608	82.640	0.920
7	39	4.549	78.872	0.872
8	17	9.219	79.824	1.000
9	96	6.789	86.573	1.000
10	42	8.799	83.952	0.929
11	11	3.198	85.545	0.909
12	22	7.712	76.500	0.727
13	14	4.075	82.857	0.929
14	55	10.339	84.345	1.000
15	12	3.763	69.583	0.667
16	15	2.902	82.133	1.000
17	9	6.106	81.556	0.889
18	95	9.141	84.537	1.000
19	47	5.450	81.596	0.851
20	14	3.696	74.500	0.786
21	36	7.877	85.444	0.861
22	53	10.924	80.925	0.887
23	41	5.182	79.805	0.854
24	25	7.037	81.080	0.800
Totals Two Yr. Period	830	6.900	82.764	0.923
Range of Obs.	9 to 96	2.608 to 10.924	69.583 to 87.000	0.667 to 1.000

Table XIV. CONSIGNEE ACTIVITY LEVELS

The 13 major PODs account for 36,537 shipments or 83.1% of the total number handled during the period under consideration. There are 556 consignees that are serviced by the 13 PODs and the following table provides a delineation of the activity that each consignee contributes to the POD (proportion by volume).

Activity Rate	Number of Consignees	Percentage of Consignees
Less than .1%	277	49.8
.1% - .99%	143	25.7
1% - 2%	48	8.6
2% - 3%	16	2.9
3% - 4%	20	3.6
4% - 5%	4	0.7
5% - 7%	12	2.2
7% - 10%	8	1.4
10% - 15%	7	1.2
15% - 20%	2	0.4
20% - 30%	9	1.6
Greater than 30%	10	1.8

Table XV. LARGE CONSIGNEE BREAKDOWN

POD	No. CONSIGNEES	Percentage of Volume 1-2	2-3	3-4	4-5	5-7	7-10	10-15	15-20	20-30	Over 30
RA3	14	2	4	4	1	2	0	0	0	0	1
RJ1	14	4	0	3	1	3	1	0	0	2	0
RJ3	13	3	1	2	2	1	0	3	0	1	0
SA1	13	8	2	0	0	0	0	0	0	2	1
TA2	12	3	1	1	2	2	1	0	0	1	1
UB1	12	8	0	0	2	0	1	0	0	0	1
UC2	6	2	2	1	0	0	0	0	0	0	1
UD6	13	5	1	0	1	2	1	0	1	2	0
UL7	5	2	0	0	0	0	1	0	0	1	1
UM1	11	4	1	2	0	1	1	1	0	0	1
UM4	8	2	2	0	1	0	1	1	0	0	1
UQ2	4	0	0	1	0	1	0	0	1	0	1
XE2	11	5	2	0	0	0	1	2	0	0	1

Table XVI. REGRESSION SUMMARY TABLE

1. Small Consignees (277) $R^2 = 0.707$ SE-DPV = 7.018

Equation $t = 8.218 + 0.201\ (1/BBPV) + 0.384\ (ADBL)$

SERC (0.008) (0.126)

2. Medium Consignees (143) $R^2 = 0.425$ SE-DPV = 23.575

Equation $t = -7.600 - 0.004\ (TVSCC) + 77.097\ (SCP) + 2.309\ (ADBL)$

SERC (0.001) (8.632) (0.595)

3. Large Consignees (136) $R^2 = 0.449$ SE-DPV = 5.064

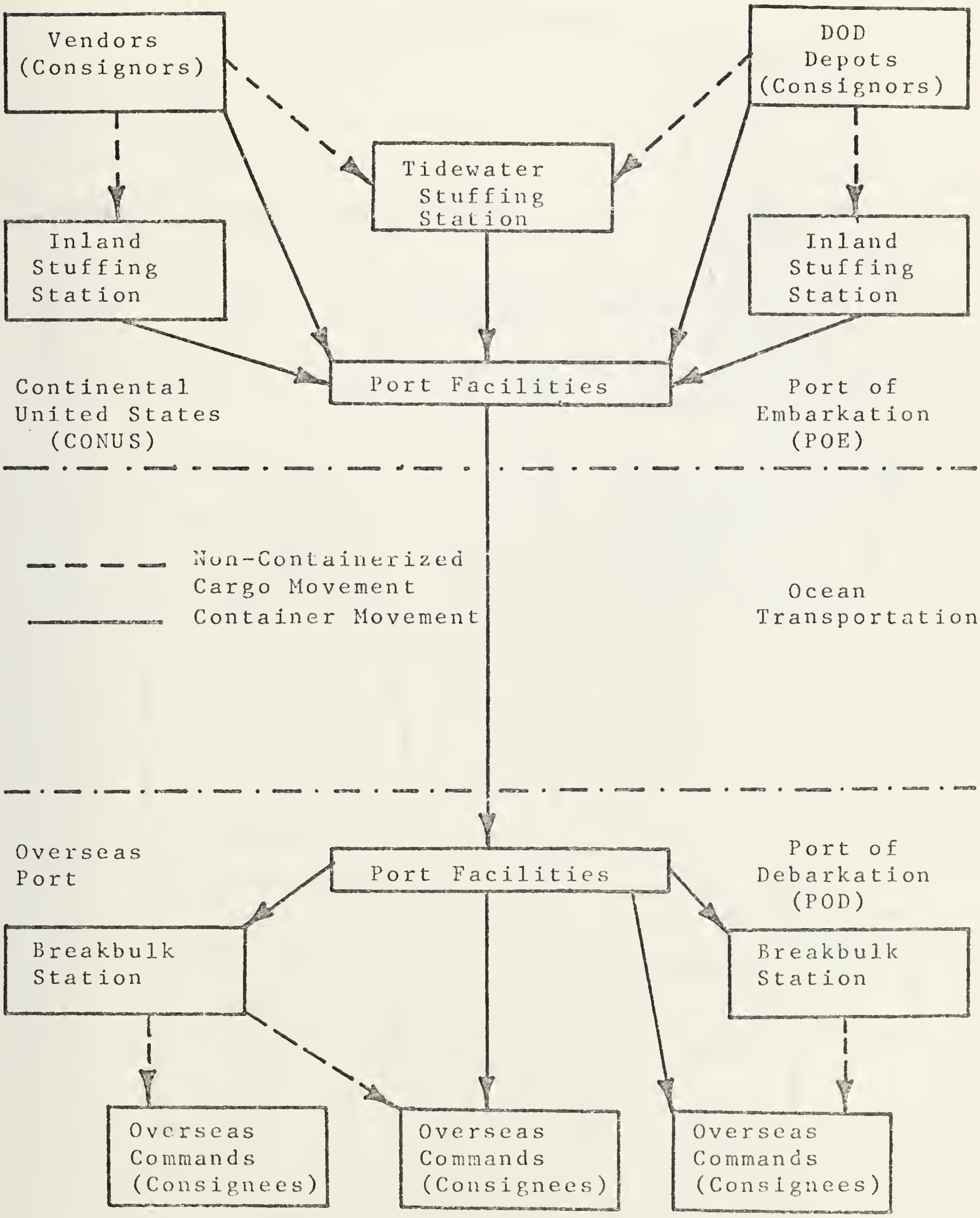
Equation $t = 4.838 + 0.022\ (1/CV) + 0.765\ (ADBL)$

SERC (0.006) (0.110)

APPENDIX B

Figure 1

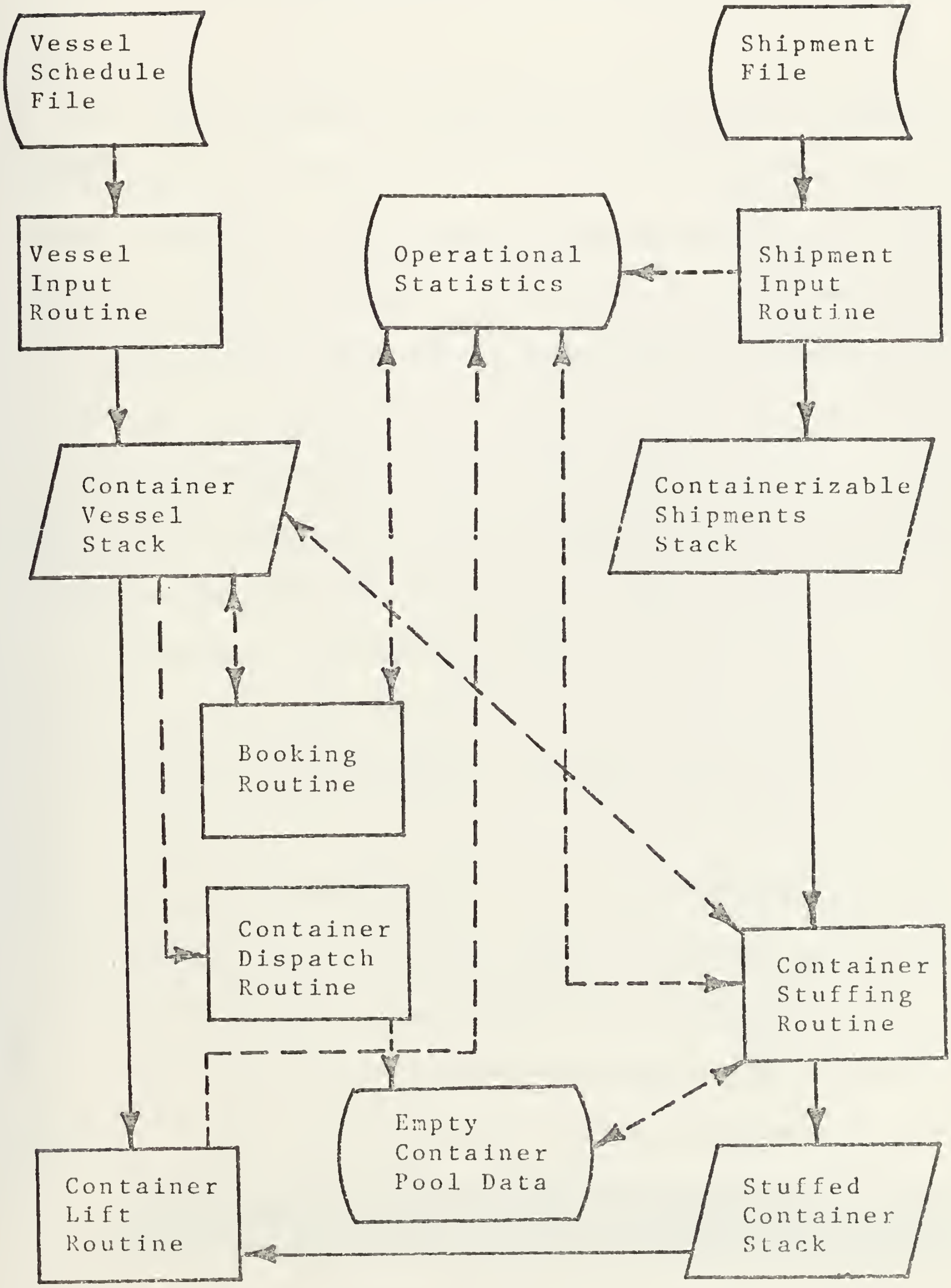
EXPORT CARGO MOVEMENT



APPENDIX B

Figure 2

GENERAL INFORMATION AND RECORD FLOW
IN THE
SIMULATION PROGRAM



COMPUTER OUTPUT ONE-1

THE FOLLOWING TABLE IDENTIFIES THE FREQUENCY OF OCCURRENCE FOR SHIPMENTS IN EACH INTERVAL FOR VOLUME MEASURED IN CUBIC FEET

POC	CON	000 TO 002	003 TO 004	005 TO 006	007 TO 008	009 TO 010	011 TO 014	015 TO 020	021 TO 030	031 TO 040	041 TO 050	051 TO 070	071 TO 090	091 TO 120	121 TO 150	151 TO 200	201 TO 400	401 TO 600	601 TO 800	801 TO 1000	1001 TO 2000	OVER 2000	NO. SHIP.
	CX4872	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
	FB5260	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	FB5270	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
	N05110	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	N70276	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
AF4	FE4684	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	4
BA1	AF6102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
BA1	AF6114	0	0	0	0	0	0	0	0	0	1	0	2	1	0	0	0	0	1	2	0	0	7
BA1	AF6149	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	0	0	0	0	5
BA1	AF6155	3	2	2	5	3	1	1	2	4	3	3	0	2	3	1	1	1	0	0	0	0	37
BA1	AF6158	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	3
BA1	AF6201	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
BA1	AF6203	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
BA1	AF6205	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	3
BA1	AF6206	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
BA1	AF6207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
BA1	AF6301	0	0	1	1	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	5
BA1	CF6109	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
BA1	FB7010	4	2	2	1	0	1	0	0	0	0	1	0	0	0	0	3	0	0	0	0	0	14
BA1	FE7010	0	0	0	0	1	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	4
BA1	FL7012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
BA1	FY8605	3	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	6
BA1	N66833	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
BA1	WF6JH9	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	1	0	1	0	0	5
BA1	WF6JE9	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	4
BA4	M95121	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	2	0	5
BA4	N00509	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
BA4	N65942	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2
BA4	N70283	2	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	5
CA3	N65963	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
CKA	AF3225	0	0	0	0	0	0	0	0	0	0	0	1	3	0	5	1	1	0	0	0	0	11
CKA	N62224	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	2
CKA	N66859	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2
CK1	AF3225	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2
CK1	FG6540	0	2	1	1	0	0	1	2	1	0	1	0	0	0	2	0	0	0	0	0	0	11
CK1	N66859	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
CK2	N00389	0	0	0	1	0	0	0	0	0	0	0	1	0	0	7	1	1	0	0	0	0	11
ED1	FPEB01	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
ED3	CBLBC1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
ED4	BBLA02	0	1	2	3	0	1	3	2	1	0	0	0	1	0	0	0	0	0	0	0	0	14
ED4	DBLB01	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
FC1	BUYAC2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
FC1	DUYB01	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
FC1	DUYE02	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
FD1	BPAAC1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
FE1	CARF02	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
GAC	FB4486	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
HA4	FB5518	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
HA4	FB5537	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
HA4	FB5587	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
HA4	FB5643	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
HA4	FB5644	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
HA4	FY3560	1	2	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	5
HA8	FB5518	1	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	4
HA8	FB5537	0	1	4	3	2	2	1	0	2	1	0	0	0	0	0	0	0	0	0	0	0	16
HA8	FB5587	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
HA8	FB5643	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	2
HA8	FB5644	0	0	0	0	1	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	4
HA8	FE5518	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	3
HA8	FE5537	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1

COMPUTER OUTPUT ONE-2

THE FOLLCWING TABLE IDENTIFIES THE FREQUENCY OF OCCURRENCE FOR SHIPMENTS IN EACH INTERVAL FOR WEIGHT MEASLRED IN PCUNDS

POD	CON	000 TO 010	011 TO 025	026 TO 050	051 TO 075	076 TO 100	101 TO 150	151 TO 250	251 TO 400	401 TO 600	601 TO 800	801 TO 1000	1001 TO 1500	1501 TO 2000	2001 TO 4000	4001 TO 7000	7001 TO 10000	10001 TO 14000	14001 TO 18000	18001 TO 25000	25001 TO 35000	OVER 35000	NO. SHIP
	CX4872	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
	FB5260	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	FB5270	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
	NC5110	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	N70278	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
AF4	FE4684	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4
BA1	AF6102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
BA1	AF6114	0	0	0	0	0	0	0	1	0	2	0	1	0	0	2	1	0	0	0	0	0	7
BA1	AF6149	0	0	0	0	0	0	0	0	0	0	0	2	0	1	2	0	0	0	0	0	0	5
BA1	AF6155	0	1	1	2	4	5	3	3	4	1	3	3	1	3	3	0	0	0	0	0	0	37
BA1	AF6158	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	3
BA1	AF6201	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
BA1	AF6203	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
BA1	AF6205	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	3
BA1	AF6206	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
BA1	AF6207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
BA1	AF6301	0	0	0	0	1	1	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	5
BA1	CF6109	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
BA1	FB7010	1	1	0	2	1	2	2	2	0	0	0	0	0	0	0	1	1	1	0	0	0	14
BA1	FE7010	0	0	0	0	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	4
BA1	FL7012	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
BA1	FY8605	2	1	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	6
BA1	N66833	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
BA1	WF6JF9	0	0	0	0	0	0	0	0	2	0	0	1	0	1	1	0	0	0	0	0	0	5
BA1	WF6J89	0	0	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	4
BA4	M95121	0	0	0	0	0	0	1	0	1	0	0	1	0	0	2	0	0	0	0	0	0	5
BA4	N0C509	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
BA4	N65942	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
BA4	N70283	1	0	1	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	5
CA3	N65963	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
CKA	AF3225	0	0	0	0	0	0	0	0	0	0	0	0	0	4	5	0	0	2	0	0	0	11
CKA	N62224	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2
CKA	N66859	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
CK1	AF3225	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2
CK1	FG6540	0	2	1	1	0	0	4	0	1	1	1	0	0	0	0	0	0	0	0	0	0	11
CK1	N66859	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
CK2	N00389	0	0	1	0	0	0	0	0	0	0	0	0	0	2	6	0	1	1	0	0	0	11
ED1	PPEBC1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
ED3	CBLBC1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
ED4	BBLA02	0	0	2	0	0	4	2	3	2	0	0	1	0	0	0	0	0	0	0	0	0	14
ED4	CBLB01	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
FC1	SUYAC2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
FC1	DUYBC1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
FC1	DUYEC2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
FD1	BPAA01	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
FE1	CARFC2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
GAC	FB4486	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
HA4	FB5518	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
HA4	FB5537	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
HA4	FB5587	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
HA4	FB5643	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
HA4	FB5644	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
HA4	FY3560	0	1	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5
HA8	FB5518	1	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	4
HA8	FB5537	1	0	8	2	2	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	16
HA8	FB5587	0	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4
HA8	FB5643	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
HA8	FB5644	0	0	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	4
HA8	FE5518	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	3
HA8	FE5537	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1

COMPUTER OUTPUT ONE-3

THE FOLLOWING TABLE IDENTIFIES THE FREQUENCY OF OCCURRENCE FOR SHIPMENTS IN EACH INTERVAL FOR DENSITY MEASURED IN POUNDS PER CU.FT.

POD	CON	000 TO 004	005 TO 008	009 TO 012	013 TO 016	017 TO 020	021 TO 024	025 TO 028	029 TO 032	033 TO 036	037 TO 040	041 TO 044	045 TO 048	049 TO 052	053 TO 056	057 TO 060	061 TO 064	065 TO 068	069 TO 072	073 TO 076	077 TO 080	OVER 080	NO. SHIP.
	CX4872	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	FB5260	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
	FB5270	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	NC5110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	N70278	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
AF4	FE4684	0	0	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	4
BA1	AF6102	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
BA1	AF6114	0	1	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
BA1	AF6149	0	0	0	0	0	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	5
BA1	AF6155	2	3	3	3	4	3	0	5	0	2	2	2	2	0	2	0	0	0	1	1	2	37
BA1	AF6158	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
BA1	AF6201	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
BA1	AF6203	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
BA1	AF6205	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
BA1	AF6206	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
BA1	AF6207	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
BA1	AF6301	1	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
BA1	CF6109	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
BA1	FB7010	1	0	1	2	0	0	1	0	1	0	1	0	2	0	2	0	0	0	0	0	3	14
BA1	FE7010	0	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
BA1	FL7012	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
BA1	FY8605	2	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	6
BA1	N66833	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
BA1	WF6JF9	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
BA1	WF6J89	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
BA4	M95121	0	3	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
BA4	N00509	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
BA4	N65942	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
BA4	N70283	0	0	1	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	5
CA3	N65963	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
CKA	AF3225	0	0	0	0	0	0	1	0	3	1	0	0	1	4	1	0	0	0	0	0	0	11
CKA	N62224	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2
CKA	N66859	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
CK1	AF3225	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
CK1	FG6540	0	4	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
CK1	N66859	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
CK2	N00389	0	0	1	0	0	1	0	1	4	1	1	1	0	1	0	0	0	0	0	0	0	11
ED1	FPEBC1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
ED3	DBLBC1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
ED4	BBLA02	0	2	2	3	1	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	2	14
ED4	DBLB01	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
FC1	BUYAC2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
FC1	DUYB01	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
FC1	DUYE02	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
FC1	BPAAC1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
FE1	DAPFC2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
GAC	FB4486	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
HA4	FB5518	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
HA4	FB5537	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
HA4	FB5587	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2
HA4	FB5643	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2
HA4	FB5644	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
HA4	FY3560	0	0	1	1	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	5
HA8	FB5518	1	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	4
HA8	FB5537	3	6	6	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	16
HA8	FB5597	0	1	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	4
HA8	FB5643	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
HA8	FB5644	1	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
HA8	FE5518	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
HA8	FE5537	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1

COMPUTER OUTPUT ONE-4

TABULAR SUMMARY TABLE OF CONSIGNEE PERFORMANCE

NC.	PCC	CON	NO.SHIP.	TOT.VOL.	AVE.VOL.	STD.DEV.VOL.	TOT.WGHT.	AVE.WGHT.	STD.DEV.WGHT.	AVE.DEN.	STD.DEV.DEN.
1		CX4872	1	48	48.000	0.0	2688	2688.000	0.0	56.000	0.0
2		FB5260	1	1	1.000	0.0	27	27.000	0.0	27.000	0.0
3		FB5270	1	677	677.000	0.0	5095	5095.000	1.000	7.526	0.0
4		N05110	1	1	1.000	0.0	85	85.000	0.0	85.000	0.0
5		N70278	1	8	8.000	0.0	100	100.000	0.0	12.500	0.0
6	AF4	FE4684	4	917	229.250	78.375	18900	4725.000	3.000	22.496	5.514
7	BA1	AF6102	1	394	394.000	0.0	10640	10640.000	0.0	27.005	0.0
8	BA1	AF6114	7	2717	388.143	369.749	21267	3038.143	2802.465	8.130	1.326
9	BA1	AF6149	5	575	115.000	49.396	13746	2749.200	1295.636	23.918	4.521
10	BA1	AF6155	37	2198	59.405	97.572	35781	967.054	1428.585	25.296	19.374
11	BA1	AF6158	3	2167	722.333	581.461	14190	4730.000	3906.055	6.177	0.545
12	BA1	AF6201	2	360	180.000	20.000	3635	1817.500	89.501	10.279	1.639
13	BA1	AF6203	2	934	467.000	0.0	31920	15960.000	8.000	34.176	0.027
14	BA1	AF6205	3	386	128.667	99.617	13263	4421.000	5460.992	25.018	17.180
15	BA1	AF6206	1	49	49.000	0.0	2100	2100.000	0.0	42.857	0.0
16	BA1	AF6207	1	521	521.000	0.0	18100	18100.000	12.000	34.741	0.0
17	BA1	AF6301	5	125	25.000	22.663	1346	269.200	223.026	15.652	6.453
18	BA1	CF6109	1	54	54.000	0.0	2710	2710.000	0.0	50.185	0.0
19	BA1	FB7010	14	973	69.500	119.987	36181	2584.357	4819.973	42.299	37.723
20	BA1	FE7010	4	222	55.500	64.500	1655	413.750	320.573	11.253	3.777
21	BA1	FL7012	1	405	405.000	0.0	2760	2760.000	0.0	6.815	0.0
22	BA1	FY8605	6	46	7.667	10.323	527	87.833	127.326	10.392	7.198
23	BA1	N66833	1	3	3.000	0.0	51	51.000	0.0	17.000	0.0
24	BA1	WF6JH9	5	1818	363.600	354.916	10995	2199.000	1812.822	6.933	0.957
25	BA1	WF6J89	4	198	49.500	23.383	1485	371.250	175.370	7.500	0.0
26	BA4	MS5121	5	2898	579.600	593.377	13476	2695.200	2558.140	9.240	6.554
27	BA4	N00509	1	882	882.000	0.0	3930	3930.000	0.0	4.456	0.0
28	BA4	N65942	2	69	34.500	14.500	607	303.500	63.500	9.745	2.255
29	BA4	N70283	5	108	21.600	39.215	1469	293.800	429.427	31.090	17.054
30	CA3	N65963	1	24	24.000	0.0	114	114.000	0.0	4.750	0.0
31	CKA	AF3225	11	2072	188.364	105.701	71180	6470.906	7473.211	34.632	8.546
32	CKA	N62224	2	618	309.000	271.000	5820	2910.000	1030.002	28.133	21.340
33	CKA	N66859	2	108	54.000	48.000	3701	1850.500	1677.500	31.711	2.877
34	CK1	AF3225	2	658	329.000	301.000	21445	10722.500	9702.504	34.425	2.004
35	CK1	FG6540	11	470	42.727	54.719	3014	274.000	276.044	7.980	2.233
36	CK1	N66859	1	110	110.000	0.0	3850	3850.000	0.0	35.000	0.0
37	CK2	N00389	11	2087	189.727	104.556	61528	5593.453	7218.242	26.331	8.283
38	ED1	PPEB01	1	4	4.000	0.0	60	60.000	0.0	15.000	0.0
39	ED2	DBLB01	1	2	2.000	0.0	30	30.000	0.0	15.000	0.0
40	ED4	BBLA02	14	286	20.429	25.645	3935	281.071	283.711	22.014	20.725
41	ED4	DBLB01	1	5	5.000	0.0	30	30.000	0.0	6.000	0.0
42	FC1	BUYA02	1	325	325.000	0.0	5440	5440.000	0.0	16.738	0.0
43	FC1	DUYB01	1	4	4.000	0.0	37	37.000	0.0	9.250	0.0
44	FC1	DUYE02	1	9	9.000	0.0	90	90.000	0.0	10.000	0.0
45	FD1	BPAA01	2	792	396.000	381.000	49068	24534.000	22020.512	40.336	22.469
46	FE1	DARF02	1	7	7.000	0.0	106	106.000	0.0	15.143	0.0
47	GAC	FB4486	1	55	55.000	0.0	3740	3740.000	0.0	68.000	0.0
48	HA4	FB5518	1	1	1.000	0.0	18	18.000	0.0	18.000	0.0
49	HA4	FB5537	3	14	4.667	2.494	76	25.333	11.842	5.583	0.514
50	HA4	FB5587	2	7	3.500	1.500	102	51.000	9.000	19.200	10.800
51	HA4	FB5643	2	77	38.500	37.500	2091	1045.500	1042.500	15.237	12.237
52	HA4	FB5644	1	1	1.000	0.0	29	29.000	0.0	29.000	0.0
53	HA4	FY3560	5	43	8.600	12.274	498	99.600	94.878	17.436	6.897
54	HA8	FB5518	4	161	40.250	38.706	4777	1194.250	1229.636	19.196	15.492
55	HA8	FB5537	16	198	12.375	11.056	1213	75.813	80.160	7.342	4.694
56	HA8	FB5587	4	21	5.250	2.586	484	121.000	144.779	17.278	14.195
57	HA8	FB5643	2	237	118.500	90.500	7779	3889.500	3653.500	22.260	13.831
58	HA8	FB5644	4	204	51.000	62.606	1725	431.250	478.505	10.266	6.855
59	HA8	FE5518	3	348	116.000	124.226	4103	1367.667	1349.614	14.777	3.279
60	HA8	FE5537	1	132	132.000	0.0	3126	3126.000	0.0	23.682	0.0

COMPUTER OUTPUT TWO-1

THE FOLLOWING TABLE IDENTIFIES THE FREQUENCY OF OCCURRENCE FOR SHIPMENTS IN EACH INTERVAL FOR VOLUME MEASURED IN CUBIC FEET

NO.	POD	000 TO 002	003 TO 004	005 TO 006	007 TO 008	009 TO 010	011 TO 014	015 TO 020	021 TO 030	031 TO 040	041 TO 050	051 TO 070	071 TO 090	091 TO 120	121 TO 150	151 TO 200	201 TO 400	401 TO 600	601 TO 800	801 TO 1000	1001 TO 2000	OVER 2000	NO. SHIP.
1		2	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	5
2	AF4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	4
3	BA1	10	5	6	8	5	4	1	2	10	5	10	3	4	4	7	7	7	1	3	1	0	103
4	BA4	2	1	1	0	1	0	0	1	0	1	1	0	1	0	0	1	0	0	1	2	0	13
5	CA3	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6	CKA	0	0	0	1	0	0	0	0	1	0	0	1	4	0	5	1	2	0	0	0	0	15
7	CK1	0	2	1	1	0	0	1	3	1	0	1	0	1	0	2	0	0	1	0	0	0	14
8	CK2	0	0	0	1	0	0	0	0	0	0	0	1	0	0	7	1	1	0	0	0	0	11
9	ED1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10	ED3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11	ED4	0	1	3	3	0	1	3	2	1	0	0	0	1	0	0	0	0	0	0	0	0	15
12	FC1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
13	FD1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
14	FE1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
15	GAC	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
16	HA4	4	4	3	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	14
17	HA8	6	3	6	4	5	4	1	2	2	1	2	0	4	1	3	2	0	0	0	1	0	47
18	HB4	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
19	JF1	2	13	9	6	7	7	12	3	7	10	7	4	6	3	6	14	9	4	3	2	0	134
20	JG1	9	8	7	4	4	6	3	7	2	4	1	4	8	8	6	9	1	0	5	2	0	98
21	JG2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
22	JH2	25	40	19	22	8	20	8	12	12	11	6	8	2	6	2	11	4	2	0	0	0	218
23	JK2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
24	KB6	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2
25	KE3	0	2	0	0	0	0	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	6
26	KJ1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	2
27	KJ2	0	0	1	0	0	0	0	0	0	0	0	0	0	1	4	1	0	0	0	0	0	7
28	KJ3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
29	LD5	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
30	LD9	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
31	LR1	0	0	2	13	0	0	0	0	0	0	0	0	0	0	11	0	0	2	0	0	0	28
32	LR6	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
33	PE1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
34	QA1	1	1	0	0	0	0	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	6
35	QF1	0	8	3	4	1	0	1	4	2	1	1	0	0	0	1	0	0	0	0	0	0	26
36	RA1	1	0	1	2	1	0	2	3	5	3	1	1	2	3	1	0	2	0	0	0	0	28
37	RA2	0	3	2	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
38	RA3	418	663	497	455	272	660	557	616	391	353	453	287	290	200	224	373	125	65	40	67	15	7021
39	RD1	19	24	12	16	6	9	13	9	10	1	5	4	0	4	4	1	0	0	0	0	0	137
40	RF2	1	0	1	0	2	0	0	0	2	3	0	0	2	0	3	1	0	0	0	0	0	15
41	RGB	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
42	RGE	5	9	12	16	2	20	10	18	6	8	15	6	8	10	5	7	3	1	1	3	0	165
43	RGL	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
44	RGU	133	114	118	98	72	130	132	167	110	84	134	75	76	57	73	102	24	19	9	14	4	1745
45	RG1	101	78	81	90	38	86	102	127	88	68	222	65	63	43	42	86	37	4	7	12	4	1444
46	RG3	5	9	5	20	4	17	10	26	19	16	14	8	4	8	9	9	4	5	3	2	2	199
47	RG4	0	1	1	3	0	1	0	5	0	4	1	8	0	2	1	5	0	0	1	1	0	34
48	RG5	6	13	10	4	3	15	11	13	9	7	17	8	5	2	1	6	4	0	0	3	0	142
49	RG6	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
50	RH1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
51	RJ1	47	119	80	85	69	132	72	114	80	47	67	39	45	15	29	41	8	6	5	7	0	1107
52	RJ2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
53	RJ3	93	137	85	71	56	90	68	99	53	47	42	14	31	15	19	31	5	3	3	1	0	963
54	SA1	30	51	45	31	15	20	19	14	8	4	8	3	4	4	9	1	1	0	0	1	0	268
55	SA2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
56	SA3	360	633	522	425	303	519	393	517	326	269	279	194	241	152	190	293	85	46	23	38	7	5815
57	SC4	14	0	0	0	1	0	0	4	1	1	0	0	0	0	0	0	0	0	0	0	0	21
58	TA1	20	89	89	67	64	156	109	105	76	62	53	32	34	13	25	41	5	4	0	4	0	1048
59	TA2	170	282	203	156	125	200	148	219	136	99	129	87	86	57	83	129	49	17	17	16	9	2417
60	TA3	1	1	0	2	0	0	0	2	1	0	1	0	0	1	0	0	0	0	0	0	0	9

COMPUTER OUTPUT TWO-2

THE FOLLOWING TABLE IDENTIFIES THE FREQUENCY OF OCCURRENCE FOR SHIPMENTS IN EACH INTERVAL FOR WEIGHT MEASURED IN POUNDS

NO.	PCD	000 TO 010	011 TO 025	026 TO 050	051 TO 075	076 TO 100	101 TO 150	151 TO 250	251 TO 400	401 TO 600	601 TO 800	801 TO 1000	1001 TO 1500	1501 TO 2000	2001 TO 4000	4001 TO 7000	7001 TO 10000	10001 TO 14000	14001 TO 18000	18001 TO 25000	25001 TO 35000	OVER 35000	NO. SHIP
1		0	0	1	0	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	5
2	AF4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4
3	BA1	3	3	2	5	6	12	7	10	8	5	4	8	3	9	8	3	3	3	1	0	0	103
4	BA4	1	0	1	0	1	0	3	1	1	0	0	2	0	1	2	0	0	0	0	0	0	13
5	CA3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6	CKA	0	0	0	0	0	0	1	0	0	0	0	0	1	6	5	0	0	2	0	0	0	15
7	CK1	0	2	1	1	0	0	4	0	1	1	1	1	0	1	0	0	0	0	1	0	0	14
8	CK2	0	0	1	0	0	0	0	0	0	0	0	0	0	2	6	0	1	1	0	0	0	11
9	ED1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10	ED3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11	ED4	0	0	3	0	0	4	2	3	2	0	0	1	0	0	0	0	0	0	0	0	0	15
12	FC1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3
13	FD1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	2
14	FE1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
15	GAC	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
16	HA4	1	3	6	1	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	14
17	HA8	6	2	11	4	2	3	3	3	0	1	0	1	1	6	2	1	0	0	1	0	0	47
18	HB4	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
19	JF1	1	4	8	6	7	10	20	12	7	7	4	6	2	12	1	6	6	1	3	6	5	134
20	JG1	5	6	7	5	4	9	4	4	5	4	9	9	4	3	4	4	5	0	1	1	5	98
21	JG2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
22	JH2	6	18	31	14	13	30	25	9	8	8	6	14	10	9	8	2	3	3	1	0	0	218
23	JK2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
24	KB6	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2
25	KE3	0	0	2	0	0	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	6
26	KJ1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2
27	KJ2	0	0	0	0	1	0	0	0	0	0	0	0	0	1	4	0	1	0	0	0	0	7
28	KJ3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
29	LD5	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
30	LD9	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
31	LR1	0	0	15	0	0	0	0	0	0	0	0	0	0	2	9	0	0	0	2	0	0	28
32	LR6	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
33	PE1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
34	CA1	1	1	0	0	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	6
35	CF1	0	0	2	4	5	4	2	3	2	1	1	0	0	1	1	0	0	0	0	0	0	26
36	RA1	0	0	1	0	0	1	3	5	5	4	0	3	1	3	2	0	0	0	0	0	0	28
37	RA2	0	1	1	0	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
38	RA3	77	197	435	447	376	659	869	718	542	445	343	491	332	510	229	103	74	42	60	32	40	7021
39	RD1	2	6	15	12	7	20	21	16	12	3	5	7	3	3	5	0	0	0	0	0	0	137
40	RF2	1	0	0	0	0	0	1	0	2	0	0	3	2	4	2	0	0	0	0	0	0	15
41	RG8	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
42	RGE	2	1	9	3	6	15	20	16	18	12	5	12	13	18	7	4	1	0	0	0	3	165
43	RGL	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
44	RGU	73	56	68	61	88	128	180	189	162	119	84	143	80	148	61	35	20	11	12	8	19	1745
45	RG1	48	53	43	49	37	92	134	140	159	149	88	106	64	134	74	24	19	11	4	3	13	1444
46	RG3	3	0	7	2	9	20	17	11	32	15	15	18	8	6	17	3	3	3	0	3	5	199
47	RG4	0	0	1	0	3	2	1	1	2	2	3	2	7	5	1	2	1	0	1	0	0	34
48	RG5	3	1	3	2	4	7	17	11	11	19	14	13	6	17	5	5	0	0	0	0	4	142
49	RG6	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
50	RH1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
51	RJ1	12	28	71	76	85	114	158	151	118	54	39	53	44	56	24	12	6	0	2	2	2	1107
52	RJ2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
53	RJ3	26	62	122	97	69	105	101	101	62	35	39	41	21	31	24	16	6	1	2	0	0	903
54	SA1	1	12	27	26	30	36	50	27	14	6	5	10	6	7	9	2	0	0	0	0	0	268
55	SA2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
56	SA3	98	233	390	426	366	591	764	622	496	314	214	346	241	348	187	90	37	24	12	8	8	5815
57	SC4	3	10	1	0	0	1	2	1	2	0	0	1	0	0	0	0	0	0	0	0	0	21
58	TA1	5	20	60	61	78	127	174	134	108	47	39	62	47	47	19	8	9	2	0	0	1	1048
59	TA2	42	83	182	174	165	218	317	253	194	128	121	160	103	133	61	31	25	7	12	4	4	2417
60	TA3	0	1	1	2	0	0	2	0	1	1	0	0	0	1	0	0	0	0	0	0	0	9

COMPUTER OUTPUT TWO-3

THE FOLLOWING TABLE IDENTIFIES THE FREQUENCY OF OCCURRENCE FOR SHIPMENTS IN EACH INTERVAL FOR DENSITY MEASURED IN POUNDS PER CU.FT.

NO.	POD	000 TO 004	005 TO 008	009 TO 012	013 TO 016	017 TO 020	021 TO 024	025 TO 028	029 TO 032	033 TO 036	037 TO 040	041 TO 044	045 TO 048	049 TO 052	053 TO 056	057 TO 060	061 TO 064	065 TO 068	069 TO 072	073 TO 076	077 TO 080	OVER 080	NO. SHIP.
1		0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	5
2	AF4	0	0	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	4
3	BA1	6	11	19	9	6	10	3	6	5	2	3	5	4	1	4	1	1	0	1	1	5	103
4	BA4	0	4	2	3	0	0	1	0	0	0	0	0	0	0	3	0	0	0	0	0	0	13
5	CA3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6	CKA	0	1	0	0	0	0	1	0	3	2	0	1	1	4	1	0	1	0	0	0	0	15
7	CK1	0	4	6	1	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	14
8	CK2	0	0	1	0	0	1	0	1	4	1	1	1	0	1	0	0	0	0	0	0	0	11
9	E01	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
10	E03	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11	ED4	0	3	2	3	1	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	2	15
12	FC1	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
13	FD1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
14	FE1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
15	GAC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
16	HA4	1	3	2	1	0	1	2	0	2	2	0	0	0	0	0	0	0	0	0	0	0	14
17	HA8	5	11	12	3	2	0	4	3	2	0	0	1	2	1	1	0	0	0	0	0	0	47
18	HB4	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
19	JF1	4	13	35	9	3	8	4	2	3	3	2	4	8	2	10	16	1	0	2	0	5	134
20	JG1	5	9	25	6	5	5	4	3	5	4	2	1	2	1	10	4	5	0	1	0	1	98
21	JG2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
22	JH2	8	22	25	14	14	10	17	13	18	9	7	18	4	10	8	3	4	1	0	2	11	218
23	JK2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
24	KB6	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
25	KE3	0	2	1	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	6
26	KJ1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2
27	KJ2	0	0	0	0	1	1	0	2	1	0	0	1	0	1	0	0	0	0	0	0	0	7
28	KJ3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
29	L05	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
30	L09	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
31	LR1	0	0	13	2	0	0	2	6	2	1	2	0	0	0	0	0	0	0	0	0	0	28
32	LR6	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
33	PE1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
34	CA1	1	2	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
35	CF1	1	1	3	1	3	1	4	1	3	1	1	1	1	1	2	0	0	0	0	0	1	26
36	RA1	0	0	4	6	5	5	2	1	2	1	1	0	0	0	0	0	0	0	0	0	1	28
37	RA2	0	1	1	0	2	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	7
38	RA3	125	519	1083	723	631	531	414	430	414	327	332	241	199	194	142	135	131	68	55	37	290	7021
39	R01	1	5	11	12	13	13	10	11	10	11	4	3	2	6	3	2	1	2	3	1	13	137
40	RF2	1	0	1	1	1	2	1	0	1	0	1	0	1	0	0	0	1	0	1	1	2	15
41	RGB	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
42	RGE	2	9	20	19	6	18	9	9	14	10	1	7	3	6	5	2	6	2	4	2	9	165
43	RGL	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
44	RGU	65	92	285	170	154	117	93	102	84	93	88	85	56	80	33	29	21	6	8	4	80	1745
45	RG1	39	73	199	205	136	122	103	80	74	63	52	51	41	48	17	22	17	16	6	7	73	1444
46	RG3	5	14	34	15	11	11	12	9	8	15	4	10	5	16	9	0	1	1	0	0	19	199
47	RG4	0	2	5	8	4	1	1	0	0	3	1	0	1	0	0	1	4	0	0	0	3	34
48	RG5	4	3	10	11	8	9	7	4	12	5	5	3	4	7	5	1	7	4	2	1	30	142
49	RG6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
50	RH1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
51	RJ1	31	107	176	122	79	84	82	86	77	43	58	35	18	29	13	13	12	8	4	7	23	1107
52	RJ2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
53	RJ3	34	118	185	89	81	64	64	49	52	34	28	21	36	29	11	5	11	8	6	5	33	963
54	SA1	3	17	20	36	19	9	13	16	12	18	11	9	5	11	5	7	4	3	8	3	39	268
55	SA2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
56	SA3	171	616	981	651	496	392	335	303	282	250	242	162	114	119	135	101	96	61	42	26	240	5815
57	SC4	2	2	1	2	1	3	4	3	3	0	0	0	0	0	0	0	0	0	0	0	0	21
58	TA1	28	112	135	143	98	69	64	58	45	49	51	35	27	25	34	41	14	5	2	4	9	1048
59	TA2	63	255	458	256	204	167	143	118	113	91	75	66	56	62	61	32	23	17	11	8	138	2417
60	TA3	0	0	4	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	9

COMPUTER OUTPUT TWO-4

TABULAR SUMMARY TABLE OF POD PERFORMANCE

NO.	POD	NO.SHIP.	TOT.VOL.	AVE.VOL.	STD.DEV.VOL.	TOT.WGHT.	AVE.WGHT.	STD.DEV.WGHT.	AVE.DEN.	STD.DEV.DEN.
1		5	735	147.000	265.576	7995	1599.000	2020.808	37.605	29.093
2	AF4	4	917	229.250	78.375	18900	4725.000	3.000	22.496	5.514
3	BA1	103	14145	137.330	241.249	222352	2158.757	4401.465	22.486	21.896
4	BA4	13	3957	304.385	482.499	19482	1498.615	2090.928	17.354	15.772
5	CA3	1	24	24.000	0.0	114	114.000	0.0	4.750	0.0
6	CKA	15	2798	186.533	150.456	80701	5380.066	7547.652	33.276	10.981
7	CK1	14	1238	88.429	156.864	28309	2022.071	5192.469	13.688	11.134
8	CK2	11	2087	189.727	104.556	61528	5593.453	7218.242	26.331	8.283
9	ED1	1	4	4.000	0.0	60	60.000	0.0	15.000	0.0
10	ED3	1	2	2.000	0.0	30	30.000	0.0	15.000	0.0
11	ED4	15	291	19.400	25.073	3965	264.333	281.155	20.946	20.417
12	FC1	3	338	112.667	150.156	5567	1855.667	2534.598	11.996	3.367
13	FD1	2	792	396.000	381.000	49068	24534.000	22020.512	40.336	22.469
14	FE1	1	7	7.000	0.0	106	106.000	0.0	15.143	0.0
15	GAC	1	55	55.000	0.0	3740	3740.000	0.0	68.000	0.0
16	HA4	14	143	10.214	19.918	2814	201.000	527.638	15.700	9.638
17	HA8	47	3784	80.511	262.318	61197	1302.064	3376.777	13.542	11.211
18	HB4	3	15	5.000	5.657	129	43.000	56.592	5.154	3.456
19	JF1	134	19397	144.754	230.523	668108	4985.879	9916.637	24.894	21.203
20	JG1	98	13293	135.643	235.724	411047	4194.355	10456.535	21.481	16.628
21	JG2	1	23	23.000	0.0	524	524.000	0.0	22.783	0.0
22	JH2	218	10464	48.000	107.530	254400	1166.972	3126.365	27.091	38.502
23	JK2	1	88	88.000	0.0	3616	3616.000	0.0	41.091	0.0
24	KG6	2	77	38.500	16.500	3164	1582.000	678.000	41.091	0.027
25	KE3	6	146	24.333	22.794	1212	202.000	148.350	11.298	7.999
26	KJ1	2	367	183.500	146.500	14559	7279.500	7000.500	25.407	17.866
27	KJ2	7	1251	178.714	101.549	35540	5077.141	3594.657	26.216	8.267
28	KJ3	1	7	7.000	0.0	100	100.000	0.0	14.286	0.0
29	LD5	2	35	17.500	2.500	240	120.000	65.000	6.458	2.792
30	LD9	1	124	124.000	0.0	1735	1735.000	0.0	13.992	0.0
31	LR1	28	3518	125.643	161.806	95710	3418.214	6829.195	15.900	9.155
32	LR6	2	43	21.500	7.500	1080	540.000	60.000	27.488	6.798
33	PE1	1	9	9.000	0.0	92	92.000	0.0	10.222	0.0
34	CA1	6	209	34.833	28.818	2330	388.333	472.913	10.146	6.899
35	QF1	26	557	21.423	36.488	13440	516.923	1173.511	23.984	14.273
36	RA1	28	2501	89.321	141.525	31468	1123.857	1319.312	17.979	11.385
37	RA2	7	39	5.571	3.620	646	92.286	52.963	16.812	11.699
38	RA3	7021	583323	83.083	242.604	12119492	1726.177	4076.799	24.015	23.916
39	RD1	137	3313	24.182	44.187	69222	505.270	1025.296	30.752	27.686
40	RF2	15	1190	79.333	75.510	30554	2036.933	1612.542	57.218	99.478
41	RGB	1	3	3.000	0.0	55	55.000	0.0	18.333	0.0
42	RGE	165	14788	89.624	195.306	350514	2124.327	1352.183	27.006	23.021
43	RGL	1	17	17.000	0.0	270	270.000	0.0	15.882	0.0
44	RGU	1745	148932	85.348	225.977	3803456	2179.631	3648.439	23.677	19.787
45	RG1	1444	137204	95.017	290.192	2965522	2053.686	3717.083	24.302	25.960
46	RG3	199	26313	132.226	336.507	641498	3223.608	6292.199	26.871	21.979
47	RG4	34	4622	135.941	214.244	92819	2729.970	4872.938	25.304	19.676
48	RG5	142	10655	75.035	172.676	352601	2483.105	5222.113	41.361	41.313
49	RG6	1	25	25.000	0.0	1435	1435.000	0.0	57.400	0.0
50	RH1	1	12	12.000	0.0	209	209.000	0.0	17.417	0.0
51	RJ1	1107	63145	57.042	158.906	1024520	925.492	2965.186	20.618	16.255
52	RJ2	1	43	43.000	0.0	560	560.000	0.0	13.023	0.0
53	RJ3	963	39122	40.625	97.874	731103	759.193	2069.972	20.106	16.683
54	SA1	268	6910	25.784	79.545	143957	537.153	1307.007	33.344	30.074
55	SA2	1	6	6.000	0.0	400	400.000	0.0	66.667	0.0
56	SA3	5815	414259	71.240	210.163	6368911	1095.255	2663.109	23.105	40.179
57	SC4	21	178	8.476	11.951	3176	151.238	267.832	16.025	7.705
58	TA1	1048	48888	46.649	121.755	845421	806.699	2218.540	21.404	19.178
59	TA2	2417	205093	84.854	280.682	2760274	1142.025	2800.781	22.435	22.089
60	TA3	9	281	31.222	35.449	4176	464.000	696.130	13.150	5.422

COMPUTER OUTPUT THREE

THE FOLLOWING TABLE IDENTIFIES THE DAILY ARRIVAL OF CARGO AT THE CONTAINER STUFFING STATION BY NO. SHIP., VOLUME, AND WEIGHT.

DAYS		NO.SHIP	VOLUME	WEIGHT
DAY	1	8	600	4500
DAY	2	450	50215	912453
DAY	3	698	74329	1041788
DAY	4	39	5153	128170
DAY	5	669	60679	1005490
DAY	6	551	67676	608442
DAY	7	29	2794	20376
DAY	8	7	472	4634
DAY	9	440	43931	619487
DAY	10	519	57383	924920
DAY	11	596	70769	1235854
DAY	12	637	56227	840181
DAY	13	566	55764	873121
DAY	14	32	2898	29206
DAY	15	0	0	0
DAY	16	821	59359	894694
DAY	17	715	49880	791171
DAY	18	580	63433	1188401
DAY	19	504	53684	1052283
DAY	20	519	52183	1069315
DAY	21	2	252	1890
DAY	22	8	2159	19355
DAY	23	548	58721	779101
DAY	24	618	43916	730337
DAY	25	472	42118	657720
DAY	26	524	41601	586004
DAY	27	583	43156	791107
DAY	28	5	625	7918
DAY	29	35	1770	28485
DAY	30	458	49969	789230

COMPUTER OUTPUT FOUR

THE FOLLOWING TABLE IDENTIFIES THE FREQUENCY OF OCCURRENCE OF THE EXCEPTION HANDLING CODES BY POD AND CONSIGNEE

NO.	POD	CON	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	OTHER
1		CX4872	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2		FB526C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
3		FB5270	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
4		N05110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
5		N70278	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
6	AF4	FE4684	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
7	BA1	AF6102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8	BA1	AF6114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0
9	BA1	AF6149	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
10	BA1	AF6155	0	0	0	0	0	0	1	1	0	0	0	0	0	5	0	0	0	0	0	0	2	0	0	0	0	26	2
11	BA1	AF6158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
12	BA1	AF6201	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
13	BA1	AF6203	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
14	BA1	AF6205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
15	BA1	AF6206	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
16	BA1	AF6207	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
17	BA1	AF6301	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1
18	BA1	CF6109	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	BA1	FB7010	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	11	0
20	BA1	FE7010	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
21	BA1	FL7012	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
22	BA1	FY8605	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1
23	BA1	N66833	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
24	BA1	WFEJH9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
25	BA1	WF6J89	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
26	BA4	M95121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0
27	BA4	N00509	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
28	BA4	N65942	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
29	BA4	N70283	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	1	1
30	CA3	N65963	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
31	CKA	AF3225	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0
32	CKA	N62224	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
33	CKA	N66859	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
34	CK1	AF3225	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
35	CK1	FG6540	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0
36	CK1	N66859	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
37	CK2	N00389	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0
38	ED1	FPEB01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
39	ED3	DBLB01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
40	ED4	BBLA02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	0
41	ED4	DBLB01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
42	FC1	BUYA02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
43	FC1	DUYB01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
44	FC1	DUYE02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
45	FD1	BPAA01	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
46	FE1	DARF02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
47	GAC	FB4486	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
48	HA4	FB5518	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
49	HA4	FB5537	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
50	HA4	FB5587	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
51	HA4	FB5643	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
52	HA4	FB5644	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
53	HA4	FY3560	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	2	0
54	HA8	FB5518	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0
55	HA8	FB5537	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0
56	HA8	FB5587	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
57	HA8	FB5643	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
58	HA8	FB5644	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0
59	HA8	FE5518	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
60	HA8	FE5537	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

COMPUTER OUTPUT FIVE

THE FOLLOWING TABLE IDENTIFIES THE SHIPMENTS BY THE COMMODITY CODES FOR EACH POD AND CONSIGNEE

NO.	POD	CON	100-149 CHILL	150-199 FREEZE	200-299 BULK	300-359 POV	360-389 BAGGAGE	390-399 HHGOODS	400-489 AMMO.	490-499 RAD.ACT	500-799 GENERAL	800-899 SPECIAL	900-999 A/C,ASSD	OTHER	NO. SHIP.
1		CX4872	0	0	0	0	0	0	0	0	1	0	0	0	1
2		FB5260	0	0	0	0	0	0	0	0	1	0	0	0	1
3		FB5270	0	0	0	0	0	1	0	0	0	0	0	0	1
4		NC5110	0	0	0	0	0	0	0	0	1	0	0	0	1
5		N70278	0	0	0	0	0	0	0	0	1	0	0	0	1
6	AF4	FE4684	0	0	0	0	0	0	0	0	4	0	0	0	4
7	BA1	AF6102	0	0	0	0	0	0	0	0	1	0	0	0	1
8	BA1	AF6114	0	0	0	0	0	4	0	0	3	0	0	0	7
9	BA1	AF6149	0	0	0	0	0	0	0	0	5	0	0	0	5
10	BA1	AF6155	1	0	0	0	0	2	0	0	32	0	0	2	37
11	BA1	AF6158	0	0	0	0	0	3	0	0	0	0	0	0	3
12	BA1	AF6201	0	0	0	0	0	0	0	0	2	0	0	0	2
13	BA1	AF6203	0	0	0	0	0	0	0	0	2	0	0	0	2
14	BA1	AF6205	0	0	0	0	0	0	0	0	3	0	0	0	3
15	BA1	AF6206	0	0	0	0	0	0	0	0	1	0	0	0	1
16	BA1	AF6207	0	0	0	0	0	0	0	0	1	0	0	0	1
17	BA1	AF6301	0	0	0	0	0	0	0	0	4	0	0	1	5
18	BA1	CF6109	0	0	0	0	0	0	0	0	1	0	0	0	1
19	BA1	FB7010	0	0	0	0	0	0	0	0	14	0	0	0	14
20	BA1	FE7010	0	0	0	0	0	1	0	0	3	0	0	0	4
21	BA1	FL7012	0	0	0	0	0	1	0	0	0	0	0	0	1
22	BA1	FY8605	0	0	0	0	0	0	0	0	5	0	0	1	6
23	BA1	N66833	0	0	0	0	0	0	0	0	1	0	0	0	1
24	BA1	WF6JH9	0	0	0	0	0	2	0	0	3	0	0	0	5
25	BA1	WF6JB9	0	0	0	0	0	0	0	0	4	0	0	0	4
26	BA4	M95121	0	0	0	0	0	0	0	0	5	0	0	0	5
27	BA4	NC0509	0	0	0	0	0	1	0	0	0	0	0	0	1
28	BA4	N65942	0	0	0	0	0	0	0	0	2	0	0	0	2
29	BA4	N70283	0	0	0	0	1	0	0	0	3	0	0	1	5
30	CA3	N65963	0	0	0	0	0	0	0	0	0	0	0	1	1
31	CKA	AF3225	0	0	0	0	0	0	0	0	11	0	0	0	11
32	CKA	N62224	0	0	0	0	0	1	0	0	1	0	0	0	2
33	CKA	N66859	0	0	0	0	0	0	0	0	2	0	0	0	2
34	CK1	AF3225	0	0	0	0	0	0	0	0	2	0	0	0	2
35	CK1	FG6540	0	0	0	0	0	0	0	0	11	0	0	0	11
36	CK1	N66859	0	0	0	0	0	0	0	0	1	0	0	0	1
37	CK2	N00389	0	0	0	0	0	0	0	0	11	0	0	0	11
38	ED1	PPEB01	0	0	0	0	0	0	0	0	1	0	0	0	1
39	ED3	DBLB01	0	0	0	0	0	0	0	0	1	0	0	0	1
40	ED4	BBLA02	0	0	0	0	0	0	0	0	14	0	0	0	14
41	ED4	DBLB01	0	0	0	0	0	0	0	0	1	0	0	0	1
42	FC1	BUYA02	0	0	0	0	0	0	0	0	1	0	0	0	1
43	FC1	OUYB01	0	0	0	0	0	0	0	0	1	0	0	0	1
44	FC1	DUYE02	0	0	0	0	0	0	0	0	1	0	0	0	1
45	FC1	EPAA01	0	0	0	0	0	0	0	0	2	0	0	0	2
46	FE1	DAFF02	0	0	0	0	0	0	0	0	1	0	0	0	1
47	GAC	FE4486	0	0	0	0	0	0	0	0	1	0	0	0	1
48	HA4	FB5518	0	0	0	0	0	0	0	0	1	0	0	0	1
49	HA4	FB5537	0	0	0	0	0	0	0	0	3	0	0	0	3
50	HA4	FB5587	0	0	0	0	0	0	0	0	2	0	0	0	2
51	HA4	FB5643	0	0	0	0	0	0	0	0	1	0	0	1	2
52	HA4	FB5644	0	0	0	0	0	0	0	0	1	0	0	0	1
53	HA4	FY3560	0	0	0	0	0	0	0	0	5	0	0	0	5
54	HA8	FB5518	0	0	0	0	0	0	0	0	4	0	0	0	4
55	HA8	FB5537	0	0	0	0	0	0	0	0	16	0	0	0	16
56	HA8	FB5587	0	0	0	0	0	0	0	0	4	0	0	0	4
57	HA8	FB5643	0	0	0	0	0	0	0	0	2	0	0	0	2
58	HA8	FB5644	0	0	0	0	0	0	0	0	4	0	0	0	4
59	HA8	FE5518	0	0	0	0	0	0	0	0	3	0	0	0	3
60	HA8	FE5537	0	0	0	0	0	0	0	0	1	0	0	0	1

COMPUTER OUTPUT SIX-1

THE FOLLOWING TABLE IDENTIFIES THE NUMBER OF DAYS AND THE FREQUENCY IN PERCENT FOR THE VARIOUS INTERVALS OF VOLUME MEASURED IN CU FT

PCD	CON		000 TO 000	001 TO 050	051 TO 100	101 TO 200	201 TO 400	401 TO 600	601 TO 800	801 TO 1000	1001 TO 1250	1251 TO 1500	1501 TO 1750	1751 TO 2000	2001 TO 3000	3001 TO 4000	4001 TO 5000	5001 TO 6000	6001 TO 8000	8001 TO 10000	10001 TO 15000	15001 TO 25000	OVER 25000	TOTAL RECEIPT DAYS
	CX4872	DAYS	122	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		PCT	99.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	FB5260	DAYS	122	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		PCT	99.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	FB5270	DAYS	122	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		PCT	99.2	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	N05110	DAYS	122	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		PCT	99.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	N70278	DAYS	122	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		PCT	99.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
AF4	FE4684	DAYS	122	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		PCT	99.2	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
BA1	AF6102	DAYS	122	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		PCT	99.2	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
BA1	AF6114	DAYS	117	1	1	1	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	6
		PCT	95.1	0.8	0.8	0.8	0.0	0.0	0.8	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
BA1	AF6149	DAYS	121	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
		PCT	98.4	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
BA1	AF6155	DAYS	100	16	1	4	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	23
		PCT	81.5	13.0	0.8	3.3	0.8	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
BA1	AF6158	DAYS	120	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3
		PCT	97.6	0.0	0.8	0.0	0.0	0.8	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
BA1	AF6201	DAYS	121	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
		PCT	98.4	0.0	0.0	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
BA1	AF6203	DAYS	122	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		PCT	99.2	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
BA1	AF6205	DAYS	120	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
		PCT	97.6	0.8	0.0	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
BA1	AF6206	DAYS	122	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		PCT	99.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
BA1	AF6207	DAYS	122	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		PCT	99.2	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
BA1	AF6301	DAYS	119	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
		PCT	96.7	2.4	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
BA1	CF6109	DAYS	122	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		PCT	99.2	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
BA1	FB7010	DAYS	111	8	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
		PCT	90.2	6.5	0.8	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
BA1	FE7010	DAYS	120	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
		PCT	97.6	1.6	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

COMPUTER OUTPUT SIX-2

THE FOLLOWING TABLE IDENTIFIES THE NUMBER OF DAYS AND THE FREQUENCY IN PERCENT FOR THE VARIOUS INTERVALS OF WEIGHT MEASURED IN PDS.

POD	CON		000 TO 000	001 TO 050	051 TO 100	101 TO 200	201 TO 400	401 TO 600	601 TO 800	801 TO 1000	1001 TO 1250	1251 TO 1500	1501 TO 2000	2001 TO 3000	3001 TO 5000	5001 TO 7500	7501 TO 10000	10001 TO 15000	15001 TO 20000	20001 TO 25000	25001 TO 30000	30001 TO 40000	OVER 40000	TOTAL RECEIPT DAYS
	CX4872	DAYS	122	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
		PCT	99.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	FB5260	DAYS	122	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		PCT	99.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	FB5270	DAYS	122	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
		PCT	99.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	N05110	DAYS	122	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		PCT	99.2	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	N70278	DAYS	122	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		PCT	99.2	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
AF4	FE4684	DAYS	122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
		PCT	99.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	
EA1	AF6102	DAYS	122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
		PCT	99.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	
EA1	AF6114	DAYS	117	0	0	0	1	0	0	0	1	1	0	0	0	3	0	0	0	0	0	0	0	6
		PCT	95.1	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.8	0.8	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
EA1	AF6149	DAYS	121	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	2
		PCT	98.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	
EA1	AF6155	DAYS	100	1	3	2	3	1	2	2	1	1	2	0	4	1	0	0	0	0	0	0	0	23
		PCT	81.3	0.8	2.4	1.6	2.4	0.8	1.6	1.6	0.8	0.8	1.6	0.0	3.3	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
EA1	AF6158	DAYS	120	0	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	3
		PCT	97.6	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	
EA1	AF6201	DAYS	121	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
		PCT	98.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
EA1	AF6203	DAYS	122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
		PCT	99.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	
EA1	AF6205	DAYS	120	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	3
		PCT	97.6	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	
EA1	AF6206	DAYS	122	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
		PCT	99.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
EA1	AF6207	DAYS	122	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
		PCT	99.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	
EA1	AF6301	DAYS	119	0	0	1	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
		PCT	96.7	0.0	0.0	0.8	1.6	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
BA1	CF6109	DAYS	122	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
		PCT	99.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
BA1	FB7010	DAYS	111	2	3	1	2	1	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	12
		PCT	90.2	1.6	2.4	0.8	1.6	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.6	0.0	0.0	0.0	0.0	0.0	
BA1	FE7010	DAYS	120	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	3
		PCT	97.6	0.0	0.0	0.8	0.0	0.8	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

COMPUTER OUTPUT SEVEN-1

THE FOLLOWING TABLES IDENTIFY THE VARIOUS CARGO PARAMETERS FOR THE THIRTEEN PODS BASED ON A 30-DAY INCREMENT BY CONTAINER TYPE

POD- 1 MONTH- 11

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
10	38	4.988	4.823	73.500	18.870	35	0.921
11	103	12.509	12.328	83.049	10.816	99	0.961

POD- 2 MONTH- 11

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
3	11	16.273	14.314	75.000	15.445	8	0.727
4	3	9.984	7.763	59.000	6.976	0	0.0

POD- 3 MONTH- 11

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
3	7	11.464	9.971	76.429	16.291	4	0.571

POD- 4 MONTH- 11

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
3	22	5.240	4.992	81.000	11.947	20	0.909
8	2	1.000	0.661	59.000	9.000	1	0.500
10	12	6.128	5.686	80.417	11.243	9	0.750

POD- 5 MONTH- 11

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
13	5	5.204	4.362	70.400	16.354	5	1.000
16	20	10.105	9.734	74.850	14.820	17	0.850

POD- 6 MONTH- 11

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
3	43	8.690	8.361	80.442	12.132	38	0.884
10	29	5.307	5.105	74.931	16.000	23	0.793

POD- 7 MONTH- 11

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
3	1	1.000	0.0	90.000	0.0	1	1.000
8	9	5.487	4.950	73.222	14.281	8	0.889
10	10	3.535	3.241	80.000	13.609	10	1.000

POD- 8 MONTH- 11

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
8	9	7.823	7.102	70.778	9.319	6	0.667
10	2	9.420	6.459	79.500	3.500	1	0.500

COMPUTER OUTPUT SEVEN-2

THE FOLLOWING TABLES IDENTIFY THE VARIOUS CARGO PARAMETERS FOR THE THIRTEEN PODS BASED ON A 30-DAY INCREMENT BY CONTAINER TYPE

POD- 1 MONTH- 21

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
10	38	8.170	7.857	73.658	14.916	27	0.711
11	64	5.887	5.770	81.047	9.995	64	1.000

POD- 2 MONTH- 21

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
3	2	8.000	4.829	61.500	8.500	2	1.000
4	7	10.897	9.564	67.286	12.418	5	0.714

POD- 3 MONTH- 21

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
3	11	13.629	12.247	77.636	11.388	7	0.636

POD- 4 MONTH- 21

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
3	40	5.024	4.905	82.300	10.412	33	0.825
10	35	6.182	5.961	83.257	10.729	33	0.943

POD- 5 MONTH- 21

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
13	15	7.955	7.447	80.133	13.913	12	0.800
16	10	8.101	7.378	77.700	12.578	9	0.900

POD- 6 MONTH- 21

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
3	52	13.048	12.435	78.788	13.427	48	0.923
10	25	8.141	7.880	81.880	12.307	23	0.920

POD- 7 MONTH- 21

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
8	67	14.436	14.104	81.776	12.422	63	0.940

POD- 8 MONTH- 21

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
8	2	10.636	6.984	63.500	5.500	1	0.500
10	1	5.000	0.0	66.000	0.0	0	0.0

THE FOLLOWING TABLES IDENTIFY THE VARIOUS CARGO PARAMETERS FOR THE THIRTEEN PODS BY CONTAINER TYPE FOR THE TWO-YEAR PERIOD

POD- 1

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
10	1006	7.610	7.599	74.769	15.870	875	0.870
11	1783	10.600	10.591	80.307	13.043	1721	0.965

POD- 2

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
3	157	16.012	15.676	75.401	13.928	122	0.777
4	109	16.719	16.521	72.605	12.813	69	0.633

POD- 3

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
3	226	11.358	11.304	73.549	13.464	149	0.659
8	11	19.000	15.256	68.273	12.927	7	0.636

POD- 4

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
3	847	7.098	7.080	81.372	10.860	788	0.930
8	397	7.195	7.112	81.703	10.953	372	0.937
10	710	7.920	7.908	82.096	12.253	654	0.921

POD- 5

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
8	129	8.320	8.231	79.233	11.500	121	0.938
13	318	9.353	9.318	79.255	13.504	280	0.881
16	301	8.529	8.500	76.375	15.092	262	0.870

POD- 6

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
3	1280	8.196	8.184	81.161	11.137	1200	0.938
10	577	6.643	6.634	77.830	14.957	520	0.901
11	267	6.323	6.261	79.730	12.396	249	0.933

POD- 7

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
3	776	9.972	9.952	80.657	13.334	740	0.954
8	922	9.395	9.378	79.505	13.815	876	0.950
10	159	6.040	5.971	72.006	18.254	152	0.956

POD- 8

CONTAINER TYPE	NO.CONTAINERS	AVE.AGE	STD.DEV.AGE	AVE.CUBE UTIL.	STD.DEV.CUBE UTIL.	NO.SINGLE CON.CONT.	SINGLE CON.PROP
8	191	14.175	14.096	78.435	11.285	148	0.775
10	48	11.451	11.200	71.229	14.703	24	0.500

COMPUTER OUTPUT EIGHT

COMPUTER PROGRAM ONE

```
C THIS PROGRAM IS DESIGNED TO TAKE SHIPMENT DATA CFF A DATA CELL AND
C PRINT OUT THE INFORMATION DESIRED BY CONSIGNEE. THE DATA REPRESENTS A
C FOUR MONTH PERIOD OF TIME.
      IMPLICIT INTEGER*4 (A-W)
      DIMENSION VCUT(20),VFREQ(21),WCUT(20),WFREQ(21)
      DIMENSION SVFREQ(1822,21),SWFREQ(1822,21),SDFREQ(1822,21)
      DIMENSION DCUT(20),DFREQ(21)
      DIMENSION SPOD(1822),SCN1(1822),SCN2(1822)
      DIMENSION STWGHT(1822),SNSHIP(1822)
      DIMENSION SXAVEV(1822),SXAVEW(1822),SXAVED(1822)
      DIMENSION SSDEVV(1822),SSDEVW(1822),SSDEVD(1822),STVOL(1822)
      INTEGER*2 PCS,DT,SVFREQ,SWFREQ,SDFREQ,VFREQ,WFREQ,DFREQ
      REAL*8 TSWGHT
      REAL*4 SXAVEV,SSDEVV,SXAVEW,SSDEVW,SXAVED,SSDEVD,TDEN,TSDEN
    1 FORMAT(A3,A4,A2,A1,A4,A4,A2,A2,A3,A4)
    2 FORMAT('1THE FOLLOWING TABLE IDENTIFIES THE FREQUENCY OF OCCURRENC
     1E FOR SHIPMENTS IN EACH INTERVAL FOR VOLUME MEASURED IN CUBIC FEET
     2')
    3 FORMAT('1THE FOLLOWING TABLE IDENTIFIES THE FREQUENCY OF OCCURRENC
     1E FOR SHIPMENTS IN EACH INTERVAL FOR WEIGHT MEASURED IN POUNDS')
    4 FORMAT('1THE FOLLOWING TABLE IDENTIFIES THE FREQUENCY OF OCCURRENC
     1E FOR SHIPMENTS IN EACH INTERVAL FOR DENSITY MEASURED IN POUNDS PE
     2R CU.FT.')
    5 FORMAT('0                  000  003  005  007  009  011  015  021  03
     11  041  051  071  091  121  151  201  401  601  801  1001  OVER  N
     2O.')
    6 FORMAT('                    TO   TO   TO   TO   TO   TO   TO   TO   T
     1O  TO   TO   TO   TO   TO   TO   TO   TO   TO   TO   TO        S
     2HIP.')
    7 FORMAT(' POD   CON         002  004  006  008  010  014  020  030  04
     10  050  070  090  120  150  200  400  600  800  1000  2000  2000')
    8 FORMAT('0                  000  011  026  051  076  101  151  251  40
     11  601  801  1001  1501 2001 4001  7001 10001 14001 18001 25001  O
     2VER  NO.')
    9 FORMAT('                    TO   TO   TO   TO   TO   TO   TO   TO   T
     1O  TO   TO   TO   TO   TO   TO   TO   TO   TO   TO   TO
     1    SHIP')
   10 FORMAT(' POD   CON         010  025  050  075  100  150  250  400  60
     10  800  1000 1500  2000 4000  7000 10000 14000 18000 25000 35000 3
     25000')
   11 FORMAT('0                  000  005  009  013  017  021  025  029  03
     13  037  041  045  049  053  057  061  065  069  073  077  OVER  NO
     2.')
   12 FORMAT('                    TO   TO   TO   TO   TO   TO   TO   TO   T
     1O  TO   TO   TO   TO   TO   TO   TO   TO   TO   TO   TO        SH
     2IP.')
   13 FORMAT(' POD   CON         004  008  012  016  020  024  028  032  03
     16  040  044  048  052  056  060  064  068  072  076  080  080')
```

```
   14 FORMAT(1X,A3,3X,A4,A2,19(2X,I3),2(3X,I3),3X,I4)
   15 FORMAT(1X,A3,3X,A4,A2,16(2X,I3),5(3X,I3),3X,I4)
   16 FORMAT(1X,A3,3X,A4,A2,21(2X,I3),3X,I4)
   17 FORMAT(1X,I4,2X,A3,2X,A4,A2,5X,I4,4X,I6,3X,F9.3,6X,F8.3,5X,I8,5X,F
     19.3,8X,F9.3,4X,F7.3,6X,F7.3)
   18 FORMAT('1                                           TABULAR SUMMARY T
     1ABLE OF CONSIGNEE PERFORMANCE')
   19 FORMAT('0 NO.  POD   CON     NO.SHIP. TOT.VCL.   AVE.VOL.    STD.
     1DEV.VOL.   TOT.WGHT.    AVE.WGHT.    STD.DEV.WGHT.  AVE.DEN.  STD.
     2DEV.DEN.')
C ESTABLISH THE INTEGER VALUE AT WHICH CUTS ARE MADE FOR FREQUENCY DIST.
C FOR VOLUME, WEIGHT, AND DENSITY.
      VCUT(1)=2
      VCUT(2)=4
      VCUT(3)=6
      VCUT(4)=8
      VCUT(5)=10
      VCUT(6)=14
      VCUT(7)=20
      VCUT(8)=30
      VCUT(9)=40
      VCUT(10)=50
      VCUT(11)=70
      VCUT(12)=90
      VCUT(13)=120
      VCUT(14)=150
      VCUT(15)=200
      VCUT(16)=400
      VCUT(17)=600
      VCUT(18)=800
      VCUT(19)=1000
      VCUT(20)=2000
      WCUT(1)=10
      WCUT(2)=25
      WCUT(3)=50
      WCUT(4)=75
      WCUT(5)=100
      WCUT(6)=150
      WCUT(7)=250
      WCUT(8)=400
      WCUT(9)=600
      WCUT(10)=800
      WCUT(11)=1000
      WCUT(12)=1500
      WCUT(13)=2000
      WCUT(14)=4000
      WCUT(15)=7000
      WCUT(16)=10000
```

```
      WCUT(17)=14000
      WCUT(18)=18000
      WCUT(19)=25000
      WCUT(20)=35000
      DCUT(1)=4
      DCUT(2)=7
      DCUT(3)=10
      DCUT(4)=13
      DCUT(5)=16
      DCUT(6)=19
      DCUT(7)=22
      DCUT(8)=25
      DCUT(9)=28
      DCUT(10)=31
      DCUT(11)=34
      DCUT(12)=37
      DCUT(13)=40
      DCUT(14)=43
      DCUT(15)=46
      DCUT(16)=49
      DCUT(17)=52
      DCUT(18)=55
      DCUT(19)=58
      DCUT(20)=61
      ENDFLG=1
      LCN1=0
      LCN2=0
      N=0
C READ A CONSIGEE SHIPMENT FROM DATA CELL
   20 READ(13,1,END=27)POD,CN1,CN2,EHC,CUBE,WGHT,PCS,DT,CC,TAC
      IF((LCN1.NE.CN1).OR.(LCN2.NE.CN2))GO TO 21
C TABULATE THE FREQUENCY OF VOLUME.
   23 VAL=CUBE
      DO 24 I=1,20
      IF(VAL.LT.VCUT(I))GO TO 28
   24 CONTINUE
      VFREQ(I+1)=VFREQ(I+1)+1
      GO TO 30
   28 VFREQ(I)=VFREQ(I)+1
C COMPUTE THE TOTAL VOLUME FOR EACH CONSIGNEE.
   30 TVOL=TVOL+CUBE
C COMPUTE THE TOTAL SQUARED VOLUME FOR EACH CONSIGNEE.
      TSVOL=TSVOL+CUBE**2
C TABULATE THE FREQUENCY OF WEIGHT.
      VAL=WGHT
      DO 40 I=1,20
      IF(VAL.LT.WCUT(I))GO TO 50
   40 CONTINUE
```

```
      WFREQ(I+1)=WFREQ(I+1)+1
      GO TO 60
   50 WFREQ(I)=WFREQ(I)+1
C COMPUTE THE TOTAL WEIGHT FOR EACH CONSIGNEE
   60 TWGHT=TWGHT+WGHT
C COMPUTE THE TOTAL SQUARED WEIGHT FOR EACH CONSIGNEE
      TSWGHT=TSWGHT+WGHT**2
C CHANGE CUBE FROM INTEGER TO REAL
      XCUBE=CUBE
C CHANGE WEIGHT FROM INTEGER TO REAL
      XWGHT=WGHT
C COMPUTE THE DENSITY OF SHIPMENT.
      XDEN=XWGHT/XCUBE
      VAL=XDEN
C TABULATE THE FREQUENCY OF DENSITY.
      DO 70 I=1,20
      IF(VAL.LT.DCUT(I))GO TO 80
   70 CONTINUE
      DFREQ(I+1)=DFREQ(I+1)+1
      GO TO 90
   80 DFREQ(I)=DFREQ(I)+1
C COMPUTE THE TOTAL DENSITY OF A CONSIGNEE
   90 TDEN=TDEN+XDEN
C COMPUTE THE TOTAL SQUARED DENSITY FOR A CONSIGNEE
      TSDEN=TSDEN+XDEN**2
C KEEP TRACK OF HOW MANY SHIPMENTS GO TO EACH CONSIGNEE.
      NSHIP=NSHIP+1
      GO TO 20
C ESTABLISH THAT THIS IS FIRST SHIPMENT FOR A NEW CONSIGNEE.
   21 IF(LCN1.EQ.0)GO TO 29
C COMPUTE THE AVERAGE VOLUME FOR A CONSIGNEE.
   25 XTMP=FLOAT(NSHIP)
      XAVEV=TVOL/XTMP
C COMPUTE THE STANDARD DEVIATION IN VOLUME
      XSDEVV=TSVOL-(TVOL**2)/XTMP
      XSDEVV=XSDEVV/XTMP
      XSDEVV=ABS(XSDEVV)
      XSDEVV=SQRT(XSDEVV)
C COMPUTE THE AVERAGE WEIGHT FOR A CONSIGNEE
      XAVEW=TWGHT/XTMP
C COMPUTE THE STANDARD DEVIATION IN WEIGHT
      XSDEVW=TSWGHT-(TWGHT**2)/XTMP
      XSDEVW=XSDEVW/XTMP
      XSDEVW=ABS(XSDEVW)
      XSDEVW=SQRT(XSDEVW)
C COMPUTE THE AVERGE DENSITY FOR A CONSIGNEE
      XAVED=TDEN/XTMP
C COMPUTE THE STANDARD DEVIATION IN DENSITY
```

```
      XSDEVD=TSDEN-(TDEN**2)/XTMP
      XSDEVD=XSDEVD/XTMP
      XSDEVD=ABS(XSDEVD)
      XSDEVD=SQRT(XSDEVD)
C STORE THE VOLUME FREQUENCY FOR PRINTOUT AT END OF PROGRAM.
      DO 100 I=1,21
      SVFREQ(N,I)=VFREQ(I)
  100 CONTINUE
C STORE THE WEIGHT FREQUENCY FOR PRINTOUT AT END OF PROGRAM.
      DO 150 I=1,21
      SWFREQ(N,I)=WFREQ(I)
  150 CONTINUE
C STORE THE DENSITY FREQUENCY FOR PRINTOUT AT THE END OF THE PROGRAM
      DO 170 I=1,21
      SDFREQ(N,I)=DFREQ(I)
  170 CONTINUE
C STORE THE TOTAL NUMBER OF SHIPMENTS FOR EACH CONSIGNEE
      SNSHIP(N)=NSHIP
C STORE TOTAL VOLUME FOR PRINTOUT AT END OF PROGRAM.
      STVOL(N)=TVOL
C STORE AVERAGE VOLUME FOR PRINTOUT AT END OF PROGRAM.
      SXAVEV(N)=XAVEV
C STORE STANDARD DEVIATION OF VOLUME FOR PRINTOUT AT END OF PROGRAM.
      SSDEVV(N)=XSDEVV
C STORE TOTAL WEIGHT FOR PRINTOUT AT END OF PROGRAM.
      STWGHT(N)=TWGHT
C STORE AVERAGE WEIGHT FOR PRINTOUT AT END OF PROGRAM.
      SXAVEW(N)=XAVEW
C STORE STANDARD DEVIATION OF WEIGHT FOR PRINTOUT AT END OF PROGRAM.
      SSDEVW(N)=XSDEVW
C STORE AVERAGE DENSITY FOR PRINTOUT AT END OF PROGRAM.
      SXAVED(N)=XAVED
C STORE STANDARD DEVIATION OF DENSITY FOR PRINTOUT AT END OF PROGRAM.
      SSDEVD(N)=XSDEVD
C SET ALL COMPUTATIONAL ELEMENTS TO ZERO TO PROCESS NEXT CONSIGNEE.
      IF(ENDFLG.EQ.2)GO TO 31
   29 TVOL=0
      TSVOL=0
      TWGHT=0
      TSWGHT=0
      TDEN=0
      TSDEN=0
      NSHIP=0
C SET ALL FREQUENCY COUNTERS BACK TO ZERO TO PROCESS NEXT CONSIGNEE.
      DO 200 I=1,21
      VFREQ(I)=0
  200 CONTINUE
      DO 210 I=1,21
```

```
      WFREQ(I)=0
  210 CONTINUE
      DO 220 I=1,21
      DFREQ(I)=0
  220 CONTINUE
      LCN1=CN1
      LCN2=CN2
C INCREMENT COUNTER FOR NEW CONSIGNEE
      N=N+1
C STORE POD AND CN1,CN2 FOR PRINTOUT AT END OF PROGRAM
      SPOD(N)=POD
      SCN1(N)=CN1
      SCN2(N)=CN2
C START TO TABULATE THE FREQUENCIES FOR NEXT CONSIGNEE.
      GO TO 23
   27 ENDFLG=2
      IF(ENDFLG.EQ.2)GO TO 25
C WRITE OUT THE FREQUENCY DATA FOR VOLUME BY CONSIGNEE
   31 WRITE(6,2)
C PRINT REQUIRED COLUMN HEADINGS FOR TABULATED VOLUMES.
      WRITE(6,5)
      WRITE(6,6)
      WRITE(6,7)
C BLANK WRITE STATEMENTS TO SKIP TWO LINES BEFORE PRINTING TABLE
      WRITE(6,1)
      WRITE(6,1)
      DO 300 N=1,1822
      WRITE(6,14)SPOD(N),SCN1(N),SCN2(N),(SVFREQ(N,I),I=1,21),SNSHIP(N)
  300 CONTINUE
C WRITE OUT FREQUENCY DATA FOR WEIGHT BY CONSIGNEE.
      WRITE(6,3)
C PRINT REQUIRED COLUMN HEADINGS FOR TABULATED WEIGHTS.
      WRITE(6,8)
      WRITE(6,9)
      WRITE(6,10)
C BLANK WRITE STATEMENTS TO SKIP TWO LINES BEFORE PRINTING TABLE
      WRITE(6,1)
      WRITE(6,1)
      DO 350 N=1,1822
      WRITE(6,15)SPOD(N),SCN1(N),SCN2(N),(SWFREQ(N,I),I=1,21),SNSHIP(N)
  350 CONTINUE
C WRITE OUT FREQUENCY DATA FOR DENSITY BY CONSIGNEE.
      WRITE(6,4)
C PRINT REQUIRED COLUMN HEADINGS FOR TABULATED DENSITIES.
      WRITE(6,11)
      WRITE(6,12)
      WRITE(6,13)
C BLANK WRITE STATEMENTS TO SKIP TWO LINES BEFORE PRINTING TABLE
```

```
      WRITE(6,1)
      WRITE(6,1)
      DO 400 N=1,1822
      WRITE(6,16)SPOD(N),SCN1(N),SCN2(N),(SDFREQ(N,I),I=1,21),SNSHIP(N)
  400 CONTINUE
C PRINT HEADING FOR CONSOLIDATED INFORMATION FOR EACH CONSIGNEE.
      WRITE(6,18)
C PRINT REQUIRED COLUMN HEADINGS FOR CONSOLIDATED INFORMATION.
      WRITE(6,19)
C BLANK WRITE STATEMENTS TO SKIP TWO LINES BEFORE PRINTING TABLE
      WRITE(6,1)
      WRITE(6,1)
C WRITE OUT CONSOLIDATED DATA FOR EACH CONSIGNEE.
      DO 450 N=1,1822
      WRITE(6,17)N,SPOD(N),SCN1(N),SCN2(N),SNSHIP(N),STVOL(N),SXAVEV(N),
     1SSDEVV(N),STWGHT(N),SXAVEW(N),SSDEVW(N),SXAVED(N),SSDEVD(N)
  450 CONTINUE
      STOP
      END
```

COMPUTER PROGRAM TWO

```
C THIS PROGRAM IS DESIGNED TO TAKE SHIPMENT DATA OFF A DATA CELL AND
C PRINT OUT THE INFORMATION DESIRED BY POD.  THE DATA REPRESENTS A
C FOUR MONTH PERIOD OF TIME.
      IMPLICIT INTEGER*4 (A-W)
      DIMENSION VCUT(20),VFREQ(21),WCUT(20),WFREQ(21)
      DIMENSION SVFREQ(110,21),SWFREQ(110,21),SDFREQ(110,21)
      DIMENSION DCUT(20),DFREQ(21)
      DIMENSION SPOD(110)
      DIMENSION STWGHT(110),SNSHIP(110)
      DIMENSION SXAVEV(110),SXAVEW(110),SXAVED(110)
      DIMENSION SSDEVV(110),SSDEVW(110),SSDEVD(110),STVOL(110)
      INTEGER*2 PCS,DT,SVFREQ,SWFREQ,SDFREQ,VFREQ,WFREQ,DFREQ
      REAL*8 TSWGHT,TSVOL,TSDEN
      REAL*4 SXAVEV,SSDEVV,SXAVEW,SSDEVW,SXAVED,SSDEVD,TDEN
    1 FORMAT(A3,A4,A2,A1,A4,A4,A2,A2,A3,A4)
    2 FORMAT('1THE FOLLOWING TABLE IDENTIFIES THE FREQUENCY OF OCCURRENC
     1E FOR SHIPMENTS IN EACH INTERVAL FOR VOLUME MEASURED IN CUBIC FEET
     2')
    3 FORMAT('1THE FOLLOWING TABLE IDENTIFIES THE FREQUENCY OF OCCURRENC
     1E FOR SHIPMENTS IN EACH INTERVAL FOR WEIGHT MEASURED IN POUNDS')
    4 FORMAT('1THE FOLLOWING TABLE IDENTIFIES THE FREQUENCY OF OCCURRENC
     1E FOR SHIPMENTS IN EACH INTERVAL FOR DENSITY MEASURED IN POUNDS PE
     2R CU.FT.')
    5 FORMAT('0                    000  003  005  007  009  011  015  021  03
     11  041  051  071  091  121  151  201  401  601  801  1001  OVER  N
     2O.')
    6 FORMAT('                      TO   TO   TO   TO   TO   TO   TO   TO   T
     1O   TO   TO   TO   TO   TO   TO   TO   TO   TO   TO   TO         S
     2HIP.')
    7 FORMAT(' NO.    POD          002  004  006  008  010  014  020  030  04
     10  050  070  090  120  150  200  400  600  800  1000  2000  2000')
    8 FORMAT('0                    000  011  026  051  076  101  151  251  40
     11  601  801  1001  1501 2001 4001  7001 10001 14001 18001 25001  O
     2VER  NO.')
    9 FORMAT('                      TO   TO   TO   TO   TO   TO   TO   TO   T
     1O   TO   TO   TO   TO   TO   TO   TO   TO   TO   TO   TO
     1    SHIP')
   10 FORMAT(' NO.    POD          010  025  050  075  100  150  250  400  60
     10  800  1000 1500  2000 4000  7000 10000 14000 18000 25000 35000 3
     25000')
   11 FORMAT('0                    000  005  009  013  017  021  025  029  03
     13  037  041  045  049  053  057  061  065  069  073  077  OVER  NO
     2.')
   12 FORMAT('                      TO   TO   TO   TO   TO   TO   TO   TO   T
     1O   TO   TO   TO   TO   TO   TO   TO   TO   TO   TO   TO         SH
     2IP.')
   13 FORMAT(' NO.    POD          004  008  012  016  020  024  028  032  03
     16  040  044  048  052  056  060  064  068  072  076  080  080')
```

```
   14 FORMAT(1X,I3,3X,A3,3X,19(2X,I3),2(3X,I3),3X,I4)
   15 FORMAT(1X,I3,3X,A3,3X,16(2X,I3),5(3X,I3),3X,I4)
   16 FORMAT(1X,I3,3X,A3,3X,2(2X,I3),1X,I4,18(2X,I3),2X,I4)
   17 FORMAT(1X,I4,2X,A3,3X,I4,3X,I7,3X,F10.3,6X,F8.3,5X,I8,5X,F10.3,7X,
     1F9.3,4X,F7.3,6X,F7.3)
   18 FORMAT('1                                                  TABULAR SUMMARY T
     1ABLE OF POD PERFORMANCE')
   19 FORMAT('0 NO.  POD   NO.SHIP. TOT.VOL.   AVE.VOL.    STD.DEV.VOL.
     1  TOT.WGHT.    AVE.WGHT.    STD.DEV.WGHT.  AVE.DEN.  STD.DEV.DEN.'
     2)
C ESTABLISH THE INTEGER VALUE AT WHICH CUTS ARE MADE FOR FREQUENCY DIST.
C FOR VOLUME, WEIGHT, AND DENSITY.
      VCUT(1)=2
      VCUT(2)=4
      VCUT(3)=6
      VCUT(4)=8
      VCUT(5)=10
      VCUT(6)=14
      VCUT(7)=20
      VCUT(8)=30
      VCUT(9)=40
      VCUT(10)=50
      VCUT(11)=70
      VCUT(12)=90
      VCUT(13)=120
      VCUT(14)=150
      VCUT(15)=200
      VCUT(16)=400
      VCUT(17)=600
      VCUT(18)=800
      VCUT(19)=1000
      VCUT(20)=2000
      WCUT(1)=10
      WCUT(2)=25
      WCUT(3)=50
      WCUT(4)=75
      WCUT(5)=100
      WCUT(6)=150
      WCUT(7)=250
      WCUT(8)=400
      WCUT(9)=600
      WCUT(10)=800
      WCUT(11)=1000
      WCUT(12)=1500
      WCUT(13)=2000
      WCUT(14)=4000
      WCUT(15)=7000
      WCUT(16)=10000
```

```
      WCUT(17)=14000
      WCUT(18)=18000
      WCUT(19)=25000
      WCUT(20)=35000
      DCUT(1)=4
      DCUT(2)=7
      DCUT(3)=10
      DCUT(4)=13
      DCUT(5)=16
      DCUT(6)=19
      DCUT(7)=22
      DCUT(8)=25
      DCUT(9)=28
      DCUT(10)=31
      DCUT(11)=34
      DCUT(12)=37
      DCUT(13)=40
      DCUT(14)=43
      DCUT(15)=46
      DCUT(16)=49
      DCUT(17)=52
      DCUT(18)=55
      DCUT(19)=58
      DCUT(20)=61
      ENDFLG=1
      LPOD=0
      N=0
C READ A CONSIGEE SHIPMENT FROM DATA CELL
   20 READ(13,1,END=27)POD,CN1,CN2,EHC,CUBE,WGHT,PCS,DT,CC,TAC
      IF(LPOD.NE.POD)GO TO 21
C TABULATE THE FREQUENCY OF VOLUME.
   23 VAL=CUBE
      DO 24 I=1,20
      IF(VAL.LT.VCUT(I))GO TO 28
   24 CONTINUE
      VFREQ(I+1)=VFREQ(I+1)+1
      GO TO 30
   28 VFREQ(I)=VFREQ(I)+1
C COMPUTE THE TOTAL VOLUME FOR EACH POD
   30 TVOL=TVOL+CUBE
C COMPUTE THE TOTAL SQUARED VOLUME FOR EACH POD.
      TSVOL=TSVOL+CUBE**2
C TABULATE THE FREQUENCY OF WEIGHT.
      VAL=WGHT
      DO 40 I=1,20
      IF(VAL.LT.WCUT(I))GO TO 50
   40 CONTINUE
      WFREQ(I+1)=WFREQ(I+1)+1
```

```
      GC TO 60
   50 WFREQ(I)=WFREQ(I)+1
C CCMPUTE THE TOTAL WEIGHT FOR EACH POD.
   60 TWGHT=TWGHT+WGHT
C COMPUTE THE TOTAL SQUARED WEIGHT FOR EACH POD.
      TSWGHT=TSWGHT+WGHT**2
C CHANGE CUBE FROM INTEGER TO REAL
      XCUBE=CUBE
C CHANGE WEIGHT FROM INTEGER TO REAL
      XWGHT=WGHT
C COMPUTE THE DENSITY OF SHIPMENT.
      XDEN=XWGHT/XCUBE
      VAL=XDEN
C TABULATE THE FREQUENCY OF DENSITY.
      DC 70 I=1,20
      IF(VAL.LT.DCUT(I))GC TO 80
   70 CCNTINUE
      DFREQ(I+1)=DFREQ(I+1)+1
      GC TO 90
   80 DFREQ(I)=DFREQ(I)+1
C CCMPUTE THE TOTAL DENSITY OF A POD.
   90 TDEN=TDEN+XDEN
C CCMPUTE THE TOTAL SQUARED DENSITY FOR A POD.
      TSDEN=TSDEN+XDEN**2
C KEEP TRACK OF HOW MANY SHIPMENTS GO TO EACH POD.
      NSHIP=NSHIP+1
      GC TO 20
C ESTABLISH THAT THIS IS FIRST SHIPMENT FOR A NEW POD.
   21 IF(LPOD.EQ.0)GO TO 29
C COMPUTE THE AVERAGE VOLUME FOR A POD.
   25 XTMP=FLOAT(NSHIP)
      XAVEV=TVOL/XTMP
C CCMPUTE THE STANDARD DEVIATION IN VOLUME
      XSDEVV=TSVOL-(TVOL**2)/XTMP
      XSDEVV=XSDEVV/XTMP
      XSDEVV=ABS(XSDEVV)
      XSDEVV=SQRT(XSDEVV)
C CCMPUTE THE AVERAGE WEIGHT FOR A POD.
      XAVEW=TWGHT/XTMP
C COMPUTE THE STANDARD DEVIATION IN WEIGHT
      XSDEVW=TSWGHT-(TWGHT**2)/XTMP
      XSDEVW=XSDEVW/XTMP
      XSDEVW=ABS(XSDEVW)
      XSDEVW=SQRT(XSDEVW)
C COMPUTE THE AVERGE DENSITY FOR A POD.
      XAVED=TDEN/XTMP
C CCMPUTE THE STANDARD DEVIATION IN DENSITY
      XSDEVD=TSDEN-(TDEN**2)/XTMP
```

```
      XSDEVD=XSDEVD/XTMP
      XSDEVD=ABS(XSDEVD)
      XSDEVD=SQRT(XSDEVD)
C STORE THE VOLUME FREQUENCY FOR PRINTOUT AT END OF PROGRAM.
      DO 100 I=1,21
      SVFREQ(N,I)=VFREQ(I)
  100 CONTINUE
C STORE THE WEIGHT FREQUENCY FOR PRINTOUT AT END OF PROGRAM.
      DO 150 I=1,21
      SWFREQ(N,I)=WFREQ(I)
  150 CONTINUE
C STORE THE DENSITY FREQUENCY FOR PRINTOUT AT THE END OF THE PROGRAM
      DO 170 I=1,21
      SDFREQ(N,I)=DFREQ(I)
  170 CONTINUE
C STORE THE TOTAL NUMBER OF SHIPMENTS FOR EACH POD.
      SNSHIP(N)=NSHIP
C STORE TOTAL VOLUME FOR PRINTOUT AT END OF PROGRAM.
      STVOL(N)=TVOL
C STORE AVERAGE VOLUME FOR PRINTOUT AT END OF PROGRAM.
      SXAVEV(N)=XAVEV
C STORE STANDARD DEVIATION OF VOLUME FOR PRINTOUT AT END OF PROGRAM.
      SSDEVV(N)=XSDEVV
C STORE TOTAL WEIGHT FOR PRINTOUT AT END OF PROGRAM.
      STWGHT(N)=TWGHT
C STORE AVERAGE WEIGHT FOR PRINTOUT AT END OF PROGRAM.
      SXAVEW(N)=XAVEW
C STORE STANDARD DEVIATION OF WEIGHT FOR PRINTOUT AT END OF PROGRAM.
      SSDEVW(N)=XSDEVW
C STORE AVERAGE DENSITY FOR PRINTOUT AT END OF PROGRAM.
      SXAVED(N)=XAVED
C STORE STANDARD DEVIATION OF DENSITY FOR PRINTOUT AT END OF PROGRAM.
      SSDEVD(N)=XSDEVD
C SET ALL COMPUTATIONAL ELEMENTS TO ZERO TO PROCESS NEXT POD.
      IF(ENDFLG.EQ.2)GO TO 31
   29 TVOL=0
      TSVOL=0
      TWGHT=0
      TSWGHT=0
      TDEN=0
      TSDEN=0
      NSHIP=0
C SET ALL FREQUENCY COUNTERS BACK TO ZERO TO PROCESS NEXT POD.
      DO 200 I=1,21
      VFREQ(I)=0
  200 CONTINUE
      DO 210 I=1,21
      WFREQ(I)=0
```

```
  210 CONTINUE
      DO 220 I=1,21
      DFREQ(I)=0
  220 CONTINUE
      LPOD=POD
C INCREMENT COUNTER FOR NEW POD.
      N=N+1
C STORE POD FOR PRINTOUT AT END OF PROGRAM.
      SPOD(N)=POD
C START TO TABULATE THE FREQUENCIES FOR NEXT POD.
      GO TO 23
   27 ENDFLG=2
      IF(ENDFLG.EQ.2)GO TO 25
C WRITE OUT THE FREQUENCY DATA FOR VOLUME BY POD.
   31 WRITE(6,2)
C PRINT REQUIRED COLUMN HEADINGS FOR TABULATED VOLUMES.
      WRITE(6,5)
      WRITE(6,6)
      WRITE(6,7)
C BLANK WRITE STATEMENTS TO SKIP TWO LINES BEFORE PRINTING TABLE
      WRITE(6,1)
      WRITE(6,1)
      DO 300 N=1,110
      WRITE(6,14)N,SPOD(N),(SVFREQ(N,I),I=1,21),SNSHIP(N)
  300 CONTINUE
C WRITE OUT FREQUENCY DATA FOR WEIGHT BY POD.
      WRITE(6,3)
C PRINT REQUIRED COLUMN HEADINGS FOR TABULATED WEIGHTS.
      WRITE(6,8)
      WRITE(6,9)
      WRITE(6,10)
C BLANK WRITE STATEMENTS TO SKIP TWO LINES BEFORE PRINTING TABLE
      WRITE(6,1)
      WRITE(6,1)
      DO 350 N=1,110
      WRITE(6,15)N,SPOD(N),(SWFREQ(N,I),I=1,21),SNSHIP(N)
  350 CONTINUE
C WRITE OUT FREQUENCY DATA FOR DENSITY BY POD.
      WRITE(6,4)
C PRINT REQUIRED COLUMN HEADINGS FOR TABULATED DENSITIES.
      WRITE(6,11)
      WRITE(6,12)
      WRITE(6,13)
C BLANK WRITE STATEMENTS TO SKIP TWO LINES BEFORE PRINTING TABLE
      WRITE(6,1)
      WRITE(6,1)
      DO 400 N=1,110
      WRITE(6,16)N,SPOD(N),(SDFREQ(N,I),I=1,21),SNSHIP(N)
```

```
  400 CONTINUE
C PRINT HEADING FOR CONSOLIDATED INFORMATION FOR EACH POD.
      WRITE(6,18)
C PRINT REQUIRED COLUMN HEADINGS FOR CONSOLIDATED INFORMATION.
      WRITE(6,19)
C BLANK WRITE STATEMENTS TO SKIP TWO LINES BEFORE PRINTING TABLE
      WRITE(6,1)
      WRITE(6,1)
C WRITE OUT CONSOLIDATED DATA FOR EACH POD.
      DO 450 N=1,110
      WRITE(6,17)N,SPOD(N),SNSHIP(N),STVOL(N),SXAVEV(N),SSDEVV(N),STWGHT
     1(N),SXAVEW(N),SSDEVW(N),SXAVED(N),SSDEVD(N)
  450 CONTINUE
      STOP
      END
```

COMPUTER PROGRAM THREE

```
C THIS PROGRAM IS DESIGNED TO RECORD THE DAILY VOLUME,WEIGHT, AND NUMBER
C OF SHIPMENTS THAT ARRIVE AT THE CONTAINER STUFFING STATION DURING THE
C PERIOD OF TIME UNDER CONSIDERATION.
      IMPLICIT INTEGER*4 (A-W)
      INTEGER*2 DT
      DIMENSION SNSHIP(123),SVOL(123),SWGHT(123)
      DATA SNSHIP/123*0/,SVOL/123*0/,SWGHT/123*0/
    1 FORMAT(A3,A4,A2,A1,A4,A4,A2,A2,A3,A4)
    2 FORMAT(2X,' DAY ',I6,3(I10),/)
    3 FORMAT('1THE FOLLOWING TABLE IDENTIFIES THE DAILY ARRIVAL OF CARGO
     1 AT THE CONTAINER STUFFING STATION BY NO. SHIP., VOLUME, AND WEIGH
     2T.')
    4 FORMAT('0   DAYS        NO.SHIP   VOLUME    WEIGHT')
    5 FORMAT(3X,' TOTAL WEIGHT = ',I10,3X,' TOTAL VOLUME = ',I10)
      TWGHT=0
      TVOL=0
C READ A SHIPMENT FROM DATA CELL.
   20 READ(13,1,END=27)POD,CN1,CN2,EHC,CUBE,WGHT,PCS,DT,CC,TAC
      N=DT
C INCREMENT THE NO. SHIPMENT AND VOLUME ARRAY FOR GIVEN DATE.
   25 SNSHIP(N)=SNSHIP(N)+1
      SVOL(N)=SVOL(N)+CUBE
      SWGHT(N)=SWGHT(N)+WGHT
      TWGHT=TWGHT+WGHT
      TVOL=TVOL+CUBE
C GO BACK AND READ ANOTHER SHIPMENT.
      GO TO 20
C PRINT HEADING FOR TABLE.
   27 WRITE(6,3)
      WRITE(6,4)
C TWO BLANK WRITE CARDS TO SKIP TWO SPACES BEFORE NEXT LINE.
      WRITE(6,1)
      WRITE(6,1)
C PRINT TABLE OUT.
      DO 200 I=1,123
      WRITE(6,2)I,SNSHIP(I),SVOL(I),SWGHT(I)
  200 CONTINUE
C TWO BLANK WRITE STATEMENTS TO SKIP TWO LINES BEFORE PRINTING
      WRITE(6,1)
      WRITE(6,1)
      WRITE(6,5)TWGHT,TVOL
      STOP
      END
```

COMPUTER PROGRAM FOUR

```
C THIS PROGRAM IS DESIGNED TO COMPUTE THE NUMBER OF SHIPMENTS THAT ARE A
C SSCCIATED WITH EACH OF THE TWENTY-SEVEN EXCEPTION HANDLING CODES
      IMPLICIT INTEGER*4 (A-W)
      DIMENSION EFREQ(27),SEFREQ(1822,27),SPOD(1822),SCN1(1822),SCN2(182
     12),C(26)
      DATA C/'A','B','C','D','E','F','G','H','I','J','K','L','M','N','O'
     1,'P','Q','R','S','T','U','V','W','X','Y','Z'/
    1 FORMAT(A3,A4,A2,A1,A4,A4,A2,A2,A3,A4)
    2 FORMAT('1      THE FOLLOWING TABLE IDENTIFIES THE FREQUENCY OF OCCU
     1RRENCE OF THE EXCEPTION HANDLING CODES BY POD AND CONSIGNEE')
    3 FORMAT('0 NO.  POD   CON    A   B   C   D   E   F   G   H   I   J
     1 K   L   M   N   O   P   Q   R   S   T   U   V   W   X   Y    Z
     2  OTHER')
    4 FORMAT(1X,I4,2X,A3,1X,A4,A2,25(1X,I3),2(2X,I4))
      ENDFLG=1
      LCN1=0
      LCN2=0
      N=0
C READ A CONSIGNEE SHIPMENT FROM DATA CELL.
   20 READ(13,1,END=27)POD,CN1,CN2,EHC,CUBE,WGHT,PCS,DT,CC,TAC
      IF((LCN1.NE.CN1).OR.(LCN2.NE.CN2))GO TO 21
   23 DO 50 I=1,26
      IF(EHC.EQ.C(I))GO TO 60
   50 CONTINUE
      EFREQ(27)=EFREQ(27)+1
      GO TO 20
   60 EFREQ(I)=EFREQ(I)+1
C GO BACK AND READ ANOTHER SHIPMENT FROM DATA CELL.
      GO TO 20
   21 IF(LCN1.EQ.0)GO TO 29
C STORE DATA FOR PRINTOUT AT END OF PROGRAM.
   30 DO 100 I=1,27
      SEFREQ(N,I)=EFREQ(I)
  100 CONTINUE
      IF(ENDFLG.EQ.2)GO TO 31
   29 DO 200 I=1,27
      EFREQ(I)=0
  200 CONTINUE
      LCN1=CN1
      LCN2=CN2
C INCREMENT COUNTER FOR A NEW CONSIGNEE.
      N=N+1
C STORE POD AND CN1,CN2 FOR PRINTOUT AT END OF PROGRAM.
      SPOD(N)=POD
      SCN1(N)=CN1
      SCN2(N)=CN2
C GO BACK AND PROCESS CONSIGNEE.
      GO TO 23
```

```
   27 ENDFLG=2
      IF(ENDFLG.EQ.2)GO TO 30
C PRINT REQUIRED COLUMN HEADINGS FOR TABULATED DATA
   31 WRITE(6,2)
      WRITE(6,3)
C BLANK WRITE STATEMENTS TO SKIP TWO LINES BEFCRE TABLE ENTRIES
      WRITE(6,1)
      WRITE(6,1)
C PRINTOUT OF SHIPMENT DATA
      DC 250 N=1,1822
      WRITE(6,4)N,SPOD(N),SCN1(N),SCN2(N),(SEFREQ(N,I),I=1,27)
  250 CONTINUE
      STOP
      END
```

COMPUTER PROGRAM FIVE

```
C THIS PROGRAM IS DESIGNED TO TAKE SHIPMENT DATA CFF THE DATA CELL AND
C FIGURE THE COMMODITY GROUPING FOR EACH SHIPMENT OF THE CARGO GOING TO
C EACH CONSIGNEE BY CHECKING THE COMMODITY CODES.
      IMPLICIT INTEGER*4 (A-W)
      DIMENSION  CCFREQ(12),SCFREQ(1822,12),SPOD(1822),SCN1(1822),SCN2(1
     1822),SNSHIP(1822)
    1 FORMAT(A3,A4,A2,A1,A4,A4,A2,A2,I3,A4)
    2 FORMAT('1 THE FOLLOWING TABLE IDENTIFIES THE SHIPMENTS BY THE COMM
     1ODITY CODES FOR EACH POD AND CONSIGNEE')
    3 FORMAT('0  NO.  POD   CON   100-149  150-199  200-299  300-359  36
     10-389  390-399  400-489  490-499  500-799  800-899  900-999   OTHE
     2R  NO.')
    4 FORMAT('                              CHILL    FREEZE    BULK     POV     BA
     1GGAGE  HHGOODS   AMMO.   RAD.ACT  GENERAL  SPECIAL  A/C,ASSD
     2  SHIP.')
    6 FORMAT(1X,I4,1X,A3,1X,A4,A2,13(5X,I4))
    7 FORMAT(65X,' THE TOTAL NUMBER OF SHIPMENTS CONSIDERED BY THIS ANAL
     1YSIS =  ',I5)
      ENDFLG=1
      LCN1=0
      LCN2=0
      N=0
      TSHIP=0
C READ A CONSIGNEE SHIPMENT FROM DATA CELL.
   20 READ(13,1,END=27)POD,CN1,CN2,EHC,CUBE,WGHT,PCS,DT,CC,TAC
C KEEP TRACK OF TOTAL NUMBER OF SHIPMENTS INVOLVED IN ANALYSIS.
      TSHIP=TSHIP+1
      IF((LCN1.NE.CN1).OR.(LCN2.NE.CN2))GO TO 21
C INCREMENT THE FREQUENCY INTERVAL THAT MATCHES COMMODITY CODE FOR
C SHIPMENT.
   23 IF((CC.GT.99).AND.(CC.LT.150))CCFREQ(1)=CCFREQ(1)+1
      IF((CC.GT.149).AND.(CC.LT.200))CCFREQ(2)=CCFREQ(2)+1
      IF((CC.GT.199).AND.(CC.LT.300))CCFREQ(3)=CCFREQ(3)+1
      IF((CC.GT.299).AND.(CC.LT.360))CCFREQ(4)=CCFREQ(4)+1
      IF((CC.GT.359).AND.(CC.LT.390))CCFREQ(5)=CCFREQ(5)+1
      IF((CC.GT.389).AND.(CC.LT.400))CCFREQ(6)=CCFREQ(6)+1
      IF((CC.GT.399).AND.(CC.LT.490))CCFREQ(7)=CCFREQ(7)+1
      IF((CC.GT.489).AND.(CC.LT.500))CCFREQ(8)=CCFREQ(8)+1
      IF((CC.GT.499).AND.(CC.LT.800))CCFREQ(9)=CCFREQ(9)+1
      IF((CC.GT.799).AND.(CC.LT.900))CCFREQ(10)=CCFREQ(10)+1
      IF((CC.GT.899).AND.(CC.LT.1000))CCFREQ(11)=CCFREQ(11)+1
      IF((CC.LT.100).OR.(CC.GT.999))CCFREQ(12)=CCFREQ(12)+1
C KEEP TRACK OF NUMBER OF SHIPMENTS GOING TO EACH CONSIGNEE.
      NSHIP=NSHIP+1
      GO TO 20
   21 IF(LCN1.EQ.0)GO TO 29
C STORE FREQUENCIES FOR PRINTOUT AT END OF PROGRAM.
   40 DO 80 I=1,12
```

```
      SCFREQ(N,I)=CCFREQ(I)
   80 CCNTINUE
C STCRE NUMBER OF SHIPMENTS FOR PRINTOUT AT END OF PROGRAM.
      SNSHIP(N)=NSHIP
      IF(ENDFLG.EQ.2)GO TO 31
C SET FREQUENCY COUNTERS TO ZERO.
   29 DC 200 I=1,12
      CCFREQ(I)=0
  200 CONTINUE
      LCN1=CN1
      LCN2=CN2
      NSHIP=0
C INCREMENT COUNTER FOR FOR NEW CONSIGNEE.
      N=N+1
C STCRE POD AND CN1,CN2 FOR PRINTOUT AT END OF PROGRAM.
      SPCD(N)=POD
      SCN1(N)=CN1
      SCN2(N)=CN2
C START TO PROCESS DATA FOR CONSIGNEE.
      GO TO 23
   27 ENDFLG=2
      IF(ENDFLG.EQ.2)GO TO 40
C WRITE OUT FREQUENCY DATA ON COMMODITY CODES FOR EACH CONSIGNEE.
   31 WRITE(6,2)
C PRINT COLUMN HEADINGS FOR TABULATED VALUES.
      WRITE(6,3)
      WRITE(6,4)
C BLANK WRITE STATEMENTS TO SKIP TWO LINES BEFORE PRINTING TABLE.
      WRITE(6,1)
      WRITE(6,1)
C PRINTOUT COMMODITY CODE FREQUENCIES.
      DC 400 N=1,1822
      WRITE(6,6)N,SPCD(N),SCN1(N),SCN2(N),(SCFREQ(N,I),I=1,12),SNSHIP(N)
  400 CCNTINUE
      WRITE(6,1)
      WRITE(6,1)
      WRITE(6,7)TSHIP
      STOP
      END
```

COMPUTER PROGRAM SIX

```
C THIS PROGRAM IS DESIGNED TO TAKE SHIPMENT DATA CFF THE DATA CELL AND
C FIGURE THE DAILY FREQUENCY OF ACTIVITY AS MEASURED BY VOLUME AND
C WEIGHT FOR EACH CONSIGNEE
      IMPLICIT INTEGER*4 (A-W)
      INTEGER*2 SVDFRQ,SWDFRQ,VDFREQ,WDFREQ
      REAL*4 PCTDV,PCTDW,SPCTDV,SPCTDW
      DIMENSION SPOD(1822),SCN1(1822),SCN2(1822),SRCD(1822)
      DIMENSION VDFREQ(21),WDFREQ(21),SVDFRQ(1822,21),SWDFRQ(1822,21)
      DIMENSION PCTDV(21),PCTDW(21),SPCTDV(1822,21),SPCTDW(1822,21)
      DIMENSION VCUT(20),WCUT(20)
    1 FORMAT(A3,A4,A2,A1,A4,A4,A2,A2,A3.A4)
    2 FORMAT('1THE FOLLOWING TABLE IDENTIFIES THE NUMBER CF DAYS ANC THE
     1 FREQUENCY IN PERCENT FOR THE VARIOUS INTERVALS OF VOLUME MEASURED
     2 IN CU FT')
    3 FORMAT('0                        000  001  051  101  201  401  601   801 1
     1001 1251 1501 1751 2001 3001 4001 5001 6001  8001 10001 15001 OVER
     2  TOTAL')
    4 FORMAT('                          TO   TO   TO   TO   TO   TC   TO   TO
     1TC   TO   TO   TO   TO   TO   TO   TO   TO   TO   TO   TO
     2RECEIPT')
    5 FORMAT(' POD   CON               000  050  100  200  400  600  800  1000 1
     1250 1500 1750 2000 3000 4000 5000 6000 8000 10000 15000 25000 2500
     20  DAYS')
    6 FORMAT(1X,A3,1X,A4,A2,' DAYS ',18(2X,I3),3(3X,I3),2X,I4)
    7 FORMAT(11X,' PCT ',1X,18(1X,F4.1),3(2X,F4.1))
    8 FORMAT('1 THE FOLLOWING TABLE IDENTIFIES THE NUMBER CF DAYS AND TH
     1E FREQUENCY IN PERCENT FOR THE VARIOUS INTERVALS OF WEIGHT MEASURE
     2D IN PDS.')
    9 FORMAT('0                        000 001 051 101 201 401 601  801 1001 125
     11 1501 2001 3001 5001  7501 10001 15001 20001 25001 30001 OVER  TO
     2TAL')
   10 FORMAT('                          TO  TO  TO  TO  TC  TO  TC  TO   TO   TO
     1  TO   TO   TO   TO    TO    TO    TO    TC    TO    TO        REC
     2EIPT')
   11 FORMAT(' POD   CON               000 050 100 200 400 600 800 1000 1250 150
     10 2000 3000 5000 7500 10000 15000 20000 25000 30000 40000 40000 DA
     2YS')
   12 FORMAT(1X,A3,1X,A4,A2,' DAYS ',7(1X,I3),7(2X,I3),7(3X,I3),3X,I4)
   13 FORMAT(11X,' PCT ',1X,7F4.1,7(1X,F4.1),7(2X,F4.1))
      VCUT(1)=000
      VCUT(2)=50
      VCUT(3)=100
      VCUT(4)=200
      VCUT(5)=400
      VCUT(6)=600
      VCUT(7)=800
      VCUT(8)=1000
      VCUT(9)=1250
```

```
      VCUT(10)=1500
      VCUT(11)=1750
      VCUT(12)=2000
      VCUT(13)=3000
      VCUT(14)=4000
      VCUT(15)=5000
      VCUT(16)=6000
      VCUT(17)=8000
      VCUT(18)=10000
      VCUT(19)=15000
      VCUT(20)=25000
      WCUT(1)=000
      WCUT(2)=050
      WCUT(3)=100
      WCUT(4)=200
      WCUT(5)=400
      WCUT(6)=600
      WCUT(7)=800
      WCUT(8)=1000
      WCUT(9)=1250
      WCUT(10)=1500
      WCUT(11)=2000
      WCUT(12)=3000
      WCUT(13)=5000
      WCUT(14)=7500
      WCUT(15)=10000
      WCUT(16)=15000
      WCUT(17)=20000
      WCUT(18)=25000
      WCUT(19)=30000
      WCUT(20)=40000
      ENDFLG=1
      LCN1=0
      LCN2=0
      N=0
C READ A CONSIGNEE SHIPMENT FROM DATA CELL.
   20 READ(13,1,END=27)POD,CN1,CN2,EHC,CUBE,WGHT,PCS,DT,CC,TAC
      IF((LCN1.NE.CN1).OR.(LCN2.NE.CN2))GO TO 21
   22 IF(LDT.EQ.DT)GO TO 73
C TABULATE THE DAILY FREQUENCY BY VOLUME.
   23 VAL=TVOL
      DO 24 I=2,20
      IF(VAL.LT.VCUT(I))GO TO 28
   24 CONTINUE
      VDFREQ(I+1)=VDFREQ(I+1)+1
      GO TO 30
   28 VDFREQ(I)=VDFREQ(I)+1
C TABULATE THE DAILY FREQUENCY BY WEIGHT.
```

```
   30 VAL=TWGHT
      DO 40 I=2,20
      IF(VAL.LT.WCUT(I))GO TO 50
   40 CONTINUE
      WDFREQ(I+1)=WDFREQ(I+1)+1
      GO TO 60
   50 WDFREQ(I)=WDFREQ(I)+1
C KEEP TRACK OF THE NUMBER OF DAYS ON WHICH CARGO RECEIVED.
   60 RCD=RCD+1
      IF(ENDFLG.EQ.2)GO TO 62
C ZERO DAILY VOLUME AND WEIGHT TOTALS FOR NEW DAY.
      LDT=DT
      TVOL=0
      TWGHT=0
      IF((LCN1.NE.CN1).OR.(LCN2.NE.CN2))GO TO 62
C GO BACK AND START CALCULATIONS FOR NEW DAY.
   73 TVOL=TVOL+CUBE
      TWGHT=TWGHT+WGHT
C GO BACK AND READ NEXT CARD.
      GO TO 20
   21 IF(LCN1.EQ.0)GO TO 29
      GO TO 23
C COMPUTE VALUE OF VDFREQ(1) AND WDFREQ(1)
   62 WDFREQ(1)=123-(WDFREQ(2)+WDFREQ(3)+WDFREQ(4)+WDFREQ(5)+WDFREQ(6)+W
     1DFREQ(7)+WDFREQ(8)+WDFREQ(9)+WDFREQ(10)+WDFREQ(11)+WDFREQ(12)+WDFR
     2EQ(13)+WDFREQ(14)+WDFREQ(15)+WDFREQ(16)+WDFREQ(17)+WDFREQ(18)+WDFR
     3EQ(19)+WDFREQ(20)+WDFREQ(21))
C CONTINUE TO PROCESS DATA ON NEW CONSIGNEE.
      VDFREQ(1)=123-(VDFREQ(2)+VDFREQ(3)+VDFREQ(4)+VDFREQ(5)+VDFREQ(6)+V
     1DFREQ(7)+VDFREQ(8)+VDFREQ(9)+VDFREQ(10)+VDFREQ(11)+VDFREQ(12)+VDFR
     2EQ(13)+VDFREQ(14)+VDFREQ(15)+VDFREQ(15)+VDFREQ(16)+VDFREQ(17)+VDFR
     3EQ(18)+VDFREQ(19)+VDFREQ(20)+VDFREQ(21))
C CALCULATE PERCENTAGE OF DAILY ACTIVITY FOR VOLUME INTERVALS.
      DO 70 I=1,21
      PCTDV(I)=(VDFREQ(I)/123.)*100
   70 CONTINUE
C CALCULATE PERCENTAGE OF DAILY ACTIVITY FOR WEIGHT INTERVALS.
      DO 80 I=1,21
      PCTDW(I)=(WDFREQ(I)/123.)*100
   80 CONTINUE
C STORE DATA FOR PRINTOUT AT END OF PROGRAM.
      DO 100 I=1,21
      SVDFRQ(N,I)=VDFREQ(I)
  100 CONTINUE
      DO 150 I=1,21
      SWDFRQ(N,I)=WDFREQ(I)
  150 CONTINUE
C STORE VOLUME AND WEIGHT PERCENTAGES FOR PRINTOUT AT END OF PROGRAM.
```

```
      DO 90 I=1,21
      SPCTDV(N,I)=PCTDV(I)
   90 CONTINUE
      DO 95 I=1,21
      SPCTDW(N,I)=PCTDW(I)
   95 CONTINUE
      SRCD(N)=RCD
      IF(ENDFLG.EQ.2)GO TO 31
C SET ALL FREQUENCY COUNTERS BACK TO ZERO TO PROCESS NEXT CONSIGNEE.
   29 DO 200 I=1,21
      VDFREQ(I)=0
  200 CONTINUE
      DO 250 I=1,21
      WDFREQ(I)=0
  250 CONTINUE
      DO 260 I=1,21
      PCTDV(I)=0
  260 CONTINUE
      DO 270 I=1,21
      PCTDW(I)=0
  270 CONTINUE
      LCN1=CN1
      LCN2=CN2
      LDT=DT
      TVOL=0
      TWGHT=0
      RCD=0
C INCREMENT COUNTER FOR NEW CONSIGNEE.
      N=N+1
C STORE POD AND CN1,CN2 FOR PRINTOUT AT END OF PROGRAM.
      SPOD(N)=POD
      SCN1(N)=CN1
      SCN2(N)=CN2
C START TO PROCESS DATA FOR CONSIGNEE.
      GO TO 22
   27 ENDFLG=2
      IF(ENDFLG.EQ.2)GO TO 23
C WRITE OUT DAILY FREQUENCY DATA FOR VOLUME BY CONSIGNEE.
   31 WRITE(6,2)
C PRINT REQUIRED COLUMN HEADINGS FOR TABULATED DAILY ACTIVITY.
      WRITE(6,3)
      WRITE(6,4)
      WRITE(6,5)
C BLANK WRITE STATEMENTS TO SKIP TWO LINES BEFORE PRINTING TABLE.
      WRITE(6,1)
      WRITE(6,1)
C PRINTOUT DAILY VOLUME ACTIVITY.
      DO 300 N=1,1822
```

```
      WRITE(6,6)SPOD(N),SCN1(N),SCN2(N),(SVDFRQ(N,I),I=1,21),SRCD(N)
C PRINTCUT DAILY PERCENTAGE OF ACTIVITY FOR VOLUME INTERVAL.
      WRITE(6,7)(SPCTDV(N,I),I=1,21)
      WRITE(6,1)
  300 CONTINUE
C WRITE CUT DAILY FREQUENCY DATA FOR WEIGHT BY CONSIGNEE.
      WRITE(6,8)
C PRINT REQUIRED COLUMN HEADINGS FOR TABULATED DAILY ACTIVITY.
      WRITE(6,9)
      WRITE(6,10)
      WRITE(6,11)
C BLANK WRITE STATEMENTS TO SKIP TWO LINES BEFORE PRINTING TABLE.
      WRITE(6,1)
      WRITE(6,1)
      DO 350 N=1,1822
      WRITE(6,12)SPOD(N),SCN1(N),SCN2(N),(SWDFRQ(N,I),I=1,21),SRCD(N)
C PRINTCUT DAILY PERCENTAGE OF ACTIVITY FOR WEIGHT INTERVAL.
      WRITE(6,13)(SPCTDW(N,I),I=1,21)
      WRITE(6,1)
  350 CONTINUE
      STOP
      END
```

COMPUTER PROGRAM SEVEN

```
C THIS PROGRAM IS DESIGNED TO TAKE THE DATA WHICH WAS GENERATED BY THE
C CONTAINER STUFFING SIMULATION MODEL, WHICH USED AS ITS INPUT THE RAW
C SHIPMENT DATA FOR THE FOUR MONTH PERIOD UNDER CONSIDERATION, AND PRINT
C OUT THE ACTIVITY FOR THE 13 LARGEST PODS.  THE SIMULATICN MODEL WAS
C USED TO SIMULATE A TWO YEAR OPERATING PERIOD REPEATING THE RAW
C SHIPMENT DATA A TOTAL OF SIX TIMES.  THE POD'S ACTIVITY BY CONTAINER
C TYPE IS PRINTED OUT FOR EACH THIRTY DAY PERIOD, WITH A SUMMARY LISTING
C FOR THE TWO YEAR PERIOD AT THE END OF THE PROGRAM.
      IMPLICIT INTEGER*4 (A-W)
      INTEGER*2 RECID,CD,POD,CT,VOLL,CU,WGHTL,WU,CSN,STLID,NCON,NSEG,NLS
     1EG,TADSS
      REAL*4 SCU,TSDAGE,TAAGE,SSCU,AVEAGE,STDAGE,AVECU,STDCU,SCPROP,TAGE
     1,TSCU,TSSCU,TSCPRO,TAVECU,TSTDCU,TTADSS,STTADS,TSTTAD
    1 FORMAT(14(A2))
    2 FORMAT('1THE FOLLOWING TABLES IDENTIFY THE VARIOUS CARGO PARAMETER
     1S FOR THE THIRTEEN PODS BASED ON A 30-DAY INCREMENT BY CONTAINER T
     2YPE')
    3 FORMAT(55X,' POD- ',I2,' MONTH- ',I2)
    4 FORMAT('0CONTAINER TYPE   NO.CONTAINERS   AVE.AGE   STD.DEV.AGE
     1AVE.CUBE UTIL.   STD.DEV.CUBE UTIL.   NO.SINGLE CCN.CONT.  SINGLE
     2CCN.PROP')
    5 FORMAT(6X,I2,12X,I4,12X,F6.3,6X,F7.3,6X,F6.3,12X,F6.3,18X,I4,12X,F
     16.3)
    6 FORMAT('1THE FOLLOWING TABLES IDENTIFY THE VARIOUS CARGO PARAMETER
     1S FOR THE THIRTEEN PODS BY CONTAINER TYPE FOR THE TWO-YEAR PERIOD'
     2)
    7 FORMAT(63X,' POD- ',I2)
      DIMENSION TNC(13,16),SCU(13,16),STTADS(13,16),TSTTAD(13,16)
      DIMENSION SSCU(13,16),AVEAGE(13,16),STDAGE(13,16),AVECU(13,16)
      DIMENSION STDCU(13,16),SCPROP(13,16),TAGE(13,16),TNSHPS(13,16)
      DIMENSION TAAGE(13,16), TSDAGE(13,16),TTNC(13,16),TNLSEG(13,16)
      DIMENSION TSCU(13,16),TAVECU(13,16),TSTDCU(13,16)
      DIMENSION TSSCU(13,16),TSCPRO(13,16),TNSCT(13,16),NSCT(13,16)
      DIMENSION TTADSS(13,16)
      M=1
      DAYS=30
      DO 710 I=1,13
      DO 700 K=1,16
      TAGE(I,K)=0
      TNSHPS(I,K)=0
      TAAGE(I,K)=0
      TSDAGE(I,K)=0
      TTNC(I,K)=0
      TNSCT(I,K)=0
      TSCU(I,K)=0
      TAVECU(I,K)=0
      TSTDCU(I,K)=0
      TSSCU(I,K)=0
```

```
      TSCPRO(I,K)=0
      TNSCT(I,K)=0
      TSTTAD(I,K)=0
  700 CONTINUE
  710 CONTINUE
      GO TO 210
   20 READ(21,1,END=999)RECID,CD,POD,CT,VOLL,CU,WGHTL,WU,CSN,STLID,NCON,
     1NSEG,NLSEG,TADSS
      IF(CD.GT.DAYS)GO TO 28
C KEEP TRACK OF NUMBER OF DATED SHIPMENT SEGMENTS MONTHLY.
      TNLSEG(POD,CT)=TNLSEG(POD,CT)+NLSEG
C KEEP TRACK OF AGE AND NUMBER OF DATED SEGMENTS FOR 24-MONTH PERIOD
      XTADSS=TADSS
   25 TAGE(POD,CT)=TAGE(POD,CT)+XTADSS
      TNSHPS(POD,CT)=TNSHPS(POD,CT)+NLSEG
C KEEP TRACK OF THE NUMBER OF CONTAINERS OF EACH TYPE GOING TO EACH POD
C MONTHLY AND FOR TWO YEAR PERIOD.
      TNC(POD,CT)=TNC(POD,CT)+1
      TTNC(POD,CT)=TTNC(POD,CT)+1
C KEEP TRACK OF AGE OF DATED SHIPMENT SEGMENTS ON MONTHLY BASIS.
      TTADSS(POD,CT)=TTADSS(POD,CT)+XTADSS
C SQUARE THE TOTAL AGE OF DATED SHIPMENT SEGMENTS.
      STTADS(POD,CT)=STTADS(POD,CT)+XTADSS**2
      TSTTAD(POD,CT)=TSTTAD(POD,CT)+XTADSS**2
C FIND THE CUBE UTILIZATION AND STORE IT
   26 XCU=CU
      SCU(POD,CT)=SCU(POD,CT)+XCU
      TSCU(POD,CT)=TSCU(POD,CT)+XCU
C SQUARE THE CUBE UTILIZATION AND STORE IT
      SSCU(POD,CT)=SSCU(POD,CT)+XCU**2
      TSSCU(POD,CT)=TSSCU(POD,CT)+XCU**2
C KEEP TRACK OF THE NUMBER OF SINGLE CONSIGNEE CONTAINERS GOING TO A POD
      IF(CSN.GT.0)GO TO 800
      GO TO 20
C COMPUTE THE AVERAGE AGE OF CARGO BY CONTAINER TYPE GOING TO POD.
   28 DO 40 I=1,13
      DO 30 K=1,16
      IF(TNLSEG(I,K).EQ.0)GO TO 30
      Z=FLOAT(TNLSEG(I,K))
      AVEAGE(I,K)=TTADSS(I,K)/Z
   30 CONTINUE
   40 CONTINUE
C COMPUTE THE STANDARD DEVIATION IN AGE OF CARGO BY CONTAINER TYPE
C GOING TO POD.
      DO 60 I=1,13
      DO 50 K=1,16
      IF(TNLSEG(I,K).EQ.0)GO TO 50
      Y=FLOAT(TNLSEG(I,K))
```

```
      STDAGE(I,K)=STTADS(I,K)/Y-(TTADSS(I,K)**2)/Y
      STDAGE(I,K)=STDAGE(I,K)/Y
      STDAGE(I,K)=ABS(STDAGE(I,K))
      STDAGE(I,K)=SQRT(STDAGE(I,K))
   50 CONTINUE
   60 CONTINUE
C COMPUTE THE AVERAGE CUBE UTILIZATION BY CONTAINER TYPE FOR EACH POD.
      DO 80 I=1,13
      DO 70 K=1,16
      IF(TNC(I,K).EQ.0)GO TO 70
      Z=FLOAT(TNC(I,K))
      AVECU(I,K)=SCU(I,K)/Z
   70 CONTINUE
   80 CONTINUE
C COMPUTE THE STANDARD DEVIATION OF CUBE UTILIZATION BY CONTAINER TYPE
C FOR EACH POD
      DO 100 I=1,13
      DO 90 K=1,16
      IF(TNC(I,K).EQ.0)GO TO 90
      Y=FLOAT(TNC(I,K))
      STDCU(I,K)=SSCU(I,K)-(SCU(I,K)**2)/Y
      STDCU(I,K)=STDCU(I,K)/Y
      STDCU(I,K)=ABS(STDCU(I,K))
      STDCU(I,K)=SQRT(STDCU(I,K))
   90 CONTINUE
  100 CONTINUE
C COMPUTE THE SINGLE CONSIGNEE PROPORTION BY CONTAINER TYPE FOR EACH POD
      DO 120 I=1,13
      DO 110 K=1,16
      IF(TNC(I,K).EQ.0)GO TO 110
      Z=FLOAT(TNC(I,K))
      SCPROP(I,K)=NSCT(I,K)/Z
  110 CONTINUE
  120 CONTINUE
C PRINT THE HEADING FOR THE MONTHLY TABLES
  399 WRITE(6,2)
C PRINT THE HEADING FOR EACH POD, INCLUDING COLUMN HEADINGS
      DO 410 I=1,13
C TWO BLANK WRITE STATEMENTS TO SKIP TWO LINES BEFORE PRINTING NEXT POD
      WRITE(6,1)
      WRITE(6,1)
      WRITE(6,3)I,M
      WRITE(6,4)
  405 DO 400 K=1,16
      IF(AVEAGE(I,K).EQ.0)GO TO 400
      WRITE(6,5)K,TNC(I,K),AVEAGE(I,K),STDAGE(I,K),AVECU(I,K),STDCU(I,K)
     1,NSCT(I,K),SCPROP(I,K)
  400 CONTINUE
```

```
410 CONTINUE
    IF(CD.GT.720)GO TO 699
200 M=M+1
    DAYS=DAYS+30
210 DO 230 I=1,13
    DO 220 K=1,16
    STTADS(I,K)=0
    TNC(I,K)=0
    TTADSS(I,K)=0
    NSCT(I,K)=0
    SCU(I,K)=0
    SSCU(I,K)=0
    AVEAGE(I,K)=0
    STDAGE(I,K)=0
    AVECU(I,K)=0
    STDCU(I,K)=0
    TNLSEG(I,K)=0
    SCPROP(I,K)=0
220 CONTINUE
230 CONTINUE
    IF(M.EQ.1)GO TO 20
    GO TO 25
800 NSCT(POD,CT)=NSCT(POD,CT)+1
    TNSCT(POD,CT)=TNSCT(POD,CT)+1
    GO TO 20
C CALCULATE THE AVERAGE AGE FOR A 24-MONTH PERIOD
699 DO 510 I=1,13
    DO 500 K=1,16
    IF(TNSHPS(I,K).EQ.0)GO TO 500
    XTNSHP=FLOAT(TNSHPS(I,K))
    TAAGE(I,K)=TAGE(I,K)/XTNSHP
500 CONTINUE
510 CONTINUE
C CALCULATE THE STANDARD DEVIATION OF AGE FOR A 24-MONTH PERIOD
    DO 530 I=1,13
    DO 520 K=1,16
    IF(TNSHPS(I,K).EQ.0)GO TO 520
    XTNSHP=FLOAT(TNSHPS(I,K))
    TSDAGE(I,K)=TSTTAD(I,K)/XTNSHP-(TAGE(I,K)**2)/XTNSHP
    TSDAGE(I,K)=TSDAGE(I,K)/XTNSHP
    TSDAGE(I,K)=ABS(TSDAGE(I,K))
    TSDAGE(I,K)=SQRT(TSDAGE(I,K))
520 CONTINUE
530 CONTINUE
C CALCULATE THE AVERAGE CUBE UTILIZATION FOR A 24-MONTH PERIOD
    DO 550 I=1,13
    DO 540 K=1,16
    IF(TTNC(I,K).EQ.0)GO TO 540
```

```
      XTTNC=FLOAT(TTNC(I,K))
      TAVECU(I,K)=TSCU(I,K)/XTTNC
  540 CONTINUE
  550 CONTINUE
C CALCULATE THE STANDARD DEVIATION OF CUBE UTILIZATION FOR 24 MONTHS.
      DO 570 I=1,13
      DO 560 K=1,16
      IF(TTNC(I,K).EQ.0)GO TO 560
      XTTNC=FLOAT(TTNC(I,K))
      TSTDCU(I,K)=TSSCU(I,K)-(TSCU(I,K)**2)/XTTNC
      TSTDCU(I,K)=TSTDCU(I,K)/XTTNC
      TSTDCU(I,K)=ABS(TSTDCU(I,K))
      TSTDCU(I,K)=SQRT(TSTDCU(I,K))
  560 CONTINUE
  570 CONTINUE
C CALCULATE THE SINGLE CONSIGNEE PROPORTION FOR 24 MONTH PERIOD.
      DO 590 I=1,13
      DO 580 K=1,16
      IF(TTNC(I,K).EQ.0)GO TO 580
      XTTNC=FLOAT(TTNC(I,K))
      TSCPRO(I,K)=TNSCT(I,K)/XTTNC
  580 CONTINUE
  590 CONTINUE
C PRINT THE HEADING FOR TWO YEAR TABLE.
      WRITE(6,6)
C PRINT THE HEADING FOR EACH POD,INCLUDING COLUMN HEADINGS.
      DO 430 I=1,13
C TWO BLANK WRITE STATEMENTS TO SKIP TWO LINES BEFORE PRINTING NEXT POD.
      WRITE(6,1)
      WRITE(6,1)
      WRITE(6,7)I
      WRITE(6,4)
      DO 420 K=1,16
      IF(TAAGE(I,K).EQ.0)GO TO 420
      WRITE(6,5)K,TTNC(I,K),TAAGE(I,K),TSDAGE(I,K),TAVECU(I,K),TSTDCU(I,
     1K),TNSCT(I,K),TSCPRO(I,K)
  420 CONTINUE
  430 CONTINUE
  999 STOP
      END
```

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c.2 Data analysis techniques for a containerized export cargo transportation system.