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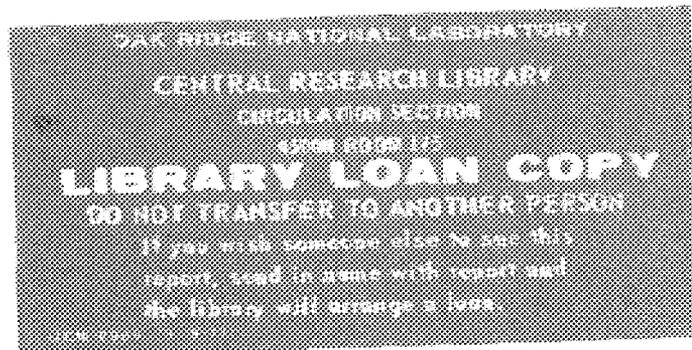
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**OAK RIDGE  
NATIONAL  
LABORATORY**

**MARTIN MARIETTA**

**A Case Study  
in  
Specifying Data Requirements  
for  
A Decision Support System Database**

Vickie Ng



OPERATED BY  
MARTIN MARIETTA ENERGY SYSTEMS, INC.  
FOR THE UNITED STATES  
DEPARTMENT OF ENERGY



Energy Division  
Center for Transportation Analysis

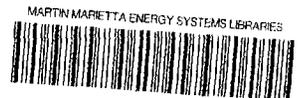
A CASE STUDY  
IN  
SPECIFYING DATA REQUIREMENTS  
FOR  
A DECISION SUPPORT SYSTEM DATABASE

Vickie Ng

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## ACRONYMS

BOA	Basic Order Agreement
CONUS	Continental United States
DoD	Department of Defense
DPM	Direct Procurement Method
DSS	Decision Support System
FOIA	Freedom of Information Act
GAO	Government Accounting Office
HQMTMC	Headquarters Military Traffic Management Command
ITGBL	International Government Bill of Lading
MTMC	Military Traffic Management Command
MTPP	Personal Property Directorate
NTS	Non-temporary-Storage
PP	Personal Property
PPM&S	Personal Property Moving and Storage
PPSO	Personal Property Shipping Office
QA	Quality Assurance
RDBMS	Relational Database Management System
RSMO	Regional Storage Management Office
SIT	Storage-in-Transit
TGBL	Government Bill of Lading
TOPS	Transportation Operational Personal Property Standard System
WHIST-MOD	Worldwide Household Goods Information System for Transportation Modernization



## ABSTRACT

An atomic database is a collection of detailed and archival data primarily used to support a decision support system (DSS). Typically, atomic data are generated externally from other sources. In order to build an atomic database in which data represent the information the DSS users expect, detailed data requirements must be specified to the source system. The basic types of information a source system needs are a list of required data items, the frequency and terms of data needs, and the method of interface. A detailed list of required items recommended for inclusion in any specifications of external data requirements is presented in this paper. Because of the volume of information involved in such specifications, a matrix presentation is believed to be the best organizational format to describe the requirements concisely and precisely. The specifications of external data requirements written for the Worldwide Household Goods Information System for Transportation Modernization (WHIST-MOD) project for the Personal Property Directorate (MTPP) of the Military Traffic Management Command (MTMC) are presented as a case study in this paper. It has been shown that the specifications in this case study effectively serve the objective of such a document. It is recommended that the concept presented in this paper be used as a guideline in specifying data requirements for an atomic database.



## 1. INTRODUCTION

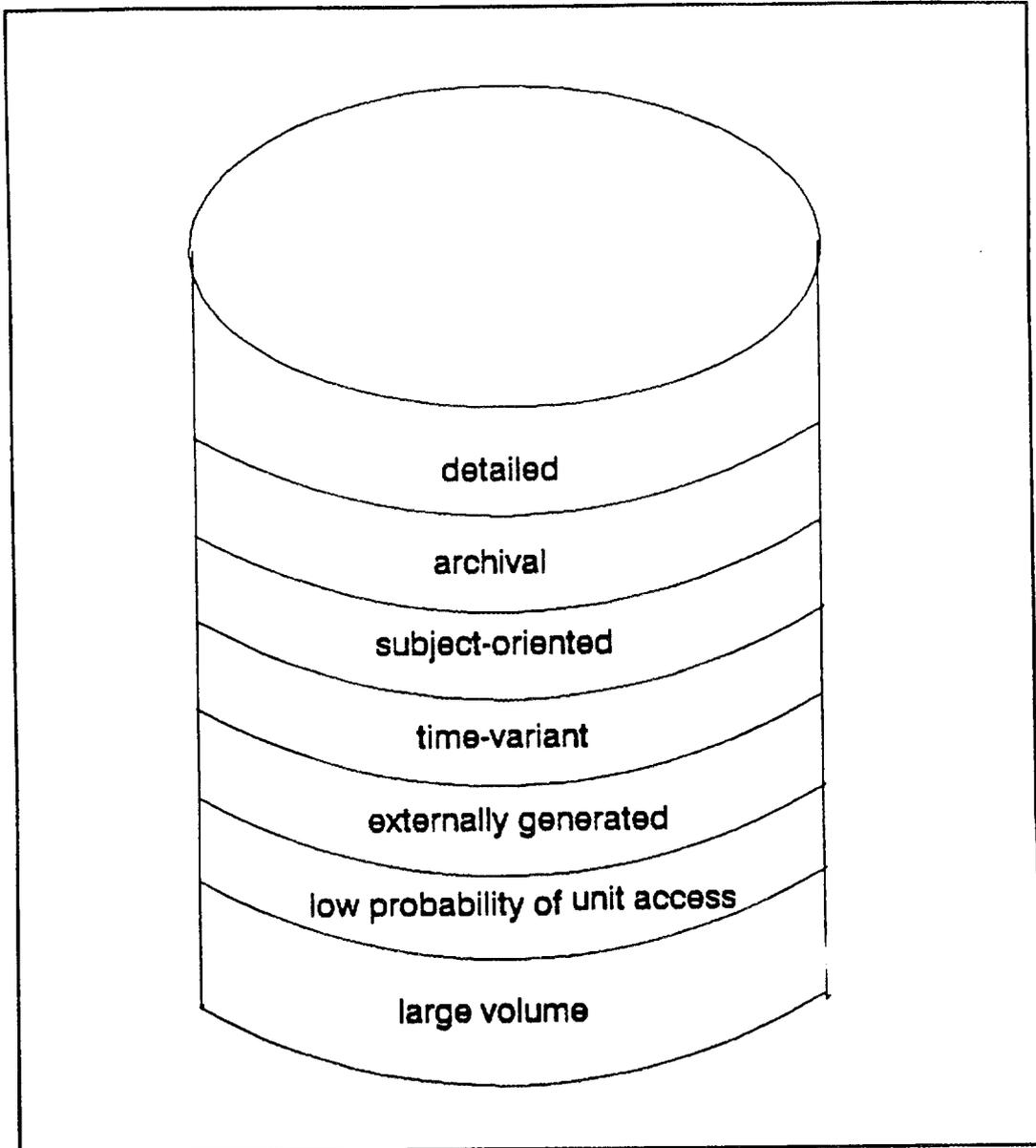
Operational or production computer systems need up-to-date data for high-performance, high-availability online processing. An automated decision support system (DSS) at the management level, on the other hand, requires a collection of historical data from the operational environment to support DSS processing requirements. This collection of data cannot be a repository of randomly organized archival data. Data are first modeled for DSS activities. Then the required data are identified and captured from the operational systems and organized into an atomic database.<sup>1</sup> An atomic database is sometimes referred to as a reports database or a DSS basis database. It generally has a high volume of data. As shown in Fig. 1, data in this kind of database are:

- detailed and archival,
- subject-oriented,
- time-variant,
- externally generated from other sources, with a
- low probability of access for a unit of data.

Because external data are the foundation of an atomic database, a good strategy for data acquisition from other systems is very important. To build an atomic database, a database designer needs to answer several questions concerning data gathering.

- From whom do data need to be collected?
- What data in their systems are needed?
- When and how often do data need to be collected?
- How are data collected?

Once the database designer has answers to these questions, the next step is to formulate a specification of data requirements for each of the external systems whose data are needed for the atomic database. Of course, the process of data acquisition does not stop here. There are issues about data integration and data discrepancies that need to be addressed. This paper, however, concentrates on how to communicate the data requirements to the information management staff in other data systems.



**Figure 1 Anatomy of an Atomic Database**

As the database designer will discover, these four simple questions will expand into complex details of data requirements. These requirements represent the different aspects of the data acquisition process that the external systems need to know. In order to ensure that the right information gets across, the specifications of external data requirements have to be comprehensive and organized in a concise and precise manner. A proposed method for organizing such specifications is given in Section 2. The specifications written for the Worldwide Household Goods Information System Modernization (WHIST-MOD) project for the Military Traffic Management Command (MTMC) are presented as a case study in Section 3. Finally, Section 4 contains some concluding remarks on the proposed design.



## **2. PROPOSED METHOD**

### **2.1 INFORMATION NEEDED BY THE RECIPIENT SYSTEM**

Because data in an atomic database are collected from external sources, a system that houses such a database is called a recipient system. A recipient system is designed in the same way as any other database system. A database designer defines what data elements are to be included, based on his/her understanding of the system requirements. The designer also defines the source of data elements -- internal through direct data entry or automatic system generation, or external through data capture. Most of the data needed for an atomic database are external.

In general, atomic data are detailed and time-dependent. Because an atomic database functions as a support for DSS activities, it requires data that are detailed enough to answer heuristic "what-if" types of queries. It needs to acquire data over time so that any time-variant statistics may be obtained. Most importantly, the definitions of the data stored in the atomic database need to be agreed upon and enforced by the external systems. In order to satisfy these data needs of the recipient system, all the data specifics need to be identified to the external systems so that data in the database represent the information the DSS users expect.

### **2.2 INFORMATION NEEDED BY THE SOURCE SYSTEM**

A source system is where the atomic data originate. The source system usually is an existing stand-alone system that contains relevant operational data. It needs to interface with the new system (the recipient system) to supply DSS basis data. In order to build a smooth interface, detailed data specifications need to be provided to the source system. The basic types of information a source system will need are:

- what data need to be supplied,
- when do the data need to be supplied, and
- how should the data need to be supplied.

The first is the identification of the particular data elements and other entities that are required of the source system to form the atomic data set. The second is the specification of the factors determining when data from the source system are collected. The last is the description of the actual interface procedure designed for the data acquisition.

### **2.3 PROPOSED ORGANIZATION OF REQUIREMENTS**

In addition to the general categories mentioned in the previous section, the source system will require more detailed specifications. For example, not only the names of the data elements need to be specified, the format of the data elements should also be provided. Because atomic databases are DSS basis databases, they may require summary level data. If an atomic database has a requirement for some aggregate data, the names and format of the new data elements that contain these aggregate data, as well as all the individual elements to be aggregated, should be given. This will help eliminate problems on data integration. If the source system can be modified to provide the new data elements, all the details on how the data are generated will be specified. Otherwise, the recipient system can collect all the individual elements and form the new aggregate data elements locally. The following is a list of proposed specific items that should be included in any specifications of external data requirements:

- name of data elements local to the source system,
- name of data elements new to the source system,
- description/definition of the new data elements,
- format of data elements (including type and length),
- name of tables/files local to the source system,
- name of tables/files new to the source system,
- description of tables/files new to the source system,
- structure of tables/files new to the source system,
- conditions under which the recipient system requires the data transfer to occur,
- frequency of data transfer to the recipient system,
- procedure of data transfer to the recipient system, and
- indication of possible modifications to the source system.

All items in the list are equally important. Skipping any item on this list might jeopardize the success of the data acquisition. However, this is not an exhaustive listing either. Depending on the method of data transfer, details such as computer magnetic tape format or import/export file format should also be specified.

From experience, several observations can be made:

- Readers have no knowledge of the system requirements of the recipient system.
- Readers would not want to scan through pages and pages of text to find the key points.
- The most often asked question is what data elements the source system needs to provide.
- The issue of most concern is how much, if any, the source system has to be modified to accommodate the data acquisition requirements.

Because of the volume of information, the specifications have to be organized in a concise and precise way. The format discussed in this paper uses columnar displays with footnotes. The advantage of such a representation is that it facilitates the location of major entries in the matrix of requirements. Elements can also be readily highlighted for attention. Moreover, ease of use does not have to be sacrificed for more specific information. Because the size of the matrix is not fixed, the number of columns can be increased as system requirements increase.



### **3. CASE STUDY: WHIST-MOD**

WHIST-MOD is a DSS and most of its data come from external sources, WHIST-MOD meets the definition of an atomic database system. Specifications of external data requirements from the different data sources must be developed. These specifications are very important to the WHIST-MOD data acquisition process.

#### **3.1 BACKGROUND OF WHIST-MOD**

The Personal Property Directorate (MTPP) of MTMC is charged with the overall management of the Personal Property Moving and Storage (PPM&S) program for the Department of Defense (DoD). MTPP's functions are to set policy, interpret and disseminate regulations, evaluate program effectiveness, and implement the rate solicitation and carrier approval process of the PPM&S program. However, MTPP has found that the present automated system -- the Worldwide Household Goods Information System for Transportation (WHIST) -- is inadequate for the growing information needs.

The purpose of the WHIST-MOD project is to provide research and development support for the modernization and enhancement of the current WHIST system. WHIST-MOD is primarily a DSS, which is flexible enough to track the effects of evolving policy within the Personal Property (PP) program while offering easy access to a variety of data to novice and experienced users.<sup>2</sup>

#### **3.2 DATA REQUIREMENTS OF WHIST-MOD**

The WHIST-MOD system requires a large database for querying and reporting by different WHIST-MOD users having various levels of access to the database. MTPP's information needs are very diverse. MTPP is required to respond to information requests from the military services, Congress, the Government Accounting Office (GAO), the Defense Manpower Data Center, the carrier industry, and individual service members through the Freedom of Information Act (FOIA).<sup>3</sup>

Occasionally the military services require data from MTPP to support special studies for budget preparation. The GAO and the Defense Manpower Data Center request data from MTPP to conduct studies on military personnel movement expenses and entitlement. MTPP has to provide data such as shipment weights, revenue, cost and/or claims information, origins and destinations of the shipments, as well as some particular personal information on the service members like pay grade and number of dependents. Other information requests initiated by Congress or the carrier industry demand data on individual shipments. Examples of such data requirements are shipment pickup and delivery data such as dates, addresses, types of shipments, and methods of shipments.

In addition to answering to external organizations, MTPP needs data to perform its own management tasks. It requires data on carrier performance to support the carrier approval process and to monitor the effectiveness of the PP Quality Assurance (QA) program. It requires data on certain types of shipments to study the impact of policy changes. For example, information on mobile home shipments is currently being collected for a policy evaluation study.

### **3.3 INTERFACES IDENTIFIED FOR DATA SOURCE**

A personal property shipping office (PPSO) is responsible for processing the moving and storage requests of service members under the policies established by MTPP. The PPSO implements the MTPP program. With the installation of the Transportation Operational Personal Property Standard System (TOPS) in each PPSO, high-quality shipment description data will be available electronically. Shipment and shipment QA data are entered into the TOPS database at each PPSO and at the end of processing each day transmitted via modem to the TOPS central machine, which is referred to as the TOPS Switcher machine. The TOPS Switcher machine transfers a copy of the data received from all PPSOs to WHIST-MOD. The WHIST-MOD system then extracts the data elements required by WHIST-MOD, converts them into appropriate WHIST-MOD database format if necessary, and performs validation checks to ensure good data quality.

Although TOPS can provide all pertinent shipment descriptive and QA data to WHIST-MOD, it does not store any financial or accounting information. As mentioned in the previous section, WHIST-MOD requires the actual shipment cost and claims data. Such data have to be obtained from the military Finance Centers and Claims Centers on computer magnetic tape or paper forms. The interface procedures for both the Finance Centers and the Claims Centers are the same. Information from the paper forms are entered manually into one of the MTPP machines. The WHIST-MOD system reads a copy of the tape, extracts and reformats data to WHIST-MOD database representation, then validates and corrects data, if possible.

Another data source identified for WHIST-MOD, as shown in Fig. 2, is the carrier industry. The carriers are invited to bid for moving and storing personal property of military service members. Several methods can be used to transport DoD-sponsored personal property shipments. Rates for each method are submitted by the shipping carriers approved by MTPP. The carriers enter their bids for shipping charges on computer magnetic tapes or paper forms. WHIST-MOD has to compile these rates data for the rate solicitation function of MTPP. It then broadcasts the rates and other traffic management information to all PPSOs via the TOPS Switcher machine.

#### **3.4 SPECIFICATION FOR WHIST-MOD DATA FROM DATA SOURCE: TOPS**

The specifications for WHIST-MOD data from one of the data sources, TOPS, have been prepared using the design discussed in Section 2. These specifications are based on the database designed for TOPS.<sup>4</sup> Any changes to the TOPS system since January 1, 1989 are not reflected in this document.

WHIST-MOD needs shipment data from TOPS as well as the rates and other traffic management data required for the TOPS-WHIST interface to satisfy its decision support functions. All the WHIST-MOD data elements have already been defined and documented.<sup>5</sup>

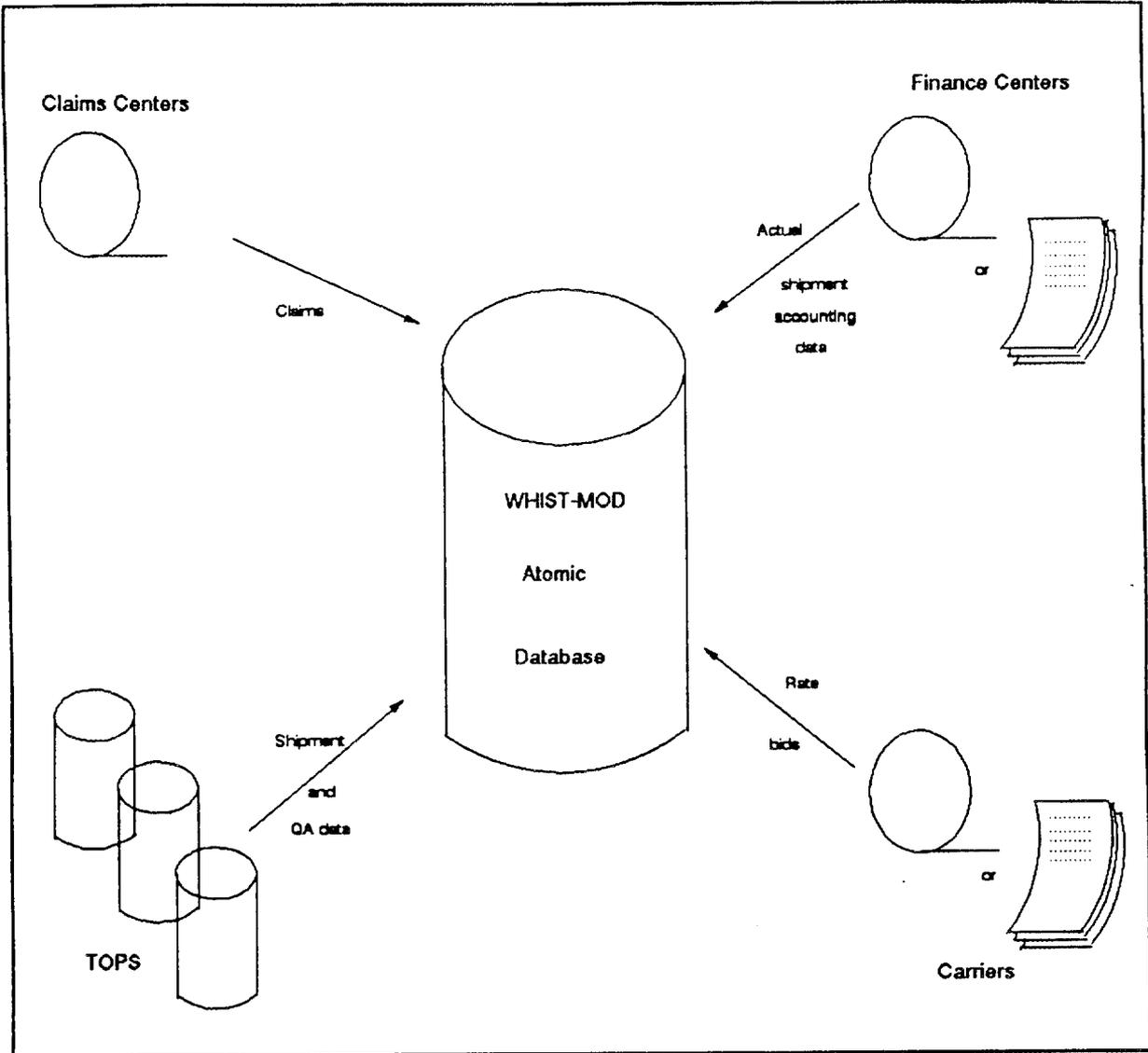


Figure 2 Data Sources for WHIST-MOD

This section describes the detailed specification of the shipment data required from TOPS and the format of the transmission tables needed for its interface. It provides the following details about the data requirements:

- name of data elements local to the TOPS system,
- name of data elements new to the TOPS system,
- description/definition of the new data elements,
- format of data elements (including type and length),
- name of tables/files local to the TOPS system,
- name of tables/files new to the TOPS system,
- description of tables/files new to the TOPS system,
- structure of tables/files new to the TOPS system,
- conditions under which WHIST-MOD requires the data transfer to occur,
- frequency of data transfer to WHIST-MOD,
- procedure of data transfer to WHIST-MOD, and
- indication of possible modifications to the TOPS system.

There are three parts to this specification. The first two discuss data requirements for shipments originating in the Continental United States (CONUS). The last discusses data requirements for international shipments. These specifications will be presented as subsections in this paper.

**PART 1: List of Data Elements Needed From TOPS**

- I. Data elements needed for all through Government bill of lading (TGBL) and direct procurement method (DPM) shipments
- II. QA data elements needed for domestic TGBL (DTGBL) shipments
- III. Data elements needed for mobile home shipments
- IV. Data elements needed for storage-in-transit (SIT) shipments
- V. Data elements needed for non-temporary-storage (NTS) shipments

**PART 2: Description of the Transmission Tables Needed by WHIST-MOD**

**PART 3: Data Requirements for International TGBL (ITGBL) Shipments**

The shipment data required include data containing all methods of shipments and different types of shipments, such as mobile home, SIT, and NTS shipments. The ITGBL data requirements are set out in the last part because complete ITGBL shipment data is not expected to be available for some time due to TOPS fielding schedule. The requirements discussed in this last part can be implemented once TOPS is fielded overseas.

These specifications describe all of the TOPS data WHIST-MOD required as of the writing of this document. Because WHIST-MOD is still in a development stage, additional data needs might be identified through prototyping. Detailed specifications for any additional data requirements will be documented as they are defined.

#### **3.4.1 Part 1: List of Data Elements Needed from TOPS**

This section presents the WHIST-MOD data requirements from TOPS as a matrix. There are four columns in this matrix:

- element name (in alphabetic order),
- format,
- associated tables in TOPS, and
- frequency and conditions of transmission to WHIST-MOD (in coded form).

WHIST-MOD is required to have access to shipment data generated from TOPS. In addition to the original data transmission in TOPS, all inserts and updates to the data elements are to be transmitted to WHIST-MOD. By definition of an atomic database, WHIST-MOD has a low probability of access for a unit of data. If a unit of data has a different value from the source system, in theory it should not affect WHIST-MOD as a DSS. However, a study should be done on each data element to check the effect on WHIST-MOD if the value of that data element is changed by TOPS. If the output from WHIST-MOD will not make a noticeable difference whether a unit of data is different, there is no need to transmit each update to WHIST-MOD. This will help decrease the volume of data transmission.

TOPS Switcher system was originally designed to facilitate faster communications between PPSOs. Because WHIST-MOD requires data from the PPSOs, WHIST-MOD is going to interface with TOPS through this TOPS Switcher system. However, the requirements for shipment data transmission to WHIST-MOD are different from those in TOPS. Any WHIST-MOD required items that are not currently passing through TOPS Switcher will need possible modifications to TOPS and/or TOPS Switcher software. In order to focus readers on these key issues, an asterisk (\*) is used in the requirements matrix to indicate that modifications might be needed to make the data items available to WHIST-MOD.

An asterisk in front of the column name indicates that the data element was not identified as passing through TOPS Switcher as of January 1, 1989.

An asterisk in front of a table name indicates that the associated column in that table was not identified as passing through TOPS Switcher as of January 1, 1989.

The frequency and conditions of data transfer are presented in a coded format. Detailed explanations of the codes are given as footnotes in the requirements matrix. Because the condition and frequency of transfer for most of the data are the same, there will be a lot of repetition. It is generally difficult to pinpoint the right information through lines and lines of text. Hence, the following codes for the frequency and the conditions of transmission are developed for clarity:

- D - daily transmission (whenever there are inserts or updates),
- D.1 - daily when shipment status code in TOPS = 'PU', 'CL', 'ST', 'DL' or 'CM',
- D.2 - daily when the first shipment of the orders gets picked up,
- D.3 - daily when a reweigh of the complete shipment (including all split portions) is done,
- D.4 - daily when a shipment gets scored,
- D.5 - daily when a personal property Government Bill of Lading (GBL) is voided due to turn/pull back with poor reason within five days of the required delivery date (RDD),
- D.6 - daily when a shipment inspection (either at origin or at destination) is complete,
- D.7 - daily when a QA action has been issued/cancelled by an installation transportation officer (ITO).

The following pages show the requirements matrix developed for the WHIST-MOD project. Assuming that the most often asked question is what data elements the source system needs to provide, the requirements matrix is organized by element name. The requirements matrix is broken into five segments, each of which pertains to a different method or different type of shipment. This division gives the source system personnel a choice of implementing the requirements a segment at a time.

## 3.4.1.1 Data Elements Needed for all TGBL and DPM Shipments

<u>Element</u>	<u>Format</u>	<u>Tables</u>	<u>Frequency/ Conditions</u>
ACTUAL_PRO_GEAR_WEIGHT	NUMBER (5)	SHIPMENT	D.1
ADDL_DELIVERY_ADDR_CITY	CHAR (25)	SHIPMENT	D.1
ADDL_DELIVERY_ADDR_STATE	CHAR (2)	SHIPMENT	D.1
ADDL_DELIVERY_ADDR_ZIP_APO_FPO	CHAR (17)	SHIPMENT	D.1
*ADDL_DELIVERY_COUNTRY	CHAR (20)	*SHIPMENT	D.1
ADDL_DELIVERY_COUNTY	CHAR (22)	SHIPMENT	D.1
*ADDL_PICKUP_ADDR_CITY	CHAR (25)	*SHIPMENT	D.1
*ADDL_PICKUP_ADDR_STATE	CHAR (2)	*SHIPMENT	D.1
*ADDL_PICKUP_ADDR_ZIP_APO_FPO	CHAR (17)	*SHIPMENT	D.1
*ADDL_PICKUP_COUNTRY	CHAR (20)	*SHIPMENT	D.1
*ADDL_PICKUP_COUNTY	CHAR (22)	*SHIPMENT	D.1
AUTHORIZED_WEIGHT	NUMBER (5)	SHIPMENT	D.1

---

D - Daily transmission (whenever there are inserts or updates)

1 - When shipment status code in TOPS = 'PU', 'CL', 'ST', 'DL' or 'CM'

CARRIER_CODE	CHAR (4)	SHIPMENT	D.1
CODE_OF_SERVICE	CHAR (2)	SHIPMENT	D.1
COMBINED_MOVE_SPOUSE_IN_SERV	CHAR (1)	MEMBER_ORDERS	D.2
*CONSOLIDATED_SHIPMENT_NUMBER	CHAR (5)	*SHIPMENT	D.1
*DATE_SHIPMENT_PICKED_UP	DATE	*SHIPMENT	D.1
*DATE_COMPLETE_SHIPMENT_ARRIVED	DATE	*SHIPMENT	D.1
*DECLARED_VALUATION_AMOUNT	NUMBER (7,2)	*SHIPMENT	D.1
DELIVERY_ADDRESS_CITY	CHAR (25)	SHIPMENT	D.1
DELIVERY_ADDRESS_STATE	CHAR (2)	SHIPMENT	D.1
DELIVERY_ADDRESS_ZIP_APO_FPO	CHAR (17)	SHIPMENT	D.1
*DELIVERY_COUNTRY	CHAR (20)	*SHIPMENT	D.1
DELIVERY_COUNTY	CHAR (22)	SHIPMENT	D.1
*DEPLOYMENT_MOVE_NUMBER	CHAR (5)	*SHIPMENT	D.1

---

D - Daily transmission (whenever there are inserts or updates)

1 - When shipment status code in TOPS = 'PU', 'CL', 'ST', 'DL' or 'CM'

2 - When the first shipment of the orders gets picked up

DESTINATION_GBLOC	CHAR (4)	SHIPMENT	D.1
DESTINATION_RATE_AREA	CHAR (9)	SHIPMENT	D.1
DIRECT_DELIVERY_REQUESTED	CHAR (1)	SHIPMENT	D.1
*DTGBL_ORIGIN_ZONE	CHAR (2)	*SHIPMENT	D.1
GBL_NUMBER	CHAR (9)	SHIPMENT	D.1
*GOCS_ORDERED	CHAR (1)	*SHIPMENT	D.1
JOINT_MOVE_SPOUSE_IN_SERVICE	CHAR (1)	MEMBER_ORDERS	D.2
*LOCAL_MOVE_INDICATOR	CHAR (1)	*SHIPMENT	D.1
MBR_REQUESTED_PICKUP_DATE	DATE	SHIPMENT	D.1
MBR_REQUESTED_DELIVERY_DATE	DATE	SHIPMENT	D.1
MEMBER_BRANCH_OF_SERVICE	CHAR (1)	MEMBER_ORDERS	D.2
MEMBER_MOVING_TO_GOV'T_HOUSING	CHAR (1)	MEMBER_ORDERS	D.2

---

D - Daily transmission (whenever there are inserts or updates)  
1 - When shipment status code in TOPS = 'PU', 'CL', 'ST', 'DL' or 'CM'  
2 - When the first shipment of the orders gets picked up

MEMBER_PAY_GRADE	CHAR (4)	MEMBER_ORDERS	D.2
*MEMBER_SOCIAL_SECURITY_NUMBER	CHAR (11)	MEMBER_ORDERS MOBILE_HOME_SHIPMENT SHIPMENT SHIPMENT_REWEIGH *SHIPMENT_SIT_TEMPORARY _STORAGE	D.2 D.1 D.1 D.3 D.1
METHOD_OF_SHIPMENT	CHAR (6)	SHIPMENT	D.1
NUMBER_OF_DEPENDENTS	NUMBER (2)	(See Note 1)	D.2
NUMBER_OF_DEPENDENTS_UNDER_12	NUMBER (2)	MEMBER_ORDERS	D.2
NUMBER_OF_DEPN_12_AND_OVER	NUMBER (2)	MEMBER_ORDERS	D.2
NUMBER_OF_PIECES_IN_SHIPMENT	NUMBER (2)	SHIPMENT	D.1
*NUMBER_OF_SPLIT_PORTIONS	NUMBER (1)	*SHIPMENT	D.1
*ONE_TIME_ONLY_INDICATOR	CHAR (1)	*SHIPMENT	D.1
*ORDERS_NUMBER	CHAR (10)	MEMBER_ORDERS MOBILE_HOME_SHIPMENT SHIPMENT SHIPMENT_REWEIGH *SHIPMENT_SIT_TEMPORARY _STORAGE	D.2 D.1 D.1 D.3 D.1
ORIGIN_GBLOC	CHAR (4)	SHIPMENT	D.1

- 
- D - Daily transmission (whenever there are inserts or updates)  
1 - When shipment status code in TOPS = 'PU', 'CL', 'ST', 'DL' or 'CM'  
2 - When the first shipment of the orders gets picked up  
3 - When a reweigh of the complete shipment (including all split portions) is done

ORIGIN_GROSS_WEIGHT	NUMBER SHIPMENT (5)	D.1
ORIGIN_NET_WEIGHT	NUMBER SHIPMENT (5)	D.1
*ORIGIN_RATE_AREA	CHAR *SHIPMENT (9)	D.1
ORIGIN_TARE_WEIGHT	NUMBER SHIPMENT (5)	D.1
ORIGIN_WEIGHT_WITNESSED	CHAR SHIPMENT (1)	D.1
PARCEL_SERVICE_METHOD	CHAR SHIPMENT (8)	D.1
PICKUP_ADDRESS_CITY	CHAR SHIPMENT (25)	D.1
PICKUP_ADDRESS_STATE	CHAR SHIPMENT (2)	D.1
PICKUP_ADDRESS_ZIP_APO_FPO	CHAR SHIPMENT (17)	D.1
PICKUP_COUNTRY	CHAR SHIPMENT (20)	D.1
PICKUP_COUNTY	CHAR SHIPMENT (22)	D.1
*PORT_OF_EMBARKATION	CHAR *SHIPMENT (3)	D.1
*PORT_OF_DEBARKATION	CHAR *SHIPMENT (3)	D.1

---

D - Daily transmission (whenever there are inserts or updates)  
1 - When shipment status code in TOPS = 'PU', 'CL', 'ST', 'DL' or 'CM'  
2 - When the first shipment of the orders gets picked up  
3 - When a reweigh of the complete shipment (including all split portions) is done

*RELEASED_VALUATION_OPTION	CHAR (7)	*SHIPMENT	D.1
REQUIRED_DELIVERY_DATE	DATE	SHIPMENT	D.1
*REWEIGH_COMPLETE	CHAR (1)	(See Note 2)	D.3
*REWEIGH_GROSS_WEIGHT	NUMBER (5)	*SHIPMENT_REWEIGH (See Note 3)	D.3
*REWEIGH_NET_WEIGHT	NUMBER (5)	*SHIPMENT_REWEIGH (See Note 4)	D.3
*REWEIGH_TARE_WEIGHT	NUMBER (5)	*SHIPMENT_REWEIGH (See Note 5)	D.3
*REWEIGH_WITNESSED	CHAR (1)	*SHIPMENT_REWEIGH (See Note 6)	D.3
SHIPMENT_CUBE	NUMBER (6,1)	SHIPMENT	D.1
*SHIPMENT_NUMBER	NUMBER (2)	MOBILE_HOME_SHIPMENT SHIPMENT *SHIPMENT_REWEIGH *SHIPMENT_SIT_TEMPORARY _STORAGE	D.1 D.1 D.3 D.1
SHIPMENT_OUT_OF_NTS	CHAR (1)	SHIPMENT	D.1
SHIPMENT_STATUS_CODE	CHAR (2)	SHIPMENT	D.1
SPECIAL_SHIPMENT_CIRCUMSTANCE	CHAR (4)	SHIPMENT	D.1
*SPLIT_SHIPMENT_INDICATOR	CHAR (1)	*SHIPMENT	D.1

---

D - Daily transmission (whenever there are inserts or updates)

1 - When shipment status code in TOPS = 'PU', 'CL', 'ST', 'DL' or 'CM'

2 - When the first shipment of the orders gets picked up

3 - When a reweigh of the complete shipment (including all split portions) is done

TYPE_OF_ORDERS	CHAR (3)	MEMBER_ORDERS	D.2
TYPE_OF_SHIPMENT	CHAR (3)	SHIPMENT	D.1
*VOLUME_MOVE_NUMBER	CHAR (5)	*SHIPMENT	D.1

---

D - Daily transmission (whenever there are inserts or updates)  
1 - When shipment status code in TOPS = 'PU', 'CL', 'ST', 'DL' or 'CM'  
2 - When the first shipment of the orders gets picked up  
3 - When a reweigh of the complete shipment (including all split portions) is done

In order to convey the details of the specifications, the requirements matrix is augmented with the additional notes listed below.

1. The WHIST-MOD element NUMBER\_OF\_DEPENDENTS is the sum of the values in the TOPS elements: NUMBER\_OF\_DEPENDENTS\_UNDER\_12, and NUMBER\_OF\_DEPN\_12\_AND\_OVER.  
TOPS is required to transmit NUMBER\_OF\_DEPENDENTS\_UNDER\_12 and NUMBER\_OF\_DEPN\_12\_AND\_OVER to WHIST-MOD.
2. The WHIST-MOD element REWEIGH\_COMPLETE must contain a 'Y' if the whole shipment (including all split portions) has been reweighed.  
TOPS is required to generate and transmit the element REWEIGH\_COMPLETE to WHIST-MOD.
3. The WHIST-MOD element REWEIGH\_GROSS\_WEIGHT must contain the sum of the values of the TOPS element REWEIGH\_GROSS\_WEIGHT for all the split portions of a shipment, if it is a split shipment.  
TOPS is required to generate and transmit the element REWEIGH\_GROSS\_WEIGHT to WHIST-MOD.
4. The WHIST-MOD element REWEIGH\_NET\_WEIGHT must contain the sum of the values of the TOPS element REWEIGH\_NET\_WEIGHT for all the split portions of a shipment, if it is a split shipment.  
TOPS is required to generate and transmit the element REWEIGH\_NET\_WEIGHT to WHIST-MOD.
5. The WHIST-MOD element REWEIGH\_TARE\_WEIGHT must contain the sum of the values of the TOPS element REWEIGH\_TARE\_WEIGHT for all the split portions of a shipment, if it is a split shipment.  
TOPS is required to generate and transmit the element REWEIGH\_TARE\_WEIGHT to WHIST-MOD.
6. The WHIST-MOD element REWEIGH\_WITNESSED must contain a 'Y' if a reweigh of the whole shipment (including all split portions) has been witnessed.  
TOPS is required to generate and transmit the element REWEIGH\_WITNESSED to WHIST-MOD.

These additional notes help to identify how aggregate data elements are composed. Data elements that have different definitions from those in the source system need to be pointed out so that no mistakes will be made on data integration.

## 3.4.1.2 QA Data Elements Needed for DTGBL Shipments

<u>Element</u>	<u>Format</u>	<u>Tables</u>	<u>Frequency/ Conditions</u>
*CARRIER_CODE	CHAR (4)	*DTGBL_SHIPMENT_EVALUATION *VOID_GBL_NUMBER	D.4 D.5
*CODE_OF_SERVICE	CHAR (2)	*DTGBL_SHIPMENT_EVALUATION *VOID_GBL_NUMBER	D.4 D.5
*DATE_DD2223_PRODUCED	DATE	*DTGBL_SHIPMENT_EVALUATION	D.4
*DATE_GBL_NUMBER_VOIDED	DATE	*VOID_GBL_NUMBER	D.5
DATE_OA_ACTION_CANCELLED	DATE	DTGBL_INTERSTATE_QA_LOG DTGBL_INTRASTATE_QA_LOG	D.7
ESTIMATED_LOSS_DAMAGE_CODE	CHAR (1)	DTGBL_SHIPMENT_EVALUATION	D.4
*GBL_NUMBER	CHAR (9)	DTGBL_SHIPMENT_EVALUATION DTGBL_SHIPMENT_INSPECTION *VOID_GBL_NUMBER	D.4 D.6 D.5
INSPECTION_AT_ORIGIN_OR_DEST	CHAR (1)	DTGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_COMPLETE	CHAR (1)	DTGBL_SHIPMENT_INSPECTION	D.6
*INSPECTION_ITEM_1	CHAR (1)	*DTGBL_SHIPMENT_INSPECTION	D.6
*INSPECTION_ITEM_2	CHAR (1)	*DTGBL_SHIPMENT_INSPECTION	D.6
*INSPECTION_ITEM_3	CHAR (1)	*DTGBL_SHIPMENT_INSPECTION	D.6

---

D - Daily transmission (whenever there are inserts or updates)

4 - When a shipment gets scored

5 - When a GBL is voided due to turn/pull back with poor reason within five days of the RDD

6 - When a shipment inspection (either at origin or at destination) is complete

7 - When a QA action has been issued/cancelled by an ITO

INSPECTION_ITEM_4	CHAR (1)	DTGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_5	CHAR (1)	DTGBL_SHIPMENT_INSPECTION	D.6
*INSPECTION_ITEM_6	CHAR (1)	*DTGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_7	CHAR (1)	DTGBL_SHIPMENT_INSPECTION	D.6
*INSPECTION_ITEM_8	CHAR (1)	*DTGBL_SHIPMENT_INSPECTION	D.6
*INSPECTION_ITEM_9	CHAR (1)	*DTGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_10	CHAR (1)	DTGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_11	CHAR (1)	DTGBL_SHIPMENT_INSPECTION	D.6
*INSPECTION_ITEM_12	CHAR (1)	*DTGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_13	CHAR (1)	DTGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_14	CHAR (1)	DTGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_15	CHAR (1)	DTGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_16	CHAR (1)	DTGBL_SHIPMENT_INSPECTION	D.6

---

D - Daily transmission (whenever there are inserts or updates)

4 - When a shipment gets scored

5 - When a GBL is voided due to turn/pull back with poor reason within five days of the RDD

6 - When a shipment inspection (either at origin or at destination) is complete

7 - When a QA action has been issued/cancelled by an ITO

INSPECTION_ITEM_17	CHAR (1)	DTGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_18	CHAR (1)	DTGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_19	CHAR (1)	DTGBL_SHIPMENT_INSPECTION	D.6
*MEMBER_SOCIAL_SECURITY_NUMBER	CHAR (11)	*VOID_GBL_NUMBER	D.5
*MISSED_PICKUP_DATE	CHAR (1)	*DTGBL_SHIPMENT_EVALUATION	D.4
*ORDERS_NUMBER	CHAR (10)	*VOID_GBL_NUMBER	D.5
*ORIGIN_STATE	CHAR (2)	*DTGBL_SHIPMENT_EVALUATION	D.4
*ORIGINAL_PICKUP_DATE	DATE	*VOID_GBL_NUMBER	D.5
QA_ACTION_CODE	CHAR (2)	DTGBL_INTERSTATE_QA_LOG DTGBL_INTRASTATE_QA_LOG	D.7
QA_ACTION_EFFECTIVE_DATE	DATE	DTGBL_INTERSTATE_QA_LOG DTGBL_INTRASTATE_QA_LOG	D.7
QA_ACTION_END_DATE	DATE	DTGBL_INTERSTATE_QA_LOG DTGBL_INTRASTATE_QA_LOG	D.7
QA_ACTION_INITIATED_BY	CHAR (4)	DTGBL_INTERSTATE_QA_LOG DTGBL_INTRASTATE_QA_LOG	D.7
QA_ACTION_LENGTH	NUMBER (3)	DTGBL_INTERSTATE_QA_LOG DTGBL_INTRASTATE_QA_LOG	D.7

---

D - Daily transmission (whenever there are inserts or updates)

4 - When a shipment gets scored

5 - When a GBL is voided due to turn/pull back with poor reason within five days of the RDD

6 - When a shipment inspection (either at origin or at destination) is complete

7 - When a QA action has been issued/cancelled by an ITO

QA_ACTION_SEQUENCE_ID	NUMBER (2)	DTGBL_INTERSTATE_QA_LOG DTGBL_INTRASTATE_QA_LOG	D.7
REASON_ACTION_NOT_TAKEN	CHAR (150)	DTGBL_INTERSTATE_QA_LOG DTGBL_INTRASTATE_QA_LOG	D.7
*SHIPMENT_NUMBER	NUMBER (2)	*VOID_GBL_NUMBER	D.5
*SHIPMENT_SCORE	NUMBER (3)	*DTGBL_SHIPMENT_EVALUATION	D.4
*SHIPMENT_UNDER_APPEAL	CHAR (1)	*DTGBL_SHIPMENT_EVALUATION	D.4
SUSPENSION_REGULAR_OR_IMMED	CHAR (1)	DTGBL_INTERSTATE_QA_LOG DTGBL_INTRASTATE_QA_LOG	D.7
*WARNING_ISSUED	CHAR (1)	*DTGBL_SHIPMENT_EVALUATION	D.4

---

D - Daily transmission (whenever there are inserts or updates)

4 - When a shipment gets scored

5 - When a GBL is voided due to turn/pull back with poor reason within five days of the RDD

6 - When a shipment inspection (either at origin or at destination) is complete

7 - When a QA action has been issued/cancelled by an ITO

### 3.4.1.3 Data Elements Needed for Mobile Home Shipments

<u>Element</u>	<u>Format</u>	<u>Tables</u>	<u>Frequency/ Conditions</u>
IS_MOBILE_HOME_EXPANDABLE	CHAR (1)	MOBILE_HOME_SHIPMENT	D.1
MH_HHG_PACKING	CHAR (1)	MOBILE_HOME_SHIPMENT	D.1
MH_REBLOCKING	CHAR (1)	MOBILE_HOME_SHIPMENT	D.1
MH_STORAGE_AT_DESTINATION	CHAR (1)	MOBILE_HOME_SHIPMENT	D.1
MH_STORAGE_AT_ORIGIN	CHAR (1)	MOBILE_HOME_SHIPMENT	D.1
MH_UNBLOCKING	CHAR (1)	MOBILE_HOME_SHIPMENT	D.1
MOBILE_HOME_LENGTH	NUMBER (4)	MOBILE_HOME_SHIPMENT	D.1
MOBILE_HOME_TYPE	CHAR (1)	MOBILE_HOME_SHIPMENT	D.1
MOBILE_HOME_WIDTH	NUMBER (4)	MOBILE_HOME_SHIPMENT	D.1
MOBILE_HOME_YEAR	NUMBER (2)	MOBILE_HOME_SHIPMENT	D.1

---

D - Daily transmission (whenever there are inserts or updates)

1 - When shipment status code in TOPS = 'PU', 'CL', 'ST', 'DL' or 'CM'

## 3.4.1.4 Data Elements Needed for SIT Shipments

<u>Element</u>	<u>Format</u>	<u>Tables</u>	<u>Frequency/ Conditions</u>
*SPLIT_PORTION_NUMBER	NUMBER (1)	*SHIPMENT_SIT_TEMPORARY _STORAGE	D.1
*DATE_PLACED_IN_STORAGE	DATE	*SHIPMENT_SIT_TEMPORARY _STORAGE	D.1
*DATE_REMOVED_FROM_STORAGE	DATE	*SHIPMENT_SIT_TEMPORARY _STORAGE	D.1
*STG_EXTENSION_EXPIRATION_DATE	DATE	*SHIPMENT_SIT_TEMPORARY _STORAGE	D.1
*STORAGE_EXPIRATION_DATE	DATE	*SHIPMENT_SIT_TEMPORARY _STORAGE	D.1

---

D - Daily transmission (whenever there are inserts or updates)

1 - When shipment status code in TOPS = 'PU', 'CL', 'ST', 'DL' or 'CM'

### 3.4.1.5 Data Elements Needed for NTS Shipments

Because NTS shipments are managed by the Regional Storage Management Offices (RSMOs), information about NTS shipments will be distributed among the RSMOs' machines. The data elements listed in this section need to be transmitted through TOPS Switcher to Headquarters MTMC (HQMTMC), which in turn routes them to each of the responsible RSMOs. Most of the data elements needed by WHIST-MOD for NTS shipments are required for the preparation of the MTMC-20 report. MTMC-20 report is a management report that details the quarterly expenses on NTS shipments. There are three types of invoices described in this management report: handle-in invoices ('HI'), quarterly storage invoices ('QS'), and partial/complete removal invoices ('RM'). The types of NTS transactions associated with these invoices are handle-in ('HI'), partial removal to local ('PL'), partial removal to outbound ('PO'), complete removal to local ('RL'), and complete removal to outbound ('RO').

NTS shipment data were not part of the transmission through TOPS Switcher, as of January 1, 1989. Items preceded by an '\*\*' in the requirements matrix indicate possible modifications to TOPS and/or TOPS Switcher.

An asterisk in front of the column name indicates that the data element was not identified as passing through TOPS Switcher as of January 1, 1989.

An asterisk in front of a table name indicates that the associated column in that table was not identified as passing through TOPS Switcher as of January 1, 1989.

TOPS will have to be modified to provide the NTS shipment data, identified by element name in the matrix, in the format with the frequency and conditions specified.

Codes for the frequency and the conditions of transmission for NTS shipment data are:

- M - monthly transmission (whenever there are inserts or updates),
- M.8 - monthly when NTS\_TYPE\_OF\_TRANSACTION in TOPS = 'HI', 'PO', 'PL', 'RO', or 'RL' and DATE\_NTS\_INVOICE\_PRINTED in TOPS is not null,
- M.9 - monthly when the Handle-in invoice is printed,
- Q - quarterly transmission (at the end of day processing on the last day of a quarter),
- Q.10 - quarterly when CURRENT\_NTS\_STORED\_WT in TOPS > 0 (for NTS weight brought forward from previous quarter),
- Q.11 - quarterly when NTS\_TYPE\_OF\_TRANSACTION in TOPS = 'HI', and
- Q.12 - quarterly when NTS\_TYPE\_OF\_TRANSACTION in TOPS = 'PL', 'PO', 'RL', or 'RO'.

<u>Element</u>	<u>Format</u>	<u>Tables</u>	<u>Frequency/ Conditions</u>
*CURRENT_NTS_STORED_WT	NUMBER (9)	*NTS_SHIPMENT	Q.10
*DATE_NTS_INVOICE_PRINTED	DATE	(See Note 1)	M.8
*DATE_NTS_TRANS_INVOICE_PRINTED	DATE	*NTS_TRANSACTION	M.8
*DATE_NTS_TRANSACTION_PERFORMED	DATE	*NTS_TRANSACTION	M.8
*DATE_QTRLY_STG_INVOICE_PRINTED	DATE	*NTS_SHIPMENT	Q
*DATE_THIS_RECORD_ENTERED	DATE	(See Note 2)	Q
*MEMBER_SOCIAL_SECURITY_NUMBER	CHAR (11)	*NTS_SHIPMENT *NTS_TRANSACTION	M.9 M.8
*NTS_CONTRACTOR_CODE	CHAR (4)	*NTS_SHIPMENT	M.9
*NTS_COST	NUMBER (9,2)	(See Note 3)	Q
*NTS_DRAYAGE_REQUIRED	CHAR (1)	*NTS_TRANSACTION	M.8
*NTS_HANDLING_IN_REQUIRED	CHAR (1)	*NTS_TRANSACTION	M.8
*NTS_LOT_NUMBER	CHAR (6)	*NTS_SHIPMENT	M.9
*NTS_PACKING_REQUIRED	CHAR (1)	*NTS_TRANSACTION	M.8

---

M - Monthly transmission (whenever there are inserts or updates)

Q - Quarterly transmission (at the end of day processing on the last day of a quarter)

8 - When NTS\_TYPE\_OF\_TRANSACTION in TOPS = 'HI', 'PO', 'PL', 'RO' or 'RL' and  
DATE\_NTS\_INVOICE\_PRINTED in TOPS is not null

9 - When the Handle-in invoice is printed

10 - When CURRENT\_NTS\_STORED\_WT in TOPS > 0

*NTS_REHANDLING_REQUIRED	CHAR (1)	*NTS_TRANSACTION	M.8
*NTS_REMOVAL_CHG_TO_NEW_APPROP	NUMBER (7,2)	*NTS_QTRLY_REMOVAL_SUMMARY	Q.12
*NTS_REMOVAL_CHG_TO_ORIG_APPROP	NUMBER (7,2)	*NTS_QTRLY_REMOVAL_SUMMARY	Q.12
*NTS_SERVICE_ORDER_NUMBER	CHAR (13)	*NTS_SHIPMENT *NTS_TRANSACTION	M.9 M.8
*NTS_SPECIAL_TRANSACTION_CODE	CHAR (2)	*NTS_TRANSACTION	M.8
*NTS_TRANSACTION_NUMBER	NUMBER (2)	*NTS_TRANSACTION	M.8
*NTS_TYPE_OF_TRANSACTION	CHAR (2)	*NTS_TRANSACTION	M.8
*NTS_UNPACKING_REQUIRED	CHAR (1)	*NTS_TRANSACTION	M.8
*NTS_WEIGHT	NUMBER (See Note 4) (9)		M.8
*NTS_WEIGHT_HANDLED_IN	NUMBER (9)	*NTS_TRANSACTION	M.9
*ORDERS_NUMBER	CHAR (10)	*NTS_SHIPMENT *NTS_TRANSACTION	M.9 M.8
*SHIPMENT_NUMBER	NUMBER (2)	*NTS_SHIPMENT *NTS_TRANSACTION	M.9 M.8
*STORAGE_FACILITY_ID	CHAR (4)	*NTS_SHIPMENT	M.9

---

M - Monthly transmission (whenever there are inserts or updates)

Q - Quarterly transmission (at the end of day processing on the last day of a quarter)

8 - When NTS\_TYPE\_OF\_TRANSACTION in TOPS = 'HI', 'PO', 'PL', 'RO' or 'RL' and  
DATE\_NTS\_INVOICE\_PRINTED in TOPS is not null

9 - When the Handle-in invoice is printed

12 - When NTS\_TYPE\_OF\_TRANSACTION in TOPS = 'PL', 'PO', 'RL' or 'RO'

*TOTAL_COST	NUMBER (7,2)	*NTS_HI_SUMMARY_CALC_TEMP *NTS_QS_SUMMARY_CALC_TEMP	Q.11 Q
*TYPE_OF_NTS_INVOICE	CHAR (2)	(See Note 5)	Q
*WEIGHT_OUT_OF_NTS	NUMBER (9)	*NTS_QTRLY_REMOVAL_SUMMARY	Q.12

- 
- M - Monthly transmission (whenever there are inserts or updates)
  - Q - Quarterly transmission (at the end of day processing on the last day of a quarter)
  - 8 - When NTS\_TYPE\_OF\_TRANSACTION in TOPS = 'HI', 'PO', 'PL', 'RO' or 'RL' and DATE\_NTS\_INVOICE\_PRINTED in TOPS is not null
  - 9 - When the Handle-in invoice is printed
  - 11 - When NTS\_TYPE\_OF\_TRANSACTION in TOPS = 'HI'
  - 12 - When NTS\_TYPE\_OF\_TRANSACTION in TOPS = 'PL', 'PO', 'RL' or 'RO'

In order to convey the details of the specifications, the requirements matrix for NTS shipment data is augmented with the additional notes listed below.

1. The WHIST-MOD element DATE\_NTS\_INVOICE\_PRINTED must contain the value of the TOPS element DATE\_NTS\_TRANS\_INVOICE\_PRINTED when NTS\_TYPE\_OF\_TRANSACTION in TOPS is 'HI', 'PL', 'PO', 'RL', or 'RO'; or the value of the TOPS element DATE\_QTRLY\_STG\_INVOICE\_PRINTED for quarterly storage invoice.  
TOPS is required to generate and transmit the element DATE\_NTS\_INVOICE\_PRINTED to WHIST-MOD.
  
2. Since a non-zero value in the CURRENT\_NTS\_STORED\_WT element in TOPS indicates that there is an NTS shipment brought forward from previous quarter, this element is required to be transmitted to WHIST-MOD at the end of every quarter.  
A new procedure needs to be set up in TOPS to take a snapshot of the element CURRENT\_NTS\_STORED\_WT at the end of the last day of a quarter. The WHIST-MOD element DATE\_THIS\_RECORD\_ENTERED is the date the snapshot of the NTS current stored weight is taken in TOPS.  
TOPS is required to generate and transmit the elements CURRENT\_NTS\_STORED\_WT and DATE\_THIS\_RECORD\_ENTERED to WHIST-MOD.
  
3. The WHIST-MOD element NTS\_COST must contain the value of the TOPS element TOTAL\_COST (for handle-in and quarterly-storage invoices); or the total SUM of the TOPS elements (NTS\_REMOVAL\_CHG\_TO\_ORIG\_APPROP + NTS\_REMOVAL\_CHG\_TO\_NEW\_APPROP) for ALL types of transactions in TOPS = 'PL', 'PO', 'RL', or 'RO' (for partial and complete removal invoices).  
TOPS is required to generate and transmit the element NTS\_COST to WHIST-MOD.
  
4. The WHIST-MOD element NTS\_WEIGHT must contain the value of the TOPS element NTS\_WEIGHT\_HANDLED\_IN (if type of transaction in TOPS = 'HI'); or the value of the TOPS element WEIGHT\_OUT\_OF\_NTS (if type of transaction in TOPS = 'PL', 'PO', 'RL', or 'RO').  
TOPS is required to generate and transmit the element NTS\_WEIGHT to WHIST-MOD.
  
5. The WHIST-MOD element TYPE\_OF\_NTS\_INVOICE must contain the code 'HI' (for handle-in), 'QS' (for quarterly storage), and 'RM' (for partial and complete removal)

### 3.4.2 Part 2: Description of the Transmission Tables Needed by WHIST-MOD

As mentioned in Section 3.4.1, TOPS and TOPS Switcher need to be modified to meet WHIST-MOD requirements. One of the goals of WHIST-MOD is to make the modifications to TOPS software as few as possible. To accomplish this, the design approach is to try to capture the WHIST-MOD data through the existing TOPS transmission. In other words, WHIST-MOD requires TOPS to send WHIST-MOD data at specified time intervals through existing transmission tables in TOPS. These time intervals were specified in detailed in Section 3.4.1. At HQMTMC, WHIST-MOD applications will extract the required columns. There are certain data elements that TOPS does not require to be transmitted between installations. Yet these data elements are very important to WHIST-MOD. In order to keep the existing transmission process unchanged for TOPS installations, those additional data elements that are not currently transmitted through the TOPS Switcher machine will be sent directly to HQMTMC in separate transmission tables created for WHIST-MOD only.

A description of all the transmission tables needed in TOPS to satisfy WHIST-MOD requirements is presented in this part of the specifications. It is based on the fact that both TOPS and WHIST-MOD are using the ORACLE Relational Database Management System (RDBMS). Tables named with '\_XMT' and '\_RCV' suffixes are designed for export and import of data, respectively. Only the description for the export (i.e., '\_XMT') tables is given. The import (i.e., '\_RCV') tables that the TOPS Switcher system needs will have the same structures as the corresponding export tables except that the column TELECOMM\_DEST\_GBLOC is not part of the record identifier. An example of the TOPS Switcher database can be found in the TOPS prototype developed by Oak Ridge National Laboratory (ORNL). Following the description of each table structure, the conditions and frequency under which a table must be transmitted to WHIST-MOD are given.

In this specification, table structures are described for two types of transmission tables:

- existing TOPS transmission tables, and
- new WHIST-MOD-only transmission tables.

A plus sign ('+') inserted in front of a table name indicates that the table must be created for WHIST-MOD transmission only. Tables that are named with suffix '\_MTMC\_XMT' are required to transmit WHIST-MOD data, so no changes need to be made to the structures of the existing TOPS transmission tables.

A '>' sign inserted in front of a column indicates that the column in the existing TOPS transmission table is needed by WHIST-MOD. Hence, those transmission tables with '>' signs must be transmitted to HQMTMC at the frequency and conditions specified for WHIST-MOD.

For the NTS shipment data, this design assumes that TOPS NTS shipment data will be sent to HQMTMC via the TOPS Switcher machine. There will be a mini-switcher system at HQMTMC to receive the data from the TOPS Switcher machine and resend them to the appropriate RSMO. The RSMO who issued the basic ordering agreement (BOA) to an NTS contractor will receive data on shipments handled by that contractor.

**Table Name: DTGBL INTERSTATE QA LOG XMT**

>TELECOMM_ORIGIN_GBLOC	NOT NULL CHAR(4)
>CARRIER_CODE	NOT NULL CHAR(4)
>CODE_OF_SERVICE	NOT NULL CHAR(2)
>DTGBL_ORIGIN_ZONE	NOT NULL CHAR(2)
>QA_ACTION_CODE	NOT NULL CHAR(2)
>QA_ACTION_EFFECTIVE_DATE	NOT NULL DATE
>QA_ACTION_SEQUENCE_ID	NOT NULL NUMBER(2)
>TELECOMM_DEST_GBLOC	NOT NULL CHAR(4)
>QA_ACTION_END_DATE	DATE
>QA_ACTION_LENGTH	NUMBER(3)
>QA_ACTION_INITIATED_BY	CHAR(4)
QA_ACTION_REMARKS	CHAR(150)
REINSTATEMENT_DATE	DATE
PENALTY_TONNAGE	NUMBER(6)
REINSTATE_AT_ORIG_OR_HIGH_TON	CHAR(2)
>REASON_ACTION_NOT_TAKEN	CHAR(150)
>DATE_QA_ACTION_CANCELLED	DATE
DATE_POSTED_TO_TDR	DATE
>SUSPENSION_REGULAR_OR_IMMED	CHAR(1)
>GBL_NUMBER	CHAR(9)
TOS_PARAGRAPH_1	CHAR(9)
TOS_PARAGRAPH_2	CHAR(9)
TOS_PARAGRAPH_3	CHAR(9)
TOS_PARAGRAPH_4	CHAR(9)
CHANGE_STATUS	CHAR(1)

This table is to be transmitted to HQMTMC whenever there are updates to the corresponding TOPS columns. The initial transmission occurs when there is a QA action issued by an ITO.

**Table Name: DTGBL INTRASTATE QA LOG XMT**

>TELECOMM_ORIGIN_GBLOC	NOT NULL CHAR(4)
>CARRIER_CODE	NOT NULL CHAR(4)
>CODE_OF_SERVICE	NOT NULL CHAR(2)
>ORIGIN_STATE	NOT NULL CHAR(2)
>DTGBL_ORIGIN_ZONE	NOT NULL CHAR(2)
>QA_ACTION_CODE	NOT NULL CHAR(2)
>QA_ACTION_EFFECTIVE_DATE	NOT NULL DATE
>QA_ACTION_SEQUENCE_ID	NOT NULL NUMBER(2)
>TELECOMM_DEST_GBLOC	NOT NULL CHAR(4)
>QA_ACTION_END_DATE	DATE
>QA_ACTION_LENGTH	NUMBER(3)
>QA_ACTION_INITIATED_BY	CHAR(4)
QA_ACTION_REMARKS	CHAR(150)

REINSTATEMENT_DATE	DATE
PENALTY_TONNAGE	NUMBER(6)
REINSTATE_AT_ORIG_OR_HIGH_TON	CHAR(2)
>REASON_ACTION_NOT_TAKEN	CHAR(150)
>DATE_QA_ACTION_CANCELLED	DATE
DATE_POSTED_TO_TDR	DATE
>SUSPENSION_REGULAR_OR_IMMED	CHAR(1)
>GBL_NUMBER	CHAR(9)
TOS_PARAGRAPH_1	CHAR(9)
TOS_PARAGRAPH_2	CHAR(9)
TOS_PARAGRAPH_3	CHAR(9)
TOS_PARAGRAPH_4	CHAR(9)
CHANGE_STATUS	CHAR(1)

This table is to be transmitted to HQMTMC whenever there are updates to the corresponding TOPS columns. The initial transmission occurs when there is a QA action issued by an ITO.

**Table Name: + DTGBL\_SHIP\_EVALUATION\_MTMC\_XMT**

GBL_NUMBER	NOT NULL CHAR(9)
TELECOMM_DEST_GBLOC	NOT NULL CHAR(4)
CARRIER_CODE	CHAR(4)
CODE_OF_SERVICE	CHAR(2)
DATE_DD2223_PRODUCED	DATE
ESTIMATED_LOSS_DAMAGE_CODE	CHAR(1)
MISSED_PICKUP_DATE	CHAR(1)
ORIGIN_STATE	CHAR(2)
SHIPMENT_SCORE	NUMBER(3)
SHIPMENT_UNDER_APPEAL	CHAR(1)
WARNING_ISSUED	CHAR(1)

This table is to be transmitted to HQMTMC only when a shipment gets scored. Updates to any of the WHIST-MOD columns need to be sent to HQMTMC. Note that the existing transmission table (DTGBL\_SHIPMENT\_EVALUATION\_XMT) cannot be used here because

- 1) the DTGBL\_SHIPMENT\_EVALUATION\_XMT table is sent between TOPS sites regardless of the existence of shipment scores, and
- 2) there are only two columns in the existing transmission table that can be used by WHIST-MOD.

**Table Name: DTGBL\_SHIPMENT\_INSPECTION\_XMT**

>GBL_NUMBER	NOT NULL CHAR(9)
>INSPECTION_AT_ORIGIN_OR_DEST	NOT NULL CHAR(1)
>TELECOMM_DEST_GBLOC	NOT NULL CHAR(4)
INSPECTION_DATE	DATE
>INSPECTION_ITEM_4	CHAR(1)
>INSPECTION_ITEM_5	CHAR(1)
>INSPECTION_ITEM_7	CHAR(1)
>INSPECTION_ITEM_10	CHAR(1)
>INSPECTION_ITEM_11	CHAR(1)
>INSPECTION_ITEM_13	CHAR(1)
>INSPECTION_ITEM_14	CHAR(1)
>INSPECTION_ITEM_15	CHAR(1)
>INSPECTION_ITEM_16	CHAR(1)
>INSPECTION_ITEM_17	CHAR(1)
>INSPECTION_ITEM_18	CHAR(1)
>INSPECTION_ITEM_19	CHAR(1)
ADDL_VIOLATION_IN_REMARKS	CHAR(1)
INSPECTION_REMARKS	CHAR(240)
INSPECTOR_NAME	CHAR(15)
>INSPECTION_COMPLETE	CHAR(1)

This table is to be transmitted to HQMTMC whenever an inspection is completed at the origin or destination of the shipment. If inspections have been performed both at origin and destination, only one record needs to be transmitted to HQMTMC. Also, all updates to the WHIST-MOD columns should be sent to HQMTMC.

**Table Name: + DTGBL\_SHIP\_INSPECTION\_MTMC\_XMT**

GBL_NUMBER	NOT NULL CHAR(9)
INSPECTION_AT_ORIGIN_OR_DEST	NOT NULL CHAR(1)
TELECOMM_DEST_GBLOC	NOT NULL CHAR(4)
INSPECTION_ITEM_1	CHAR(1)
INSPECTION_ITEM_2	CHAR(1)
INSPECTION_ITEM_3	CHAR(1)
INSPECTION_ITEM_6	CHAR(1)
INSPECTION_ITEM_8	CHAR(1)
INSPECTION_ITEM_9	CHAR(1)
INSPECTION_ITEM_12	CHAR(1)

This table is to be transmitted to HQMTMC initially when the corresponding TOPS transmission table (DTGBL\_SHIPMENT\_INSPECTION\_XMT) is first sent to HQMTMC. Thereafter this table is sent to HQMTMC if there are any updates to the columns.

Note that this table and the DTGBL\_SHIPMENT\_INSPECTION\_XMT table exist as a pair. If a new record is inserted in the DTGBL\_SHIPMENT\_INSPECTION\_XMT table, a corresponding record should be inserted in this table as well.

**Table Name: MEMBER ORDERS XMT**

>MEMBER_SOCIAL_SECURITY_NUMBER	NOT NULL CHAR(11)
>ORDERS_NUMBER	NOT NULL CHAR(10)
>TELECOMM_DEST_GBLOC	NOT NULL CHAR(4)
ORDERS_DATE	DATE
ORDERS_PARAGRAPH_NUMBER	CHAR(3)
MEMBER_LAST_NAME	CHAR(17)
MEMBER_FIRST_NAME	CHAR(15)
MEMBER_MIDDLE_NAME_OR_INITIAL	CHAR(15)
>MEMBER_BRANCH_OF_SERVICE	CHAR(1)
>MEMBER_PAY_GRADE	CHAR(4)
MEMBER_RANK	CHAR(5)
MEMBER_NAVY_RANK_RATE_CODE	CHAR(4)
MEMBER_OVER_2_YEARS_SERVICE	CHAR(1)
>NUMBER_OF_DEPENDENTS_UNDER_12	NUMBER(2)
>NUMBER_OF_DEPN_12_AND_OVER	NUMBER(2)
>TYPE_OF_ORDERS	CHAR(3)
APPROXIMATE_REPORTING_DATE	DATE
ORDERS_ISSUING_HEADQUARTERS	CHAR(36)
NEW_DUTY_STATION	CHAR(36)
UNIT_GAINING_MEMBER	CHAR(36)
MBR_DEST_DUTY_PHONE_NUMBER	CHAR(12)
MBR_DEST_CONTACT_PHONE_NUMBER	CHAR(12)
DESTINATION_SPONSOR_NAME	CHAR(30)
DESTINATION_SPONSOR_PHONE	CHAR(12)
MBR_DEST_CONTACT_STREET	CHAR(49)
MBR_DEST_CONTACT_CITY	CHAR(25)
MBR_DEST_CONTACT_STATE	CHAR(2)
MBR_DEST_CONTACT_ZIP_APO_FPO	CHAR(17)
MBR_DEST_CONTACT_COUNTRY	CHAR(20)
MBR_INTRANSIT_CONTACT_PHONE	CHAR(12)
MBR_INTRANSIT_CONTACT_STREET	CHAR(49)
MBR_INTRANSIT_CONTACT_CITY	CHAR(25)
MBR_INTRANSIT_CONTACT_STATE	CHAR(2)

MBR_INTRANSIT_ZIP_APO_FPO	CHAR(17)
MBR_INTRANSIT_CONTACT_COUNTRY	CHAR(20)
MBR_INTRANSIT_CARE_OF_NAME	CHAR(30)
ACCOUNTING_CLASSIFICATION	CHAR(55)
MOVEMENT_DESIGNATOR_CODE	CHAR(4)
TRANSPORTATION_ACCOUNT_CODE	CHAR(4)
NAVY_NMF_CODE	CHAR(4)
MEMBER_FISCAL_YEAR_OF_DETACH	NUMBER(1)
RETIREMENT_SEPARATION_DATE	DATE
MEMBER_IN_PAY_STATUS_AT_DEST	CHAR(1)
FULL_JTR_TABULAR_WEIGHT_PCS	NUMBER(5)
FULL_JTR_TABULAR_WEIGHT_TDY	NUMBER(5)
>JOINT_MOVE_SPOUSE_IN_SERVICE	CHAR(1)
>COMBINED_MOVE_SPOUSE_IN_SERV	CHAR(1)
ORDERS_AMENDED	CHAR(1)
>MEMBER_MOVING_TO_GOVT_HOUSING	CHAR(1)
MEMBER_UB_TABULAR_WEIGHT	NUMBER(4)

This table is to be transmitted to HQMTMC initially whenever the first shipment of this order is originally sent to HQMTMC. Thereafter this table is sent to HQMTMC if there are any updates to the WHIST-MOD columns.

**Table Name: MOBILE HOME SHIPMENT\_XMT**

>MEMBER_SOCIAL_SECURITY_NUMBER	NOT NULL CHAR(11)
>ORDERS_NUMBER	NOT NULL CHAR(10)
>SHIPMENT_NUMBER	NOT NULL NUMBER(2)
>TELECOMM_DEST_GBLOC	NOT NULL CHAR(4)
MOBILE_HOME_MAKE	CHAR(20)
MOBILE_HOME_MODEL	CHAR(15)
>MOBILE_HOME_YEAR	NUMBER(2)
MOBILE_HOME_SERIAL_NUMBER	CHAR(20)
MH_SECOND_SERIAL_NUMBER	CHAR(20)
MH_THIRD_SERIAL_NUMBER	CHAR(20)
MOBILE_HOME_HEIGHT	NUMBER(4)
>MOBILE_HOME_LENGTH	NUMBER(4)
>MOBILE_HOME_WIDTH	NUMBER(4)
>MH_HHG_PACKING	CHAR(1)
>MH_UNBLOCKING	CHAR(1)
>MH_REBLOCKING	CHAR(1)
>MOBILE_HOME_TYPE	CHAR(1)
>MH_STORAGE_AT_ORIGIN	CHAR(1)
>MH_STORAGE_AT_DESTINATION	CHAR(1)
>IS_MOBILE_HOME_EXPANDABLE	CHAR(1)
MOBILE_HOME_EXPANDO_DESC	CHAR(40)

This table is to be transmitted to HQMTMC initially whenever rates for the mobile home one-time-only shipment are requested or when the mobile home shipment is picked up. Thereafter this table is sent to HQMTMC if there are any updates to the WHIST-MOD columns.

**Table Name: SHIPMENT\_XMT**

>MEMBER_SOCIAL_SECURITY_NUMBER	NOT NULL CHAR(11)
>ORDERS_NUMBER	NOT NULL CHAR(10)
>SHIPMENT_NUMBER	NOT NULL NUMBER(2)
>TELECOMM_DEST_GBLOC	NOT NULL CHAR(4)
>TYPE_OF_SHIPMENT	CHAR(3)
>METHOD_OF_SHIPMENT	CHAR(6)
>SPECIAL_SHIPMENT_CIRCUMSTANCE	CHAR(4)
SHIPMENT_CONTAINS_FIREARMS	CHAR(1)
ESTIMATED_WEIGHT	NUMBER(5)
ESTIMATED_PRO_GEAR_WEIGHT	NUMBER(5)
>ORIGIN_GROSS_WEIGHT	NUMBER(5)
>ORIGIN_NET_WEIGHT	NUMBER(5)
>ORIGIN_WEIGHT_WITNESSED	CHAR(1)
>SHIPMENT_CUBE	NUMBER(6,1)
>NUMBER_OF_PIECES_IN_SHIPMENT	NUMBER(2)
PARTIAL_DELIVERY_REQUESTED	CHAR(1)
SIT_TEMP_STG_AUTH_AT_DEST	CHAR(1)
DAYS_SIT_TEMP_STG_AUTHORIZED	NUMBER(3)
>ORIGIN_GBLOC	CHAR(4)
>DESTINATION_GBLOC	CHAR(4)
AUTHORIZED_DESTINATION_COUNTY	CHAR(22)
AUTHORIZED_DESTINATION_STATE	CHAR(2)
AUTHORIZED_DESTINATION_COUNTRY	CHAR(20)
DD1299_PREPARING_INSTALLATION	CHAR(36)
DD1299_BLOCK13_REMARKS	CHAR(150)
EXCESS_COSTS_EXIST	CHAR(1)
EXCESS_COST_TO_PRECOLLECT	NUMBER(7,2)
EXCESS_COST_PRECOLLECTED	NUMBER(7,2)
>MBR_REQUESTED_PICKUP_DATE	DATE
>MBR_REQUESTED_DELIVERY_DATE	DATE
>DIRECT_DELIVERY_REQUESTED	CHAR(1)
>REQUIRED_DELIVERY_DATE	DATE
INSPECTION_REQUESTED_AT_DEST	CHAR(1)
REWEIGH_REQUESTED_AT_DEST	CHAR(1)
>PICKUP_COUNTY	CHAR(22)
>PICKUP_ADDRESS_STATE	CHAR(2)
>PICKUP_ADDRESS_ZIP_APO_FPO	CHAR(17)
>PICKUP_COUNTRY	CHAR(20)
DELIVERY_ADDRESS_STREET	CHAR(49)

>DELIVERY_ADDRESS_CITY	CHAR(25)
>DELIVERY_COUNTY	CHAR(22)
>DELIVERY_ADDRESS_STATE	CHAR(2)
>DELIVERY_ADDRESS_ZIP_APO_FPO	CHAR(17)
DELIVERY_DESIG_AGENT_NAME	CHAR(30)
DELIVERY_DESIG_AGENT_RELATN	CHAR(14)
DELIVERY_DESIG_AGENT_PHONE	CHAR(12)
ADDL_DELIVERY_ADDR_STREET	CHAR(49)
>ADDL_DELIVERY_ADDR_CITY	CHAR(25)
>ADDL_DELIVERY_COUNTY	CHAR(22)
>ADDL_DELIVERY_ADDR_STATE	CHAR(2)
>ADDL_DELIVERY_ADDR_ZIP_APO_FPO	CHAR(17)
ADDL_DEL_DESIG_AGENT_NAME	CHAR(30)
ADDL_DEL_DESIG_AGENT_RELATN	CHAR(14)
ADDL_DEL_DESIG_AGENT_PHONE	CHAR(12)
>ACTUAL_PRO_GEAR_WEIGHT	NUMBER(5)
>ORIGIN_TARE_WEIGHT	NUMBER(5)
DAYS_SIT_TEMP_STG_USED_ORIGIN	NUMBER(3)
SHIPMENT_CONTAINS_POV	CHAR(1)
SHIPMENT_CONTAINS_MOTORCYCLE	CHAR(1)
POV_MAKE	CHAR(10)
POV_YEAR	NUMBER(2)
POV_IDENTIFICATION_NUMBER	CHAR(20)
POV_LICENSE_NUMBER	CHAR(10)
POV_LICENSE_STATE_OF_ISSUE	CHAR(2)
>PARCEL_SERVICE_METHOD	CHAR(8)
PARCEL_SERVICE_DATE_SENT	DATE
PARCEL_REGISTERED_CERT_NUMBER	CHAR(20)
>CODE_OF_SERVICE	CHAR(2)
>CARRIER_CODE	CHAR(4)
>GBL_NUMBER	CHAR(9)
TRANSPORTATION_CONTROL_NUMBER	CHAR(17)
AUTHORIZED_DESTINATION_CITY	CHAR(25)
IS_POV_DRIVABLE	CHAR(1)
POV_MODEL	CHAR(15)
DELIVERY_ADDRESS_PHONE_NUMBER	CHAR(12)
ADDL_DELIVERY_ADDR_PHONE	CHAR(12)
EXCESS_COST_ESTIMATE	NUMBER(7)
>PICKUP_ADDRESS_CITY	CHAR(25)
DPM_CONTRACTOR_CODE	CHAR(5)
>SHIPMENT_STATUS_CODE	CHAR(2)
SHIPMENT_STATUS_DATE	DATE
>AUTHORIZED_WEIGHT	NUMBER(5)
PARCEL_CONSIGNED_TO_DEST_ITO	CHAR(1)

>SHIPMENT_OUT_OF_NTS	CHAR(1)
SHIPMT_ACCOUNT_CLASSIFICATION	CHAR(55)
REQUESTED_DISTANCE	NUMBER(4)
MEMBER_REQUESTED_PACK_DATE	DATE
>DESTINATION_RATE_AREA	CHAR(9)

This table is to be transmitted to HQMTMC initially whenever the shipment has been picked up, cleared, stored, delivered, or completed. Thereafter this table is sent to HQMTMC if there are any updates to the WHIST-MOD columns.

**Table Name: + SHIPMENT MTMC XMT**

MEMBER_SOCIAL_SECURITY_NUMBER	NOT NULL CHAR(11)
ORDERS_NUMBER	NOT NULL CHAR(10)
SHIPMENT_NUMBER	NOT NULL NUMBER(2)
TELECOMM_DEST_GBLOC	NOT NULL CHAR(4)
ADDL_DELIVERY_COUNTRY	CHAR(20)
ADDL_PICKUP_ADDR_CITY	CHAR(25)
ADDL_PICKUP_ADDR_STATE	CHAR(2)
ADDL_PICKUP_ADDR_ZIP_APO_FPO	CHAR(17)
ADDL_PICKUP_COUNTRY	CHAR(20)
ADDL_PICKUP_COUNTY	CHAR(22)
CONSOLIDATED_SHIPMENT_NUMBER	CHAR(5)
DATE_SHIPMENT_PICKED_UP	DATE
DATE_COMPLETE_SHIPMENT_ARRIVED	DATE
DECLARED_VALUATION_AMOUNT	NUMBER(7,2)
DELIVERY_COUNTRY	CHAR(20)
DEPLOYMENT_MOVE_NUMBER	CHAR(5)
DTGBL_ORIGIN_ZONE	CHAR(2)
GOCS_ORDERED	CHAR(1)
LOCAL_MOVE_INDICATOR	CHAR(1)
NUMBER_OF_SPLIT_PORTIONS	NUMBER(1)
RELEASED_VALUATION_OPTION	CHAR(7)
ONE_TIME_ONLY_INDICATOR	CHAR(1)
ORIGIN_RATE_AREA	CHAR(9)
PORT_OF_DEBARKATION	CHAR(3)
PORT_OF_EMBARKATION	CHAR(3)
SPLIT_SHIPMENT_INDICATOR	CHAR(1)
VOLUME_MOVE_NUMBER	CHAR(5)

This table is to be transmitted to HQMTMC whenever the corresponding TOPS transmission table (SHIPMENT\_XMT) is sent to HQMTMC (i.e., when a shipment is picked up, cleared, stored, delivered, or completed). Thereafter this table is sent to HQMTMC if there are any updates to the WHIST-MOD columns.

**Table Name: + SHIPMENT REWEIGH MTMC XMT**

MEMBER_SOCIAL_SECURITY_NUMBER	NOT NULL CHAR(11)
ORDERS_NUMBER	NOT NULL CHAR(10)
SHIPMENT_NUMBER	NOT NULL NUMBER(2)
TELECOMM_DEST_GBLOC	NOT NULL CHAR(4)
REWEIGH_COMPLETE	CHAR(1)
REWEIGH_GROSS_WEIGHT	NUMBER(5)
REWEIGH_NET_WEIGHT	NUMBER(5)
REWEIGH_TARE_WEIGHT	NUMBER(5)
REWEIGH_WITNESSED	CHAR(1)

This table is to be transmitted to HQMTMC initially when the reweigh of the whole shipment has been completed. Thereafter this table is sent to HQMTMC if there are any updates to the WHIST-MOD columns.

Note that this is a summary table. In other words, each of the reweigh weight columns (REWEIGH\_GROSS\_WEIGHT, REWEIGH\_NET\_WEIGHT, REWEIGH\_TARE\_WEIGHT) is the sum of the reweigh weights for all the portions of the shipment if it is a split shipment. For example, if there are two split portions for the shipment, REWEIGH\_GROSS\_WEIGHT will be the sum of the REWEIGH\_GROSS\_WEIGHT of split portion #1 and REWEIGH\_GROSS\_WEIGHT of split portion #2. REWEIGH WITNESSED is set to 'Y' only if reweighs of all the split portions have been witnessed.

**Table Name: + SHIPMENT SIT MTMC XMT**

MEMBER_SOCIAL_SECURITY_NUMBER	NOT NULL CHAR(11)
ORDERS_NUMBER	NOT NULL CHAR(10)
SHIPMENT_NUMBER	NOT NULL NUMBER(2)
TELECOMM_ORIGIN_GBLOC	NOT NULL CHAR(4)
TELECOMM_DEST_GBLOC	NOT NULL CHAR(4)
SPLIT_PORTION_NUMBER	NOT NULL NUMBER(1)
DATE_PLACED_IN_STORAGE	DATE
DATE_REMOVED_FROM_STORAGE	DATE
STG_EXTENSION_EXPIRATION_DATE	DATE
STORAGE_EXPIRATION_DATE	DATE

This table is to be transmitted to HQMTMC initially if a shipment has been picked up and placed in storage. Thereafter this table is sent to HQMTMC whenever there are updates to the WHIST-MOD columns.

Since the reports generated from these data will be based on shipment summary level, data on split portions are too different to aggregate. Therefore, the records will not be sent to HQMTMC if there are split portions involved. In other words, SPLIT\_PORTION\_NUMBER should be zero for those records to be transmitted to HQMTMC.

Table Name: + VOID\_GBL\_NUMBER\_MTMC\_XMT

GBL_NUMBER	NOT NULL CHAR(9)
TELECOMM_DEST_GBLOC	NOT NULL CHAR(4)
CARRIER_CODE	CHAR(4)
CODE_OF_SERVICE	CHAR(2)
DATE_GBL_NUMBER_VOIDED	DATE
MEMBER_SOCIAL_SECURITY_NUMBER	CHAR(11)
ORDERS_NUMBER	CHAR(10)
ORIGINAL_PICKUP_DATE	DATE
SHIPMENT_NUMBER	NUMBER(2)

This table is to be transmitted to HQMTMC initially when a GBL is voided due to turn/pull back with poor reason within five days of the RDD. Thereafter this table is sent to HQMTMC if there are any updates to the WHIST-MOD columns.

Table Name: + NTS\_SHIPMENT\_MTMC\_XMT

MEMBER_SOCIAL_SECURITY_NUMBER	NOT NULL CHAR(11)
ORDERS_NUMBER	NOT NULL CHAR(10)
SHIPMENT_NUMBER	NOT NULL NUMBER(2)
TELECOMM_ORIGIN_GBLOC	NOT NULL CHAR(4)
TELECOMM_DEST_GBLOC	NOT NULL CHAR(4)
NTS_CONTRACTOR_CODE	CHAR(4)
NTS_LOT_NUMBER	CHAR(6)
NTS_SERVICE_ORDER_NUMBER	CHAR(13)
STORAGE_FACILITY_ID	CHAR(4)

This table is to be transmitted to HQMTMC monthly when there is a handle-in invoice printed for an NTS shipment. Thereafter a record is resent to HQMTMC in the following month if there are any updates to the WHIST-MOD columns.

**Table Name: + NTS TRANSACTION MTMC XMT**

NTS_SERVICE_ORDER_NUMBER	NOT NULL CHAR(13)
NTS_TRANSACTION_NUMBER	NOT NULL NUMBER(2)
TELECOMM_ORIGIN_GBLOC	NOT NULL CHAR(4)
TELECOMM_DEST_GBLOC	NOT NULL CHAR(4)
DATE_NTS_INVOICE_PRINTED	DATE
DATE_NTS_TRANSACTION_PERFORMED	DATE
NTS_DRAYAGE_REQUIRED	CHAR(1)
NTS_HANDLING_IN_REQUIRED	CHAR(1)
NTS_PACKING_REQUIRED	CHAR(1)
NTS_REHANDLING_REQUIRED	CHAR(1)
NTS_SPECIAL_TRANSACTION_CODE	CHAR(2)
NTS_TYPE_OF_TRANSACTION	CHAR(2)
NTS_UNPACKING_REQUIRED	CHAR(1)
NTS_WEIGHT	NUMBER(9)

This table is to be transmitted to HQMTMC monthly when there is an NTS transaction of handle-in or complete/partial removal and the transaction invoice has been issued. Thereafter a record is resent to HQMTMC in the following month if there are any updates to the WHIST-MOD columns. (Refer to the requirements matrix in Section 3.4.1 for detailed description of the columns.)

**Table Name: + NTS QTRLY INVOICE MTMC XMT**

NTS_SERVICE_ORDER_NUMBER	NOT NULL CHAR (13)
DATE_NTS_INVOICE_PRINTED	NOT NULL DATE
TYPE_OF_NTS_INVOICE	NOT NULL CHAR(2)
TELECOMM_ORIGIN_GBLOC	NOT NULL CHAR(4)
TELECOMM_DEST_GBLOC	NOT NULL CHAR(4)
NTS_COST	NUMBER(9,2)

This table is to be transmitted to HQMTMC quarterly when all invoices (handle-in invoices, removal invoices, and quarterly storage invoices) have been issued. (Refer to the requirements matrix in Section 3.4.1 for detailed description of the columns.)

**Table Name: + NTS\_QTRLY\_WT\_FORWARD\_MTMC\_XMT**

NTS_SERVICE_ORDER_NUMBER	NOT NULL CHAR(13)
DATE_THIS_RECORD_ENTERED	NOT NULL DATE
TELECOMM_ORIGIN_GBLOC	NOT NULL CHAR(4)
TELECOMM_DEST_GBLOC	NOT NULL CHAR(4)
CURRENT_NTS_STORED_WT	NUMBER(9)

This table is to be transmitted to HQMTMC quarterly at the end of day processing when the CURRENT\_NTS\_STORED\_WT in the TOPS' NTS\_SHIPMENT table is greater than zero. A non-zero CURRENT\_NTS\_STORED\_WT column indicates that there is an NTS shipment brought forward from a previous quarter. (Refer to the requirements matrix in Section 3.4.1 for detailed description of the columns.)

### 3.4.3 Part 3: Data Requirements for ITGBL Shipments

This part specifies the data elements and transmission tables required to transmit ITGBL shipment data to WHIST-MOD. This specification is based on the original design of TOPS ITGBL shipment processing as of January 1, 1989. The list of data elements and their associated TOPS tables are given, followed by the description of the transmission tables needed for TOPS and/or TOPS Switcher.

Because WHIST-MOD will interface with TOPS through the TOPS Switcher system, all items preceded with the symbol '\*\*' will indicate possible modifications to TOPS and/or TOPS Switcher.

An asterisk '\*\*' in front of the column name indicates that the data element was not identified as passing through TOPS Switcher as of January 1, 1989.

An asterisk '\*\*' in front of a table name indicates that the column in that table was not identified as passing through TOPS Switcher as of January 1, 1989.

Codes for the frequency and the conditions of transmission are:

- D - daily transmission (whenever there are inserts or updates),
- D.1 - daily when shipment status code in TOPS = 'PU', 'CL', 'ST', 'DL' or 'CM',
- D.2 - daily when the first shipment of the orders gets picked up,
- D.3 - daily when a reweigh of the complete shipment (including all split portions) is done,
- D.4 - daily when a shipment gets scored,
- D.5 - daily when a GBL is voided due to turn/pull back with poor reason within five days of the RDD,
- D.6 - daily when a shipment inspection (either at origin or at destination) is complete, and
- D.7 - daily when a QA action has been issued/cancelled by an ITO.

## 3.4.3.1 List of Data Elements Needed for ITGBL Shipments

<u>Element</u>	<u>Format</u>	<u>Tables</u>	<u>Frequency/ Conditions</u>
*CARRIER_CODE	CHAR (4)	*ITGBL_SHIPMENT_EVALUATION	D.4
*CODE_OF_SERVICE	CHAR (2)	*ITGBL_SHIPMENT_EVALUATION	D.4
*DATE_DD1780_PRODUCED	DATE	*ITGBL_SHIPMENT_EVALUATION	D.4
DATE_QA_ACTION_CANCELLED	DATE	ITGBL_QA_ACTION_LOG	D.7
ESTIMATED_LOSS_DAMAGE_AMT	NUMBER (5)	ITGBL_SHIPMENT_EVALUATION	D.4
GBL_NUMBER	CHAR (9)	ITGBL_SHIPMENT_EVALUATION ITGBL_SHIPMENT_INSPECTION	D.4 D.6
INSPECTION_AT_ORIGIN_OR_DEST	CHAR (1)	ITGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_COMPLETE	CHAR (1)	ITGBL_SHIPMENT_INSPECTION	D.6
*INSPECTION_ITEM_A	CHAR (1)	*ITGBL_SHIPMENT_INSPECTION	D.6
*INSPECTION_ITEM_B	CHAR (1)	*ITGBL_SHIPMENT_INSPECTION	D.6
*INSPECTION_ITEM_C	CHAR (1)	*ITGBL_SHIPMENT_INSPECTION	D.6
*INSPECTION_ITEM_D	CHAR (1)	*ITGBL_SHIPMENT_INSPECTION	D.6

---

D - Daily transmission (whenever there are inserts or updates)

4 - When a shipment gets scored

6 - When a shipment inspection (either at origin or at destination) is complete

7 - When a QA action has been issued/cancelled by an ITO

INSPECTION_ITEM_E	CHAR (1)	ITGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_F	CHAR (1)	ITGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_G	CHAR (1)	ITGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_H	CHAR (1)	ITGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_I	CHAR (1)	ITGBL_SHIPMENT_INSPECTION	D.6
*INSPECTION_ITEM_J	CHAR (1)	*ITGBL_SHIPMENT_INSPECTION	D.6
*INSPECTION_ITEM_K	CHAR (1)	*ITGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_L	CHAR (1)	ITGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_M	CHAR (1)	ITGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_N	CHAR (1)	ITGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_O	CHAR (1)	ITGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_P	CHAR (1)	ITGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_Q	CHAR (1)	ITGBL_SHIPMENT_INSPECTION	D.6

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D - Daily transmission (whenever there are inserts or updates)

4 - When a shipment gets scored

6 - When a shipment inspection (either at origin or at destination) is complete

7 - When a QA action has been issued/cancelled by an ITO

INSPECTION_ITEM_R	CHAR (1)	ITGBL_SHIPMENT_INSPECTION	D.6
*INSPECTION_ITEM_S	CHAR (1)	*ITGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_T	CHAR (1)	ITGBL_SHIPMENT_INSPECTION	D.6
*INSPECTION_ITEM_U	CHAR (1)	*ITGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_V	CHAR (1)	ITGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_W	CHAR (1)	ITGBL_SHIPMENT_INSPECTION	D.6
INSPECTION_ITEM_X	CHAR (1)	ITGBL_SHIPMENT_INSPECTION	D.6
*INSPECTION_ITEM_Y	CHAR (1)	*ITGBL_SHIPMENT_INSPECTION	D.6
LOSS_DAMAGE_TYPE	CHAR (1)	ITGBL_SHIPMENT_EVALUATION	D.4
*MISSED_PICKUP_DATE	CHAR (1)	*ITGBL_SHIPMENT_EVALUATION	D.4
*ORIGIN_RATE_AREA	CHAR (9)	*ITGBL_SHIPMENT_EVALUATION	D.4
QA_ACTION_CODE	CHAR (2)	ITGBL_QA_ACTION_LOG	D.7
QA_ACTION_EFFECTIVE_DATE	DATE	ITGBL_QA_ACTION_LOG	D.7

---

D - Daily transmission (whenever there are inserts or updates)  
4 - When a shipment gets scored  
6 - When a shipment inspection (either at origin or at destination) is complete  
7 - When a QA action has been issued/cancelled by an ITO

QA_ACTION_END_DATE	DATE	ITGBL_QA_ACTION_LOG	D.7
QA_ACTION_INITIATED_BY	CHAR (4)	ITGBL_QA_ACTION_LOG	D.7
QA_ACTION_LENGTH	NUMBER (3)	ITGBL_QA_ACTION_LOG	D.7
QA_ACTION_SEQUENCE_ID	NUMBER (2)	ITGBL_QA_ACTION_LOG	D.7
REASON_ACTION_NOT_TAKEN	CHAR (150)	ITGBL_QA_ACTION_LOG	D.7
*SHIPMENT_SCORE	NUMBER (3)	*ITGBL_SHIPMENT_EVALUATION	D.4
*SHIPMENT_UNDER_APPEAL	CHAR (1)	*ITGBL_SHIPMENT_EVALUATION	D.4
SUSPENSION_REGULAR_OR_IMMED	CHAR (1)	ITGBL_QA_ACTION_LOG	D.7
*WARNING_ISSUED	CHAR (1)	*ITGBL_SHIPMENT_EVALUATION	D.4

---

D - Daily transmission (whenever there are inserts or updates)  
4 - When a shipment gets scored  
6 - When a shipment inspection (either at origin or at destination) is complete  
7 - When a QA action has been issued/cancelled by an ITO

### 3.4.3.2 Description of the Transmission Tables for ITGBL Shipments

This section contains descriptions of two types of transmission tables:

- TOPS transmission tables (based on the original design of TOPS ITGBL shipment processing as of January 1, 1989), and
- new WHIST-MOD-only transmission tables.

Following the description of each table structure, the conditions and frequency under which a table must be transmitted to WHIST-MOD are given.

A plus sign ('+') inserted in front of a table name indicates that the table must be created for WHIST-MOD transmission only. Tables that are named with suffix '\_MTMC\_XMT' are required to transmit WHIST-MOD data, so no changes need to be made to the structures of the existing TOPS transmission tables.

A '>' sign inserted in front of a column indicates that the column in the existing TOPS transmission table is needed by WHIST-MOD. Hence, those transmission tables with '>' signs are required to be transmitted to HQMTMC at the frequency and conditions specified for WHIST-MOD.

**Table Name: + ITGBL QA ACTION LOG XMT**

>ORIGIN_RATE_AREA	NOT NULL CHAR(9)
>CARRIER_CODE	NOT NULL CHAR(4)
>DESTINATION_RATE_AREA	NOT NULL CHAR(9)
>CODE_OF_SERVICE	NOT NULL CHAR(2)
>QA_ACTION_CODE	NOT NULL CHAR(2)
>QA_ACTION_EFFECTIVE_DATE	NOT NULL DATE
>QA_ACTION_SEQUENCE_ID	NOT NULL NUMBER(2)
>TELECOMM_DEST_GBLOC	NOT NULL CHAR(4)
>QA_ACTION_END_DATE	DATE
>QA_ACTION_LENGTH	NUMBER(3)
>QA_ACTION_INITIATED_BY	CHAR(4)
QA_ACTION_REMARKS	CHAR(150)
VIOLATION_CORRECTED	CHAR(1)
REINSTATEMENT_DATE	DATE
PENALTY_TONNAGE	NUMBER(6)

REINSTATE_AT_ORIG_OR_HIGH_TON	CHAR(2)
>REASON_ACTION_NOT_TAKEN	CHAR(150)
>DATE_QA_ACTION_CANCELLED	DATE
DATE_POSTED_TO_TDR	DATE
>SUSPENSION_REGULAR_OR_IMMED	CHAR(1)
>GBL_NUMBER	CHAR(9)
TOS_PARAGRAPH_1	CHAR(9)
TOS_PARAGRAPH_2	CHAR(9)
TOS_PARAGRAPH_3	CHAR(9)
TOS_PARAGRAPH_4	CHAR(9)
CHANGE_STATUS	CHAR(1)

This table is to be transmitted to HQMTMC whenever there are updates to the corresponding TOPS columns. The initial transmission occurs when there is a QA action issued by an ITO.

**Table Name: + ITGBL\_SHIP\_EVALUATION\_MTMC\_XMT**

GBL_NUMBER	NOT NULL CHAR(9)
TELECOMM_DEST_GBLOC	NOT NULL CHAR(4)
CARRIER_CODE	CHAR(4)
CODE_OF_SERVICE	CHAR(2)
DATE_DD1780_PRODUCED	DATE
ESTIMATED_LOSS_DAMAGE_AMT	NUMBER(5)
LOSS_DAMAGE_TYPE	CHAR(1)
MISSED_PICKUP_DATE	CHAR(1)
ORIGIN_RATE_AREA	CHAR(9)
SHIPMENT_SCORE	NUMBER(3)
SHIPMENT_UNDER_APPEAL	CHAR(1)
WARNING_ISSUED	CHAR(1)

This table is to be transmitted to HQMTMC only when a shipment gets scored. Updates to any of the WHIST-MOD columns need to be sent to HQMTMC. Note that the existing transmission table (ITGBL\_SHIPMENT\_EVALUATION\_XMT) cannot be used here because:

- 1) the ITGBL\_SHIPMENT\_EVALUATION\_XMT table is sent between TOPS sites regardless of the existence of shipment scores, and
- 2) there are only two columns in the existing transmission table that can be used by WHIST-MOD.

**Table Name: ITGBL SHIPMENT INSPECTION XMT**

>GBL_NUMBER	NOT NULL CHAR(9)
>INSPECTION_AT_ORIGIN_OR_DEST	NOT NULL CHAR(1)
>TELECOMM_DEST_GBLOC	NOT NULL CHAR(4)
INSPECTION_DATE	DATE
>INSPECTION_ITEM_E	CHAR(1)
>INSPECTION_ITEM_F	CHAR(1)
>INSPECTION_ITEM_G	CHAR(1)
>INSPECTION_ITEM_H	CHAR(1)
>INSPECTION_ITEM_I	CHAR(1)
>INSPECTION_ITEM_L	CHAR(1)
>INSPECTION_ITEM_M	CHAR(1)
>INSPECTION_ITEM_N	CHAR(1)
>INSPECTION_ITEM_O	CHAR(1)
>INSPECTION_ITEM_P	CHAR(1)
>INSPECTION_ITEM_Q	CHAR(1)
>INSPECTION_ITEM_R	CHAR(1)
>INSPECTION_ITEM_T	CHAR(1)
>INSPECTION_ITEM_V	CHAR(1)
>INSPECTION_ITEM_W	CHAR(1)
>INSPECTION_ITEM_X	CHAR(1)
ADDL_VIOLATION_IN_REMARKS	CHAR(1)
INSPECTION_REMARKS	CHAR(240)
INSPECTOR_NAME	CHAR(15)
>INSPECTION_COMPLETE	CHAR(1)

This table is to be transmitted to HQMTMC whenever an inspection is completed at the origin or destination of the shipment. If inspections have been performed both at origin and destination, only one record needs to be transmitted to HQMTMC. Also, all updates to the WHIST-MOD columns should be sent to HQMTMC.

**Table Name: + ITGBL\_SHIP\_INSPECTION\_MTMC\_XMT**

GBL_NUMBER	NOT NULL CHAR(9)
INSPECTION_AT_ORIGIN_OR_DEST	NOT NULL CHAR(1)
TELECOMM_DEST_GBLOC	NOT NULL CHAR(4)
INSPECTION_ITEM_A	CHAR(1)
INSPECTION_ITEM_B	CHAR(1)
INSPECTION_ITEM_C	CHAR(1)
INSPECTION_ITEM_D	CHAR(1)
INSPECTION_ITEM_J	CHAR(1)
INSPECTION_ITEM_K	CHAR(1)
INSPECTION_ITEM_S	CHAR(1)
INSPECTION_ITEM_U	CHAR(1)
INSPECTION_ITEM_Y	CHAR(1)

This table is to be transmitted to HQMTMC initially when the corresponding TOPS transmission table (ITGBL\_SHIPMENT\_INSPECTION\_XMT) is first sent to HQMTMC. Thereafter this table is sent to HQMTMC if there are any updates for the columns.

Note that this table and the ITGBL\_SHIPMENT\_INSPECTION\_XMT table exist as a pair. If a new record is inserted in the ITGBL\_SHIPMENT\_INSPECTION\_XMT table, a corresponding record should be inserted in this table as well.

#### 4. CONCLUSION

The case study presented in the previous section shows an implementation of the proposed design of the specifications of external data requirements. It uses the matrix representation for the data requirements, describing specifics such as

- name of data elements local to the source system,
- name of data elements new to the source system,
- description/definition of the new data elements,
- format of data elements (including type and length),
- name of tables/files local to the source system,
- name of tables/files new to the source system,
- description of tables/files new to the source system,
- structure of tables/files new to the source system,
- conditions under which the recipient system requires the data transfer to occur,
- frequency of data transfer to the recipient system,
- procedure of data transfer to the recipient system, and
- indication of possible modifications to the source system.

It also gives detailed specifications for the requirements generated from the interface procedure. The specifications for WHIST-MOD data from TOPS were presented to the information management staff of the TOPS and WHIST-MOD systems. The comments received showed that they understood the requirements and the possible implications called for by the data acquisition process. This response is a good indication of the appropriateness and adequacy of the design. It is recommended that the concept and style proposed in this paper be used as a general guideline for specifying external data requirements for an atomic database.



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