

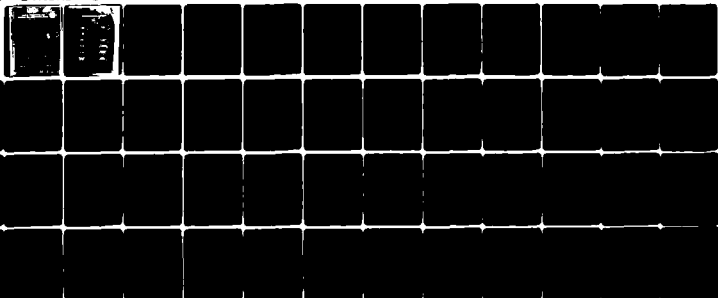
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DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CE--ETC F/G 9/2
CONTAINER ORIENTED NETWORK DISTRIBUTION ANALYSIS (CONDA) SYSTEM--ETC(U)
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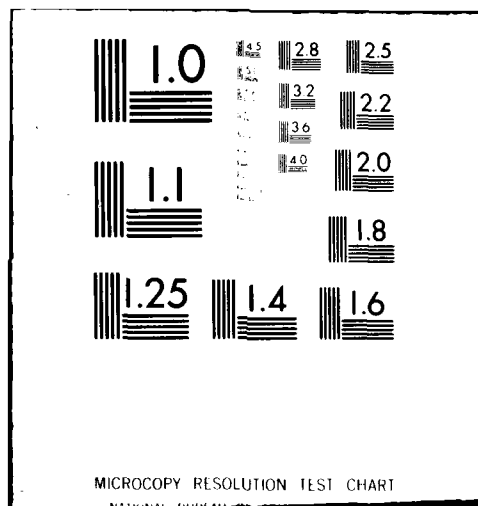


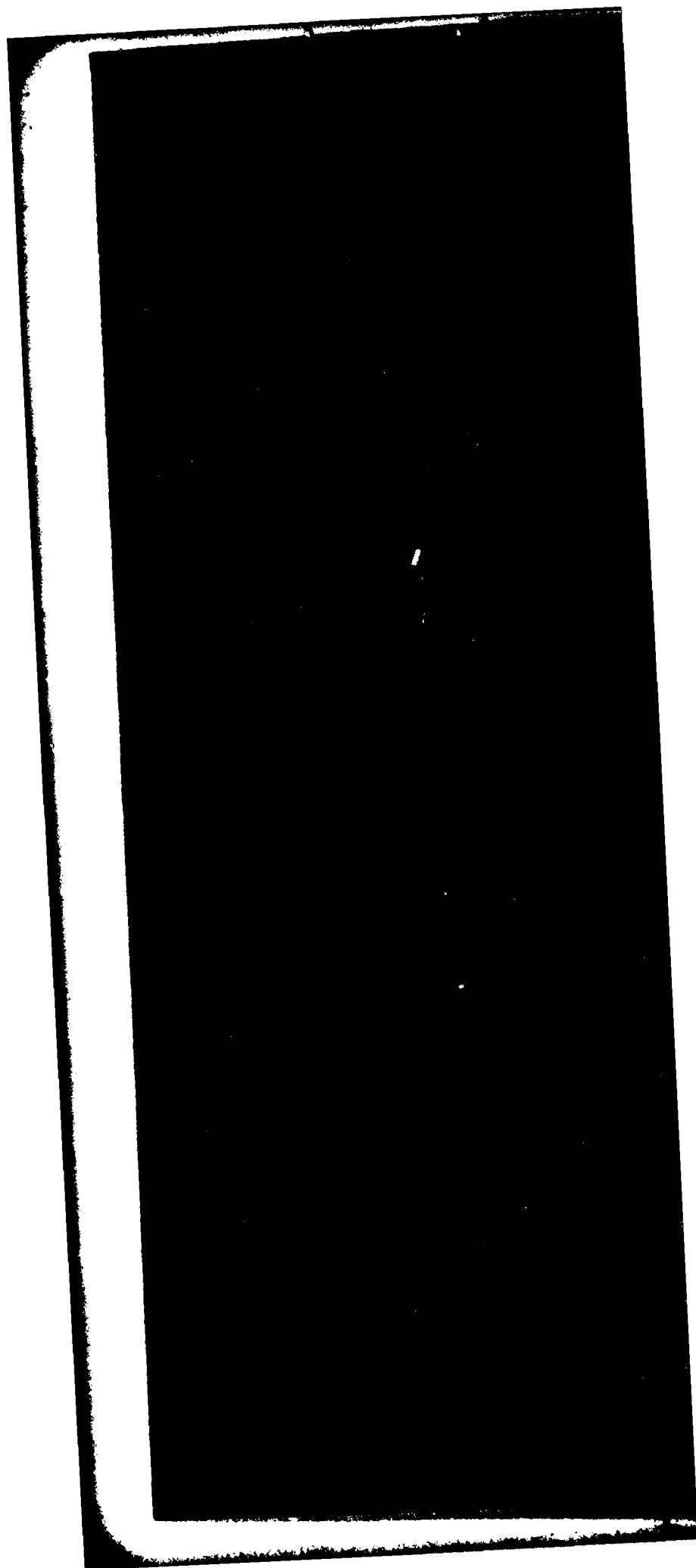
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the design and development of a data base which addresses the specific areas of inland cargo movement, port handling, and ocean freight container movement. This prototype data base operates with the SHARP Data Base Management System on a Control Data Corporation 6700 computer at the David W. Taylor Naval Ship Research and Development Center.

The second major effort of the CONDA Program is a study, conducted by J.J. Henry Co., Inc., that addresses the containerized cargo and documentation flow for seavan cargo that moves from origin to destination through a water terminal.

The CONDA Program provides management with a decision making tool, supported by actual historical data, to analyze and evaluate route patterns and rate structures for both break-bulk and seavan cargo that moves throughout the Navy Supply System.

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ABSTRACT

The Container Oriented Network Distribution Analysis (CONDA) Program was developed to provide the Navy with the capability to determine the extent, types, and manner in which containers/unitized cargo should be handled and incorporated into the Navy Supply System. The CONDA program encompassed two complementary efforts. The initial effort resulted in the design and development of a data base which addresses the specific areas of inland cargo movement, port handling, and ocean freight container movement. This prototype data base operates with the SHARP Data Base Management System on a Control Data Corporation 6700 computer at the David W. Taylor Naval Ship Research and Development Center.

The second major effort of the CONDA Program is a study, conducted by J.J. Henry Co., Inc., that addresses the containerized cargo and documentation flow for seavan cargo that moves from origin to destination through a water terminal.

The CONDA Program provides management with a decision making tool, supported by actual historical data, to analyze and evaluate route patterns and rate structures for both break-bulk and seavan cargo that moves throughout the Navy Supply System.

ADMINISTRATIVE INFORMATION

The CONDA program was sponsored by NAVSUP 043 under program element number 62760N. NAVMAT 08D1 was the program element manager. DTNSRDC, Code 187, was the technical agent with support from J.J. Henry Co., Inc.

SECTION 1 INTRODUCTION

Since the mid 1960's commercial shipping has been steadily shifting to the use of container ships. By 1985 as much as 85 percent of U.S. flag sealift capacity may be in container capable ships. As the responsible agent for all DoD sealift and as a primary user of containerized cargo, the Navy must develop the most effective methods for containerized cargo utilization.

One of the Navy initiatives in this area is the development of the Container Oriented Network Distribution Analysis (CONDA) system. The primary objective of the CONDA system is to determine the best types of containers, the extent to which they should be used, and the manner in which they should be handled and incorporated into the Navy Supply System. The CONDA system provides management with a decision making tool, supported by actual historical data, for analyzing and evaluating route patterns and rate structures for both breakbulk and seavan cargo moving through the Navy Supply System. The specific areas that CONDA addresses include inland cargo movements, port handling, and ocean freight container movement.

CONDA, developed by Code 187 of the David W. Taylor Naval Ship Research and Development Center (DTNSRDC), consists of a data base management system, and a prototype data base, both of which are operational on the CDC 6700 computer System at DTNSRDC. The data base was established under the SHARP data base management system which allows for the creation of large files and the organization, storage, retrieval, maintenance, and security of the data elements within these files. The current prototype data base includes files of GBL payment data, port handling billing data, seavan cargo movement data, commercial container agreement data, and containerized contract shipment data. Presently the CONDA data base contains 83 data elements taken from these five data files. Future applications of CONDA may require additional data elements from other files. The data base could be easily updated by a user familiar with the SHARP Data Management System.

The CONDA program is designed for operation by management users with limited computer experience. It is envisioned as a management tool for use in the evaluation of route patterns and rate structures in origin-destination cargo movement.

Some of the potential uses to the Navy of the CONDA system capability include

- o analyzing and evaluating the Navy Supply System's cargo movement
- o independently assessing transportation costs
- o making tradeoffs of routes versus rates
- o determining alternatives for consolidating containers at terminals
- o checking all billing shipments by GBL or TCN number
- o determining container cube utilization
- o forecasting future operations.

A study conducted by J.J. Henry Co., Inc., demonstrated some of these potential uses. The study ^{1*} addresses the containerized cargo and documentation flow for seavan cargo moving from origin to destination through a water terminal in the Naval Supply System. This study analyzed shipments that move from the shipper through a Port of Embarkation (POE) to a Port of Discharge (POD), and finally reach an ultimate consignee. The study included both the stuffing and stripping of containers at the water terminal and shipments of source-stuffed seavans which move directly from vendor sources to the ultimate consignee. This study made use of many of the data elements collected as part of the prototype CONDA data base.

*A complete listing of references is given on page 47.

SECTION 2 THE CONDA DATA BASE

The CONDA data base is stored in the CDC 6700 computer located at the David W. Taylor Naval Ship Research and Development Center and can be accessed from remote user terminals by using an interactive query language.

2.1 CONDA DATA FILES

The CONDA system development began with the identification of the data elements involved in the movement of Navy cargo. These data elements represent cargo characteristics, transportation information, shipment unit information, and associated costs and were obtained from five separate sources:

- o the Military Traffic Management Command (MTMC) Cargo Master Prime File (606019F)
- o the Navy Material Transportation Office (NAVMTO) GBL Payment Data File
- o the MTMC Port Handling File (HRSAll)
- o the Military Sealift Command (MSC) Cost and Accrual File (F3902552)
- o the DoD Activity Address Directory (DoDAAD) Master Record File

These five data files could not be linked through a common data element because transportation data are identified by transportation control numbers (TCN) and payment data are identified by Government Bill of Lading (GBL) numbers. Data elements selected from each of the files provide the information required for each segment of the transportation routes.

2.2 CONDA DATA BASE DEFINITION

The CONDA data base was designed under the SHARP Data Management System (DMS).² SHARP requires that certain information be provided for each data element that appears in the data base. This information is used to control the processing of data throughout the system.

2.2.1 Data Element Number

A unique data element number must be assigned to each data element to be entered into the CONDA data base. The data element number can be any value from 3 through 999. The numbers 0, 1, and 2 are unique SHARP identifier codes. See the SHARP User's Manual² for an explanation of these codes.

2.2.2 Data Element Name

The SHARP DMS requires that each data element in the data base be given a unique name. The acronym can be any combination of characters A through Z, numbers 0 through 9, and the special characters slash (/) and dash (-). Each acronym must be limited to a maximum of ten characters with no embedded blanks. Acronyms ending in the suffix "DATE" are assumed to identify a numeric field containing a date formatted YYYYMMDD or Julian YYDDD.

2.2.3 Data Element Size

Each data element must be identified as having either a fixed or a variable length data field by using the keywords SIZE or MAXSIZE, respectively. The size specification indicates the length of a data element and is required for all data elements. SHARP ensures that the length of the data values in a file maintenance transaction matches the length specified originally. If a difference is detected, the transaction is rejected as invalid.

2.2.4 Format

The CONDA data base will accommodate any type of data: alphanumeric, alphabetic, numeric, real, integer, or free format. However, the format for each data element must be specified. In file maintenance transactions SHARP will test data values for the correct format.

Alphanumeric: Alphanumeric data may contain any characters A through Z, 0 through 9, or spaces. Alphanumeric is denoted by the keyword ALPHAN.

Example:

27) GBL-NO; SIZE = 8; ALPHAN

Alphabetic: Alphabetic data may include any combination of letters A through Z, or spaces. The keyword is ALPHAB.

Example:

9) PKG; SIZE = 2; ALPHAB

Numeric: Numeric data can have any combination of characters 0 through 9. A numeric field is a noncomputational field.

Example:

26) REC-SEQ; SIZE = 3; NUMERIC

Real: The data element is identified as a computational number which has an embedded or assumed point. The location of the decimal point must be specified. This data field can include maximum of twelve characters excluding the decimal point but including the sign. The keywords REAL and DEC define real elements.

38) TOT-CHRG: MAXSIZE = 8; REAL; DEC = 2

In this example total charges are represented by a field length up to and including eight characters with the decimal point located two places to the left of the rightmost digit.

Integer: The data element is assumed to be a computational whole number with no decimal point. Integer elements are defined by the keyword INTEGER.
Example:

14) NO-PCS: MAXSIZE = 7; INTEGER

Free Format: When no other data format is specified, any combination of characters will be accepted as a valid data value. This is the default option.

2.2.5 Inversion

Because SHARP uses the partially inverted file concept, any data elements that will be the subject of query searches must be specified by placing the key word INVERT in the data definition statement.

Example:

10) TCN-NO; SIZE = 17; ALPHAN; INVERT

The SHARP DMS includes other types of specifications not presently used in the CONDA data base. These specifications are discussed in the SHARP manual², Section 3.

A dictionary of the elements selected for inclusion in the prototype CONDA data base is given in Figure 1.

2.3 INPUT PREPARATION

2.3.1 Modification of Source Data

The CONDA data base comprises several data files, each of which is made up of many logical records. Each record contains the information selected by the user to establish or update the data base. For example, a user may receive a data

Figure 1 - CONDA Data Base Dictionary

ID CONDA

- 0) SVAN-CNT: MAXSIZE=9; ALPHAN; INVERT
- 2) PROC-DATE: SIZE=6; NUMERIC; INVERT
- 3) CONSGR: SIZE=6; ALPHAN; INVERT
- 4) COM: MAXSIZE=3; ALPHAN; INVERT
- 5) COM-EXP: SIZE=2; CHAR 1; ALPHAB; CHAR 2; NUMERIC
- 6) POE: SIZE=3; ALPHAN; INVERT
- 7) POD: SIZE=3; ALPHAN; INVERT
- 8) MODE: SIZE=1; ALPHAN
- 9) PKG: SIZE=2; ALPHAB
- 10) TCN-NO: SIZE=17; ALPHAN; INVERT
- 11) TCN-NO2: SIZE=17; ALPHAN; INVERT
- 11) CONSGE: SIZE=6; ALPHAN; INVERT
- 12) PRI: MAXSIZE=1; INTEGER
- 13) TAC-CODE: SIZE=4; ALPHAN
- 14) NO-PCS: MAXSIZE=7; INTEGER
- 15) WEIGHT: MAXSIZE=7; INTEGER
- 16) CUBE: MAXSIZE=7; INTEGER
- 17) DTE-REC: MAXSIZE=7; INTEGER
- 18) VSL-STAT: MAXSIZE=2; ALPHAN
- 19) DTE-INP: MAXSIZE=4; NUMERIC
- 20) TYPE-ADDR: SIZE=1; NUMERIC
- 42) TYPE-ADD2: SIZE=1; NUMERIC
- 21) ZIPCODE: SIZE=5; NUMERIC; INVERT
- 43) ZIPCODE2: SIZE=5; NUMERIC; INVERT
- 22) AIRTERM-ID: SIZE=3; ALPHAB
- 44) AIRTERM-ID2: SIZE=3; ALPHAB
- 24) PORT CODE: SIZE=3; ALPHAN
- 45) PORT CODE2: SIZE=3; ALPHAN
- 26) REC-SEQ: SIZE=3; NUMERIC; INVERT
- 27) GBL-NO: SIZE=8; ALPHAN; INVERT
- 28) SHIP-PT: MAXSIZE=8; ALPHAB; INVERT
- 28) CONSGR-ADR: MAXSIZE=8; ALPHAB; INVERT
- 29) TYPE MOVE: SIZE=1; ALPHAB; INVERT
- 30) PICKUP DTE: SIZE=6; NUMERIC; INVERT
- 31) DLVY DATE: SIZE=6; NUMERIC; INVERT
- 32) DEST-PT: MAXSIZE=8; ALPHAB; INVERT
- 32) POE-ADR: MAXSIZE=8; ALPHAB; INVERT
- 33) ORG-DODAAC: SIZE=6; ALPHAN; INVERT
- 34) DST-DODAAC: SIZE=6; ALPHAN; INVERT
- 35) TOT-WGT: MAXSIZE=7; INTEGER
- 36) BILL WGT: MAXSIZE=7; INTEGER

- 0A (DATA BASE CODE FOR SEAVAN/CONTENTS P0010001)
- 2A SHARP ASSIGNED DATE FOR COMPUTER RUN
- 3A (CONSIGNOR-SHIPING ACTIVITY DODAAC)
- 4A MILSTAMP COMMODITY CODE
- 5A MILSTAMP COMMODITY SPECIAL HANDLING CODE
- 6A MILSTAMP PORT OF EMBARKATION IDENTIFIER
- 7A MILSTAMP PORT OF DEBARKATION IDENTIFIER
- 8A IDENTIFIES METHOD OF SHIPMENT USED FOR INITIAL MOVEMENT
- 9A IDENTIFIES TYPE OF PACKING USED FOR CONTAINER/BREAKBULK CARGO
- 10A A NUMBER WHICH IS ASSIGNED TO CONTROL A
- 10A SHIPMENT UNIT THROUGHOUT THE TRANSPORTATION CYCLE
- 11A DODAAC OF THE ULTIMATE RECEIVER OF THE MATERIAL
- 12A TRANSPORTATION PRIORITY
- 13A TRANSPORTATION ACCOUNT CODE-IDENTIFIES SPONSORING SHIPPER
- 14A NO. OF PIECES IN THE SEAVAN OR THE SHIPMENT UNIT
- 15A TOTAL WEIGHT-IN SEAVAN OR THE SHIPMENT UNIT
- 16A TOTAL CUBE-IN SEAVAN OR THE SHIPMENT UNIT
- 17A MATERIAL RECEIPT DATE AT THE POE
- 18A VESSEL STATUS-IDENTIFIES TYPE OF SHIPPING, TERMS OF CONTRACT
- 19A DATE OF INPUT
- 20A TYPE OF ADDRESS-SHIPING ADDRESS
- 42A TYPE OF ADDRESS-BILLING ADDRESS
- 21A ZIPCODE OF SHIPPING ADDRESS
- 43A ZIPCODE OF BILLING ADDRESS
- 22A AIR TERMINAL CODE FOR SHIPPING
- 44A AIR TERMINAL CODE FOR BILLING
- 24A PORT CODE DESIGNATOR FOR SHIPPING
- 45A PORT CODE DESIGNATOR FOR BILLING
- 26A RECORD TYPE SEQUENCE-GEN. COMMODITIES-PERSONAL PROP. HOUSEHOLD GOODS
- 27A GOVERNMENT BILL OF LADING NUMBER
- 28A IN THE CLEAR SHIPPING POINT-STATE-CITY
- 28A SAME AS SHIPPING POINT
- 29A TYPE MOVEMENT E = EXPORT I OR A BLANK SPACE = IMPORT
- 30A PICKUP DATE-DATE OF RECEIPT OF SHIPMENT
- 31A DELIVERY DATE OF MATERIAL TO DESTINATION POINT
- 32A IN THE CLEAR CONUS DESTINATION POINT-STATE-CITY
- 32A SAME AS DESTINATION POINT
- 33A ORIGINATING DOD ACT. ADDRESS CODE-RECORD TYPE 301 HOUSEHOLD GOODS
- 34A DESTINATION DOD ACT. ADDRESS CODE-RECORD TYPE 301 HOUSEHOLD GOODS
- 35A TOTAL WEIGHT-ACTUAL GROSS WEIGHT/NET WEIGHT-APPLIES TO CARGO
- 36A ACTUAL BILLING WEIGHT (lb)

Figure 1 (Continued)

```

37) TOT-CUBE; MAXSIZE=5; INTEGER
38) TOT-CHARGE; MAXSIZE=8; REAL; DEC=2
39) DEST-GBLOC; SIZE=6; ALPHAN; INVERT
40) POD-ADR; MAXSIZE=8; ALPHAB; INVERT
41) CONSGE-ADR; MAXSIZE=8; ALPHAB; INVERT
46) SVAN-CODE; SIZE=1; INVERT
38) TOT-CHARGE; MAXSIZE=8; REAL; DEC=2
50) WGT-TONS; MAXSIZE=6; REAL; DEC=2
51) MT-CUBE; MAXSIZE=6; REAL; DEC=2
52) LHRATE; MAXSIZE=6; REAL; DEC=2
53) LH-COST; MAXSIZE=8; REAL; DEC=2
60) TYPE-MOV2; SIZE=1; NUMERIC; INVERT
61) CONT-CODE; SIZE=2; NUMERIC; INVERT
62) TAC-COD2; SIZE=4; ALPHAN; INVERT
63) BILL-MO; SIZE=2; NUMERIC; INVERT
64) TRANS-RATE; MAXSIZE=5; REAL; DEC=2; INVERT
65) TRANS-MTON; MAXSIZE=10; REAL; DEC=3; INVERT
66) PREM-RATE; MAXSIZE=5; REAL; DEC=2; INVERT
67) PREM-MTON; MAXSIZE=10; REAL; DEC=3; INVERT
68) THRU-CHGE; MAXSIZE=10; REAL; DEC=2; INVERT
69) PREM-CHGE; MAXSIZE=10; REAL; DEC=2; INVERT
70) COMMAND; SIZE=1; NUMERIC; INVERT
71) ORG-MSC; SIZE=4; ALPHAN; INVERT
72) DEST-MSC; SIZE=4; ALPHAN; INVERT
73) COM-MSC; SIZE=2; NUMERIC; INVERT
74) WGT-MSC; MAXSIZE=6; INTEGER
75) COST-MSC; MAXSIZE=7; INTEGER
76) RDATE-MSC; SIZE=3; NUMERIC; INVERT
77) ESTIMATE; SIZE=1; ALPHAN; INVERT
78) SHIP-DIR; SIZE=1; NUMERIC; INVERT
79) POE2; SIZE=3; ALPHAN; INVERT
80) POD2; SIZE=3; ALPHAN; INVERT
81) POE3; SIZE=3; ALPHAN; INVERT
82) POD3; SIZE=3; ALPHAN; INVERT
83) SEARATE; MAXSIZE=7; INTEGER
RELATIONS
COMPUTE LHRATE = TOT-CHARGE / TOT-WGT
COMPUTE LH-COST = ( WEIGHT ) * ( TOT-CHARGE / TOT-WGT )
COMPUTE WGT-TONS = WEIGHT / 2000.
COMPUTE MT-CUBE = CUBE / 40.
COMPUTE SEARATE = COST-MSC / WGT-MSC
SEND
37A ACTUAL TOTAL CUBE (ft3)
38A TOTAL PAID CHARGES (dollars and cents)
39A DESTINATION POINT OF ITO GBL RECEIVING ACTIVITY
40A IN THE CLEAR OVERSEAS PORT (CITY-COUNTRY)
41A IN THE CLEAR OVERSEAS DESTINATION POINT (CITY-COUNTRY)
46A SEAVAN" HEADER RECORD INDICATOR P = PRIME O = CONTENTS
38A TOTAL PAID CHARGES (dollars and cents)
50A (WEIGHT/2000.) SHORT tons
51A (CUBE/40.) MEASUREMENT tons
52A (TOT-CHARGE/TOT-WGT) (dollars and cents/lb)
53A (WEIGHT) * (TOT-CHARGE/TOT-WGT)
60A CARGO MOVEMENT INDICATOR IMPORT = 1, EXPORT = 2
61A COST COMMODITY CODE REFERENCE DA-PAMPHLET 55-3
62A IDENTIFIES SPONSORING SHIPPER SERVICE
63A REPORTING MONTH FOR BILLING
64A TRANSSHIPPED RATE THRU PORT (dollars and cents/lb)
65A TRANSSHIPPED MEASUREMENT tons THRU THE PORT
66A PREMIUM RATE THRU PORT (dollars and cents/lb)
67A PREMIUM MEASUREMENT tons THRU THE PORT
68A TOTAL TRANSSHIPPED THRU CHARGES THRU THE PORT
69A TOTAL PREMIUM CHARGES THRU THE PORT
70A COMMAND MTMC EASTERN AREA = 1 MTMC WESTERN AREA = 2
71A MSC ORIGINATION POINT
72A MSC DESTINATION POINT
73A MSC COMMODITY CODE
74A QUANTITY OF CARGO EXPRESSED IN MEASUREMENT TONS
75A MSC COST ROUNDED TO THE NEAREST DOLLAR
76A REPORTING YEAR AND MONTH (YMM FORMAT)
77A ESTIMATE E = ESTIMATED COST
78A SHIP DIRECTION IMPORT-EXPORT
79A PORT OF EMBARKATION CODE
80A PORT OF DEBARKATION CODE
81A PORT OF EMBARKATION CODE
82A PORT OF DEBARKATION CODE
83A (COST-MSC/WGT-MSC) (dollars/measurement ton)
999A
999B
999C
999A
999B
999D
999Z

```

tape which has 20 pieces of information for each record but is concerned with only 10 of those pieces for each record. To form the data base the user must input 10 separate lines of data in the proper field positions and two additional lines of data which identify the record key and the transaction date for that record. Each record must be given a unique descriptor, called the record key, which distinguishes it from other records. In addition, each piece of data, called an element, for each individual record must be assigned a number which is unique within the entire CONDA data base. Three of these element numbers, however, are reserved for data necessary to the SHARP system. Element number 0 stores the record key number. Element number 1 stores the overflow of the record key if it exceeds nine characters. Element number 2 stores the date on which the record is introduced into the SHARP system. These elements must be listed at the end of each element key listing for each record key, the 0 element first, element 1 second and then element 2. The listing of elements for that record then follows. The SHARP User's Manual² discusses these elements in more detail.

All data may be entered into the CONDA data base in existing form with two exceptions.

(1) There may be no embedded blanks within the data. For example, if a number was in integer format on the data tape in an allotted field size (on the tape) of 10 columns, but the actual number had only three digits, it would appear as bbbbbbb123. The data read into the data base in this format would be unacceptable.

(2) If a data field from the input tape contains a negative value, the complement of the negative number must be input. A simple algorithm is used to find the complement of that negative data value:

Correct data

$$\text{value format} = 10^{(\text{field size} - 1)} + (\text{data value})$$

The CONDA system will be able to use this value for a negative number and subsequently change the data value back to a negative number on output.

The CONDA system also includes a format checking program. As data are entered in the standard transaction format, they are checked for validity in accordance with the input specifications. This capability eliminates the need for deleting bad data and re-entering correct data.

After the analyst has defined the new set of unique elements for his new data, the CONDA system will read the new data, validate the format, and through the use of the loader setup, add the new data to the existing data base. All data elements found to be incorrect will be rejected. A sample data transaction including coded cards and a few data elements, is presented in Table 1. The first line (beginning with A) represents an "add" transaction for record number 121 followed by the data for data elements 4, 5, and 6. The third line (beginning with the C) represents a "change" transaction for record number 121. The value in element 5 was changed to MC from MV.

2.3.2 Input Formats

To prepare data and load it into the SHARP Data Management System requires the use of a formatting program. Figure 2 shows the input card configurations. The first input card, the program identification and date card, identifies the data base name and the date on which data will be added to the data base. The second input card, INVRT, fills the array used to specify whether or not a data element is to be inverted. The inversion capability must be specified when data files are loaded into the CONDA data base master file. A blank in the specified field indicates that the data element is to be inverted; an X in the specified field indicates no inversion. The CONDA system then uses a direct access technique to retrieve the records in a file which satisfy a user query on the file.

The MSIZE card describes the field length for each data element. The fourth input card, defining the ICHAR array, reads the actual input data from the data tape for each data element defined. The program listing of Figure 3 indicates that the card that reads the values for the ICHAR array is in a major loop. All input data values are read, checked for the proper format (no blanks or negative numbers), and written to the output files. This output file will later be loaded into the SHARP Data Management System.

The ICNT array, Figure 3, defines the data element numbers that the user will input into the data base. For the example shown as part of Figure 3, the data element numbers are 76, 81, 82, 71, 72, 73, 74, 75, 77, and 78.

TABLE 1 - SAMPLE DATA TRANSACTION

ATTACH,SISFILE,CONDADATADEFFILE,ID=SHRP,MR=1.

ATTACH,UPDLIB,ID=SHRP,MR=1.

LIBRARY,UPDLIGB.

FMCK.

7/8/9

ID CONDA

A	121	4)	AC	5)	MV	6)	340	\$END
---	-----	----	----	----	----	----	-----	-------

A	50	4)	AR	5)	MP	6)	279	\$END
---	----	----	----	----	----	----	-----	-------

C	121	5)	MC	\$END
---	-----	----	----	-------

\$STOP

1.	ID	MDATE	
	11	21	

<u>Variable</u>	<u>Format</u>	<u>Description</u>
ID	A5	Program ID
MDATE	A6	Date

2.	INVRT(I),I=1,10	
	11	

<u>Variable</u>	<u>Format</u>	<u>Description</u>
INVRT	10A1	An "X" in field means element <u>NOT</u> to be inverted

3.	MSIZE(I),I=1,10	
	11	

<u>Variable</u>	<u>Format</u>	<u>Description</u>
MSIZE	10I2	Describes Field Length for each element

4. Input Data Card (for Cost Accrual File)
ICCHAR(I),I=1,10

<u>Variable</u>	<u>Format</u>	<u>Description</u>
ICCHAR (1)	A3	Element Number 76
(2)	A3	81
(3)	A3	82
(4)	A4	71
(5)	A4	72
(6)	A2	73
(7)	I7	74
(8)	I8	75
(9)	A1	77
(10)	A1	78

Figure 2 - Description of Inputs

Figure 3 - Data Tape Format Routine

```

PROGRAM DBASF5(INPUT=128,OUTPUT=128,TAPE5=INPUT,TAPE6=OUTPUT,
* TAPE1=/144,TAPE2)
  DIMENSION ICHAR(10),INVPT(10),MSIZE(10),ICNT(10)
  DATA ICODE/1H3/,IBLK/1H /
  DATA ICNT/4H0C76,4H0081,4H0082,4H0071,4H0072,4H0073,4H0074
* 4H0075,4H0077,4H0078 /
  NREC=0
  IDUM = 000009000
  READ(5,1000) ID, MDATE
  READ(5,1001) (INVPT(T),T=1,10)
  READ(5,1002) (MSIZE(I),(I = 1,10)
  WRITE(2,2000) ID
10  CONTINUE
  READ(1,1003) (ICAR(I),(I=1,5) (ICAR (I),I=6,10)
  IDUM = IDUM + 1
  NREC=NREC+1
  IF(EOF(1).NE.0.0) GO TO 999
  DO 100 I = 1,10
  IF(I .EQ. 7 .OR. I .EQ. 8) GO TO 40
  IF(IBLK.EQ.ICAR(I) GO TO 100
  MASK=77000000000000000000000000000000
  ITEMP = ICAR(I)
  DO 20 J = 1,10
  ITEST = (MASK .AND. TTEMP)
  IF(ITEST .NE. 1L .AND. ITEST .NE. 1L0) GO TO 30
  ITEMP = SHIFT(ITEMP,6)
20  CONTINUE
C   ALL BLANK OR ZERO
  GO TO 100
30  CONTINUE
C   NOT BLANK OR ZERO
  WRITE(2,2006) IDUM,ICODE,ICNT(I),MSIZE(I),ICODE,ICNT(I).
  * INVPT(I),ICAR(T)

```

Figure 3 (Continued)

```

GO TO 100
40 IF(ICHAR(I) .EQ. 0) GO TO 100
   IF(ICHAR(I) .GT. 0) GO TO 80
C   DATA IS A NEGATIVE NUMBER
   IDID = (10**(MSIZE(I) - 1)) + ICHAR(I)
   IF(I .NE. 7) GO TO 45
C   DATA .LE. 0 I = 7
   WRITE(2,2004) IDUM,ICODE,ICNT(I),MSIZE(I),ICODE,ICNT(I).
   * INVRT(I),IDID
   GO TO 100
45 CONTINUE
C   DATA .LE. 0 I = 8
   WRITE(2,2009) IDUM,ICODE,ICNT(I),MSIZE(I),ICODE,ICNT(I).
   * INVRT(I),IDID
   GO TO 100
80 CONTINUE
C   DATA .GT. 0 --- NOW IS THIS 7 OR 8
   IF(I .NE. 7) GO TO 82
C   DATA .CT. 0 I = 7
   WRITE(2,2007) IDUM,ICODE,ICNT(I),MSIZE(I),ICODE,ICNT(I).
   * INVRT(I),ICHAR(I)
   GO TO 100
82 CONTINUE
C   DATA .GT. 0 I = 8
   WRITE(2,2008) IDUM,ICODE,ICNT(I),MSIZE(I),ICODE,ICNT(I).
   * INVRT(I),ICHAR(I)
100 CONTINUE
   WRITE(2,2002) IDUM,ICODE,ICODE,IDUM
   WRITE(2,2003) IDUM,ICODE,ICODE,MDATE
   GO TO 10
999 WRITE(2,2005)
   ENDFILE 2

```

Figure 3 (Continued)

```
      WRITE(6,3000) NREC
      STOP
1000  FORMAT(A5,5X,A6)
1001  FORMAT(10A1)
1002  FORMAT(10I2)
1003  FORMAT(A3,24X,2A3,4X,2A4,3X,A2,1X,I7,3X,I8,5X,A1,6X,A1)
2000  FORMAT(21X,1H*,9X,A5)
2001  FORMAT(I9,3X,A1,A4,2X,A2,A1,A4,4X,A1,A10)
2002  FORMAT(I9,3X,A1,*0000 09*,A1,*0000*,5X,I9,9)
2003  FORMAT,(I9,3X,A1,*0002 06*,A1,*0002*,4X,*X*,A6)
2004  FORMAT(I9,3X,A1,A4,2X,I2.2,A1,A4,4X,A1,*--*,I6)
2005  FORMAT(4H$END )
2006  FORMAT(I9,3X,A1,A4,2X,T2.2,A1,A4,4X,A1,A10)
2007  FORMAT(I9,3X,A1,A4,2X,T2.2,A1,A4,4X,A1,I7.7)
2008  FORMAT(I9,3X,A1,A4,2X,T2.2,A1,A4,4X,A1,I8.8)
2009  FORMAT(I9,3X,A1,A4,2X,I2.2,A1,A4,4X,A1,*--*,I7)
3000  FORMAT(* RECORDS = *,I7)

      END
```

2.4 LOADING THE DATA BASE

When the data have been properly formatted, the user is ready to load the data into the CONDA Data Base. The formatted data resides on a disk file to be attached by the loader control cards. The Loader setup is the same for all types of data to be input. Figure 4 illustrates the required input configuration for loading the data base.

2.5 EXAMPLE OF LOADING AND MODIFYING THE DATA BASE

Figure 5 is an example of the data setup. A Navy installation provides a data tape with X number of records stored on it. Each record contains 20 pieces of data, of which ten are to be analyzed. Ten unique element numbers are assigned to these ten pieces of data.

In Figure 5, the first nine characters of each line represent the record key. The record key remains the same for all data items of a given record. The first five lines contain data for the same record, whose record key is 9001. The next three spaces are blank.

The 3 in column 13 represents an "add" transaction which inserts a new logical record into the existing data base. The "add" transaction is one of three types of transactions used by the SHARP System. The other two transactions are "change" and "delete". Section 4 of the SHARP Manual² gives further explanation of these three transactions. This example indicates all four records are being added to the SHARP Data Base.

The next four columns (Cols. 14 through 17) contain the data element number of the piece of data that follows. Two more blank spaces (Cols. 18 and 19) are followed by a field two columns long (Cols. 20 and 21) which contain the length of the data for this element. Figure 5 indicates that the lengths of the first three pieces of data for record key 9001 are 3, 8, and 1 columns.

The next five columns (Cols. 22 through 26) repeat columns 13 through 17. The next four columns (Cols. 27 through 30) are blank. The next one-column field (Col. 31) contains either a space or an X to specify whether this data element is to be inverted. Figure 5 shows that only two pieces of data in record 9001, elements 75 and 2, are not be inverted.

The last field, starting in column 32, contains the data. The field length may be 1 - 17 columns long and may be alphanumeric.

Figure 4 - SHARP Loader Card Setup

PAUSE, JOB REQUIRES DISK DV4794. (your disk pack)	
MOUNT, VSN=DV4794, SN=CONDAPK.	
MAP(OFF)	
LIMIT, 13000.	
ATTACH, INDISC, CABQCOSTO, ID=CABQ.	Attach data file
FILE, INDISC, RT=Z, BT=C, MRL=127, MBL=640.	
FILE, OUTDISC, RT=F, BT=C, FL=127, MBL=640	Change source data format to a format acceptable to SHARP
COPYRM, INDISC, OUTDISC.	Rewind data file
REWIND, OUTDISC.	
ATTACH, UPDLIB, ID=SHRP, MR=1.	Attach and define SHARP Library routines
LIBRARY(UPDLIB)	Request permanent file
REQUEST, SH00101.*PF.	Sort data by transact or codes and date
HSORT.	Create permanent file of sorted data
CATALOG, SH00101, CDASH00101, ID=CAFA.	
REQUEST, SH00201.*PF, SN=CONDAPK.	Request permanent files
REQUEST, COPY109.*PF.	Attach Direct Master File
ATTACH(DIRIN, CDADIR, ID=SHRP, SN=CONDAPK)	Rename above File to cycle '2' (from cycle 1)
RENAME(DIRIN, CY=2)	Copy Master File to previously requested PF
COPYBF(DIRIN, SH00201)	Rewind new file
REWIND(SH00201)	Execute Update program for Direct Master PF
DUPD.	Rewind error file
REWIND(ZZZZZEF)	
CATALOG, SH00201, CDADIR, ID=SHRP, CY=1.	

Figure 4 (Continued)

RETURN,SH00201.	Create new Master File and return to system
COPYCF(IN00109,COPY109)	Copy Inverted Master file and rewind
REWIND(IN00109)	
CATALOG,COPY109,CDCACOPY109,ID=CAFA.	Create new Inverted Master File
ATTACH,INSM,ID=SHRP,MR=1.	Attach sort Parameters
REWIND(IN00109,INVTRAN)	Rewind these files
FILE(IN00109,BT=C,RT=F,FL=88,MBL=640)	
FILE(INVTRAN,BT=C,RT=F,FL=88,MBL=640)	
LOSET(FILES=IN00109/INVTRAN)	
SORTMRG(I=INSM)	Format these files
REQUEST,IN00101,*PF,SN=CONDAPK.	Load these files into memory
ATTACH,INVIN,CDAINV,ID=SHRP,SN=CONDAPK.	Sorts the transactions out of direct update
RENANE(INVIN,,CY=2)	Request permanent file on personal discpack
COPYBF(INVIN,IN00101)	Attach Inverted Master File
REWIND(IN00101)	Rename above file to cycle '2'
IN1.	Copy this file
CATALOG,IN00101,CDAINV,ID=SHRP,CY=1.	Rewind this file
PURGE(SH00101)	Execute Update program for Inverted M.F.
PURGE(COPY109)	Create next Inverted Master File
PURGE(DIRIN)	
PURGE(INVIN)	
EXIT(S)	
REWIND(ZZZZZZEF)	Purge these four files
	In case of error in previous execution, pass
	Control to this point-otherwise skip

Figure 4 (Continued)

COPYBF(ZZZZZEF,OUTPUT	Rewind error file and copy to output
PUT YOUR UPDATES HERE	
STOP	Stop
ATTACH,SISDISC,DATADEFFILE,ID=SHRP,MR=1.	Attach data definition file for validating data
ATTACH,FMCKL,PHILFMCK,ID=SNAL,MR=1.	Attach Validation program
FILE(INPUT,LFN=INDISC)	Define input file for Validation program
LDSET(FILES=INPUT)	Load input file into core
FMCKL.	Execute Validation program
RETURN,SISDISC.	Return data definition file to system

Figure 5 - Data Input Example

Card Columns									
1	9	13	17	20	22	26	31	32	48
*									
000009001		30076		0330076			706		
000009001		30075		0830075			X00003684		
000009001		30078		0130078			1		
000009001		30000		0930000			000009001		
000009001		30002		0630002			X780920		
000009002		30076		0330076			706		
000009002		30081		0330081			3DS		
000009002		30082		0330082			BA1		
000009002		30073		0230073			60		
000009002		30074		0730074			X0000098		
000009002		30075		0830075			X00004702		
000009002		30078		0130078			1		
000009002		30000		0930000			000009002		
000009002		30002		0630002			X780920		
000009003		30076		0330076			706		
000009003		30081		0330081			3DS		
000009003		30082		0330082			BA1		
000009003		30071		0430071			AD17		
000009003		30072		0430072			EQ01		
000009003		30073		0230073			60		
000009003		30074		0730074			X0000098		
000009003		30075		0830075			X00000110		
000009003		30078		0130078			1		
000009003		30000		0930000			000009003		
000009003		30002		0630002			X780920		
000009004		30076		0330076			706		
000009004		30081		0330081			CK1		
000009004		30082		0330082			1R5		

Figure 5 (Continued)

000009004	30073	0230073	84
000009004	30074	0730074	X-999990
000009004	30075	0830075	X-9999862
000009004	30077	0130077	E
000009004	30078	0130078	2
000009004	30000	0930000	000009004
000009004	30002	0630002	X780920

After all ten elements have been listed, two more lines of data must be added for elements number 0 and 2 which contain the record key and the date this record key was added to the CONDA Data Base, respectively. In the first record of the example, 9001, element number "0" contains the record key itself and element number "2" the date, "September 20, 1978", this record was added to the CONDA Data Base. The setup for these last two lines of each record is similar to the rest of each record.

The first nine columns of both the element 0 and 2 contain the record key followed by three columns of spaces. The following column contains a "3" followed by "0000bb09" for element number "0" - the record key and "0002bb06" for element number "2" - the date this record key was created. In the following five columns (Cols. 22 through 26) repeat columns 13 through 17 for both elements. For element "0" skip the following five columns (Cols. 27 through 31) and then list the record key itself. For element "2" skip the following four columns (Cols. 27 through 30) and then place an "X" in column 31 followed by the current date. This date must be listed by year, month, and day allowing two columns for each (six total) occupying columns 32 through 37. This process must be repeated for each record key to be added to the SHARP Data Management System.

SECTION 3 QUERYING THE CONDA DATA BASE

3.1 CAPABILITIES

3.1.1 Overview

Users may interrogate the CONDA Data base in either batch or interactive mode using an English-like command language. Questions are constructed which specify the desired selection criteria, and those records in the data base which meet the selection criteria will be retrieved and output. Either a print statement or a previously defined report statement may be used to specify how the output information will appear. Section 4 describes seven previously defined CONDA output reports.

For each query, the system will determine the number of data base records (hits) that satisfy the specified selection criteria. The user then has the option of specifying for each question whether the selected records will be printed on line on the user terminal, off line at a batch printer, or not printed at all.

A maximum of 75 questions may be entered at one time in either the interactive or batch mode. With each question a different sort, print, or report specification may be entered. Each question is analyzed for errors. The query values are checked to ensure that the format agrees with that of the data base definition for the specified data elements. Questions are also checked for query language syntax errors, and appropriate diagnostics are output if errors are found. During an interactive query, error diagnostics for each question are output immediately to the user. The user may then re-enter the information correctly before entering the next question.

Because the data base is too large to be maintained on line, and because most query results require a large printer output, CONDA is designed to run both off line and via on-line batch terminal.

3.1.2 Batch Terminal Operation

The batch terminal mode of operation, the user enters the query at the user terminal and logs off. The computer processes the query while the user is off-line. The query is entered into a batch queue where it is executed in batch mode along with other batch jobs according to priority. The user can retrieve the

output search report in approximately 30 minutes to 1 hour depending on the backlog of jobs in the computer. (There is a significant cost advantage to using this retrieval method as opposed to the interactive retrieval method.) The user has the option of retrieving his output either from the off-line printer at the computer center or at the user terminal. If the user specifies that the output is to be printed at the computer center, the system requires no further action by the user after he logs off. If the user desires his output printed at the user terminal, he logs in again approximately one half hour later using the QUERY option. The system automatically checks its files to determine whether the user has an active request outstanding. If the active request has not been processed completely at the time the user logs in, the user logs in again at a later time. A new request cannot be initiated until the active request is completed. If the active request has been processed and completed at the time the user logs in, the user is given the number of hits for each question in his query. He then designates whether he wants to delete the question, print the output at the teletype, or print the output off-line at the computer center. The user then logs out if he has no additional queries. The query procedures is as follows:

1. Log On
2. Select Data Base File
3. Enter Query
4. Specify on-line or off-line output
5. Log Off
6. (After Job Execution)
If off-line output was specified, receive output from off-line printer.
7. If on-line output was specified, log back on approximately one-half hour after the initial query was made.
8. Receive number of hits for each question. Specify output disposition for each question.
9. If on-line output was specified, receive output at terminal.
10. Log Off
11. If off-line output was specified, receive output from printer.

The CONDA Program user can access the computerized Data Base directly if he has a User ID and a PASSWORD. Each user is assigned a unique user ID by the DTNSRDC User Services Group. The user's PASSWORD is an active DTNSRDC job number to which computer costs are charged. Here is an example of the user access procedure.

```
NSRDC 6600 INTERCON U 4.6
DATE 04/03/79
TIME 10.09.58.
LOGIN,CAFAMYERS,SUP
XXXXXXXXXX ENTER ACCESS NUMBER-
COMMAND- COMRADE,SHARP
```

```
COMRADE      TIME:      10.11.49.
              DATE:      04/03/79
```

```
SHARP SUBSYSTEM ENTERED
????QUERY
```

3.1.3 Off-Line Operation

Users may also wish to submit queries off-line via a punched card deck. In this case, the query questions can be punched on cards using the same command language as for on-line queries.

3.2 QUERY CONSTRUCTION

3.2.1 Search Acronyms

The data names assigned in the CONDA Data Definition are used in CONDA queries. These acronyms are used in referencing data elements in a query and are called "search acronyms."

3.2.2 Search Criteria

In any query the search criteria qualify the search. Table 2 gives a complete list of available search criteria. Each criterion has one or more of allowable

TABLE 2 - CONDA SEARCH CRITERIA

<u>CRITERIA</u>	* <u>ENTER CODE</u>
<u>Logical Operators</u>	
**Is; Equal to	<u>IS</u> <u>IS</u> EQ <u>TO</u> <u>IS</u> EQUAL <u>TO</u> <u>IS</u> EQUALS <u>TO</u> <u>IS</u> = <u>TO</u>
Not Equal To	<u>IS</u> NOT <u>IS</u> NOT EQUAL <u>TO</u> <u>IS</u> NE <u>TO</u>
Less Than (but not equal to)	<u>IS</u> LT <u>THAN</u> <u>IS</u> LS <u>THAN</u> <u>IS</u> LESS <u>THAN</u> <u>IS</u> < <u>THAN</u>
Less Than or equal to	<u>IS</u> LE <u>TO</u> <u>IS</u> LESS OR EQUAL <u>TO</u> <u>IS</u> LESS THAN OR EQUAL <u>TO</u>
Greater Than (but not equal to)	<u>IS</u> GR <u>THAN</u> <u>IS</u> GT <u>THAN</u> <u>IS</u> GREATER <u>THAN</u> <u>IS</u> > <u>THAN</u>
Greater Than or Equal to	<u>IS</u> GE <u>TO</u> <u>IS</u> GREATER OR EQUAL <u>TO</u> <u>IS</u> GREATER THAN OR EQUAL <u>TO</u>
<u>Ranging Operators</u>	
Between but not equal to	<u>IS</u> BN <u>TO</u> <u>IS</u> BETWEEN BUT NOT EQUAL <u>TO</u> <u>IS</u> BETWEEN
Between or Equal to	<u>IS</u> BE <u>TO</u> <u>IS</u> BETWEEN OR EQUAL <u>TO</u>
Between or Equal to higher value	<u>IS</u> BH <u>IS</u> BETWEEN OR EQUAL HIGHER
Between or Equal to lower value	<u>IS</u> BL <u>IS</u> BETWEEN OR EQUAL LOWER

TABLE 2 (Continued)

<u>Special Operators</u>	
Prefix	PREFIX
Suffix	SUFFIX
Present	PRESENT
Absent	ABSENT
* Underlined Codes are optional ** Default Search Criteria, used when no criterion is specified	

syntax combinations for specifying the criterion in a query. The underlined portion of the codes are optional and are allowed for readability.

3.2.3 Search Values

The search value is that value to which the search acronym is compared in the search. For example, in the MTMC Cargo File of the CONDA Data Base, the data element POE is compared on equality (EQ) to the search value 1M1. This means that in a designated search all values of POE equal to 1M1 would be selected.

3.2.4 Query Format and Restrictions

A CONDA query is composed of one or more questions. Each query is introduced by the Syntax - QUERY XXX where XXX is a two or three character user identification tag such as personal name initials. Each question is introduced by the conjunction IF and is terminated by either a semicolon or a question mark. Each question may contain one or more independent clauses which contain as a minimum a search acronym, a search criterion, and one or more search values. An independent clause is introduced by one of the conjunctions IF, AND, OR, OR IF. Each sentence within a question except the last may be optionally terminated with either a semi-colon or question mark. The last sentence in a question must be terminated by either a semi-colon or question mark. The command \$END must be entered following the last question in a query.

Example:

```
QUERY FAM
IF POE IS 1P2;

IF POE EQ 1P2 OR 1M1?

IF POE IS 1P2
OR POD IS CE1;

IF POE IS 1M1 OR 1P2
AND POD IS CE1;
$END
```

This query is composed of four questions. The first question consists of an acronym (POE), a search criterion (IS), and one search value (IP2). The second question has one sentence but two search values (IP2 and IM1). The third question contains two sentences, each of which has one search value (IP2 in sentence one, "CE1" in sentence two). The two sentences are joined by the conjunction OR. Question four contains two sentences with a total of three search values, two in sentence one, and one in sentence two. Note that the rule of conjunction OR is different in questions three and four. In question three, OR introduces a sentence whereas in question four OR joins two search values.

The query language syntax closely approximates the way questions would be phrased in English. In question one, all POEs which have a value of IP2 (Charleston, SC) would be selected. In question two, the ports of embarkation IP2 and IM1 (Charleston, SC, and Norfolk, VA,) would be selected. In question three, the data base records selected are those whose POE is IP2 and/or whose POD is CE1. In question four, the records selected would be only the POEs of Norfolk or Charleston whose POD CE1 (Guantanamo Bay). Codes for all ports are provided in DoD Regulation 4500.32-R, Volumes I and II.

Compound search values can be expressed in many acceptable ways in the query language. Section 5.1.4.1 of the SHARP Manual² provides examples of format variations.

Queries to the CONDA Data Base are entered in a free-form format. Multiple spaces are allowed between words; however, at least one space is required. Spacing on either side of punctuation marks is optional. Any number of words may be entered on a line; however, on batched type queries using punched card input only the first 72 characters are used. A maximum of 15 sentences and 25 search values may be entered per question. Search values may not exceed 50 characters in length including embedded blanks. Users are restricted to a maximum of 25 questions input at one time in either the interactive or batch mode.

Examples:

1. Correct QUERY FM
 IF COM IS 102;
2. Incorrect IFCOM IS 102;
3. Correct IF TYPE-MOV2 IS 1;
4. Incorrect IF TYPE - MOV2 IS 1;

- 5. Correct IF POE IS 1K2 OR 1MJ;
- 6. Incorrect IF POE IS 1K2 OR1MJ;

Question 2 is incorrect because at least one space was not entered between IF and COM. Question 4 is incorrect because embedded blanks are not allowed in acronyms. Question 6 is incorrect because at least one space was not entered between the conjunction OR and the search value 1MJ.

3.2.5 AND/OR Dominance

If both conjunctions (AND,OR) appear in a question separating the conditions of a question, the conjunction AND is dominant over the OR.

Example:

```
IF REC-SEQ IS 101
AND SHIP-PT IS VANORFOL
OR DEST-PT IS SCCHARLE;
```

In this case, if OR was dominant, records would be selected where DEST-PT is SCCHARLE regardless of whether any other conditions are met. However, since AND is dominant, the logic is grouped as follows:

```
IF REC-SEQ IS 101
AND   SHIP-PT IS VANORFOL
      OR DEST-PT IS SCCHARLE;
```

For a record to be selected, REC-SEQ must be 101 and in addition either of two conditions must be met -- SHIP-PT must be VANORFOL or DEST-PT must be SCCHARLE.

When both AND and OR are used as conjunctions introducing sentences, the OR condition can be made dominant by using OR IF.

Example:

```
IF REC-SEQ IS 101
AND SHIP-PT IS VANORFOL
OR IF DEST-PT IS SCCHARLE;
```

In this example, the logic grouping is as follows:

```
IF   REC-SEQ IS 101
      AND SHIP-PT IS VANORFOL
OR IF DEST-PT IS SCCHARLE;
```

The use of the OR IF changes the logic such that a record is selected if DEST-PT is SCCHARLE regardless if any other conditions are met.

3.2.6 Ranging Searches

The ranging search capability allows data value ranges to be specified rather than single data values. The ranging search criteria are listed as part of Table 2.

Examples:

1) IF COM IS BE 100/125?

In this case all records with a commodity code (COM) in the range of 100 to 125 inclusive will be selected.

2) IF COM IS BN 100/125?

In this example commodities 101 to 124 inclusive will be selected.

3) IF COM IS BH 100/125?

This example specifies all commodities in the range 101 to 125 inclusive.

4) IF COM IS BL 100/125?

This final example selects all commodities in the range 100 to 124 inclusive.

3.2.7 Special Operators

Queries can be made on the beginning (left most) characters, the middle characters, or the end characters of a data element. These three operators are defined as a PREFIX, PARTIAL, or SUFFIX search, respectively.

For example, assume that a date is entered into a file in the numeric form YYYYMMDD (YY-year, MM-month, DD-day). The acronym for this date is given as DATE. If the user wants to select all records for the year 1978, his query would be:

IF PREFIX DATE IS 78;

If the user wants to select records from June, his query structure would be:

IF PARTIAL DATE IS (2)06;

This query is interpreted as follows: skip the first two characters of DATE and compare the next two characters on the value 06. All records with dates in the month of June will be selected.

Finally, if the user wants to select all records which reflect transactions on the first day of the month;

IF SUFFIX DATE IS 01;

This query satisfy the first day of the month requirement.

Two other special operators include a present and an absent search. The present search locates all records in the data base which have any values entered for the given data element.

Example:

IF COM IS PRESENT;

The absent search is the opposite of the present search.

Example:

IF COM IS ABSENT;

3.3 SORT SPECIFICATION

The CONDA system can, on request, sort output records selected during a search. Any combination of data elements defined in the CONDA Data Base may be specified for the sort sequence. The data elements may be sorted in both ascending (low to high values) and descending (high to low) sequence. Ascending order (low to high) is the default sequence.

Examples:

QUERY FAM

IF COM IS BE 360/399;

SORT ON COM.

IF POE IS IMJ

AND POD IS PRESENT;

SORT ON POD.

SEND

The results of the first question would be sorted in ascending order beginning at 360 and ending with 399. The second question results in a sort of the PODs in alphabetical order.

The prefix and partial sort capabilities allow the Data Base user to sort on the left-most characters or characters in the middle of a data element.

Example:

1) SORT ON (2) DATE.

In this example; the sort would be on the first two characters of DATE. For the purpose of this example, assume DATE has a format YYMMDD.

A partial sort allows the user to sort on the middle characters of a data element.

Example:

1) SORT ON (*16,1) TCN-NO.

3.4 PRINT SPECIFICATION

With each question the user may enter a print statement which specifies the data elements to be output from each record selected in the search. A print statement may be entered either in a standard system print format or in a report statement. Examples of the standard system print format are:

```
QUERY FAM
IF POE IS IMJ AND POD IS CEL;
PRINT NO-PCS, WEIGHT, AND CUBE.
```

```
IF COM IS BE 360/399;
PRINT COM, AND NO-FCS
$END
```

The standard system print format is described in more detail in Section 5 of the SHARP Manual². The report definition capability is discussed in detail in Section 4 of this report.

3.5 COMPUTATION CAPABILITY

Computations may be performed on data elements in those records selected in the search. Table 3 gives a list of computation specifications. The following examples illustrate computation specifications:

- 1) IF REC-SEQ IS 301 AND SHIP-PT IS SCCHARLE;
PRINT BILL-WGT.
SUM BILL-WGT.
- 2) IF REC-SEQ IS 301 AND SHIP-PT IS SCCHARLE;
PRINT AVERAGE TOT-CUBE.
- 3) IF POE IS IP2 AND POD IS PRESENT.
SORT ON POD.
SUBTOTAL NO-PCS, WEIGHT, AND CUBE ON POD.

In Question 1, BILL-WGT is to be output and summed. Any number of data elements may be entered and summed following the keyword SUM.

Question 2 will print the average of TOT-CUBE for household goods (REC-SEQ IS 301) are shipped from Charleston, South Carolina.

TABLE 3 - COMPUTATION SPECIFICATIONS

<u>Computation</u>	<u>Acronym(s)</u>
Sum or total a data element	SUM TOTAL
Average of a data element	AVG AVERAGE
Percent (1 element - another x 100)	PERCENT
Percent sum (sum two elements then compute percentage)	PERCENT SUM TOTAL
Maximum of a data element	MAXIMUM MAX
Minimum of a data element	MINIMUM MIN
Standard deviation of a data element	SIGMA
Count the occurrences of a data element	COUNT
Sub-total a data element when another element changes in value	SUBTOTAL SUBTOTALS SUB-TOTAL

Question 3 allows the NO-PCS, WEIGHT, and CUBE to be subtotaled each time the POD changes. The net result of this query is a total of NO-PCS, WEIGHT, and CUBE leaving from port 1P2 and going to all possible PODS.

The other computation specifications operate in the same way.

3.6 REPORT SPECIFICATION

The report specification enables the user to specify that his output be printed in a previously defined report format. If no report statement is entered, the output will be displayed in the standard system print format. The following examples illustrate the report specification:

```
QUERY FM1.  
IF POD IS CEL;  
SORT ON POE.  
REPORT R01.  
IF SHIP-PT IS INCRANE AND  
DEST-PT IS NJEARLE;  
REPORT R04.  
$END
```

The records selected for output from the first question will be displayed in a report format which was catalogued under the name R01. A report statement is always introduced with the keyword REPORT. The report identification, in this case R01, immediately follows. A different report may be specified for each question. The second example will display records selected for output in a report format which was catalogued under the name R04. Seven previously defined reports are described in Section 4.

SECTION 4 CONDA REPORTS

4.1 CAPABILITIES

The SHARP Data Management System has on-line and off-line report definition capability. In addition, any number of reports may be defined at any one time. If the user makes errors during the defining of a report, error messages will be output. The user may then re-enter the report definitions correctly.

Each report definition is catalogued under a specified identification acronym. The user selects the report at query time by specifying the report ID. A user may also define a report and select it in a query during the same terminal session. The report IDs which are already defined for the CONDA Data Base are REPORT R01 through R07 which are defined in Section 4.3.

Both columnar- and row-type reports may be defined. The information from one data base record appears on a single line on the output page of a columnar report. All seven previously defined CONDA reports are of the columnar type. Row reports differ from columnar reports in that multiple lines are required on the output report page to contain the information from one record.

The initial input for all the CONDA report definitions is the field ID followed by the data base file for which the report is defined (e.g., ID CONDA). The file ID is followed by the report ID in the form REPORT XXX, where XXX is a one to three-character identification code assigned by the user. This sequence is followed by specific report definition information.

4.2 REPORT DEFINITION PROCEDURE

Columnar reports are normally defined when the information to be selected from a data base record can be contained on a single line of the output page. Column reports are defined using the keywords COL HEAD or COLHEAD which introduce column headings for the report. The following input illustrates the definition of a typical CONDA report:

```
ID CONDA
REPORT R02
PAGE WIDTH = 135
MHEAD = $SEAVAN COST SUMMARY$
COL HEAD 1 = $/CL CONSGR$
```

```

COL HEAD 2 = $/CL POE$
COL HEAD 3 = $/CL POD$
COL HEAD 4 = $TOT WGT/(TONS)$
COL HEAD 5 = $/TOT CUBE$
COL HEAD 6 = $/MTONS$
COL HEAD 7 = $/TOT-CHARGE$
COL HEAD 8 = $LH RATE/PER LB$
PRINT SHIP-PT, POE-ADR, POD-ADR, WGT-TONS,
CUBE, MT-CUBE, TOT-CHARGE, LHRATE
$END

```

The ID indicates the CONDA data file. Report R02 has been assigned as the identification code for this report. PAGE WIDTH indicates the number of characters or spaces to an output line. A page width of 72 characters is normally used for remote terminal reports. The report master heading, MHEAD, provides a title for the report. An option allows three variable headings following the master heading to annotate the output report. The keyword HEAD introduces each of those variable headings which may have from one to sixty characters and must be bounded by either a single quotation mark or a dollar sign. The heading number immediately follows the keyword HEAD or HEADING.

Following the master heading (and subheads if used) are the column headings for the respective data columns. The left-most column heading for the report page is entered first (COL HEAD 1). Each column heading is bounded by either single quotation marks or single dollar signs. A maximum of three column heading lines per column heading may be entered with a maximum of twelve characters per column heading line. Slashes are used to separate column heading lines. The first column of the example used consists of one heading line. The use of a slash drops the heading one so that it is printed on the second line used for headings.

Following the eighth column heading in the example, a PRINT statement lists the data elements to be output under the column headings. Each element is entered via its acronym, the first element to be output under column heading one, the second under column heading two, etc.. The report definition is terminated by \$END.

If a column report is defined which is too wide for the defined page width, an error message will be returned. The following procedure should be used to compute the minimum report page width:

- 1) For each data column, take the number of characters in the widest column heading line or the maximum number of characters which may be output for a data value, whichever is larger.

- 2) Sum the numbers computed for each data column.

- 3) Add one space for each column except the last to determine the minimum spacing between columns.

- 4) Compare the total spaces required to the page width. If the total spaces are greater than the page width, the report definition is invalid and must be redefined.

4.3 PREDEFINED CONDA REPORTS

Seven reports (see Figures 6-12) have been predefined for the present prototype CONDA data base. These formats represent the kinds of reports that can be generated from the data base.

```

ID CONDA
REPORT R01
PAGE WIDTH = 135
MHEAD = $NAVY CARGO MOVEMENT LISTINGS$
COL HEAD 1 = $/CONSGE$
COL HEAD 2 = $/POE$
COL HEAD 3 = $/POD$
COL HEAD 4 = $/CONSGE$
COL HEAD 5 = $/COM$
COL HEAD 6 = $COM/EXP$
COL HEAD 7 = $/MODE$
COL HEAD 8 = $/PKG$
COL HEAD 9 = $/TCN NUMBERS$
COL HEAD 10 = $/PRI$
COL HEAD 11 = $TAC/CODE$
COL HEAD 12 = $NO OF / PIECES$
COL HEAD 13 = $/WEIGHT$
COL HEAD 14 = $/CUBE$
COL HEAD 15 = $REC/DATE$
COL HEAD 16 = $VSL/STATUS$
PRINT CONSGR, POE, POD, CONSGE, COM, COM-EXP, MODE,
PKG, TCN-NO, PRI, TAC-CODE, NO-PCS, WEIGHT, CUBE,
DTE-REC, VSL-STAT
$END

```

The data elements in this report are: consignor, port of embarkation, port of debarkation, consignee, commodity, commodity exception, mode, package code, transportation control number, priority, transportation account code, number of pieces, weight, cube, date received at POE, and vessel status code.

Figure 6 - Navy Cargo Movement Report

ID CONDA
REPORT R02
PAGE WIDTH = 135
MHEAD = \$SEAVAN COST SUMMARY\$
COL HEAD 1 = \$/CL CONSGR\$
COL HEAD 2 = \$/CL POE\$
COL HEAD 3 = \$/CL POD\$
COL HEAD 4 = \$TOT WGT/(TONS)\$
COL HEAD 5 = \$/TOT CUBE\$
COL HEAD 6 = \$/MTONS\$
COL HEAD 7 = \$/TOT-CHARGE\$
COL HEAD 8 = \$LH RATE/PER LB\$
PRINT SHIP-PT, POE-ADR, POD-ADR, WGT-TONS,
CUBE, MT-CUBE, TOT-CHARGE, LHRATE
\$END

The data elements defined in this report include: consignor city and state, in the clear POE and DoD addresses, total cargo weight, total cargo cube, cargo measurement tons, total paid charges, and the linehaul rate (dollars/pound).

Figure 7 - Seavan Cost Report

```
ID CONDA
REPORT R03
WIDTH = 135
MHEAD = $SEAVAN CONTENT ROUTE DATA$
COLHEAD 1 = $CONSIGNOR/ADDRESS$
COLHEAD 2 = $POE/ADDRESS$
COLHEAD 3 = $POD/ADDRESS$
COLHEAD 4 = $COMMODITY/CODE$
COLHEAD 5 = $TCN/NUMBER$
COLHEAD 6 = $WEIGHT/(LBS)$
COLHEAD 7 = $CUBE/(CU FT)$
COLHEAD 8 = $DATE REC/AT POE$
PRINT CONSGR-ADR,POE-ADR,POD-ADR,COM,TCN-NO,WEIGHT,CUBE, AND DTE-REC
SEND
```

Report R03 contains these data elements; consignor address, POE address, POD address, commodity code, transportation control number, weight, cube, and receipt date of cargo at the POE.

Figure 8 - Seavan Content Route Report

```
ID CONDA
REPORT R04
WIDTH = 135
MHEAD = $INLAND COST SHIPMENT DATA$
COLHEAD 1 = $/SHIPPING/POINT$
COLHEAD 2 = $/DESTINATION/POINT$
COLHEAD 3 = $TOTAL/WEIGHT/(LBS)$
COLHEAD 4 = $TOTAL/CUBE/(CU FT)$
COLHEAD 5 = $TOTALCHARGES/(DOL&CTS)$
COLHEAD 6 = $LINEHAUL/RATE$
COLHEAD 7 = $DELIVERY/DATE/TO DEST PT$
PRINT SHIP-PT,DEST-PT,TOT-WGT,TOT-CUBE,TOT-CHARGE,LHRATE,DLVY-DATE
$END
```

Report R04 is a summary of inland shipment cost data and includes these data elements: the in the clear or noncoded shipping point, destination point, total shipment weight, total cube, total paid charges, linehaul rate, and the delivery date to the destination point.

Figure 9 - Inland Cost Shipment Report

```

ID CONDA
REPORT R05
WIDTH = 135
MHEAD = $NAVY PORT HANDLING CHARGES$
COLHEAD 1 = $/POE$
COLHEAD 2 = $/POD$
COLHEAD 3 = $TYPE OF/MOVE$
COLHEAD 4 = $COMMODITY/CODE$
COLHEAD 5 = $TRANSSHIPPED/RATE$
COLHEAD 6 = $TRANSSHIPPED/MTONS$
COLHEAD 7 = $PREMIUM/RATE$
COLHEAD 8 = $PREMIUM/MTONS$
COLHEAD 10 = $PREMIUM/CHARGE$
COLHEAD 11 = $BILLING/MONTH$
PRINT POE2, POD2, TYPE-MOV2, CONT-CODE, TRANS-RATE, TRANS-MTON,
PREM-RATE, PREM-MTON, THRU-CHGE, PREM-CHGE, BILL-MO
$END

```

The data elements which compose report R05 are: POE, POD, type of movement (either import or export), commodity code, transshipment rate, transshipment measurement tons, premium rates, premium measurement tons, transshipped charges, premium charges, and the billing month.

Figure 10 - Port Handling Charge Report

```

ID CONDA
REPORT R06
WIDTH = 135
MHEAD = $NAVY SEALIFT CHARGES$
COLHEAD 1 = $/POE$
COLHEAD 2 = $/POD$
COLHEAD 3 = $INITIAL/ORIGIN$
COLHEAD 4 = $ULTIMATE/DESTINATION$
COLHEAD 5 = $/COMMODITY$
COLHEAD 6 = $QUANTITY/(MTONS)$
COLHEAD 7 = $COST/(DOLLARS)$
COLHEAD 8 = $SEALIFT RATE$
COLHEAD 9 = $$SHIPMENT/DIRECTION$
COLHEAD 10 = $ESTIMATED/PAYMENTS$
COLHEAD 11 = $REPORT/DATE$
PRINT POE3, POD3, ORG-MSC, DEST-MSC, COM-MSC, WGT-MSC, COST-MSC,
SEARATE, SHIP-DIR, ESTIMATE, RDATE-MSC
$END

```

Report R06 reflects the port-to-port segment of the transportation network. Data elements include the POE, POD, origin point, destination point, commodity code, weight, cost of shipment, sealift rate, direction of shipment (import or export), estimated charges indicator, and receipt date.

Figure 11 - Sealift Charge Report

ID CONDA
REPORT R07
WIDTH = 72
MHEAD = \$INLAND COST SHIPMENT DATA\$
COLHEAD 1 = \$/SHIPPING POINT\$
COLHEAD 2 = \$/DESTINATION/POINTS
COLHEAD 3 = \$TOTAL/WEIGHT/(LBS)\$
COLHEAD 4 = \$TOTAL/CUBE/(CU FT)\$
COLHEAD 5 = \$TOTAL CHARGES/(DOL&CTS)
COLHEAD 6 = \$LINEHAUL/RATE\$
COLHEAD 7 = \$DELIVERY/DATE/TO DEST PTS
PRINT SHIP-PT, DEST-PT, TOT-WGT, TOT-CUBE, TOT-CHARGE, LHRATE, DLVY-DATE
\$END

Report R07 is identical to the Inland Cost Shipment Report R04 except that it is defined a 72-column rather than a 135-column report.

Figure 12 - Inland Shipment Report

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