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User Interface in ORACLE
for the Worldwide Household Goods
Information System for Transportation
Modernization (WHIST-MOD)

T. James
J. Loftis

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Energy Division

**USER INTERFACE IN ORACLE
FOR THE WORLDWIDE HOUSEHOLD GOODS
INFORMATION SYSTEM FOR TRANSPORTATION
MODERNIZATION (WHIST-MOD)**

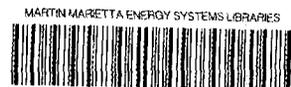
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ACRONYMS AND ABBREVIATIONS

ALL	All Shipments Under All Categories
COS	Code of Service
DOM	Domestic Interstate and Intrastate Shipments
DPM	Direct Procurement Method Shipments
GBLOC	Government Bill of Lading Office Code
INTER	Domestic Interstate Shipments
INTL	International Shipments
INTRA	Domestic Intrastate Shipments
MH	Mobile Homes
MTMC	Military Traffic Management Command
MTPP	Directorate of Personal Property, MTMC
ORNL	Oak Ridge National Laboratory
OTHER	Mobile Home, Local Move, and Privately-Owned Vehicle Shipments
QA	Quality Assurance
RDBMS	Relational Database Management System
SIT	Storage in Transit
SQL	Standard Query Language
VM	Volume Moves
WHIST-MOD	Worldwide Household Goods Information System for Transportation Modernization

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ABSTRACT

The Directorate of Personal Property of the Military Traffic Management Command (MTMC) requested that Oak Ridge National Laboratory (ORNL) design a prototype decision support system, the Worldwide Household Goods Information System for Transportation Modernization (WHIST-MOD). This decision support system will automate current tasks and provide analysis tools for evaluating the Personal Property Program, predicting impacts to the program, and planning modifications to the program to meet the evolving needs of military service members and the transportation industry. The system designed by ORNL consists of three application modules: system dictionary applications, data acquisition and administration applications, and user applications. The development of the user applications module is divided into two phases. Round 1 is the data selection front-end interface, and Round 2 is the output or back-end interface.

This report describes the prototyped front-end interface for the user application module. It discusses user requirements and the prototype design. The information contained in this report is the product of in-depth interviews with MTMC staff, prototype meetings with the users, and the research and design work conducted at ORNL.

1. INTRODUCTION

1.1 BACKGROUND

The Worldwide Household Goods Information System for Transportation Modernization (WHIST-MOD) being designed and prototyped by Oak Ridge National Laboratory (ORNL) will be a decision support system for the various organizations of the Military Traffic Management Command (MTMC) that establish and implement the Personal Property Movement and Storage Program. The staff of the Personal Property Program monitor and set policy for the movement and storage of military service members' household goods. There are almost one million moves annually, and the decision support system being prototyped at ORNL will aid the staff of the Personal Property Program in evaluating and setting policy for such a large-scale program.

This system is designed to access a distributed database through a powerful set of information management tools. It is unlike an operations-based system because users will not insert, update, or delete records from the database but will retrieve and analyze data supplied by operations-based systems.

The prototype system offers users, even those with minimal computer experience, easy access to a large selection of data elements and the ability to formulate complex queries easily. In addition, users may perform special studies and one-time-only queries. WHIST-MOD will be a dynamic, flexible system that evolves to meet the changing needs of the Directorate of Personal Property, MTMC (MTPP) staff.

1.2 THE USER APPLICATIONS MODULE

The user applications module is divided into two prototype design and development phases. Round 1, the front-end interface, was prototyped using ORACLE, a relational database management system (RDBMS), and its associated toolset. The front-end interface includes screens that allow users to choose, retrieve, and store a subset of data. These data are then passed to the postprocessing back-end interface. Round 2 will prototype the back-end interface using SAS, a data management and statistical analysis toolset. (ORACLE does not currently support the complex graphics and statistics needed for the back-end interface.) The back-end interface will allow the user to (1) specify report types and formats and (2) produce output based on the operating system data file passed to SAS from the front-end interface.

The following sections describe the front-end interface prototyped in Round 1 of the WHIST-MOD project. Section 1 of this report provides an overview of the WHIST-MOD system, Section 2 discusses system requirements considered in the design of the front-end interface, and Section 3 describes the interface screens prototyped in Round 1 as well as the way they are used to produce a data file. Finally, Section 4 provides an example of how to use the interface screens.

2. DESIGN CONSIDERATIONS

Two major considerations during the design phase of Round 1 were the various needs and computer skills of the user community and the need for a flexible interface with the database. The following sections discuss the system requirements that affected the design of the front-end interface prototyped in ORACLE.

2.1 SYSTEM USERS

One of the challenges in the design of the software for Round 1 was to prototype an interface that served the needs of disparate users. Three categories of users were identified during the analysis phase of the project:

- action officers,
- analysts, and
- managers.

2.1.1 Action Officers

Action officers are responsible for overseeing and analyzing specific areas of the Personal Property Program. They may be assigned to one of three divisions at MTPP: Rate Acquisition, Quality Assurance and Operations, or Management Support. Each of these divisions analyzes different types of data and produces different reports. Within each division, action officers are assigned to specific tasks. For example, in the Rates Division, one action officer is assigned to oversee the mobile home rate solicitation while another action officer is responsible for the domestic rates solicitation. One of the system requirements was to prototype an interface that would meet the needs of the different divisions as well as the needs of each action officer.

2.1.2 Analysts

Analysts are responsible for preparing reports and special studies for managers and for outside organizations such as Congress and the Armed Services. They also produce reports to support action officer needs. Their primary responsibilities are to research and analyze problems, investigate proposed policy changes, and provide computer support.

Because of the nature of the analyst's job, no standard interface could be built to anticipate every issue that might arise. However, this interface does support the analyst's needs by allowing him/her to build complex queries of the database rapidly for many commonly asked questions.

2.1.3 Managers

Managers need timely, accurate data to perform the following tasks:

- to identify specific problems in the Personal Property Program,
- to determine where changes are needed,

- to monitor the program, and
- to report to outside agencies.

The interface was designed to allow managers to have direct access to the data they need to perform these tasks.

2.1.4 Computer Skills of Users

In addition to supporting users with different tasks, another challenge in the design of the interface was to prototype a system that would support users with different levels of computer skills. In each category of users, the amount of computer experience ranges from people with no previous computer experience to skilled computer programmers. A further consideration in the design of the interface was the high rate of staff turnover at MTPP.

To accommodate the various users the interface has the following characteristics.

- It is simple enough to be used by people with minimal computer skills.
- It includes extensive help for first-time or infrequent users.
- It requires no knowledge of the database structure.
- It requires no knowledge of the database language.
- It is flexible enough to meet the needs of experienced as well as inexperienced users.

2.2 SYSTEM FLEXIBILITY

ORNL designed the front-end user interface to be flexible and generic enough to encompass the data access needs of all users. During the analysis phase of the project, a group of standard applications was identified as the reports the system needed to generate. MTPP personnel identified the following reports as the ones most frequently used:

- Average Net Weight Shipped,
- Average Cost of Shipments,
- Change in Rate Levels,
- Number of Shipments into Storage in Transit (SIT),
- Tonnage,
- Number of Shipments,
- Total Actual Cost (plus claims),
- Score Summary Statistics,
- Missed Pickup,
- Loss/Damage,
- Other Tender of Service Violations, and
- Number of Quality Assurance (QA) Actions.

The front-end interface is designed to support the identification and selection of data for all of these report types.

There are three types of flexibility built into the Round 1 prototype:

- the ability to choose and change data parameters used to retrieve a subset of records from the database,
- the capability of the interface to produce any of the standard reports, and
- the ability to support expansion and modification of the system.

Sections 3 and 4 will illustrate and discuss the interface screens and the flexibility built into them.

3. THE INTERFACE

3.1 INTRODUCTION

The user interface is a powerful tool that allows users to manipulate data and produce reports. This single interface is designed to allow users to choose a subset of data for a variety of report types (see Sect. 2.2). Figure 3.1 illustrates the components and relationships that comprise the prototyped user interface. Users move through the interface screens in the following order:

- select an application category on the Application Category Screen,
- select an application (report) on a User Application Screen,
- select parameter categories on the Parameter Selection Menu Screen, and
- select a subset of data from a reference table in any or all of the lower-level parameter selection screens.

As users make selections on the lower-level parameter selection screens, their choices are stored in a database table called the Conditions Table. An operating-system-specific script is used to build a query that retrieves data from the Shipment Tables based on the user choices stored in the Conditions Table. The data retrieved from this query are reformatted and written to an operating system data file. This file is used by SAS to generate reports and charts in the postprocessing back-end.

The following sections describe each screen of the completed prototype interface for Round 1 of the WHIST-MOD project. They also discuss how the selections made in these screens are saved in the Conditions Table and used to build the query for the selected report. Three types of screens are discussed:

- the initial menu screens,
- the Main Parameter Screen, and
- the lower-level parameter selection screens.

3.2 THE INITIAL MENU SCREENS

There are three initial menu screens. The first menu screen identifies the system. The second menu screen is the Application Category Screen (Fig. 3.2). The purpose of this screen is to allow the user to specify a work division (i.e., Rate Acquisition, Quality Assurance, Operations, or Management Support) in order to retrieve a list of reports applicable to that division. The last menu screen is the User Application Screen, which allows users to specify the report they want to produce (Fig. 3.3).

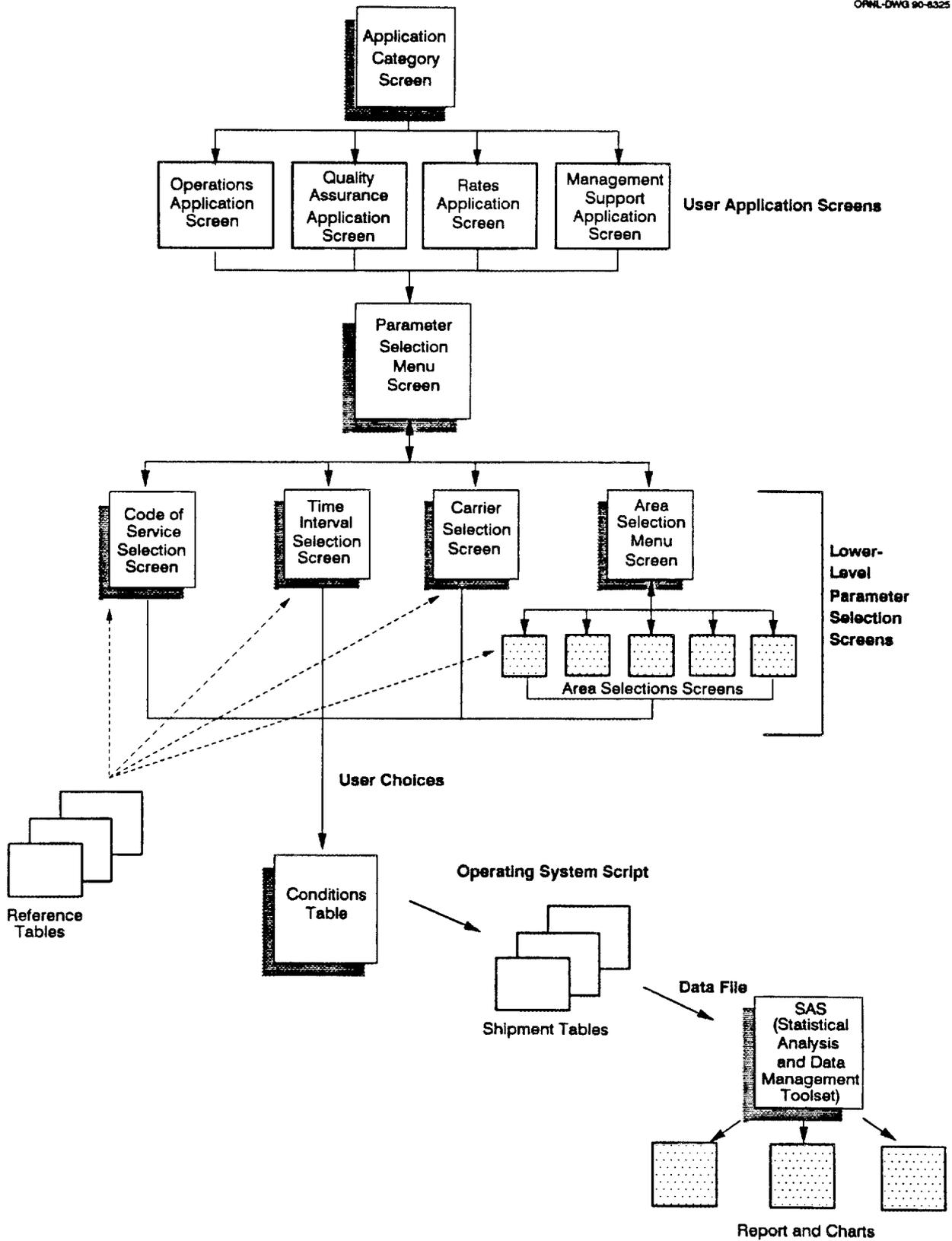


Fig. 3.1. Components and relationships of the user interface.

Application Category

- _ Rates**
- _ QA (Quality Assurance)**
- _ Operations**
- _ Management Support**
- _ Quit**

Press SELECT to choose option

Fig. 3.2. Application Category Screen.

User Applications for Rates Division

- _ Average Net Weight Shipped**
- _ Average Cost of Shipments**
- _ Number of Shipments**
- _ Number of Shipments that Went into SIT (Storage in Transit)**
- _ Change in Rate Levels**
- _ Tonnage**
- _ Number, Cost, and Tonnage for Volume Moves & OTOs
(One-Time-Only Shipments)**
- _ Cost Avoidance**

Press SELECT to choose option

Fig. 3.3. User Application Selection Screen.

3.3 THE PARAMETER SELECTION MENU SCREEN

The Parameter Selection Menu Screen (Fig. 3.4) has a header line that identifies the user, the report application he/she chose in the previous menu screen, and the date. The screen is divided into two sections, the first of which contains the service category selection field. The service category indicates the type of shipment, such as mobile home shipments or domestic shipments. This field allows the user to enter a service category or select a service category from a screen containing a list of valid values (Fig. 3.5). The option chosen in this field may reduce the choices that are displayed in the lower-level parameter selection screens and may reduce the data retrieved by the resulting query of the database. For example, if the user chooses domestic service as the service category, only domestic values will be available in the lower-level parameter selection screens [i.e., only domestic carriers, domestic Codes of Service (COSs), domestic origins and destinations, and domestic rate and scoring cycles may be displayed/entered].

The second section of the Parameter Selection Menu Screen contains four parameter categories:

- COS,
- carrier,
- pickup date, and
- origin and destination.

ORNL-DWG 90-6340

User Name	AVERAGE WEIGHT SHIPPED	26-FEB-90
Parameter Selection Menu		
Service Category:		
<u>Code of Service</u>	<u>Pickup Date</u>	
_ ALL SELECTED	_ ALL SELECTED	
<u>Carrier</u>	<u>Origin & Destination</u>	
_ ALL SELECTED	_ ALL SELECTED	
Press SELECT to choose option		

Fig. 3.4. Parameter Selection Menu Screen.

LIST OF VALID FIELD VALUES	
Value	Description
ALL	ALL SHIPMENTS UNDER ALL SERVICE CATEGORIES
DOM	DOMESTIC INTERSTATE AND INTRASTATE SHIPMENTS
DPM	DIRECT PROCUREMENT METHOD SHIPMENTS
INTER	DOMESTIC INTERSTATE SHIPMENTS
INTL	INTERNATIONAL SHIPMENTS
INTRA	DOMESTIC INTRASTATE SHIPMENTS
MH	MOBILE HOMES
OTHER	MOBILE HOME, LOCAL MOVE, AND PRIVATELY-OWNED VEHICLE SHIPMENTS
VM	VOLUME MOVES

Use arrow keys to move to desired code, then press SELECT

Fig. 3.5. List of Valid Field Values Screen (service categories).

The user may select any or all of these parameters to limit or identify specific data for a report. For example, if the user does not want all COSs to be retrieved for the report, he/she may choose the COS parameter category to move to a lower-level parameter selection screen and specify a subset of COSs. When a user chooses data in a lower-level parameter selection screen, the message in the corresponding field on the Parameter Selection Menu Screen changes from "All Selected" to "Some Selected." By default, if the user does not choose to specify a particular parameter category (i.e., COS, carrier, pickup date, or origin and destination), that parameter is not used to limit the query of the database, and all the values for that parameter are retrieved. When the user selects a parameter category, a lower-level parameter selection screen is displayed.

3.4 THE LOWER-LEVEL PARAMETER SELECTION SCREENS

The lower-level parameter selection screens allow users to choose COSs, carriers, time intervals, and origin and destination areas for shipments. Each of these screens has a header line that identifies the user, the report application chosen in a menu screen, and a code for the service category that was chosen in the Parameter Selection Menu Screen (Fig. 3.5). There are three categories of lower-level parameter selection screens—the COS Selection Screen, the Carrier Selection Screen, and the "Time Interval Selection" Screen—which allow the user to specify data on a single screen. A fourth category, the Area Selection Screens, consists of a menu screen and eight selection screens, and the user may specify data on one origin screen and/or one destination screen.

3.4.1 The COS Selection Screen

On the COS Selection Screen the user chooses specific COSs to restrict the subset of data used in the report. The screen is divided into two sections (Fig. 3.6). The first section allows the user to control the data that will be displayed on the second section. The user may choose to display a list of applicable COSs or to enter them one at a time. If the user chooses to display a list of COSs, he/she must choose whether the list returned from the code reference table will be sorted alphanumerically by the COSs or by the description of the COSs. The user may also choose to enter up to two characters to limit the records retrieved into the second section (e.g., if the user enters "DO" to specify a sort on description, only those COSs that have a description beginning with "DO" will be retrieved).

ORNL-DWG 90-63-42

User Name	AVERAGE WEIGHT SHIPPED	INTER
List or Enter Codes of Service:		L
Sort by COS or Description:		C
String for Limiting Search :		DO
COS	Description	
1A	DOMESTIC MOTOR VAN DOOR-TO-DOOR-INTERSTATE	
2A	DOMESTIC CONTAINER DOOR-TO-DOOR-INTERSTATE	
Use arrow keys to scroll up or down. Press SELECT beside your choice(s).		

Fig. 3.6. Code of Service (COS) Selection Screen.

In the second section of the screen, the user chooses specific COSs. If the user has chosen to list COSs, the list may be limited by the service category chosen (see Sect. 3.3). The user will select from a displayed list or enter a selection(s). These COS selections are saved to the Conditions Table and later used to build the query for this report (see Sect. 3.5). Additional information about the second section of the lower-level parameter selection screens will be covered in a forthcoming document.

3.4.2 The Carrier Selection Screen

The Carrier Selection Screen allows the user to choose specific carriers to restrict the subset of data used in the report (Fig. 3.7). Its functionality is like that of the COS Selection Screen (see Sect. 3.4.1). The first section of the screen allows the user to control the data that will be displayed on the second section. The user may choose to display a list of applicable carriers or to enter them one at a time. If the user chooses to display a list of carriers, he/she must choose whether the list returned from a carrier reference table will be sorted by the carrier code or the carrier name. The user may also choose to enter up to two characters to limit the records retrieved into the second section (e.g., if the user enters "C" to specify a sort on carrier name, only those carriers whose names begin with a "C" are retrieved).

CPWL-DWG 90-6343

User Name	AVERAGE WEIGHT SHIPPED	INTER
List or Enter Carrier Codes: L		
Sort by Carrier Code (C) or Description (D) : D		
String for Limiting Search : C		
Carrier Code	Carrier Name	
CVLC	CARTWRIGHT VAN LINES INC	
AAAA	CLARK TRANSFER & STORAGE CO	
CVLS	CONTINENTAL VAN LINES	
COVL	COURIER VAN LINES INC	
Use arrow keys to scroll up or down. Press SELECT beside your choice(s).		

Fig. 3.7. Carrier Selection Screen.

In the second section of the screen, the user chooses specific carriers. If the user has chosen to list carriers, the list may be limited by the service category the user has chosen (see Sect. 3.3). He/she will select from a displayed list or enter a selection(s). These selections are saved to the Conditions Table and later used to build the query for this report.

3.4.3 Area Selection Screens

3.4.3.1 The Area Selection Menu Screen

On the Area Selection Menu Screen (Fig. 3.8) users will specify an origin and/or a destination area category. There are five ways that users may define an area category:

- geographic area,
- Government Bill of Lading Office Code (GBLOC),
- rate area,
- country, or
- state.

Once the user has made an origin or a destination area category selection, the user will move to the Appropriate Area Selection Screen.

ORNL-DWG 90-8344

User Name	AVERAGE WEIGHT SHIPPED	INTER
	Origin	Destination
	-	Geographic Area
	-	GBLOC (Government Bill of Lading Office Code)
	-	Rate Area
	-	Country
	-	State
Press PG Up/PG DN to move between origin and destination lists. Press SELECT to select or cancel an origin or destination.		

Fig. 3.8. Area Selection Screen.

3.4.3.2 The Area Selection Screens

There are five Origin Area Selection Screens—one for each category—and five Destination Area Selection Screens. These screens have the same design and functionality

as the COS and Carrier Selection Screens (see Sects. 3.4.1 and 3.4.2); however, the users are selecting area parameters to be saved and used to build the query. Figure 3.9 shows the screen that is displayed after the user has selected origin geographic area on the Area Selection Menu Screen.

ORNL-DWG 80-6345

User Name	AVERAGE WEIGHT SHIPPED	INTER
List or Enter Codes of Service:		L
Sort by Area Code (C) or Description (D):		C
String for Limiting Search : __		
Geo_Area	Description	
A	EASTERN UNITED STATES	
AA	NORTH ATLANTIC	
AB	CENTRAL ATLANTIC	
AC	SOUTH ATLANTIC	
AD	NORTHEAST CENTRAL	
AE	NORTH CENTRAL	
AF	SOUTHEAST CENTRAL	
AG	NORTH MIDDLE	
B	WESTERN UNITED STATES	
BA	SOUTHWEST CENTRAL	
Press SELECT to choose option.		

Fig. 3.9. Origin Geographic Area Screen.

3.4.4 The Time Interval Selection Screen

The Time Interval Selection Screen (Fig. 3.10) allows the user to specify a range of shipment pickup dates. The user may choose one of three ways to enter a beginning and/or ending pickup date. The user may enter a rate cycle number, a scoring cycle number, or arbitrary dates. Entering a scoring and/or rate cycle number is appropriate only for two service category selections: international and domestic. If the user has chosen another service category (e.g. "ALL," "DPM," or "MOBILE HOME"), he/she cannot enter a rate or scoring cycle number. When he/she enters a rate or scoring cycle number, the associated beginning and ending pickup dates are retrieved and displayed on the screen. A user who is unfamiliar with the data may choose to display a list of applicable rate cycle or scoring cycle numbers (Fig. 3.11). If the user wants to enter an arbitrary beginning and/or ending pickup date, he/she may move to the last section of the screen and enter the desired date(s).

The range of pickup dates chosen by the user are saved to the Conditions Table. These dates are used to build the query for the selected report.

User Name	AVERAGE WEIGHT SHIPPED	INTER
Time Interval		
Enter rate/scoring cycles below.		
Rate Cycle : 0009	Begin: 01-NOV-88	End: 30-APR-89
Scoring Cycle :	Begin:	End:
Enter requested dates below (DD-MON-YY).		
Begin Date :	End Date:	
Press SELECT to commit your time interval choice.		

Fig. 3.10. Time Interval Selection Screen.

LIST OF VALID FIELD VALUES	
0009	
0010	
DS90	
DW89	
Use arrow keys to move to desired code, then press SELECT.	

Fig. 3.11. List of Valid Field Values Screen (rates/scoring cycles).

3.5 THE CONDITIONS TABLE

The Conditions Table contains all the choices the user has made from any of the lower-level parameter selection screens along with information about the user (i.e., the user name and the terminal identification number). Figure 3.12 shows the structure of the Conditions Table. An operating system script uses the data from this table to build the "where" clause of the actual Standard Query Language (SQL) query to the appropriate database table. For example, it builds a query that selects columns from a database table where

- Carrier Code = any Carrier Code in the Conditions Table;
- COS = any COS in the Conditions Table;
- Origin Area = any origin state, origin country, origin rate area or origin GBLOC in the Conditions Table;
- Destination Area = any destination state, destination country, destination rate area or destination GBLOC in the Conditions Table; and
- Pickup Date = any date \geq the beginning pickup date and/or any date \leq the ending pickup date in the Conditions Table.

If the user does not make a selection on a particular lower-level parameter selection screen, then the shipment data retrieved from the database are not restricted by that parameter. For example, if the user does not specify carriers, but does specify COSs, data will be retrieved about shipments that moved by those COSs. The data retrieved will not be restricted by carrier.

ORNL-DWG 80-6346

<u>Name</u>	<u>Null?</u>	<u>Type</u>
USER_ID	NOT NULL	CHAR(30)
TERMINAL_ID	NOT NULL	CHAR(8)
CODE_OF_SERVICE		CHAR(2)
CARRIER_CODE		CHAR(4)
BEGINNING_PICKUP_DATE		DATE
ENDING_PICKUP_DATE		DATE
ORIGIN_GBLOC		CHAR(4)
ORIGIN_RATE_AREA		CHAR(9)
ORIGIN_STATE		CHAR(2)
ORIGIN_COUNTRY		CHAR(20)
DESTINATION_GBLOC		CHAR(4)
DESTINATION_RATE_AREA		CHAR(9)
DESTINATION_STATE		CHAR(2)
DESTINATION_COUNTRY		CHAR(20)

Fig. 3.12. Conditions Table structure.

4. EXAMPLE OF USING THE INTERFACE

This section discusses the flexibility of the prototype interface for Round 1 and contains an example that illustrates

- the parameters a user could choose,
- the data stored in the Conditions Table as a result of these parameter choices, and
- the data retrieved from the resulting query.

The example portrays types of flexibility that allow the user to make many different choices to define alternative subsets of data for the same report.

Illustrated in this example is one way of defining data for the report "Average Net Weight Shipped." Assuming that the user has been asked to produce a report on the average weight shipped for domestic shipments, the report must be limited to the following data:

SCAC = CVLC, AAAA, and CVLS;
COS = 1A and 2A;
Origin Area = origin state VA;
Destination Area = destination GBLOCs LIFL and LJFL; and
Pickup Dates = 1989 Domestic Winter Rate Cycle.

4.1 PARAMETER CHOICES

On the Parameter Selection Menu Screen (Fig. 4.1) the user enters "DOM" to select the domestic service category. Next, the user goes to the COS Selection Screen and chooses to list COSs by code. The list that appears is a list of all domestic COSs sorted alphanumerically. The user selects 1A and 2A (Fig. 4.2). On the Carrier Selection Screen (Fig. 4.3) the user selects "CVLC," "AAAA," and "CVLS." To choose the beginning and ending pickup dates for the 1989 domestic winter rate cycle, the user enters "DW89" on the Time Interval Selection Screen (Fig. 4.4). On the Area Selection Menu Screen the user chooses "origin state" and moves to the Origin State Selection Screen. Here the user chooses to list by description and selects "VA" (Fig. 4.5). The user is returned to the Area Selection Menu Screen. He/she selects "Destination GBLOC" to move to the GBLOC Area Selection Screen. On this screen the user chooses "LIFL" and "LJFL" (Fig. 4.6).

4.2 CONDITIONS TABLE

The use of the Conditions Table to store user choices allows users to select the data parameters needed to subset the data without knowing table names, column names, or ORACLE SQL syntax.

User Name	AVERAGE WEIGHT SHIPPED	26-FEB-90
Parameter Selection Menu		
Service Category:	DOM (DOMESTIC INTERSTATE AND INTRASTATE SHIPMENTS)	
<u>Code of Service</u>	<u>Pickup Date</u>	
_ ALL SELECTED	_ ALL SELECTED	
<u>Carrier</u>	<u>Origin & Destination</u>	
_ ALL SELECTED	_ ALL SELECTED	
Press SELECT to choose option.		

Fig. 4.1. Parameter Selection Menu Screen.

User Name	AVERAGE WEIGHT SHIPPED	DOM
List or Enter Codes of Service: L		
Sort by Codes of Service (COS) or Description (D): C		
String for Limiting Search : _		
COS	Description	
• 1A	DOMESTIC MOTOR VAN DOOR-TO-DOOR-INTERSTATE	
1B	DOMESTIC MOTOR VAN DOOR-TO-DOOR-INTRASTATE	
* 2A	DOMESTIC CONTAINER DOOR-TO-DOOR-INTERSTATE	
2B	DOMESTIC CONTAINER DOOR-TO-DOOR-INTRASTATE	
Use arrow keys to scroll up or down. Press SELECT beside your choice(s).		

Fig. 4.2. Code of Service (COS) Selection Screen.

User Name	AVERAGE WEIGHT SHIPPED	DOM
List or Enter Origin States : L		
Sort by State Code (C) or Description (D): D		
String for Limiting Search : ___		
Code	Description	
SC	SOUTH CAROLINA	
SD	SOUTH DAKOTA	
TN	TENNESSEE	
TX	TEXAS	
UT	UTAH	
VT	VERMONT	
*VA	VIRGINIA	
WA	WASHINGTON	
WV	WEST VIRGINIA	
WI	WISCONSIN	
Press SELECT to commit codes.		

Fig. 4.5. Origin State Screen.

User Name	AVERAGE WEIGHT SHIPPED	DOM
List or Enter Destination GBLOCs : L		
Sort by GBLOC Code (C) or Description (D): D		
String for Limiting Search : ___		
Code	Description	
HOFL	ALTUS AFB, OKLAHOMA	
FSFL	BARKSDALE AFB, LOUISIANA	
*LIFL	BEALE AFB, CALIFORNIA	
HCFL	BERGSTROM AFB, TEXAS	
KNFL	CANNON AFB, NEW MEXICO	
DMAT	CARLISLE BARRACKS, PENNSYLVANIA	
HGFL	CARSWELL AFB, TEXAS	
*LJFL	CASTLE AIR FORCE BASE, CALIFORNIA	
GKFK	CHANUTE AFB, ILLINOIS	
DMAC	CHARLES E. KELLY SUPP FAC, PA	
Press SELECT to commit codes.		

Fig. 4.6. Destination Government Bill of Lading Office Code (GBLOC) Screen.

Table 4.1 shows the data stored in the Conditions Table as a result of the parameter selections made for the example.

Table 4.1. Example of Conditions Table with data

User Name	Terminal	COS	SCAC	Beginning Pickup Date	Ending Pickup Date	Origin State	Destination GBLOC
User	hty004	1A					
User	hty004	2A					
User	hty004		AAAA				
User	hty004		CVLC				
User	hty004		CVLS				
User	hty004					VA	
User	hty004						LJFL
User	hty004						LIFL
User	hty004			01-NOV-89			
User	hty004				30-APR-90		

4.3 THE OPERATING SYSTEM SCRIPT FILE

An operating system script file performs several tasks for WHIST-MOD. It queries the appropriate Shipment Tables to retrieve data based on the parameters in the Conditions Table, and it stores these data in a data file (which must be formatted to be compatible with SAS). In addition, the script shuts down ORACLE and starts the SAS back-end interface. The operating system script file allows the user to query the Shipment Table and retrieve data without using column names, table names, or ORACLE SQL syntax.

4.4 THE DATA RETRIEVED

Table 4.2 shows the records that would be retrieved as a result of querying the Shipment Table based on the parameters stored in the Conditions Table. These data are records of domestic code 1A and 2A shipments that were moved by carriers CVLC, AAAA, and CVLS from Virginia into two Air Force bases in California (GBLOCs LIFL and LJFL) between November 1, 1989, and April 30, 1990. These records include the weights of the shipments. All of the data will be used to produce the Average Net Weight Shipped Report.*

*The output end of the system will be prototyped in Round 2.

Table 4.2. Example of data retrieved from shipment table

Code of Service	Carrier Code	Date Shipment Picked Up	Origin State	Destination GBLOC	Origin Net Weight
1A	CVLC	22-NOV-89	VA	LIFL	1180
1A	CVLC	30-NOV-89	VA	LIFL	5020
1A	CVLS	30-NOV-89	VA	LJFL	4440
1A	CVLS	15-APR-90	VA	LIFL	2860
2A	AAAA	27-NOV-89	VA	LIFL	19120
2A	CVLC	15-FEB-90	VA	LJFL	5410
2A	CVLC	15-MAR-90	VA	LJFL	5680
2A	CVLS	29-NOV-89	VA	LJFL	8120

5. SUMMARY

The MTPP staff members are responsible for monitoring almost one million shipments annually. Based on the shipment data, they must evaluate the Personal Property Program and investigate the effects of policy changes. Currently, MTPP personnel spend the majority of their time manually gathering, organizing, checking, and distributing data; supplying information to other federal agencies; and interacting with carriers concerning data problems. They have little time to analyze data that identify trends, predict impacts of trends and other changes on the Personal Property Program, or recommend policy changes based on their analysis of the program.

The user application module designed and prototyped for WHIST-MOD will automate many of the tasks now performed manually by the MTPP staff, thereby allowing the staff to spend more time analyzing the Personal Property Program. Furthermore, this single interface allows users with diverse computer skill levels to access a large volume of data and gives users the capability to produce a variety of reports. Finally, the system interface is flexible enough to adapt to changing organizational demands.

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