IBM InfoSphere Optim for z/OS
Version 11 Release 3

Move User Manual

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Note
Before using this information and the product it supports, read the information in "Notices" on page 213.

Version 11 Release 3

This edition applies to version 11, release 3 of IBM InfoSphere® Optim for z/OS and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

About this publication

This document explains how to use Move and Optim™ Legacy to extract relational sets of data and move them to destination databases.

Note: In general, when this document refers to Move, it includes the Optim Legacy functions. When this document describes specific Optim Legacy functions, it refers to Optim Legacy rather than Move.

Chapter 1. Introduction

IBM® Optim for z/OS® manages enterprise data throughout every stage of the information life cycle.

Optim enables you to assess, classify, subset, archive, store, and access enterprise application data. Optim uses the relationships defined in the DB2® Catalog, where available, and supplements these relationships with those defined in the Optim Directory. Optim runs as a TSO/ISPF application and incorporates familiar ISPF commands. Optim handles any number of tables and any number of relationships, regardless of the complexity.

Optim helps you achieve these benefits with the following components: Access, Archive, Move, and Compare. You can use these Optim components for test data management, data privacy, data retention, application retirement, and data growth management. This manual describes how to use Move in test data management.

Test Data Management

The Optim test data management capabilities provide an efficient alternative to database cloning, allowing you to create development and testing environments that are sized appropriately.

For information about the test data management functions of Optim, see the *Access User Manual*, the *Compare User Manual*, and this user manual.

Move is a relational facility used to copy or move sets of relationally intact data from multiple source tables to corresponding destination tables. Optim Legacy allows you to perform the same processes, using data in IMS™, Virtual Storage Access Method (VSAM), or sequential files.

Note: In general, when this manual refers to Move, it includes the Optim Legacy functions. When the manual describes specific Optim Legacy functions, it refers to Optim Legacy, rather than Move.

Move is indispensable when

- Creating test data that is a relationally intact subset of existing production data.
- Copying related sets of data to a “work area” where any problems can be resolved. Then, the corrected data can be re-introduced to the production data.
- Migrating subsets of data that require data transformations as part of the migration.

Programmers and database administrators (DBAs) are no longer required to spend hours writing programs to accomplish these tasks. Instead, Move provides an interactive utility to prompt for the necessary information and perform the task.

Since Move runs as a TSO/ISPF application, the Help and Tutorial facility in ISPF are also supported. Menu-driven prompt screens or panels are used to specify which data to obtain and which process to perform. Intelligent screen handling technology provides simultaneous display of multiple tables, pop-up windows, cursor-sensitive online help, and tutorials.

Data Privacy

Data privacy is a licensed function of test data management.

For information about the general test data management functions of Optim, see the *Access User Manual*, the *Compare User Manual*, and this user manual. Data transformations for privacy are accomplished through the use of Optim column maps. For information needed to transform data using a column map, see the *Common Elements Manual*.

Data Retention, Application Retirement, and Data Growth Management

You can use the archiving features in Optim to:

- Isolate historical data from current activity and safely remove it to a secure archive.
- Access archived data easily, using familiar tools and interfaces.
- Restore archived data to its original business context when it requires additional processing.

For information about the archive functions of Optim, see the *Archive User Manual*.

Processing Flow

To copy a set of related data, you define the source of the data and the destination. The source is defined in the Extract Process and the destination in the Insert Process.

Extract Process

An Extract is the process of copying data from one table or a set of related tables to an "Extract File" on disk or tape.

An Extract File is a sequential file that contains the extracted data and information about that data. The supporting information defines the characteristics of the data, and optionally includes the object definitions for that data. (Object definitions are the definitions for tables, keys, indexes, and so forth.) An Extract File can be used repeatedly to create new databases or to refresh existing databases.

To perform an Extract Process, you must specify

- The names of the tables from which data is extracted and the name of the Start Table or the table used as the starting point for the process.
- The relationships between the tables to be used for the extract. By default, all relationships are used.

Note: If an unload program is available, you also can indicate whether it is to be used to extract the data.

To identify or limit the rows to be extracted, you can use

- Selection criteria for any table.
- A list of rows in the Start Table.
- A selection factor and maximum row limit.

Table definitions (DB2 and Legacy) and column definitions are always extracted. You can also extract subordinate definitions as follows:

- Primary Keys
- Relationships
- Indexes
- Views
- Aliases
- Synonyms
- Column Field Procedure Names
- Triggers
- User Defined Types

- User Defined Functions
- Stored Procedures
- Materialized Query Tables

Access Definitions

The information that identifies the data for the Extract Process—table names, relationships, and selection criteria—is stored in an Access Definition, which is copied to the Extract File.

A named Access Definition is available to all components of Optim. You can also define an unnamed, temporary Access Definition to be used for a single Extract Process.

For further information, see the *Common Elements Manual*.

Insert Process

Once an Extract File is created, the data in the file can be inserted into the destination tables. These tables may or may not reside in the DB2 subsystem from which they were extracted.

Table Maps

A Table Map matches source tables to destination tables. Using a Table Map, you can exclude individual tables from processing and map tables with dissimilar names. You can use one or more existing Table Maps (APPLY command) as the basis for a new Table Map, or define the Table Map at the same time you define other specifications for the process.

When the names and attributes of columns in the destination table match those of columns in the source table, Move automatically inserts the data. If the columns do not match, you can use one or more Column Maps to tell Move how to insert the data.

Table Maps are described fully in the *Common Elements Manual*.

Column Maps

A Column Map matches source and destination columns that have different names or attributes. You can also use a Column Map to provide default values, or specify literals, constants, expressions and exit routines used to populate destination columns. Although Move automatically handles many transformations, you can use custom exit routines for more complex processing.

Column Maps are described fully in the *Common Elements Manual*.

Create Object Definitions

Move generates the appropriate SQL DDL statements to create destination tables that do not exist. These tables can be created as part of the Insert or in a separate step and the created tables may be identical to the source tables and columns or you can modify the table definitions.

Other object definitions, such as primary keys, relationships, indexes, etc., that have been extracted with the data can be created by request also.

Insert Processing

You can choose the type of processing for all tables as a group or by table. If you select:

- Insert processing, a row in the Extract File is inserted when it does not already exist at the destination. However, if the row exists, the row to be inserted is discarded.

- Update processing, a row in the Extract File replaces or updates a matching row in the destination. However, a source row that does not match a destination row is not inserted.
- Both Insert and Update processing, new rows are inserted and existing rows are updated.

Other Processes

In addition to Extract and Insert, Move includes the following processes or facilities:

Load Process
To insert large volumes of data, the Extract File can be transformed into a DB2 Load or other load format to be used with a Load Utility. (The Extract File can also be modified to use BMC LOADPLUS.)

Create Process
The object definitions in the Extract File can be used to create any and all objects (tables, primary keys and relationships, indexes, etc.) without inserting source data.

Convert Process
The data in the Extract File can be transformed according to parameters in the Table Map and Column Maps and saved as modified. Conversion is useful for masking source data or creating consistent, refreshable test data. Convert is described fully in the *Common Elements Manual*.

Retry Retry can be executed for one or more rows in the Extract File that cannot be inserted. A row that cannot be processed is marked as discarded. The Retry Process attempts the previous operation for the discarded rows only. Retry is described fully in the *Common Elements Manual*.

Restart
Restart can be executed when a process does not complete successfully. A process may terminate unexpectedly due to resource restrictions, such as space allocation or time limitations.

Using Restart, the process is restarted from the last commit point. Move tracks the most recently committed row in the Extract File and restarts the process with the succeeding row. Restart is described fully in the *Common Elements Manual*.

Browse
The Extract File can be browsed. Browsing is useful for reviewing the error status of individual rows or for verifying the data in an Extract File. Browse is described fully in the *Common Elements Manual*.

Delete If your site is licensed for this option, an Extract File can be used to delete rows from the database.

General Information

This section presents general information about the Move component. It describes the elements that are common to the Optim components, terminology pertinent to Move, and the sample database.

Note: For general information about naming conventions and screen format and handling, refer to the *Common Elements Manual*.

Common Elements

The components of Optim provide varied functions.

Access is the relational facility that lets you browse and edit related data residing in multiple DB2 tables. Archive enhances database performance by facilitating the removal of infrequently referenced data. Compare is the relational comparison facility that lets you compare sets of related data from two database structures. Move is the relational copy facility that lets you extract sets of related data from DB2 or Legacy tables, and insert that data into destination databases and files. Features common to the Optim components are discussed in the *Common Elements Manual*.

To carry out their functions, the Optim components rely upon user-defined objects that supplement objects defined to the database (for example, tables, primary keys, relationships, stored procedures). These user-defined objects (collectively, Optim objects) are stored in the Optim Directory.

Optim objects that are common to the Optim components include:

- **Access Definitions**
  - Column Maps
- **Primary Keys**
  - Table Maps
- **Relationships**

The following processes and facilities are common to the Optim components:

- **Export/Import**
  - Retry/Restart
- **Convert**
  - Browse

The *Common Elements Manual* also describes the various options that allow you to manage Optim.

Terminology

The following paragraphs describe some common terms and their relationship to Move usage.

Additional terms are described in the *Common Elements Manual*.

Access Definitions

With Move, you must describe the set of data to be extracted. This description is referred to as an **Access Definition**. An Access Definition contains a variety of information, including:

- The list of tables from which data is extracted.
- Relationships used in the Extract Process and direction of traversal.
- Optionally, the order in which data is displayed or selection criteria for data in the listed tables.

The first table from which the data is extracted is the Start Table. All other listed tables are visited in logical sequence based on relationships and specifications in the Access Definition.

You can save an Access Definition for repeated future use. The saved definition can be modified and re-saved under the same or a new name. Once saved, the same Access Definition can be used by Access to browse and edit data in DB2 tables, by Compare to select data from DB2 tables for the Compare Process, and by Archive to archive data in DB2 tables.

The name of an Access Definition is made up of three parts:

```
group.user.name
```

The *group* and *user* portions of the name are useful for organizing projects. For example, you can assign a unique group name to each project and, within each project, a unique user value for each person (user) in the group.

Column Maps

A **Column Map** is a set of specifications used by Move to determine the source data used to populate each destination column when the Insert, Load, or Convert Process is performed.

The Column Map name consists of two parts:

mapid.mapname

The *mapid* is frequently used to group the maps by user or project.

Column Maps can also be used and created by Archive and Compare. They can be used interchangeably, if the definition fits the application. (Different rules are used to define Column Maps for Compare than for Move or Archive. Column Maps created with Move or Archive may not be available for Compare.)

Environment Definitions

An **Environment Definition** identifies the IMS Program Libraries, the DBD and PSB Program Libraries, the DFSVSAMP data set and member name, as well as the IMS System ID and AGN used with the IMS Legacy Tables. IMS Legacy Tables and Retrieval Definitions reference the information specified in the Environment Definition.

The Environment Definition name consists of

environmentname

Extract File

An **Extract File** contains the extracted data and information that defines the characteristics of the data. Once created, an Extract File can be reused, providing a constant set of data with which to create and refresh test databases. (An Extract File on disk can also be used by Compare. Users can compare the test database "after" testing an application to the "before" version of the data in the Extract File.)

You can create an Extract File on tape, though there are some restrictions on their use. Refer to "Extracting data to tape" on page 76.

Legacy Tables

Optim Legacy uses Legacy Tables to incorporate legacy data (IMS, VSAM, or sequential data) into Move processes. A **Legacy Table** is an Optim object that describes the legacy data and maps it to a pseudo DB2 table format. Once created, the Legacy Table can then be referenced in Optim objects, e.g., Access Definitions or Table Maps, as if it were a DB2 table.

Note: Two Optim objects, IMS Environment Definitions and IMS Retrieval Definitions, help process IMS data described in a Legacy Table.

For example, legacy data might correspond to more recent customer orders stored in a DB2 table. If you create a Legacy Table for the legacy orders, you can use the legacy data in any Move process in which you can use the DB2 data.

The Legacy Table name consists of

creatorid.tablename

Legacy Table array processing

When you process legacy table data that includes array columns special considerations apply. Be aware of these general guidelines for working with arrays:

Column map - array processing

- Arrayed columns can be referenced in a column map. In a column map, any specification for an arrayed column applies to all instances of the array.

- You can specify selection criteria for fixed arrays, however, the criteria is applied only to the first instance of the column in the array.
- Selection criteria cannot be specified for variable arrays.
- If you map an array column to a non-array column, the value of the first instance of the array column is copied to the non-array column.
- If you map a non-array column to an array column, the value of the non-array column is copied to every instance of the array column.
- If a source array has more instances than a destination array, the remaining source instances are not used.
- If a destination array has more instances than a source array, the remaining destination instances are initialized to blank or zero (0), depending on their data type.
- When you map an array column to an array column the corresponding instances are mapped. Correspondence is based on the order in which the column instance appears in the row. For example, if the source array is defined as:

  ```
  05 ADDRESSES OCCURS 3 TIMES.
  10 STREET OCCURS 2 TIMES.
  10 CITY  PIC X(30).
  10 ZIP    PIC     9(9) COMP-3.
  ```

  And the destination array is defined as:

  ```
  05 Street OCCURS 5 TIMES.
  ```

  There are 6 instances of STREET in the source array (STREET_1_1, STREET_1_2, STREET_2_1, STREET_2_2, STREET_3_1, STREET_3_2,) and 6 instances of Street in the destination array (Street_1, Street_2, Street_3, Street_4, Street_5, Street_6). STREET_1_1 is mapped to Street_1, STREET_1_2 is mapped to Street_2, and so on.
- A variable array is described with an OCCURS DEPENDING ON clause that references a column. This column, known as the ODO object, is a numeric column and contains the number of occurrences of the array. Special considerations for ODO objects are:
  - An ODO column must receive a value explicitly. It must not be UNUSED in the column map or overlaid by another column. This includes groups and redefines.
  - Within a processing cycle for column map functions, ODO objects are always processed first.

Primary key - array processing

A primary key can be defined on a fixed array column. However only the first instance of the column will be part of the key. You cannot use a variable array column as a primary key definition.

Relationship - array processing

There are the following restrictions on using array columns in relationships:

- A fixed array column can be used in a relationship definition. The relationship references only the first instance of the array.
- You cannot use a variable array column to define a relationship.
- A variable offset column can be used in a relationship definition.
- Relationships for NO_VALUE columns are not processed. Processing for HAS_VALUE columns in the same row are not affected. A column is NO_VALUE for a row instance when either:
  - It is a variable arrayed column and there are less than the maximum occurrences in the row instance. For example, if the variable array column occurs from 1 to 3 times (COL_1 COL_2 COL_3) and there are 2 occurrences in this row instance, then COL_3 is NO_VALUE.
  - The length of the row instance does not include the column. If COL has an offset of 20 and length of 5 and the row length is less than 25, then COL is NO_VALUE.

Materialized Query Tables

A Materialized Query Table (MQT) is a DB2 table that contains the results of a query against one or more tables. For data that is accessed frequently, storing it in an MQT can improve performance. MQTs can be User-maintained and modifiable or System-maintained and protected. You can create an MQT and reference it in Optim objects, with exceptions:

- You cannot define Optim Relationships for MQTs.
- A System-MQT can be used only in Optim processes that do not modify the data.

Object Definitions

Object definitions are the parameters required by DB2 to create an object. Move can migrate DB2 objects from one subsystem to another by extracting the object definitions from the source and using them to create the objects at the destination. The following objects can be migrated:

- **Aliases**
  - Retrieval Definitions
- **Column Field Procedure Names**
  - Stored Procedures
- **Environment Definitions**
  - Synonyms
- **Indexes**
  - Tables
- **Foreign Keys**
  - Triggers
- **Legacy Tables**
  - User Defined Functions
- **Primary Keys**
  - User Defined Types
- **Relationships**
  - Views
- **Materialized Query Tables**

Primary Keys

A **primary key** is the column or set of columns that uniquely identifies each row in a table. For example, the CUSTOMERS table has a column, CUST_ID, that contains a unique value for each row in the table. CUST_ID is an acceptable primary key for the CUSTOMERS table.

Move requires primary keys when

- Extracting data from a table that is visited more than once in the process. The primary key guarantees uniqueness of the extracted rows.
- Inserting or updating data. The primary key identifies whether a row exists. If a row exists, the extracted row is used to update the existing row. If a row does not exist, the extracted row is used to create a new row in the database.
- Selecting rows from the Start Table during a Point-and-Shoot session.

Optim Directory

The **Optim Directory** contains information needed to access DB2 and legacy data. This information includes user-defined:

- **Access Definitions**
  - Legacy Tables
- **Column Maps**
  - Primary Keys
- **IMS Environment Definitions**
  - Relationships
- **IMS Retrieval Definitions**
  - Table Maps

Access Definitions, Column Maps, Table Maps, Legacy Tables, IMS Environment Definitions, and IMS Retrieval Definitions are unique to Optim. DB2 primary key definitions and relationships are available in the DB2 Catalog, and IMS logical relationships in the DBD. Move uses DB2 Catalog information whenever possible. However, when the information is not available in the DB2 Catalog, you can use Move facilities to specify the information and store it in the Optim Directory.

Referential Integrity Rules

Move uses referential integrity, table and column information from the DB2 Catalog. When the DB2 Catalog does not provide the needed relationship information, user-specified objects, stored in the Optim Directory, supplement the Catalog.

Relationships

A **relationship** determines how two tables are related. A relationship can be defined in the DB2 Catalog, IMS, or the Directory. When a list of relationships is presented, the source is indicated. You can browse DB2 relationships, or you can create or modify a Optim relationship using Move. You can also use DB2 relationships as a "model" for new Optim relationships.

A DB2 relationship is defined by a primary key/foreign key pairing. The foreign key is the set of columns in a child table that corresponds with the primary key columns in the parent table. For example, values in the ORDERS table column, CUST_ID, coincide with those in the CUSTOMERS table primary key column CUST_ID. The ORDERS column is the foreign key.

Move also recognizes IMS relationships between segments within the same DBD, and IMS logical relationships between segments in separate databases. If an IMS relationship pairs two Legacy Tables, you do not need to create an Optim relationship.

Optim relationships are not limited to primary key/foreign key pairings. You can pair any compatible columns or use substring and concatenation functions for columns, as well as literal and constant values. An Optim relationship between DB2 tables, between Legacy Tables, or between a DB2 table and a Legacy Table can be defined. You cannot define Optim relationships for Materialized Query Tables. Relationships are defined by and available to all Optim components interchangeably.

Retrieval Definitions

A **Retrieval Definition** is used by IMS Legacy Tables that provide the default PSB Name (FOPDEPPR), PCB number (1), and IMS ID (IMSA) for the DBD FOPDEDB, and associate the data set for the IMS database with each DD (data definition) within the DBD.

The Retrieval Definition name consists of

environmentname.dbdname

Table Maps

Move uses a **Table Map** to match source tables to destination tables.

The Table Map name consists of two parts:
mapid.mapname

The *mapid* is frequently used to group the maps by user or project.

Table Maps can also be used and created by Archive and Compare. They can be used interchangeably, if the definition fits the application. (Different rules are used to define Table Maps for Compare than for Move or Archive.)

Tables

Throughout this document, the term **tables** refers to DB2 tables, views, Materialized Query Tables, aliases, synonyms, as well as to Legacy Tables, which describe data in IMS, VSAM, or sequential files. These objects are manipulated similarly. The differences in handling are noted where pertinent.

Long Object Names

Optim supports long object names, if they are supported by the DB2 version you are using. Names up to the maximum length supported by the database can be defined for the following:

- Creator ID
- Index Name
- Trigger
- Table Name
- Relationship
- User Defined Type
- View Name
- Schema
- Stored Procedure
- Synonym
- Alias Name
- User Defined Function
- Column Name
- Storage Group
- Materialized Query Table

Optim panels display single or double arrows (> or >>) anywhere a long object name can be specified. Use the **EXPAND** primary command to open a popup window where you can enter the full name of the object. Use **END** to return to the main panel. Optim displays the first part of the name followed by arrow(s).

When trying to browse or edit a table with Optim, you may encounter an "Invalid name" error. This can be caused by invalid characters in the Creator ID or Table Name fields. To resolve the problem, on the command line type **EXPAND**, position the cursor on the field for Creator ID, and hit **Enter**. Delete any characters next to the field. Then **Save** and retry. Use the same procedure on the field for Table Name.

To edit a long object name, use the **EXPAND** primary command. This displays the full name in the the pop-up window where you can make changes to it. If you modify the name without using **EXPAND** to display the full name in the pop-up window, you cannot ensure that you have edited it correctly.

Display long object names by scrolling or using the **EXPAND** primary or **EXP** line command. Double arrows (>> or <<) indicate an area that can be scrolled or expanded, as shown in the following figure. In this example, you can scroll or expand the Default Creator ID, Start Table and Table/View names:

```
-- Select Tables/Views for AD: GRP.FOPUSR.SAMPLE -----------------------------
Command ===>                                                 Scroll ===> PAGE

 Primary : COL,SEL,SQL,REL,POINT,GROUP,GET TABLES RELATED,INDENT,LIST SUBS
    Line : COL,SEL,SQL,ALL,GR(A),GP(A),GC(A),DR(A),PR(A),DP(A),PP(A),
           DC(A),PC(A),EXP,STA
                                                      Table 1 of 3 <<MORE
Default Creator ID ===> FOPUSR1_DEPARTMENT_FOP_1234567890_INVENTORY_MAIN   >>
Start Table        ===> CUSTOMERS_1234567890_XXXXXXXXXX_1234567890_XXXXX   >>
Start Table Options   : None
                                              Ref --Extract Parms--
Cmd   Status     (CreatorID.)Table/View Name    Tbl EveryNth RowLimit Type
--- ----------- ----------------------------->> --- -------- -------- ----
*** ********************************* TOP ********************************
___             CUSTOMERS_1234567890_XXXXXXXXXX      ____     ________ TABLE
___             ITEMS_1234567890_XXXXXXXXXX_123  N   ____     ________ TABLE
___             SHIP_TO_1234567890_XXXXXXXXXX_1  N   ____     ________ TABLE
*** ******************************** BOTTOM ********************************
```

On some panels, a long object name is truncated and shown with a plus sign (+) as its last character. This indicates that the name cannot be scrolled or expanded on this panel.

For complete information on long object names, see the *Common Elements Manual*. See the *Command Reference Manual* for information on the EXPAND primary command and the EXP line command.

Sample Database

A sample database is distributed with Optim.

The sample database is created as part of the installation and is described in the *Common Elements Manual*. The sample database provides data for training and allows you to experiment with Move without fear of disrupting your production database.

The sample database is used in examples in this manual. This database includes the following DB2 tables (names are prefixed with the Creator ID FOPDEMO):

- OPTIM_CUSTOMERS
- OPTIM_ORDERS
- OPTIM_DETAILS
- OPTIM_SALES
- OPTIM_ITEMS
- OPTIM_SHIP_TO
- OPTIM_SHIP_INSTR
- OPTIM_FEMALE_RATES
- OPTIM_MALE_RATES
- OPTIM_STATE_LOOKUP

The tables in the following chart are used in this manual. The chart shows these tables and the relationships among them. The arrows indicate the flow from parent to child. (The OPTIM_ prefix for each table name is not shown in the chart.)

If you use the Session Overview as a tutorial, note that relationships may have been added to the sample database at your facility during training or other activities. The table names in the sample scenario are shown without the OPTIM_ prefix. To use the scenarios, prefix the table names with OPTIM_

Chapter 2. Session Overview

The following overview highlights the key facilities provided with Move by presenting a brief sample session. For this sample session, assume you want to create a test database by copying data from one set of related DB2 and Legacy Tables to another. This task is comprised of two basic steps:

- Specify the Source Data
- Specify the Destination.

This sample session begins with the **Main Menu** and demonstrates how to perform these two steps with Move.

Main Menu

When you invoke Move, the **Main Menu** is displayed as shown in the following figure.

(Options available on the **Main Menu** may vary according to the Optim components that are installed. An option marked with an asterisk is not available.)

```
---------------------------- IBM's InfoSphere Optim -----------------------------
OPTION  ===>

0  OPTIONS         - Site and User Options      SQLID  ===> FOPDEMO
1  BROWSE TABLE    - Browse a DB2 Table         SUBSYS ===> TDB2
2  EDIT TABLE      - Edit a DB2 Table           LOCATION ===>
3  BROWSE USING AD - Browse DB2 Tables Using Access Definition
4  EDIT USING AD   - Edit DB2 Tables Using Access Definition
5  ADS             - Create or Modify Access Definitions
6  DEFINITIONS     - Maintain InfoSphere Optim Definitions (Keys, Maps, ...)
7  MIGRATION       - Data Migration - Extract, Insert, Update, ...
8  COMPARE         - Compare Two Sets of Data
9  ARCHIVE         - Archive and Restore Data

T  TUTORIAL        - Information About IBM's InfoSphere Optim
C  CHANGES         - Changes from Prior Release(s)
X  EXIT            - Terminate Product Use
P  LICENSING       - Product Licensing Modification
```

Figure 1. Main Menu

Panel Options

To select the desired option, type the corresponding one-character identifier. The options are:

0 OPTIONS

Specify options, including user options, editor and display options, job card and print options, Compare options, Archive options, and Legacy options. For details, see the *Common Elements Manual*.

1 BROWSE TABLE

Browse data in a DB2 table. This facility is documented in the *Access User Manual*.

2 EDIT TABLE

Edit data in a DB2 table. This facility is documented in the *Access User Manual*.

3 BROWSE USING AD

Browse DB2 data defined by an Access Definition. This facility is documented in the *Access User Manual*.

4 EDIT USING AD

Edit DB2 data defined by an Access Definition. This facility is documented in the *Access User Manual*.

5 ADS

Create and maintain Access Definitions. For details, see the *Common Elements Manual*.

6 DEFINITIONS

Define and maintain Legacy Tables, IMS Environment Definitions, and IMS Retrieval Definitions. You can also define and maintain Optim primary keys, relationships, Access Definitions, Column Maps, Table Maps, and Archive Collections, or invoke utilities to export and import these objects. For details, see the *Common Elements Manual*.

7 MIGRATION

Perform the Move processes for extracting, inserting, creating, converting, and browsing DB2 or Legacy data, or the Compare extracting and browsing processes. You can use the Compare option to compare Extract files created by Move. Move processes are documented in this manual. For details on Compare processes, see the *Compare User Manual*.

8 COMPARE

Compare one set of tables with another and browse the results. This facility is documented in the *Compare User Manual*.

9 ARCHIVE

Perform the Archive processes for archiving data, browsing and searching the archives, and selectively restoring the archived data. This facility is documented in the *Archive User Manual*.

T TUTORIAL

Display the online Tutorial.

C CHANGES

Display a list of enhancements for the current release.

X EXIT

Terminate Optim.

P LICENSING

Display a list of the Optim components and their releases. The status for each component is identified as “In Evaluation: n Days Left” or “Not Installed.” Administrator privileges are required to enable or disable a component. This facility is documented in the *Common Elements Manual.*

Panel Prompts

Values in the panel prompts are profiled. These prompts are:

SQLID
The current SQLID. Modify this value to connect using a different SQLID.

SUBSYS
The current DB2 subsystem. Modify this value to connect to a different DB2 subsystem.

When connecting to a remote subsystem, this value should be the local subsystem where the remote location is defined.

LOCATION
The remote location. This prompt is displayed if remote access is available. Specify a value to connect to a remote DB2 subsystem. You can use a percent sign (%) to obtain a selection list of available locations.

Note: If you leave this prompt blank, the local subsystem is assumed.

Specify the Source Data

With Move you need an Access Definition to identify the source data to be extracted. You can

- Select Option 5 ADS from the Main Menu to define an Access Definition before selecting Option 7 MIGRATION.
- Select Option 7 MIGRATION from the Main Menu to use an existing Access Definition or to define a new Access Definition that can be saved. You can also define a temporary Access Definition for the current Extract Process only.

See the *Common Elements Manual* for a full discussion about defining an Access Definition.

Select Migration Option

For this sample session, select Option 7 MIGRATION to display the **Data Migration** menu.

```
------------------------------ Data Migration --------------------------------
OPTION ===>
                                              SQLID  ===> FOPDEMO
                                              SUBSYS ===> TDB2
1  EXTRACT  - Extract Data from Source Tables   LOCATION ===>
2  INSERT   - Insert Data into Destination Tables
3  LOAD     - Create Load Files and Perform Load
4  CREATE   - Create Tables and Related Object Definitions
5  CONVERT  - Convert Extract File using Table and Column Maps
6  LIST     - List Extract Files in Directory
7  IMPORT   - Import Extract File and Populate Directory

R  RETRY/RESTART   - Retry/Restart an Insert Process
B  BROWSE          - Browse Content of Extract or Control File
```

Figure 2. Data Migration Menu

Option 1 EXTRACT is used to define the source data and extract it from the database. Select this option to display the **EXTRACT Process** menu.

```
-------------------------------- EXTRACT Process -------------------------------
OPTION ===>                                                  SCROLL ===> PAGE

  1  TABLES               - Specify Set of Tables and Selection Criteria
  2  PATHS                - Specify Traversal Paths via Relationship List
  3  OBJECTS              - Specify Object Definitions to Extract
  4  PERFORM              - Specify EXTRACT Parameters and Perform EXTRACT

Type of Access Definition to Use for EXTRACT ===> P  (P-Perm, T-Temp)

If Permanent, Specify New or Existing Access Definition Name
  Group ===>
  User  ===>
  Name  ===>

  Use '_' for DB2 LIKE Character ===> N  (Y-Yes, N-No)
```

Figure 3. EXTRACT Process Menu

For this sample session, you will use a temporary Access Definition. Specify T for the **Type of Access Definition to Use for Extract** and select Option 1 TABLES on the **EXTRACT Process** menu to display the Select Tables/Views for AD panel.

Specify Tables

To extract data you must define the source by listing the names of tables from which data is to be extracted.

Begin by typing CUSTOMERS at the **Start Table** prompt to indicate that data is to be extracted from the CUSTOMERS table first, and press ENTER. You can then type the names of other related tables on the list after inserting lines using the I line command or you can use the GET TABLES RELATED command to add the names of related tables.

GET TABLES RELATED Command

The GET TABLES RELATED command directs Move to add the names of tables related to a DB2 table or a Legacy Table on the list. You indicate the table by specifying the name with the command or by positioning the cursor on the line containing the table name. If only one table is listed, as in the figure, it is used for the GET TABLES RELATED command.

In the following figure, the GET TABLES RELATED command is entered. The ALL operand is used to list names of tables directly related to the CUSTOMERS table, the names of tables related to those tables, and so on.

```
-- Select Tables/Views for AD: TEMPORARY AD ----------------------------------
Command ===> GET TABLES RELATED ALL                          Scroll ===> PAGE

 Primary : COL,SEL,SQL,REL,POINT,GROUP,GET TABLES RELATED,INDENT,LIST SUBS
    Line : COL,SEL,SQL,ALL,GR(A),GP(A),GC(A),DR(A),PR(A),DP(A),PP(A),
           DC(A),PC(A),EXP,STA
                                                  Table 1 of 1 <<MORE
Default Creator ID ===> FOPDEMO                                      >>
Start Table        ===> CUSTOMERS                                    >>
Start Table Options   : None
                                             Ref --Extract Parms--
Cmd   Status      (CreatorID.)Table/View Name    Tbl EveryNth RowLimit  Type
--- ----------- ------------------------------>> --- -------- -------- -------
*** ********************************* TOP ***********************************
___              CUSTOMERS                          ____   ________ TABLE
*** ******************************** BOTTOM **********************************
```

Figure 4. Using the GET TABLES RELATED Command

All Related Tables

Move checks the DB2 Catalog and the Optim Directory for tables related to CUSTOMERS and adds those table names to the list. Move then checks for tables related to the newly listed tables and adds the names, also. This chain-like process continues until the complete set of related tables is listed. In this example, ORDERS is related to CUSTOMERS. DETAILS is related to ORDERS and ITEMS is related to DETAILS.

Note: You can specify a User Option to limit the tables inserted in the Access Definition using the GET TABLES RELATED command by allowing you to insert tables with DB2 relationships, Optim relationships, or both.

When using the GET TABLES RELATED command, names of related tables other than those shown in Figure 5 on page 18 may be inserted into the table list. For this sample session, delete all lines except those shown in the figure by using the delete line command.

You can use other commands to display selection lists. Use LIST TABLES to display a list of all tables or to obtain a selection list of all tables related to a specific table, LIST TABLES RELATED. Then, rather than have Move automatically add the tables, you can select names of tables from the list as desired.

For this sample session, information about back ordered items is also needed. This information is not stored in a DB2 table; it is kept in a sequential file, BKORDER. In order to extract this data with the DB2 data, you must use a Legacy Table and create an Optim relationship between ITEMS and BKORDER. A Legacy Table defines the layout of a legacy record and is associated with a physical data source. The Legacy Table can be created from COBOL or PL/1 copybooks, which provide descriptive information similar to that in the DB2 Catalog for DB2 tables.

The relationship between ITEMS and BKORDER is application managed and must be duplicated using a Optim relationship. To include the BKORDER Legacy Table for this sample session, insert a new line by entering the I line command in **Cmd** next to the ITEMS table. Next type “BKORDER” in the space provided and press ENTER. **Type** indicates that BKORDER is a Legacy Table.

```
-- Select Tables/Views for AD: TEMPORARY AD ----------------------------------
Command ===>                                                Scroll ===> PAGE

 Primary : COL,SEL,SQL,REL,POINT,GROUP,GET TABLES RELATED,INDENT,LIST SUBS
    Line : COL,SEL,SQL,ALL,GR(A),GP(A),GC(A),DR(A),PR(A),DP(A),PP(A),
           DC(A),PC(A),EXP,STA
                                                    Table 1 of 5 <<MORE
Default Creator ID ===> FOPDEMO                                        >>
Start Table        ===> CUSTOMERS                                      >>
Start Table Options   : None
                                                 Ref --Extract Parms--
Cmd   Status      (CreatorID.)Table/View Name    Tbl EveryNth RowLimit  Type
--- ----------- ------------------------------>> --- -------- -------- -------
*** ********************************* TOP ***********************************
___             CUSTOMERS                             ____   ________ TABLE
___             ORDERS                          N     ____   ________ TABLE
___             DETAILS                         N     ____   ________ TABLE
___             ITEMS                           N     ____   ________ TABLE
___             BKORDER                         N     ____   ________ LEGACY
*** ******************************** BOTTOM ********************************
```

Figure 5. Related Tables Included

Specify Criteria for this Extract

After you have listed the tables for the extract, you can specify selection criteria in a variety of ways.

- You can specify parameters for the selection of rows and a row limit for each table by entering values for Extract Parms on the Select Tables/Views for AD panel.
- You can use the Access Definition commands listed on the panel to display column information and define criteria for row selection. Details about these commands are provided in the *Command Reference Manual*, and in the *Common Elements Manual*. In this sample session, only the POINT command is used.

In this sample session, a subset of customers and related orders with backorder information is extracted. Using the CUSTOMERS table as the Start Table, you can select specific rows to be extracted from that table.

POINT Command

The Point-and-Shoot facility is used to select specific rows. Enter the POINT command on the Select Tables/Views for AD panel. The primary key values for rows selected in a Point-and-Shoot session are saved in a file, which is referred to as the Point-and-Shoot or Row List file.

When you enter the POINT command, Move prompts for the name of a data set containing previously selected rows. If one exists, specify the name and press ENTER. Rows from the Start Table are displayed and any previously selected rows are indicated. If a data set does not exist or you want to stop using an existing data set, leave the name blank and press ENTER.

Point-and-Shoot Display

Move presents the rows in the Start Table in a browse-only display. Use the Select Related line commands, SR and SSR, or the SELECT RELATED primary command to select the individual customer rows you want to extract.

The title indicates Point-and-Shoot row selection. In Figure 6 on page 19, five rows have been selected as noted by the S in the **F** or status flag area and the message in the panel. The SR line command is specified for two customers, 07260 Five Star Videos and 07101 Movie Mania. The primary key values for

these rows are to be included with the previously selected ones.

```
--------------------------- Optim: Point-and-Shoot ----------- 5 ROWS SELECTED
Command ===>                                                   Scroll ===> PAGE

Cmd F == Table: FOPDEMO.CUSTOMERS(T1) ====================== 1 OF 27 === MORE>>
      CUST_ID      CUSTNAME             ADDRESS             CITY       STATE
      ------- -------------------- ==================== --------------- -----
*** ********************************** TOP ************************************
   _ S  07006  Excalibur Video      35 Seminary Ave      Harvard          MA
SR_    07260  Five Star Videos     123 Howe Lane        Boston           MA
___ S  07235  Jack's               Grafton Plaza        Grafton          MA
___ S  07440  Monarch Movies       280 Chestnut St      Springfield      MA
   _ S  07201  Movie Buff          400 Merrimac         Concord          MA
SR_    07101  Movie Mania          572 Front St         Auburn           MA
___    07126  Movie Rentals        101 Munson St        Greenfield       MA
___ S  07118  Movie Store          752 State Road       Menemsha         MA
___    07203  Movies-R-Us          1772 Bridge St       Bourne           MA
___    07191  Popcorn              15 Crystal Park      Lenox            MA
___    07156  Prime Tyme           982 Upper State St   Marion           MA
___    07140  ProMusic             84 Second Ave        Chicopee         MA
___    07160  Reely Great Videos   590 Frontage Rd      Amherst          MA
___    07053  Replay Video         9032 Dickerson St    Amherst          MA
___    07150  Rick's Flicks        823 Chestnut St      Springfield      MA
```

Figure 6. Point-and-Shoot Display

When individual rows are selected from the Start Table using Point-and-Shoot, the Extract Process begins with those rows. In this example, the extract begins with the selected customers. The related rows from the other tables are extracted based on the relationships between the CUSTOMERS table and the other tables. For details, see "Traversing Relationships" on page 22.

Selection Complete

Use END to terminate the Point-and-Shoot session. Move prompts for the name of a data set in which to store the selected rows and then returns to the Select Tables/Views for AD panel. If a data set is not supplied, the list is temporary. That means it is used only for the current Extract Process and is discarded when the process completes.

Create Relationship

Since no explicit relationship between the ITEMS table and the BKORDER table is included in the sample data, you must create the relationship in order to perform the extract in this sample session.

Move allows you to define relationships prior to extracting data. For example, you can create an Optim relationship for a Legacy Table as though the Legacy Table were a DB2 table. This relationship can replicate an application-managed relationship. An Optim relationship can be defined between DB2 tables, between Legacy Tables, or between a DB2 table and a Legacy Table, with either table as the parent and the other as the child. You cannot define an Optim relationship between Materialized Query Tables.

To create a relationship between the DB2 table ITEMS and the Legacy Table BKORDER, you must use the CREATE RELATIONSHIP primary command on the Select Tables/Views for AD panel to display the Choose a Relationship panel. You must provide the name of one table in the relationship on this panel. When specifying a table name, you can provide the complete Creator ID and table name. Alternatively, you can use DB2 LIKE syntax for either or both table names in order to obtain a selection list.

```
--------------------------- Choose a Relationship -----------------------------
OPTION ===> 1                                                SCROLL ===> PAGE

  1  CREATE   - Create a Relationship for Specified Parent or Child Table
  2  MODIFY   - Modify a Relationship for Specified Child Table
  3  LIST     - List All Relationships for Specified Table

Specify Table Name (Child for OPTION 2, Parent or Child for OPTIONS 1 and 3)
  Creator ID ===> FOPDEMO                                              >>
  Table Name ===> ITEMS                                                >>

Specify Relationship Name (OPTIONS 1 and 2)
  Relationship Name ===> RIB                                             >>

Specify Relationship Type (OPTIONS 2 and 3)
  Relationship Type ===> OPT                 (P|O-OPT, D-DB2, I-IMS, A-All)

Use '_' for DB2 LIKE character ===> NO       (Y-Yes  N-No)
```

Figure 7. Choose a Relationship

For this example, however, type FOPDEMO at the **Creator ID** prompt and ITEMS at the **Table Name** prompt. At the **Relationship Name** prompt, enter RIB (relationship ITEMS to BKORDER), and enter P (for Optim relationship) at the **Relationship Type** prompt. Select Option 1 CREATE to display the **Create a New Relationship** pop-up, shown in the following figure.

```
--------------------------- Choose a Relationship -----------------------------
OPTION ===>                                                  SCROLL ===> PAGE

  1  CREATE   - Create a Relationship for Specified Parent or Child Table

+--------------------------Create a New Relationship-------------------------+
|                                                                            |
| Specified Table   : FOPDEMO.ITEMS                                          |
| Table Type     ===> P                 (P-Parent C-Child)                   |
|                                                                            |
| Leave blank or include wild cards for Table Selection List                 |
|                                                                            |
| Other Table:                                                               |
|  Creator ID ===> FOPDEMO                                              >>   |
|  Table Name ===> BKORDER                                              >>   |
|                                                                            |
| Relationship Name ===> RIB                                            >>   |
+----------------------------------------------------------------------------+
```

Figure 8. Create a New Relationship

The name of the table (ITEMS) entered on the Choose a Relationship panel is shown. Enter P at **Table Type** to indicate that ITEMS is the parent table in the relationship. Type BKORDER, the name of the child table in the relationship, at the (Other) **Table Name** prompt and press ENTER to display the Define Relationship panel.

```
---------------------------- Define Relationship -----------------------------
Command ===>                                                 Scroll ===> PAGE

                       Define OPTIM Relationship RIB
         Special Commands: LIST COLUMNS, EXPAND, GENERIC, MODEL

    Parent: FOPDEMO.ITEMS                Child: FOPDEMO.BKORDER
                                                                    1 OF 1
Cmd       Column Name        Data Type         Column Name        Data Type
--- ---------------------->> ----------  ---------------------->> ----------
*** ********************************* TOP ***********************************
___ ITEM_ID                  CH(5)       ITEM_ID                  CH(5)
*** ******************************** BOTTOM ***********************************
```

Figure 9. Define Relationship

This panel shows the relationship name and lists commands that are useful when defining a relationship. The panel is divided into two parts. The first part displays the name of the parent table followed by space for a list of parent table columns and data types. The second part indicates the child table name followed by space for a list of corresponding child columns and data types.

Move provides several editing facilities for constructing a relationship. Usually, a relationship is composed of corresponding values in columns from the parent and child tables.

There are three ways to populate the Relationship Editor with column names. You can:

- Use the column names automatically inserted by Move.
- Insert lines and enter the column names or values manually.
- Select column names from a selection list using the LIST COLUMNS command.

Existing Primary Key

When creating a new relationship, Move populates the Define Relationship panel with as much potentially useful information as possible.

If the parent table has a primary key, the names of primary key columns and data types are shown on the parent side of the panel. The names of any child table columns that match the primary key column names and have compatible data types are populated on the child side of the panel. (Note that, unlike a DB2 relationship, an Optim relationship does not require that corresponding columns have identical attributes.)

If no child table columns have matching names, Move checks the child table for columns with identical attributes, regardless of the name. If only one column has identical attributes, that column name is inserted. Otherwise, no child table column names are inserted. If the parent table does not have a primary key, a blank line is provided for you to enter column names for both the parent table and the child table.

Use the LIST COLUMNS command to display a selection list of columns in a table. The PARENT or CHILD operand specifies the table to be used for the list of columns.

In addition, you can manually add column names to the list. Use the I line command to insert a blank line in the relationship definition editor. You can then type the column names. Move automatically inserts the data type of the column in **Data Type**.

For this sample session, both the parent table (ITEMS) and the child table (BKORDER) have a matching column, ITEM_ID. When you use END to return to the Choose a Relationship panel, the message “RELATIONSHIP SAVED” is displayed in the panel. The relationship has been created and you can use END again to return to the Select Tables/Views for AD panel.

Use END again to return to the **EXTRACT Process** menu.

Associate Legacy Tables with Data Sources

If the Access Definition references one or more Legacy Tables, the Associate Legacy Tables to Data Sources panel is displayed when you exit the Access Definition Editor. A Legacy Table must be associated with a specific data source (i.e., the location of the data and how the data is accessed) in order to be used in an Extract Process.

For VSAM or sequential files, you must provide the data set name.

For IMS, you must provide the PSB and PCB for the source table's DBD, as well as the data set name.

A Site Option (Require IMS Data Set Names) determines whether you can omit the data set name to allow IMS to dynamically allocate the data set. All users can specify '$MDA' as the data set name to choose dynamic allocation, regardless of this Site Option.

For example, a single Legacy Table can describe records in your production environment and in your test environment. The Associate Legacy Tables to Data Sources panel contents vary, depending on whether the Legacy Tables in the Access Definition references IMS data, VSAM or sequential files, or both.

The Associate Legacy Tables to Data Sources panel shows the default data set name (if any) for the VSAM Legacy Table.

```
---------------- Associate Legacy Tables with Data Sources -------------------
Command ===>                                                Scroll ===> PAGE

Overriding Dataset Prefix ===>                                    1 of 1


Legacy Table                Dataset Name
--------------------------- -------------------------------------------
********************************** TOP ***************************************
FOPDEMO.BKORDER             'FOPRT.PROD.FOPDEMO.BKORDER'
FOPDEMO.VENDOR
FOPDEMO.VENDITEM
******************************** BOTTOM ***************************************
```

Figure 10. Associate Legacy Tables with Data Source

You can retain the default data set association or change it to a different data set association. If you do not enclose the data set name in quotation marks, it is automatically prefixed with the **Overriding Dataset Prefix** from this panel, or the default prefix specified in the User Options. Use the **Overriding Dataset Prefix** to save time with a number of data set names.

Use END when finished making changes to this panel. If one or more Legacy Tables reference IMS data, Move displays the Associate IMS Segments With IMS Database Datasets panel; otherwise, the **EXTRACT Process** menu is redisplayed.

For detailed information on using Legacy Tables in an Access Definition, see the *Common Elements Manual*.

Traversing Relationships

You can select the relationships between the specified tables that are traversed to extract the data and control the direction in which they are traversed.

This is useful when multiple relationships are defined between tables. Select Option 2 PATHS on the **EXTRACT Process** menu to display the **Specify Relationship Usage** panel (or use the REL command on

the Select Tables/Views for AD panel).

```
------------------------ Specify Relationship Usage --------------------------
Command ===>                                                Scroll ===> PAGE

For Each Relationship Indicate:                             Rel 1 of 4

Q1: If a Child Row is Included, Include its Parent Row to Satisfy the RI Rule?
Q2: If a Parent Row is Included to Satisfy any RI Rule, Include All Child Rows?

           Q Q Child                                                --Relation--
Cmd Status 1 2 Limit      Parent Table          Child Table           Name  Type
--- ------ - - ----- ---------------------- ---------------------- ------>> ---
*** ********************************* TOP ***********************************
___ NEW    Y N       CUSTOMERS              ORDERS                 RCO      DB2
___ NEW    Y N       ITEMS                  BKORDER                RIB      OPT
___ NEW    Y N       ORDERS                 DETAILS                ROD      DB2
___ NEW    Y N       ITEMS                  DETAILS                RID      DB2
*** ******************************** BOTTOM ***********************************
```

Figure 11. Selecting Relationships for Move functions

All DB2 and Optim relationships between the pairs of tables on the Select Tables/Views for AD panel are listed. The first time this panel is displayed, all relationships have a NEW status. The default handling for NEW relationships is specified as an Access Definition option. Using the option, you can specify whether or not all NEW relationships are to be automatically selected. On the Specify Relationship Usage panel, you can explicitly select, S, or unselect, U, any relationship using line commands. For this sample session, use the S line command to select the relationships RCO, RIB, ROD, and RID.

Q1 and Q2

Q1 and **Q2** settings control whether parent rows are extracted to satisfy RI rules and, further, whether the children of those extracted parent rows are also extracted.

Q1 determines whether Move follows a relationship from child to parent to extract data. By default, **Q1** is Y (Yes) to indicate that Move follows the relationship from child to parent. This default behavior ensures the relational integrity of extracted data by ensuring that a parent row is extracted for every child row. In this sample session, ITEMS rows that are parents of extracted DETAILS are extracted because **Q1** is Y for the relationship RID.

Q2 determines whether additional child rows are extracted if a parent row has been extracted because of **Q1**. For example, if Move has followed a relationship from child to parent and extracted a parent row, additional children of that parent are extracted when **Q2** is Yes. For this sample session, the ITEMS table is a parent to both the DETAILS table and the BKORDER Legacy Table. Therefore, by answering Y to Q2 for the ITEMS to BKORDER relationship, Move extracts the additional children of the ITEMS table, that is, related records in the data set associated with BKORDER.

```
------------------------ Specify Relationship Usage ---------------------------
Command ===>                                                Scroll ===> PAGE

For Each Relationship Indicate:                             Rel 1 of 4

Q1: If a Child Row is Included, Include its Parent Row to Satisfy the RI Rule?
Q2: If a Parent Row is Included to Satisfy any RI Rule, Include All Child Rows?

           Q Q Child                                                --Relation--
Cmd Status 1 2 Limit      Parent Table          Child Table          Name  Type
--- ------ - - ----- --------------------- --------------------- ------>> ---
*** ********************************* TOP ***********************************
___ SELECT Y N       CUSTOMERS             ORDERS                RCO      DB2
___ SELECT Y Y       ITEMS                 BKORDER               RIB      OPT
___ SELECT Y N       ORDERS                DETAILS               ROD      DB2
___ SELECT Y N       ITEMS                 DETAILS               RID      DB2
*** ******************************** BOTTOM ***********************************
```

Figure 12. Specifications for Q1 and Q2

SHOW STEPS Command

You can request an analysis of the relationship traversal path using the SHOW STEPS command from the Specify Relationship Usage panel. Move describes the traversal path based on the specified source tables and selected relationships and displays text that documents the series of steps that are to be performed.

```
---------------------------- Process Steps Report ----------------------------
Command ===>                                                SCROLL ===> PAGE
                                                            ROW 0    OF 16
******************************** TOP OF DATA ********************************

Step 1: Extract Rows from Start Table FOPDEMO.CUSTOMERS.   Row List is
        used and Determines the Rows Selected.

Step 2: Extract Rows from FOPDEMO.ORDERS which are Children of Rows
        Previously Extracted from FOPDEMO.CUSTOMERS in Step 1 using
        Relationship RCO.

Step 3: Extract Rows from FOPDEMO.DETAILS which are Children of Rows
        Previously Extracted from FOPDEMO.ORDERS in Step 2 using
        Relationship ROD.

Step 4: Extract Rows from FOPDEMO.ITEMS which are Parents of Rows Previously
        Extracted from FOPDEMO.DETAILS in Step 3 to satisfy an RI rule using
        Relationship RID.

Step 5: Extract Rows from FOPDEMO.BKORDER which are Children of Rows Previously
        Extracted from FOPDEMO.ITEMS in Step 4 using Relationship RIB.

****************************** BOTTOM OF DATA ******************************
```

Figure 13. Process Steps Report

This is a powerful way to check your relationship specifications before actually extracting data. You can make changes as needed to obtain the required set of relationally intact data.

After viewing the SHOW STEPS information, use END to return to the Specify Relationship Usage panel.

ACM Command

If necessary, you can use the ACM command to open the **Choose Access Method / Key Lookup Limit** pop-up dialog.

```
+------------------ Choose Access Method / Key Lookup Limit -----------------+
|                                                                      1 of 3 |
| Access Method Values:                                                       |
|   K - Key Lookup                                                 Key        |
|   S - Table Scan                                  Access        Lookup     |
|   blank - Software Chooses                        Method        Limit      |
|                                        Rel    ------------ ------------     |
|     Parent Table        Child Table    Name   Parent Child Parent Child     |
| ----------------->> ----------------->> ------>> ------ ----- ------ -----  |
| ********************************* TOP ***********************************  |
| FOPDEMO.CUSTOMERS   FOPDEMO.ORDERS     RCO        S      S    100    100   |
| FOPDEMO.ORDERS      FOPDEMO.DETAILS    ROD        K      K     50     50   |
| FOPDEMO.ITEMS       FOPDEMO.DETAILS    RID                                 |
| ******************************** BOTTOM ********************************** |
+-----------------------------------------------------------------------------+
```

Figure 14. Choose Access Method / Key Lookup Limit

The ACM command allows you to override the default method (scan or key lookup) for accessing the parent or child table for each relationship. A scan reads all rows in a table at one time; whereas a key lookup locates rows using a WHERE clause to search for primary or foreign key values. Additionally, you can change the maximum number of key lookups performed at one time for a table. Valid values are 1 through 1000.

Note:

- If no value is specified, then the default value is used. The default value is specified by a user option. See the *Common Elements Manual*.
- To set the access method for all listed tables, use the ACM command with a B (blank), K (key lookup), or S (table scan) operand. For example, enter ACM B to clear the access method for all listed tables.

For detailed information on the **Choose Access Method / Key Lookup Limit** pop-up window, see the *Common Elements Manual*.

SHOW INDEXES Command

Use the SHOW INDEXES command on the Specify Relationship Usage panel to analyze indexes for selected relationships in the Access Definition. You can use the Relationship Index Analysis panel as a diagnostic tool for determining whether to create the necessary indexes.

```
------------------------ Relationship Index Analysis --------------------------
Command ===>                                                Scroll ===> PAGE

                                                                    1 of 4
AD: TEMP.$$.EXTRACT

Parent Ix    Child Ix
Stat/Needed  Stat/Needed  Relationship                  Parent Table
-----------  -----------  ---------------------------->>  -------------------->>
********************************** TOP ***************************************
NotAnlyzed   None       Y FOPDEMO.ORDERS.RCO            FOPDEMO.CUSTOMERS
NotAnlyzed   NotAnlyzed Y FOPDEMO.BKORDER.RIB           FOPDEMO.ITEMS
Full       Y NotAnlyzed   FOPDEMO.DETAILS.RID           FOPDEMO.ITEMS
NotAnlyzed   Full       Y FOPDEMO.DETAILS.ROD           FOPDEMO.ORDERS
******************************** BOTTOM **************************************
```

Figure 15. Relationship Index Analysis

The index is necessary for a parent or child table if **Needed** is Y. If **Status** is Partial or None, creation of the necessary index may enhance processing performance.

After viewing the SHOW INDEXES information, use END to return to the Specify Relationship Usage panel. Use END again to return to the **EXTRACT Process** menu.

For detailed information on the Relationship Index Analysis panel, see the *Common Elements Manual*.

Specify Object Definitions

DB2 and Legacy Table definitions and the Access Definition are always extracted with data so that Move can automatically create any unknown DB2 and Legacy Tables at the destination.

You can also extract one or more types of associated object definitions from the source and store them in the Extract File. The available object types include: primary keys, relationships, indexes, views, Materialized Query Tables, aliases, synonyms, column field procedure names, triggers, user defined types and functions, and stored procedures.

To select the definitions to be extracted, use Option 3 OBJECTS on the **EXTRACT Process** menu to display the following panel.

```
------------------- Specify Object Definitions to EXTRACT ---------------------
Command ===>                                                  SCROLL ===> PAGE

Use S Line Command to Select ALL Associated Objects of Specified Type
Use U Line Command to Unselect Associated Objects of Specified Type

Cmd   Status             Object Type
---  --------  --------------------------------
 _   SELECT    Primary Keys and Relationships
 _   SELECT    Indexes
 _   UNSELECT  Views
 _   UNSELECT  Materialized Query Tables
 _   UNSELECT  Aliases
 _   UNSELECT  Synonyms
 _   UNSELECT  Column Field Procedure Names
 _   UNSELECT  Triggers
 _   UNSELECT  User Defined Types and Functions
 _   UNSELECT  Stored Procedures

Note: Catalog Queries to Extract Object Definitions are Expensive
      Selected Objects Extracted for Tables ONLY
      Will Always Extract Index Required by DB2 Primary Key
```

Figure 16. Specify Object Definitions to EXTRACT

On initial display, Primary Keys, Relationships, and Indexes are designated as SELECT. You select and unselect object definition types using the S, select, or U, unselect, line commands. The selected object definitions for every extracted table are also extracted.

Use END to return to the **EXTRACT Process** menu.

Perform the Extract

To perform the Extract Process, select Option 4 **PERFORM** from the **EXTRACT Process** menu.

The Specify EXTRACT Parameters and Execute panel is displayed. There are prompts for several parameters on this panel.

```
------------------- Specify EXTRACT Parameters and Execute --------------------
Command ===>

Current AD Name     : TEMPORARY ACCESS DEFINITION
Extract File DSN ===> 'FOPDEMO.SAMPLE.EXTRACT'
Extract          ===> D                      (D-Data,
                                              O-Object Definitions
                                              B-Both)
If Extracting Data:
  Limit Number of Extract Rows ===>          (1-4294967295, Blank/SL)
  Extract Data using           ===>          (D-DB2, B-BMC UnloadPlus)
  Extract Data to Tape         ===>          (Y-Yes, N-No)

Perform Convert with Extract   ===>          (Y-Yes, N-No)

Extract with Uncommitted Reads ===>          (Y-Yes, N-No)

Run Process in Batch or Online ===> O        (B-Batch, O-Online)
  If Batch, Review or Save JCL ===>          (N-No, R-Review, S-Save)

Process Report Type            ===> D        (D-Detailed, S-Summary)
```

Figure 17. Extract Process Parameters

You must specify the Extract File name at **Extract File DSN**. If the file does not exist, Move prompts for allocation information and creates the file.

You can extract the data, the object definitions, or both. Use the **Extract** prompt to specify your choice. For this sample session, only data is extracted.

If an unload program is available, prompts are provided to specify whether it is used to perform the extract.

If you choose to create the extract file on tape, you will be prompted for information about the tape file before the extract is processed. For this sample session, type `N` for **Extract Data to Tape**.

Perform Convert with Extract allows you to direct Move to convert the data before writing it to the Extract File. This feature is useful to mask sensitive data or alter values to be extracted from the database.

Other prompts allow you to limit the number of rows of data that are extracted, to include data that has not been committed to the database, to execute in batch or online, and, if in batch, to review the JCL and Batch Utility control statements.

When you request review of the JCL and control statements for batch execution, the JCL and control statements are displayed in the ISPF editor. You can save the JCL and control statements using the ISPF facilities. Use END to return to your Move session. (A user option, discussed in the *Common Elements Manual*, determines whether END also automatically submits the job.) The saved JCL and control statements can be edited and executed from ISPF without entering a Move session.

Helpful Information

Before the process is executed, Move evaluates the Access Definition. Several conditions cause warning messages. For example, the message in the following figure warns that a relationship will not be traversed.

```
------------------- Specify EXTRACT Parameters and Execute --------------------
Command ===>

Current AD Name     : TEMPORARY ACCESS DEFINITION
Extr
Extr +------------------- EXTRACT Errors & Warnings -------------------+
     |                                                                 |
     | EXTRACT Process Can Proceed Despite the Following Warnings:     |
If E |   1 Relationship(s) will not be Traversed (See SHOW STEPS)      |
  Li |                                                                 | )
  Ex | Press ENTER Key to Proceed Despite Warnings                     |
     | Enter END Command to Return to EXTRACT Menu to Correct Problems |
Perf +-----------------------------------------------------------------+

Extract with Uncommitted Reads ===>           (Y-Yes, N-No)

Run Process in Batch or Online ===> O         (B-Batch, O-Online)
  If Batch, Review or Save JCL ===>           (N-No, R-Review, S-Save)

Process Report Type            ===> D         (D-Detailed, S-Summary)
```

Figure 18. Extract Process Warnings

As noted in the message, you can correct the problem and execute the process, or execute the process despite the problem.

When the process is executed online, the execution status is displayed. The status information includes the name of the table being processed and the number of processed rows. This information is refreshed periodically.

Extract Process Report

Move generates an EXTRACT Process Report. For batch execution, the report is available in a data set or SYSOUT, as specified on the Job Card and Print Options panel. For online execution, the report is automatically displayed when the process terminates. Here is a sample of this report.

```
------------------ EXTRACT Process Report -------------------------------------
 Command ===>                                                SCROLL ===> PAGE

********************** Top of Data ****************************************

                            EXTRACT Process Report

Extract File          : FOPDEMO.TESTJUL
Access Definition     : TEMPORARY ACCESS DEFINITION
Created by            : Job PSTUSR, using SQLID PSTUSR on DB2 Subsystem DDAF
Time Started          : 2014-08-07 11.01.31
Time Finished         : 2014-03-07 11.01.39

File Compression Impact  :
Extract File
  Compression is not available on BASIC or LARGE format datasets.

Process Options:
  Process Mode        : Online
  Retrieve Data using : DB2
  Limit Extract Rows  : 3000000

Total Number of Extract Tables              : 5
Total Number of Extracted Rows              : 34888
Total Number of First Pass Start Table Rows : 3520
Extract file data byte count  :  2,603,172 Bytes (0.002 GB)

     Extracted Object Types  Number
     ----------------------  ------
1    Table-List Tables            5
2    Related Primary Keys         5
3    Relationships                4
4    Related Indexes              5
5    Related Views                1
6    Materialized Query Tables    0

                                 Extracted   Reference
     Extract Tables                 Rows       Table          Data Byte Count
     ---------------             ---------   -----------      ------------------
1    PSTSUPP.CUSTOMERS              3520                        1722290
2    PSTSUPP.ORDERS                 9321         N               419445
3    PSTSUPP.SALES                   110         N                11206
4    PSTSUPP.DETAILS               21427         N               428540
5    PSTSUPP.ITEMS                   510         N                21691


                   Relationship Usage Report
                                                 Access Type  Key Limit
                                      Relation   ------------ ------------
   Parent Table    Child Table        Name       Parent Child Parent Child
-----------------  -----------------  --------   ------ ----- ------ -----
PSTSUPP.CUSTOMERS  PSTSUPP.ORDERS     RCO        **     SCAN

PSTSUPP.ORDERS     PSTSUPP.DETAILS    ROD        **     SCAN

PSTSUPP.SALES      PSTSUPP.CUSTOMERS  RSC        KEY    **

PSTSUPP.ITEMS      PSTSUPP.DETAILS    RID        SCAN   **

** This path was not traversed during this run.

                      ****** End of Report ******
******************************** Bottom of Data ************************
```

Figure 19. Extract Process Report

Information in the online EXTRACT Process Report can be directed to a data set or SYSOUT. Use the OUTPUT command to specify the destination. Otherwise, the report is not retained.

When the Extract Process is complete, use END to return to the **EXTRACT Process** menu, and END again to return to the **Data Migration** menu.

Specify the Destination

Once you have used Move to extract the source data and generate the Extract File, you can specify the destination using the Insert option on the **Data Migration** menu.

When you select Option 2 INSERT on the **Data Migration** menu, the **INSERT Process** menu is displayed.

```
-------------------------------INSERT Process ---------------------------------
OPTION ===>                                                  SCROLL ===> PAGE

  1  TABLE MAP - Specify Table Map, Column Maps and Table Processing Options
  2  PERFORM   - Specify Parameters and Perform INSERT and/or UPDATE Process

Specify Data Set Names for Extract File and Control File:
  Extract File DSN ===> 'FOPDEMO.SAMPLE.EXTRACT'
  Control File DSN ===> 'FOPDEMO.INSERT.CONTROL'
```

Figure 20. INSERT Process Menu

Extract File

The name of the last Extract File you created is provided automatically. This file contains the source data that is to be inserted at the destination.

The Extract File is used solely to contain the extracted source data. It is not affected directly by the Insert Process. Therefore, the Extract File can be used by multiple users simultaneously and repeatedly.

Control File

Also, you must specify the name of a Control File. The Control File is used to track discarded rows. When the process is complete you can browse the entire Control File or browse only the rows that were discarded to determine why they could not be processed.

For example, if RI rules prevent a row from being inserted because a related row in the parent table does not exist, Move discards this row when the insert is attempted. Browsing the Control File to display the discarded rows helps you determine that some rows were not inserted because a parent row did not exist. You can create the needed parent row to remedy the problem and "RETRY" the Insert Process for the discarded rows without duplicating any previously successful processing.

Separate Source from Destination

The Extract File can be reused as needed to insert the same data into different destination tables or to refresh a destination after testing an application. In contrast, the Control File is designed to track a specific process–the destination and the discarded rows. Using the same Extract File and separate Control Files, multiple users can work with the same data to perform individual Insert Processes. For example, each programmer can test applications on a discrete copy of the data. If necessary, a programmer can repeatedly use the source data in an Extract File to refresh test data.

Table-level versus Default Processing Options

On the Specify INSERT Parameters and Execute panel, specify insert, update, or both as the default processing method for all tables.

- **Insert**

  Only new rows are inserted. Thus, a source row is discarded if the primary key value matches the value in an existing destination row.
- **Update**

  Only existing destination rows are updated. Thus, when the primary key value for the source row matches the value in an existing destination row, the destination row is updated.
- **Both** ***(insert and update)***

  New rows are inserted and existing destination rows are updated.

In the Table Map Editor, you can also override the default processing method for tables on an individual basis. If you leave the overriding parameters blank for a table, the default processing method is used.

Insert Process Options

The **INSERT Process** menu, as shown in Figure 20 on page 31, provides two options:

1 TABLE MAP

2 PERFORM

TABLE MAP

Move can insert the data from the Extract File into destination tables and files with the same names or different names.

When the destination tables or files do not exist, Move can create them and then insert the data. When Move determines that destination tables or files must be created, you are prompted to specify whether primary keys, relationships, indexes, and so forth as contained in the Extract File are also created. (If the definitions for these objects have not been extracted, only the tables are listed.) This is useful when moving source data from one subsystem to another and the destination tables have not been defined. You can let Move do it for you automatically.

By default, Move assumes the base destination table names are the same as the source table names. However, at the very least, you must specify a default Creator ID for the destination using the TABLE MAP option.

Table Map Panel

When you select Option 1 TABLE MAP from the **INSERT Process** menu, the following panel is displayed.

```
--------------------------- INSERT Process Table Map --------------------------
Command ===>                                                 Scroll ===> PAGE

Available Commands: APPLY,SAVE,LIST,MAP,POPULATE,ACM,CLEAR,END when Done
                                                                       MORE>>
   Src CID: FOPDEMO                                      Column
  Dest CID:                                          >>  Map ID ===>

   Extract Tables       Destination Table Name     Type   Column Map or "LOCAL"
-------------------- ------------------------>> ------- --------------------
*********************************** TOP ************************************
CUSTOMERS            CUSTOMERS                  UNKNOWN
DETAILS              DETAILS                    UNKNOWN
ITEMS                ITEMS                      UNKNOWN
ORDERS               ORDERS                     UNKNOWN
BKORDER              BKORDER                    UNKNOWN
********************************** BOTTOM **********************************
```

Figure 21. INSERT Process Table Map - Initial Display

Move automatically displays the Source Creator ID in **Src CID** and the names of all tables in the Extract File in **Extract Tables**. Move inserts these same values for the destination tables in **Destination Table Name**. You must supply the Destination Creator ID in **Dest CID**. (To re-insert or update the source data, you can use a Destination Creator ID that is the same as the Source Creator ID, although this is not typical.)

The **Type** is supplied by Move and specifies whether the destination is a DB2 or Legacy Table, User-maintained Materialized Query Table, a view, or unknown. On initial display, the destination is UNKNOWN. This type is revised after you specify the **Dest CID**.

You can overtype the **Dest CID** and the **Destination Table Names** to specify the names you want. Move automatically adjusts the **Type**.

Specifying Dest CID

Assume you have a test database that has the same structure as the production system. The Creator ID is used to distinguish between these two sets of tables. To insert the source data extracted from the production system into the test tables of the same name, specify the **Dest CID** and do not change the **Destination Table Names**. Move automatically identifies the **Type** for each destination using the **Dest CID**. In this example, the **Dest CID** is specified as FOPDEMO2 and all destinations are DB2 or Legacy Tables.

```
--------------------------- INSERT Process Table Map --------------------------
Command ===>                                                 Scroll ===> PAGE

Available Commands: APPLY,SAVE,LIST,MAP,POPULATE,ACM,CLEAR,END when Done
                                                                       MORE>>
   Src CID: FOPDEMO                                      Column
  Dest CID: FOPDEMO2                                  >>  Map ID ===>

   Extract Tables       Destination Table Name     Type   Column Map or "LOCAL"
-------------------- -------------------------->> ------- --------------------
*********************************** TOP ************************************
CUSTOMERS            CUSTOMERS                   TABLE
DETAILS              DETAILS                     TABLE
ITEMS                ITEMS                       TABLE
ORDERS               ORDERS                      TABLE
BKORDER              BKORDER                     LEGACY
********************************** BOTTOM **********************************
```

Figure 22. INSERT Process Table Map - Modify Creator ID

Column Maps

You can also map each table column-by-column using Column Maps. Column Maps provide enormous flexibility. You can map columns with different names or use a subset of columns. You can also insert literal data, use an exit routine to modify the data before inserting it, insert the same source data into more than one column, insert the defined DB2 default value, specify an expression, or insert NULL if valid for the column. You can age the date in DATE, TIMESTAMP, character, and numeric columns.

Processing Overrides

The **INSERT Process Table Map** is presented on two "pages." **MORE**, preceded or followed by two arrows, indicates the presence of another page. Use the primary commands **LEFT** and **RIGHT** or the assigned function keys to scroll the page horizontally.

To provide processing overrides for inserting selected tables, you can scroll to **Overriding** on the **INSERT Process Table Map** panel.

```
--------------------------- INSERT Process Table Map --------------------------
Command ===>                                                 Scroll ===> PAGE

Available Commands: APPLY,SAVE,LIST,MAP,POPULATE,ACM,CLEAR,END when Done
                                                                     <<MORE
   Src CID: FOPDEMO                                    --Overriding--
  Dest CID: FOPDEMO2                                >>  Process Delete
                                                          Mode  Before
   Extract Tables       Destination Table Name     Type    U/I/B  Insert
-------------------- -------------------------->> ------- ------- ------
*********************************** TOP ************************************
CUSTOMERS            CUSTOMERS                   TABLE
DETAILS              DETAILS                     TABLE
ITEMS                ITEMS                       TABLE
ORDERS               ORDERS                      TABLE
BKORDER              BKORDER                     LEGACY
********************************** BOTTOM **********************************
```

Figure 23. Table Map – Processing Overrides

Process Mode and **Delete Before Insert** allow you to set the processing options for any table on an individual basis. These overriding parameters are blank by default. You can specify the processing mode as update (U), insert (I), or both insert and update (B) for any table. If you specify I for any table, you

can also choose to delete the current contents of the destination table prior to inserting data from the Extract File. The global default processing options from the Specify INSERT Parameters and Execute panel are used for tables with no overriding parameters. (For a description of the global default processing options, see “Process Options” on page 37.)

In this example, leave the overriding parameters blank for all tables.

Choose Access Method

If necessary, you can use the ACM command to open the **Choose Access Method** popup dialog.

```
+-------- Choose Access Method -------+
|                             1 of 4 |
| Access Method Values:              |
|   K - Key Lookup                   |
|   S - Table Scan                   |
|   blank - Software Chooses         |
|                                    |
|                             Access |
| Destination Table Name      Method |
| --------------------------  ------ |
| ************** TOP ***************** |
| FOPDEMO.CUSTOMERS                  |
| FOPDEMO.DETAILS                    |
| FOPDEMO.ORDERS                     |
| FOPDEMO.ITEMS                      |
| ************ BOTTOM *************** |
+------------------------------------+
```

Figure 24. Choose Access Method

The ACM command allows you to override the default method (scan or key lookup) for accessing each table in the Extract or Archive File. A scan reads all rows in a table at one time; whereas a key lookup locates rows using a WHERE clause to search for primary or foreign key values.

Use END to return to the **INSERT Process** menu.

Apply Existing Table Map

If a suitable Table Map has been defined and stored in the Optim Directory, you can use the APPLY command to insert the specifications for that Table Map into the current one. You can determine the specifications that are included–the Dest CID, Destination table names, any Column Maps, or all.

For details, see the *Common Elements Manual*.

Use END to return to the **INSERT Process** menu.

Associate Legacy Tables to Data Destinations

If the Table Map references one or more Legacy Tables, the Associate Legacy Tables with Data Destinations panel is displayed when you exit the Table Map Editor. A Legacy Table (for IMS data, or a VSAM or sequential file) that is referenced as a Destination Table Name in a Table Map must be associated with a specific data source (i.e., the location of the data and how the data is accessed) in order to be used in an Insert Process. For VSAM or sequential files, you must provide the data set name. For IMS, you must provide the PSB and PCB for the destination table's DBD, as well as the data set name.

For example, a single Legacy Table can describe records in your production environment and in your test environment. The **Associate Legacy Tables with Data Destinations** panel contents vary depending on whether the Legacy Tables in the Access Definition reference IMS data, VSAM or sequential files, or both.

The **Associate Legacy Tables with Data Destinations** panel shows the default data set name for the VSAM Legacy Table. This panel shows the data set names of any previously specified data destinations.

```
--------------- Associate Legacy Tables with Data Destinations ----------------
Command ===>                                                Scroll ===> PAGE

Source Dataset Prefix                    :  FOPRT.PROD                  1 of 1
Overriding Destination Dataset Prefix ===>                              MORE>>

Source Legacy Table /       Source Dataset /                    Dest
Destination Legacy Table    Destination Dataset                 Status
--------------------------- ------------------------------------------------
******************************** TOP ***************************************
FOPDEMO.BKORDER             FOPDEMO.BKORDER                     LEGACY
  FOPDEMO.BKORDER             FOPDEMO.BKORDER
****************************** BOTTOM ***************************************
```

Figure 25. Associate Legacy Tables with Data Destinations

If you specify a data set name and do not enclose it in quotes, the name is automatically prefixed with the **Overriding Destination Dataset Prefix** from this panel or the default prefix specified in **User Options**.

To save time, if you have more than one Legacy Table, you can enter the data set name in the list and use the “=” shortcut on subsequent lines. Use “=” to copy the Destination Dataset name from the preceding entry or use “=s” to copy the Source Dataset from the current entry into Destination Dataset. For example, if you had more than one Legacy Table, you would enter “=” under FOPDEMO.BKORDER in **Source Dataset/Destination Dataset** and the previous entry would be duplicated.

Use END to save the Table Map and display the previous panel.

PERFORM

In this sample session, Option 2 **PERFORM** is selected from the **INSERT Process** menu. The following panel is displayed.

```
---------------------- Specify INSERT Parameters and Execute -------------------
Command ===>

Names for Extract File and Control File:
  Extract File DSN : FOPDEMO.SAMPLE.EXTRACT
  Control File DSN : FOPDEMO.INSERT.CONTROL

Process Options:
  Default Options (Overrides are not currently set in the Table Map):
    Processing Method to Use           ===> I   (I-Insert, U-Update, B-Both)
    For Tables Processed by Insert Only:
      Delete All Rows in Target Tables ===> N   (Y-Yes, N-No)
        If YES, Commit Frequency       ===> T   (T-After Each Table, E-At End)

  Lock Tables During Process      ===> N        (Y-Yes, N-No)
  Age Date Values                 ===> N        (Y-Yes, N-No)
  Commit Every Nth Row            ===>          (1-1000, Blank/SL)
  Limit Number of Discarded Rows  ===>          (1-4294967295, Blank/NL)

Run Process in Batch or Online    ===> O        (B-Batch, O-Online)
  If Batch, Review or Save JCL    ===>          (N-No, R-Review, S-Save)

Process Report Type               ===> D        (D-Detailed, S-Summary)
```

Figure 26. Specify INSERT Process Parameters

The Extract File and the Control File data set names are supplied.

Several parameters allow you to control the Insert Process. For example, you can specify whether tables are locked during the process, whether to age dates, and whether the process is to be performed in batch or online.

Note: If the extract file is on tape you must process the insert in batch.

Process Options

Process Options allow you to specify default values for tables that do not have overrides set in the Table Map Editor. A parenthetical note on the **Default Options** line indicates whether overriding values have been established. To set the default **Processing Method to Use**, specify whether to perform the Insert Process with insert (I), update (U), or both insert and update (B) processing. For tables that use insert only processing, you can choose to delete the data in destination tables prior to performing the insert (perhaps to fully refresh test data) and how often to issue commits during processing.

Note: If site management does not allow user specification, the **Delete All Rows in Target Tables** and **Commit Frequency** lines may be omitted from this panel.

Limit Discarded Inserts

You can also request that the Insert Process be terminated based on the number of discarded rows. For instance, if more than 50 rows are discarded there may be some problem with RI rules such that rows cannot be inserted because necessary parents do not exist. Rather than continue the process and accumulate a large number of discarded rows, the process is terminated. You can display the discarded rows, determine the problem, correct it, and retry the Insert Process.

Primary Keys

A Legacy Table requires a primary key when inserting, deleting, or extracting from a table more than once. You can create an Optim primary key for a Legacy Table as though the Legacy Table were a DB2 table. Fields in a Legacy record are treated as columns for the purpose of creating a primary key.

A primary key can be defined on a fixed array column. However only the first instance of the column will be part of the key. You cannot use a variable array column as a primary key definition.

Online versus Batch

You can execute the process online or in batch if the extract file is on disk. If the extract file is on tape you must use batch processing. When online, execution status is displayed in a pop-up window and, when the process is completed, an INSERT Process Report is automatically displayed. When executed in batch, the INSERT Process Report is output to SYSOUT or another user-designated file.

After typing your specifications for the Insert Process, press ENTER to direct Move to perform the process.

SHOW INDEXES Command

Use the SHOW INDEXES command on the Specify INSERT Parameters and Execute panel to display the **Index Analysis** pop-up window listing the destination tables of the Insert Process with the status of the supporting indexes. You can use the **Index Analysis** pop-up window as a diagnostic tool for determining whether to create the missing indexes.

```
+---------------------- Index Analysis ----------------------+
¦                                          1 of 5            ¦
¦ Table Name                 Index Name    Index Status      ¦
¦ -------------------------  ------------- ------------      ¦
¦ ************************* TOP ***************************** ¦
¦ FOPDEMO.CUSTOMERS          XCUSTPK       DBPK              ¦
¦ FOPDEMO.ORDERS             XORDRPK       Unique            ¦
¦ FOPDEMO.DETAILS                          Partial           ¦
¦ FOPDEMO.ITEMS              XITEMPK       DBPK              ¦
¦ FOPDEMO.BKORDER                          None              ¦
¦ ********************** BOTTOM ************************** ¦
+-------------------------------------------------------------+
```

Figure 27. Index Analysis

If **Index Status** is Partial or None, creation of the missing index may enhance processing performance.

After viewing the SHOW INDEXES information, use END to return to the Specify INSERT Parameters and Execute panel and continue with the Insert Process.

For detailed information on the **Index Analysis** pop-up window, see "SHOW INDEXES Command" on page 117.

More Details

The remainder of this manual provides details on all Move panels, facilities, and accompanying commands. It emphasizes the core capability provided by Move, the ability to copy relationally intact sets of DB2 and Legacy data and object definitions.

Chapter 3. Definitions

This section describes how to create and maintain Legacy Tables, and IMS Environment and Retrieval Definitions stored in the Optim Directory. Select Option 6 DEFINITIONS on the **Main Menu** to display the **Choose a Definition Option** menu.

```
------------------------- Choose a Definition Option -------------------------
OPTION ===>
                                            SQLID  ===>
1  PRIMARY KEYS    - Maintain Primary Keys     SUBSYS ===>
2  RELATIONSHIPS   - Maintain Relationships    LOCATION ===>
3  COLUMN MAPS     - Maintain Column Maps
4  TABLE MAPS      - Maintain Table Maps
5  ADS             - Maintain Access Definitions
6  LEGACY TABLES   - Maintain Legacy Tables for Non-DB2 Data
7  IMS ENVIRONMENT - Maintain IMS Environment Definitions
8  IMS RETRIEVAL   - Maintain IMS Retrieval Definitions
9  COLLECTIONS     - Maintain Archive Collections
A  PROCEDURES      - Maintain Column Map Procedures

E  EXPORT          - Export Optim Object Definitions
I  IMPORT          - Import Optim Object Definitions
```

Figure 28. Choose a Definition Option

Panel Options

The available options are:

PRIMARY KEYS
Primary keys are columns with values that uniquely identify a row in a table.

Use Option 1 to create, modify, or delete Optim primary keys and browse DB2 primary keys. For more information about this option, see the *Common Elements Manual*.

RELATIONSHIPS
Relationships are the set of columns from each of two tables used to define a correspondence between the tables.

Use Option 2 to create, modify, or delete Optim relationships, and browse DB2 and IMS relationships. For more information about this option, see the *Common Elements Manual*.

COLUMN MAPS
Column Maps are used by Move to map source columns to destination columns, or to transform the data for a destination column as part of an Insert, Load, or Convert Process. Column Maps are also used to exclude columns from participation in a process.

Use Option 3 to create, modify, or delete a Column Map. For more information about this option, see the *Common Elements Manual*.

TABLE MAPS
Table Maps are used by Move to map the source tables or Legacy Tables to their corresponding destination tables or Legacy Tables, so that tables with different names in the source and destination can be mapped and tables in the source can be excluded from the process.

Use Option 4 to create, modify, or delete a Table Map. For more information about this option, see the *Common Elements Manual*.

ADS Access Definitions are used by Move to specify the related data that is extracted. You can specify the set of tables, selection criteria, relationships, and other criteria to define the desired set of data.

Use Option 5 to create, modify, or delete an Access Definition. This option is the same as selecting Option 5 ADS on the **Main Menu**. For more information about this option, see the *Common Elements Manual*.

LEGACY TABLES

Option 6 LEGACY TABLES is displayed only if Move or Compare for IMS, VSAM and Sequential Data is installed. A Legacy Table allows you to incorporate legacy data into Move or Compare processes. The Legacy Table describes the legacy data and maps it to a DB2 table format.

If a Legacy Table has a defined primary key and necessary relationships, you can use the Legacy Table in Move or Compare processes. The Legacy Table can be referenced in Optim objects (for example, in Access Definitions or Table Maps) as if it were a DB2 table.

Use Option 6 to create, modify, or delete a Legacy Table. For more information about this option, see "Legacy Tables" on page 41.

IMS ENVIRONMENT

Option 7 IMS ENVIRONMENT is displayed only if Move or Compare for IMS, VSAM and Sequential Data is installed. An IMS Environment Definition allows you to define the information needed to access IMS data, including the DBD, PSB, and IMS Program libraries, the DFSVSAMP data set and member names, and if the IMS data is allocated to a control region, the IMS System ID and Application Group Name (AGN).

Use Option 7 to create, modify, or delete an IMS Environment Definition. For more information about this option, see "IMS Environment Definition" on page 59.

IMS RETRIEVAL

Option 8 IMS RETRIEVAL is displayed only if Move or Compare for IMS, VSAM and Sequential Data is installed. An IMS Retrieval Definition provides the information necessary to dynamically process IMS data by defining the PSB name, PCB number, IMS System ID, and data sets for the IMS database to be used by Legacy Tables that reference the DBD and Environment Definition.

Use Option 8 to create, modify, or delete an IMS Retrieval Definition. For more information about this option, see "IMS Retrieval Definition" on page 64.

COLLECTIONS

An Archive Collection is a mainframe object that contains one or more Archive Files. When an ODM connection is made using a collection name, the Archive Files in the collection are unioned and presented to the user as though a single Archive File was being accessed.

For example, say you archive the customer database 50 times a year, and all 50 archive files are assigned to the same collection. Each Archive File has selection criteria for a single, unique state. When accessed individually, each Archive File holds only one state's worth of data. However, when accessed via the collection, data from all 50 states is available for retrieval. A collection can included any number of Archive Files, and a given Archive File may be included in more than one collection, but each Archive File can be included only once in a given collection

Use Option 9 to create, modify, or delete an Archive Collection. For more information about this option, see the *Archive User Manual*.

PROCEDURES

A Column Map Procedure contains either a complex expression (unstructured set of Lua statements) or a set of standard functions (structured set of Lua statements) used to transform or mask data.

EXPORT

The Export Process is used to copy object definitions that are specific to Optim from the Optim

Directory and store them in an external file. This file can then be used by the Import Process to add the object definitions to an Optim Directory used in another subsystem.

Use Option E to export object definitions from the Optim Directory. For more information about this option, see the *Common Elements Manual*.

IMPORT
The Import Process is used to import previously exported object definitions. The imported definitions are stored in the Optim Directory. You can also import primary keys and relationships described in CREATE TABLE and ALTER TABLE JCL statements, allowing you to import definitions stored in an external data modeling tool.

Use Option I to import object definitions. For more information about this option, see the *Common Elements Manual*.

Panel

Using prompts on the **Choose a Definition Option** menu, you can change the SQLID, DB2 subsystem, or remote location. This is especially useful for accessing the object definitions for a specific database, or when exporting and importing, to connect to the desired target database.

SQLID
The current SQLID. Modify this value to connect using a different SQLID.

SUBSYS
The current DB2 subsystem. Modify this value to connect to a different DB2 subsystem.

When connecting to a remote subsystem, this value should be the local subsystem where the remote location is defined.

LOCATION
The remote location. This prompt is displayed if remote access is available. Specify a value to connect to a remote DB2 subsystem. You can use a percent sign (%) to obtain a selection list of available locations. If the connection fails, the session is restarted and the **Main Menu** is redisplayed.

Note: If you leave this prompt blank, the local subsystem is assumed.

Considerations for Primary Keys and Relationships

When you request a function that requires relationship information — such as adding related tables to an Access Definition or selecting a traversal path for an extract — any relationship information from the DB2 Catalog is used.

If the required information is not defined in the DB2 Catalog, Move searches for the information in the Optim Directory. If the information is not defined in the Directory, you can create the relationship definition using a series of prompts provided by Move. This information is then stored in the Directory and becomes available to all Optim users. Move uses the Directory as an extension of the DB2 Catalog.

Update the Directory

You can add primary keys and relationships to the Directory using the series of panels described in the *Common Elements Manual*. Alternatively, the IMPORT option can be used to import relationship information from third party dictionaries or case tools.

Legacy Tables

A Legacy Table allows you to incorporate legacy data into Move processes. The Legacy Table uses COBOL or PL/I copybooks to describe the legacy data and map it to a pseudo DB2 table format.

You can also create a Legacy Table independently, by entering information manually. After you define an Optim primary key, for VSAM Legacy Tables, and a relationship with DB2 tables or other Legacy Tables, you can use the Legacy Table as a surrogate for a DB2 table in Move processes. The Legacy Table can then be referenced in Optim objects, e.g., Access Definitions or Table Maps, as if it were a DB2 table.

Note: A legacy table is limited to a maximum of 2500 fields.

For example, you might have legacy data that corresponds to more recent customer orders stored in a DB2 table. If you create a Legacy Table for the legacy orders, you can use the legacy data in any Move process in which you can use the data in the ORDERS table. Thus, if you wish to extract a set of related data that includes all legacy orders for selected customers in the DB2 table CUSTOMERS, you would create a Legacy Table for the legacy orders and reference both the Legacy Table and the CUSTOMERS table in the Access Definition used to extract the data. The resulting Extract File can then be used to create or update a database.

In general, references to tables in this manual apply to Legacy Tables as well as DB2 tables and views, except where specifically noted.

Legacy Table array processing

When you process legacy table data that includes array columns special considerations apply. Be aware of these general guidelines for working with arrays:

Column map - array processing

- Arrayed columns can be referenced in a column map. In a column map, any specification for an arrayed column applies to all instances of the array.
- You can specify selection criteria for fixed arrays, however, the criteria is applied only to the first instance of the column in the array.
- Selection criteria cannot be specified for variable arrays.
- If you map an array column to a non-array column, the value of the first instance of the array column is copied to the non-array column.
- If you map a non-array column to an array column, the value of the non-array column is copied to every instance of the array column.
- If a source array has more instances than a destination array, the remaining source instances are not used.
- If a destination array has more instances than a source array, the remaining destination instances are initialized to blank or zero (0), depending on their data type.
- When you map an array column to an array column the corresponding instances are mapped. Correspondence is based on the order in which the column instance appears in the row. For example, if the source array is defined as:

  ```
  05 ADDRESSES OCCURS 3 TIMES.
  10 STREET OCCURS 2 TIMES.
  10 CITY  PIC X(30).
  10 ZIP    PIC     9(9) COMP-3.
  ```

  And the destination array is defined as:

  ```
  05 Street OCCURS 5 TIMES.
  ```

  There are 6 instances of STREET in the source array (STREET_1_1, STREET_1_2, STREET_2_1, STREET_2_2, STREET_3_1, STREET_3_2,) and 6 instances of Street in the destination array (Street_1, Street_2, Street_3, Street_4, Street_5, Street_6). STREET_1_1 is mapped to Street_1, STREET_1_2 is mapped to Street_2, and so on.

- A variable array is described with an OCCURS DEPENDING ON clause that references a column. This column, known as the ODO object, is a numeric column and contains the number of occurrences of the array. Special considerations for ODO objects are:
  - An ODO column must receive a value explicitly. It must not be UNUSED in the column map or overlaid by another column. This includes groups and redefines.
  - Within a processing cycle for column map functions, ODO objects are always processed first.

Primary key - array processing

A primary key can be defined on a fixed array column. However only the first instance of the column will be part of the key. You cannot use a variable array column as a primary key definition.

Relationship - array processing

There are the following restrictions on using array columns in relationships:

- A fixed array column can be used in a relationship definition. The relationship references only the first instance of the array.
- You cannot use a variable array column to define a relationship.
- A variable offset column can be used in a relationship definition.
- Relationships for NO_VALUE columns are not processed. Processing for HAS_VALUE columns in the same row are not affected. A column is NO_VALUE for a row instance when either:
  - It is a variable arrayed column and there are less than the maximum occurrences in the row instance. For example, if the variable array column occurs from 1 to 3 times (COL_1 COL_2 COL_3) and there are 2 occurrences in this row instance, then COL_3 is NO_VALUE.
  - The length of the row instance does not include the column. If COL has an offset of 20 and length of 5 and the row length is less than 25, then COL is NO_VALUE.

Creating a Legacy Table for IMS Data

Move uses two Optim definitions to process IMS data described in a Legacy Table. These definitions are IMS Environment Definitions and IMS Retrieval Definitions.

Note: If you are creating a Legacy Table for data in VSAM or sequential files, the information in this section does not apply. You can skip to "Choose a Legacy Table" on page 44.

An **IMS Environment Definition** for each IMS database is required in order to create a Legacy Table with IMS data.

An **IMS Retrieval Definition** for each DBD within the IMS database provides defaults for processing IMS data.

In most situations you need only one Optim object for each IMS object.

IMS Environment Definitions

Move requires an IMS Environment Definition to identify the DBD, PSB, and IMS Load Libraries to be used during processing and the information needed to process the data when online to IMS. In fact, Move requires an Environment Definition as a prerequisite to creating both a Legacy Table for an IMS segment and an IMS Retrieval Definition.

A Legacy Table name is in two parts, *envdef.tablename.* The first portion of the name references the Environment Definition used with the Legacy Table in processing. If you attempt to create an IMS Legacy Table, but an Environment Definition with a matching name does not exist, Move prompts you to create the needed Environment Definition before it displays the Legacy Table editor.

To create an Environment Definition from the Specify Copybooks for Legacy Table panel, use the ENVIRONMENT primary command to display the Define IMS Environment panel. The first segment of the Legacy Table name is used as the new Environment Definition name.

For more information about creating Environment Definitions, see "IMS Environment Definition" on page 59.

IMS Retrieval Definition

An IMS Retrieval Definition allows you to optionally define appropriate default settings for processing IMS data. By creating a Retrieval Definition, you establish the PSB and PCB defaults used to access the specified DBD, and you associate the segments within the DBD with default database data sets to be referenced during processing.

The Retrieval Definition name is in two parts, *envdef.dbdname*, the name of the Environment Definition (which is also the name of the Creator ID of the Legacy Table) and the name of an IMS DBD referenced by the Environment Definition.

Move uses the information in the Retrieval Definition to provide default values when the Legacy Table is specified in an Access Definition or a Table Map. If you have not created a Retrieval Definition, you must manually enter the information when you create the Access Definition.

To create a Retrieval Definition directly from the **Modify Legacy Table** panel, use the DATASOURCE primary command to display the **Provide Retrieval Definition for DBD** panel using the Creator ID of the Legacy Table and the specified DBD as the two-part Retrieval Definition name.

For more information about creating Retrieval Definitions, see "IMS Retrieval Definition" on page 64.

Relationships Created with Legacy Tables for IMS

Move recognizes IMS relationships between two segments within the same DBD, and IMS logical relationships between two segments in separate databases. If an IMS relationship exists between two Legacy Tables, you do not need to create an Optim relationship.

Access Definition and Table Map Overrides

Retrieval Definitions provide default values to be used during processing. You can override these defaults when creating an Access Definition or Table Map.

- When creating an Access Definition that references one or more IMS Legacy Tables, you can override, for the Extract Process, the default PSB names, PCB numbers, IMS IDs, and IMS data sets specified in each referenced Retrieval Definition. The overrides are stored in the Access Definition and are used each time the Access Definition is used in an Extract Process.
- When creating a Table Map that references one or more IMS Legacy Tables, you can override, for the Insert Process, the default PSB names, PCB numbers, IMS IDs, and IMS data sets specified in each referenced Retrieval Definition. If the Table Map is named, the overrides are stored in the Table Map and are used each time it is used in an Insert Process.

Choose a Legacy Table

To create or edit a Legacy Table using the DEFINITIONS option on the **Main Menu**, select Option 6 LEGACY TABLES on the **Choose a Definition Option** menu. The Choose a Legacy Table panel is displayed and prompts for the Creator ID and Table Name.

```
----------------------------- Choose a Legacy Table --------------------------
Command ===>

Legacy Table:
  Creator ID ===>
  Table Name ===>

Use '_' for DB2 LIKE character ===> NO    Y-Yes, N-No
```

Figure 29. Choose a Legacy Table

Panel

This panel includes:

Creator ID
Specify the Creator ID. Use DB2 LIKE syntax or leave **Creator ID** blank to display a selection list.

Each IMS Legacy Table must have a matching Environment Definition. The name of the matching Environment Definition and the Creator ID are the same. The Legacy Table cannot be defined without a matching Environment Definition. If the matching Environment Definition has not been predefined, you can create it by using the ENV command from the **Choose a Definition Option** menu. See "IMS Environment Definition" on page 59 for more information.

Table Name
Specify the name of the Legacy Table to define or modify. Use DB2 LIKE syntax or leave **Table Name** blank to display a selection list.

Use '_' for DB2 LIKE character
Indicate whether the underscore, '_', is used as a DB2 LIKE character or literally, as part of the name.

Explicit Names

If you specify explicit values for **Creator ID** and **Table Name**, and:

- The Legacy Table exists, Move displays the named Legacy Table on the Modify Legacy Table panel.
- The Legacy Table does not exist, Move prompts for information needed to create a new Legacy Table on the Specify Copybooks for Legacy Table panel. See "Specifying Legacy Table Copybooks" on page 48.

Selection List of Legacy Tables

When you use DB2 LIKE syntax or leave **Creator ID** or **Table Name** blank, a selection list is displayed.

```
------------------------------ Select Legacy Table------------------------------
Command ===>                                                 Scroll ===> PAGE

    Line Cmds: S-Select, D-Delete, C-Copy, R-Rename, AT-Attr    1 OF 4

    ------ Legacy Table ------- ------ Last Modified -------
Cmd Creator      Table Name        By           Date
--- -------- ------------------ -------- ------------------
    ***************************** TOP ********************************
___ FOPLEG   CUSTOMERS          FOPDEMO  2000-11-13 10.57.15
___ FOPLEG   ITEMS              FOPDEMO  2000-11-13 10.09.35
___ FOPLEG   ITEMSX             FOPDEMO  2000-11-13 10.57.32
___ FOPLEG   ORDERS             FOPDEMO  2000-11-13 10.09.07
    ***************************** BOTTOM *******************************
```

Figure 30. Select Legacy Table

Panel

This panel includes

Cmd Line command area. The possible line commands are:

- **S** Select a Legacy Table.
- **D** Delete a Legacy Table. After deleting, the message "*DELETED" is displayed.
- **C** Copy a Legacy Table to create a new one. The **Copy Legacy Table** panel prompts for the name of the new Legacy Table. After copying, the message "*COPIED" is displayed.
- **R** Rename a Legacy Table. The Rename Legacy Table panel prompts for the new name of the selected Legacy Table. After renaming, the message "*RENAMED" is displayed.
- **AT** Modify attributes of a Legacy Table. The Object Attributes panel allows you to edit the Legacy Table description and security status (if authorized).

Creator
The Creator ID that qualifies the Table Name.

Table Name
The name of the Legacy Table.

By The TSO ID for the user that last modified the Legacy Table.

Date The date and time the Legacy Table was last modified.

Select a Legacy Table

On the selection list, use the S line command to select a Legacy Table to modify. The Modify Legacy Table panel is displayed. For more information about modifying the Legacy Table, see "Defining Legacy Tables" on page 51.

Copy Legacy Table

To copy a Legacy Table, type C in **Cmd** next to the name of the source Legacy Table. The following figure shows the **Copy Legacy Table** panel.

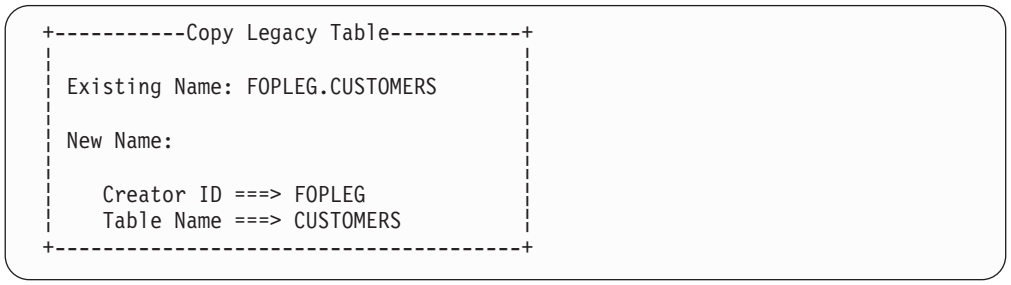


Figure 31. Copy Legacy Table

The **Copy Legacy Table** panel displays the name of the original Legacy Table and prompts for a new Creator ID and Table Name.

Rename Legacy Table

To rename a Legacy Table, type R in **Cmd** next to the name of the Legacy Table. The following figure shows the **Rename Legacy Table** panel.

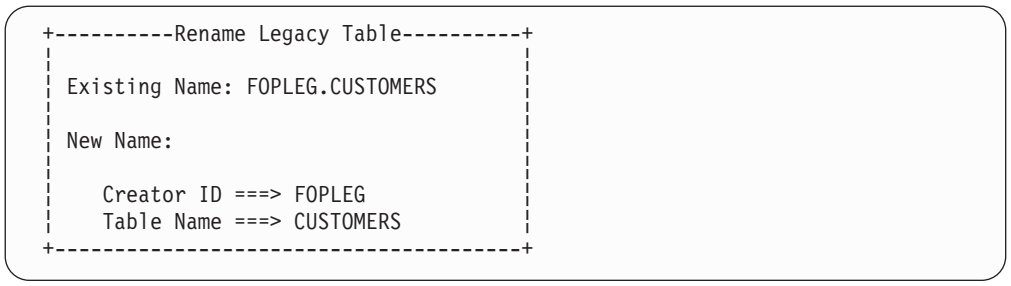


Figure 32. Rename Legacy Table

The **Rename Legacy Table** panel displays the current name of the Legacy Table and prompts for a new Creator ID and Table Name.

Object Attributes

To modify the description or security status attributes of a Legacy Table, type AT in **Cmd** next to the name of the Legacy Table. The description and security status for the Legacy Table are specified on the Object Attributes panel.

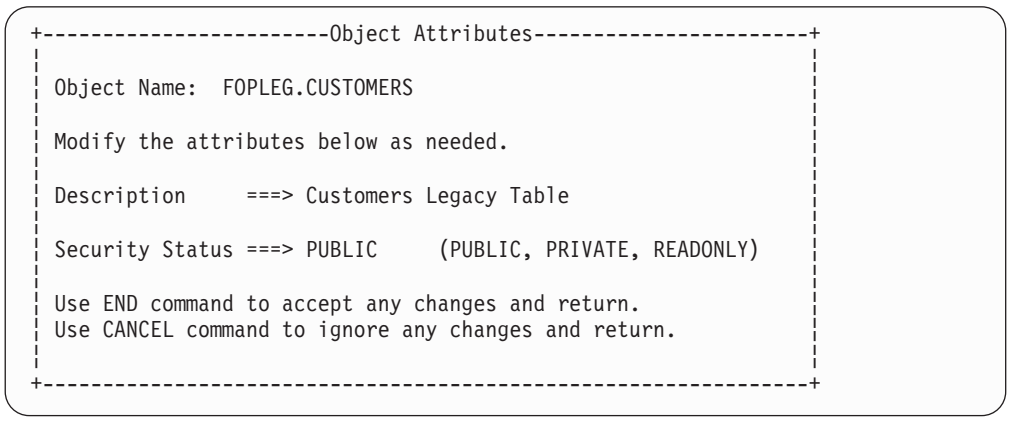


Figure 33. Object Attributes

The Object Attributes panel provides a 40-character area to display and edit the description. An 8-character area is available to specify one of the following security statuses:

Public
Anyone can edit and use.

Private
Only the owner can edit and use.

Readonly
Anyone can use, only the owner can edit.

A site option determines whether security status is available. If it is not available, **Security Status** is not displayed. For additional information about the Object Attributes panel see the *Common Elements Manual*.

Managing the Selection List

You can use standard ISPF scrolling facilities to scroll the selection list. The following primary commands are available for a selection list of Legacy Tables. For details, see the *Common Elements Manual*.

- BOTTOM
- CANCEL
- DOWN
- END
- FIND
- LOCATE
- OPTIONS
- RESET
- RFIND
- SHOW
- SORT
- TOP
- UP

Note:

- FIND locates a character string anywhere in the list. RFIND repeats the FIND operation. (This command is usually assigned to PF5.)
- LOCATE locates and scrolls to an object name that matches or is greater than the search value.
- SORT arranges the list by values under a column heading (for example, SORT DATE).
- SHOW limits the selection list to objects for which a specific value is displayed.

Specifying Legacy Table Copybooks

The Specify Copybooks for Legacy Table panel prompts you for the copybook(s) used to define the Legacy Table.

Move parses the copybooks to populate the Legacy Table editor. If you do not specify any copybooks, you must define the Legacy Table manually.

```
----------------Specify Copybooks for Legacy Table: FOPLEG.ITEMS ---------------
 Command ===>

 INSTRUCTIONS: Specify the name(s) of the Copybook members containing the record
                description to be used for this Legacy Table.  All members will be
               concatenated before being parsed.

   Legacy Table Type ===> I   I-IMS  F-File (VSAM or Sequential)

   Copybook Language ===> C   C-COBOL P-PL/I

   Copybook(s) ===>
               ===>
               ===>
               ===>
               ===>
```

```
------------ Specify Copybooks for Legacy Table: FOPDEMO.BKORDER --------------
Command ===>                                                  Scroll ===> PAGE

INSTRUCTIONS: Specify the name(s) of the Copybook members containing the record
              description to be used for this Legacy Table.  All members will
              be concatenated before being parsed.

  Legacy Table Type ===>     I-IMS  F-File (VSAM or Sequential)

  Copybook Language ===>     C-COBOL  P-PL/I

  Copybook(s) ===>
              ===>
              ===>
              ===>
              ===>
```

Figure 34. Specify Copybooks for Legacy Table

The options on this panel are:

Legacy Table Type
The type of data to be used with the Legacy Table. Specify:

I Data in an IMS database.

F Data in sequential or VSAM files.

Copybook Language
The language used to create the copybooks. Specify C (COBOL) or P (PL/I).

Copybook(s)
The names of copybooks used as a source for the Legacy Table. You can enter up to five copybook names. You can use wildcards to select one or more copybooks from a list.

Note: Move remembers your entries and presents the same information whenever you invoke the Specify Copybooks for Legacy Table panel and subsequent panels.

About Copybooks

Copybooks processed by Optim Legacy must be valid COBOL or PL/I definitions. If an error is detected, a message is issued identifying the specific problem and relevant line number. Optim Legacy supports field redefinitions, and Occurs and Occurs Depending On (ODO) clauses, including nested ODO's. Level 66 (RENAMES) are not supported.

Selecting Copybook Members

To create a Legacy Table manually, leave all Copybook entries blank. Move displays the Define Legacy Table panel in Edit mode, without populating any Field names. This allows you to manually create the Legacy Table.

You can enter as many as five copybook names on the Specify Copybooks for Legacy Table panel. If a desired copybook is not in the default copybook library, you must provide both the copybook data set and member names.

Note:

- If the copybook member does not exist in the default or specified copybook library, an error message is displayed.
- If you do not use single quotes (') around the copybook library (and member) name, the Data Set Prefix, specified as a User Option, is used as the prefix.

Selection Lists

If you are unsure which copybook data set you want to select, you can:

- Display the Member Selection List using the asterisk (*) wildcard, either alone or by adding the wildcard to the partial copybook member name (e.g., VE*). If only one copybook member matches the criteria, Move displays the Define Legacy Table panel and populates the Field names from the copybook member.
- Display the Select Copybook Library panel using the percent (%) wildcard, either alone or by adding the wildcard to the data set name (e.g., 'FOP.RT.%'). You can then select the desired library. Once you select a valid copybook library, Move displays the Member Selection List panel, allowing you to select a copybook member.

Manually Defining Legacy Tables

If you do not specify any copybook names on the Specify Copybooks for Legacy Table panel, the Define Legacy panel is displayed in full edit mode, with no Column or Field names populated. This allows you to manually create the Legacy Table.

Member Selection List

Entering an asterisk (*) wildcard in **Copybook** opens the Member Selection List panel.

```
--------------- Member Selection List for FOPRT.LEGACY.COPYLIB ----------------
Command ===>                                                 Scroll ===> PAGE

Cmd  Member  VV.MM  Created       Changed       Size  Init   Mod UserID
--- ------------------------------------------------------------------------
********************************** TOP ********************************
___ ITEMS    01.01 2000/09/25 2000/09/27 00:33     7    16     0 DASDMGR
___ ORDERS   01.01 2000/09/25 2000/09/27 00:33     9    16     0 DASDMGR
******************************** BOTTOM *******************************
```

Figure 35. Copybook Member Selection List

Use the S line command to select a copybook member and then press ENTER or END to open the Define Legacy Table panel. Move populates the Legacy Table editor with the information from the selected copybook member.

Note:

- You can select only a single copybook from the Member Selection List panel. If you use the S line command on more than one copybook, Move selects only the first.
- To list several copybooks from selection lists, enter an asterisk at the prompt for each copybook.

Select Copybook Library

Enter a percent (%) wildcard to display the Select Copybook Library panel, allowing you to select a copybook library other than the Default Copybook Library, specified in Legacy Options. (For more information, see the *Common Elements Manual*). You may also place a wildcard at the end of a fully qualified data set name to create a more limited selection list. For example, entering 'FOPDEMO.RT.%' might return the following selection list.

```
+-----------------Select Copybook Library------------------+
|                                                          |
| Cmd                 Data Set Name                1 OF 4  |
| --- ------------------------------------------           |
| ********************** TOP **********************       |
| ___ FOPDEMO.RT.LOCAL.CLIST                               |
| ___ FOPDEMO.RT.LOCAL.EXEC                                |
| ___ FOPDEMO.RT.TEST.CLIST                                |
| ********************* BOTTOM **********************      |
+----------------------------------------------------------+
```

Figure 36. Select Copybook Library

Select Record Name

A Legacy Table can include only one 01-level field. If the copybook text (possibly concatenated from multiple copybook members) contains multiple 01-level record definitions, the **Select Record Name Used To Create Legacy Table** panel is displayed.

```
+---Select Record Name Used To Create Legacy Table----+
|                                                     |
| Cmd Record Name                    Lang    1 OF 2   |
| --- ---------------------------------              |
| ******************* TOP *****************          |
| ___ SALES                           C               |
| ___ ORDERS                          C               |
| ****************** BOTTOM ***************          |
+-----------------------------------------------------+
```

Figure 37. Select Record Name Used to Create Legacy Table

This panel allows you to select the record name used to populate the Legacy Table Editor. The resulting Legacy Table is displayed on the Define Legacy Table panel. If you select more than one copybook with a 01-level, only the information from the first selected copybook is displayed on the Define Legacy Table panel.

Defining Legacy Tables

The Define Legacy Table panel allows you to create or edit a Legacy Table.

If a copybook member is specified on the Specify Copybooks for Legacy Table panel, Move uses the copybook field names to populate the panel. If no copybook member is specified, then the Define Legacy Table panel is blank, allowing you to manually create the Legacy Table.

```
---------------------- Define Legacy Table: FOPLEG.ITEMS -----------------------
Command ===>                                                 Scroll ===> PAGE

Associated IMS DBD Name ===>            Segment ===>
User defined I/O Exit   ===>
                                                                      Row 1 of 7
Cmd Level/Field Name              Type  Len  Occur Column Name
--- ----------------------------- --- ----- ----- ------------------
*********************************** TOP ************************************
___ 1 ITEMS                             102        ITEMS
___  5 ITEM_ID                     CHR    5        ITEM_ID
___  5 ITEM_DESCRIPTION            CHR   72        ITEM_DESCRIPTION
___  5 CATEGORY                    CHR   14        CATEGORY
___  5 RATING                      CHR    4        RATING
___  5 UNIT_PRICE                  DEC    3        UNIT_PRICE
___  5 ON_HAND_INVENTORY           BIN    4        ON_HAND_INVENTORY
********************************** BOTTOM **********************************
```

Figure 38. Define Legacy Table

Panel

The Define Legacy Table panel includes:

Associated IMS DBD Name
Specify the name of the DBD with which the Legacy Table is associated. The DBD must be in a DBD Library referenced in the Environment Definition. (The name of the Environment Definition determines the association. An associated Environment Definition has the same name as the Creator ID for the Legacy Table.) Specify an asterisk to generate a selection list that includes DBDs in the referenced Environment Definition.

This prompt is displayed only if the Legacy Table type is IMS.

Segment
Specify the name of the segment in the associated DBD. Specify an asterisk to generate a selection list of segments in the specified DBD.

This prompt is displayed only if the Legacy Table type is IMS.

User defined I/O Exit
Supply the name of a user defined I/O exit to be invoked during Extract and Insert processing. If you leave this field blank, and if a user defined I/O exit is specified in the Site Options, it will be used.

Cmd Line command area. Valid line commands are:

C Copy the selected line to create a new one.

D Delete a line.

I Insert a line.

M Move a line.

R Repeat a line.

Z Zoom the field.

For Copy and Move, use A or B to indicate the destination.

You can use the block form (e.g., CC) or a repetition factor (e.g., C4) for these commands.

All line commands, other than the Z line command, are enabled only in full edit mode. See "EDIT Command" on page 56 for a detailed explanation of the EDIT command and mode.

Level / Field Name
Level and name of the field. The level number indicates the hierarchical order of the fields described in the Legacy Table. A lower number (01, 02, 03, etc.) indicates a grouping of higher-numbered elements. Entries are indented one space for each logical level. Level 1 is the highest level for a field in a Legacy Table.

Type The data type for the field. Possible data types are:

BIN Binary

CHR Character

DEC Decimal

FLT Floating

NUM Other numeric

OTH Other PL/I field types (Bit, Pointer, etc.)

GRP Group fields

Len Length of the field. If a field is of varying size (contains Occurs Depending On), length is listed as VAR.

The length of an 01-level field or a group field is the sum of all subordinate field lengths. If you change subordinate field lengths, use the VERIFY command to update the length of the higher-level field.

Occur Number of times a field occurs. Fields that occur a variable number of times are indicated by a D after the numeric value.

Column Name
Name by which the field and its data are referenced in Move processes. Move automatically generates a column name derived from the field name. The column name must be compatible with DB2 requirements in order to be used in Move processes.

Move column names must be unique and can be no more than 18 characters, while COBOL allows a maximum of 30 characters for field names, and PL/I allows 31. Thus, Move may truncate COBOL and PL/I field names in order to use them as column names. Truncated names may require editing to be useful. In addition, the Move-generated names do not include dashes; any dashes in a field name are translated to underscore characters. You can delete and type new column names or overtype the generated names.

Available Commands

Commands available on this panel are:

- CANCEL
- CRITERIA
- DATASOURCE
- EDIT
- END
- FIND
- ONLY
- SHOW
- SAVE
- VERIFY

Note: In limited edit mode, only the Column Names can be edited. Use the EDIT command to edit all information on the panel. If a copybook is referenced, the Define Legacy Table panel is initially displayed in "normal" mode. (See "EDIT Command" on page 56 for details.)

Specify Data Source Information

A Legacy Table must be associated with a specific data source before Move can extract or insert data. To specify default data source information associated with the Legacy Table, you can use the DATASOURCE primary command.

- For an IMS Legacy Table, the Provide Retrieval Definition for DBD panel is displayed, using the Creator ID and the Associated IMS DBD Name as the two-part name of the Retrieval Definition. The Provide Retrieval Definition for DBD panel allows you to create or, if it exists, edit the Retrieval Definition. For more information about the Retrieval Definition see "IMS Retrieval Definition" on page 64.
- For a VSAM Legacy Table Type, the following pop-up is displayed.

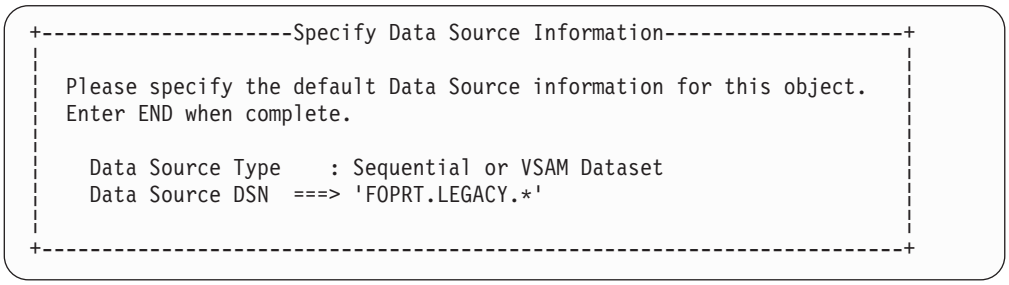


Figure 39. Specify Data Source Information

Enter the data set name explicitly, by enclosing it within single quotes, or enter part of a name with wildcards to obtain a selection list. On the Select Data Set panel, select the desired Data Set Name and press ENTER to insert the name in the **Specify Data Source Information** panel. Press END to continue.

Note: If a default data source has not been associated with the Legacy Table, you must define it when the Legacy Table is referenced in an Access Definition or Table Map.

CRITERIA Command

Use criteria to match the Legacy Table to specific records in the source file. For example, a source file might contain three types of records of the same length, but different format. Each record type is distinguished by a code in the first field.

Criteria are created using an input format similar to that of an SQL WHERE clause. Use the CRITERIA primary command to specify criteria for a Legacy Table.

An example of a completed criteria statement follows.

```
------------ Modify Criteria For Legacy Table: FOPLEG.ITEMS ------------------
Command ===>                                                 Scroll ===> PAGE

                                                                    Row 1 of 3
Cmd Selection Criteria
--- ------------------------------------------------------------------------
********************************** TOP ***********************************
___ RATING <>'X' AND CATEGORY = 'DRAMA' AND UNIT_PRICE < '12.00' AND
___ ITEM_ID > 'DR001' AND
___ ITEM_ID < 'DR060'
___ -- Sample comment text.
******************************** BOTTOM **********************************
Line Commands: (I)nsert (D)elete (R)epeat (M)ove (C)opy
Use the LIST COLUMNS command to add column names, if needed
```

Figure 40. Completed Criteria

A maximum of 200 lines is available for specifying criteria. Standard DB2 conventions apply to comments; each line must begin with two hyphens (--).

The criteria area is scrollable. Notation indicates the total number of lines and the relative position of the first displayed line.

To obtain a selection list of columns, enter LIST COLUMNS at the command line. A column list appears:

```
------------ Modify Criteria For Legacy Table: FOPLEG.ITEMS ------------------
Command ===>                                                 Scroll ===> PAGE

                                                                    Row 1 of 1
Cmd Selection Criteria
--- ------------------------------------------------------------------------
*** ********************************* TOP ************************************
...
*** ******* +--------------------Select One Column---------------------+ *****
Line Comman ¦ Cmd           Column Name        Data Type         1 OF 7 ¦
Use the LIS ¦ --- ---------------------------------------------        ¦
            ¦ ********************** TOP ***********************        ¦
            ¦ ___ ITEMS                          CHAR(102)              ¦
            ¦ ___ ITEM_ID                        CHAR(5)                ¦
            ¦ ___ ITEM_DESCRIPTION               CHAR(72)               ¦
            ¦ ___ CATEGORY                       CHAR(14)               ¦
            ¦ ___ RATING                         CHAR(4)                ¦
            ¦ ___ UNIT_PRICE                     DECIMAL(52)            ¦
            ¦ ___ ON_HAND_INVENTORY              INTEGER                ¦
            ¦ ********************** BOTTOM **********************        ¦
            +-----------------------------------------------------------+
```

Figure 41. Choose Column for Criteria

Type S next to the desired Column Name and press ENTER to insert the column name in the panel. Format the criteria as you would an SQL WHERE clause. You may specify a combination of OR and AND logical operators as needed.

Several functions can be performed using line commands. The functions and the line commands are:

Copy C*n*, CC

Delete D*n*, DD

Insert I*n*

Move M*n*, MM

Repeat
R*n*, RR

For Copy and Move, use A or B to indicate the destination.

All leading and trailing spaces on each line are maintained; only the trailing spaces at the end of the last line are deleted.

Use END when finished. The criteria are saved with the Legacy Table.

EDIT Command

Use the EDIT command to toggle the Legacy Table editor between limited editing and full editing modes.

- Limited edit mode allows you to edit only the Column Name field of the Legacy Table editor.
- Full editing mode allows you to edit all fields in the Legacy Table editor. In addition, all line commands (i.e., Copy, Delete, Insert, Move, and Repeat) are enabled.

Note: If no copybooks are specified on the Specify Copybooks for Legacy Table panel, then the Legacy Table editor is automatically in full editing mode when the **Modify Legacy Table** panel is displayed.

FIND Command

Use the FIND command to locate names that include a specific character string. The syntax is:

```
FIND string
```

where "string" is the search value. Do not delimit the string. Move locates the first occurrence of the string beginning with the first displayed line of data. Use RFIND to continue the search from the current cursor location. If the string is not found, FIND goes to the beginning of the list and continues the search. If no match is found after the entire list is searched, the search terminates.

ONLY Command

The ONLY command is useful when you are working with a large Legacy Table and need to focus on a subset of the listed fields. ONLY displays the names of fields that satisfy command parameters. The syntax is:

```
ONLY string
```

where "string" is the exclusive value. Do not delimit the string. For example, to locate and display every field name that contains SHIPPING_ , specify:

```
ONLY SHIPPING_
```

SHOW Command

Use the SHOW command to redisplay all field names after using ONLY.

VERIFY Command

Use the VERIFY command to check for errors without terminating the session or saving the data.

If a field length is blank when VERIFY is executed, a warning message is displayed. Group field lengths are automatically recalculated when you use VERIFY.

After making a correction, press ENTER to move to the next error.

Use END to verify the current specifications and terminate the edit session.

SAVE Command

Verify data in the current session and save it. The session is not terminated. If errors are detected, you are prompted to correct them as described for the VERIFY command.

Z (Zoom) Command

Use the Z (zoom) line command for a field listed on the Legacy Table editor to display field specifications on the Field Details panel.

```
------------------------------ Field Details --------------------------------
Command ===>                                                 SCROLL ===> PAGE


Field Level   ===> 5
Field Name    ===> RATING
Column Name   ===> RATING
Type          ===> CHR     G-GRP, C-CHR, N-NUM, D-DEC, B-BIN, F-FLT, O-OTH
Length        ===> 4       Precision ===>      Scale   ===>
Occurs From   ===>         Occurs To ===>
Depending On  ===>
Sync          ===>         Boundary  ===>      Picture ===> X(4)
Is Redefined     :         Redefines ===>
Value         ===>
```

Figure 42. Zoomed Field Details

Panel

This panel includes:

Field Level
Hierarchical level of the field within the Legacy Table.

Field Name
Name of the field.

Column Name
Name of the column for the field.

Type The data type for the field. Possible data types are:

GRP

BIN Binary

CHR Character

DEC Decimal

FLT Floating

NUM Other Numeric

OTH Other PL/I field types (Bit, Pointer, etc.)

GRP Group fields

Length
Length of the field. For a single field, the length is displayed. For a group, the combined length of subordinate fields is displayed.

Precision
Number of digits in a numeric field.

Scale Number of decimal positions in a numeric field.

Occurs From
Minimum number of times the field occurs.

Occurs To
Maximum number of times the field occurs.

Depending On
The number of times the field occurs (i.e., as in the COBOL parameter "Occurs Depending On").

If this value is inserted from working storage during program execution, you can use MAX_OCCURS to direct Move to calculate the number of occurrences based on remaining space in the record. The DO field must be at the end of the record.

Sync Indicate how the field is aligned. Specify:

Y Explicitly aligned.

N Not explicitly aligned.

blank Default alignment. (Alignment inherited from higher level field or, if unspecified for PL/I, default determined by data type.)

Boundary
Alignment if field type is Other (applies to fields unique to PL/I). Specified as 1, 2, 4, or 8.

Picture
Picture of the field as defined in the source. For information only.

Is Redefined
Indicator for redefined field. This value is set on entry to the editor and with the VERIFY command.

Redefines
Name of the field that the current field redefines.

Value Value indicating the definition to use for redefined fields.

Use END or CANCEL to return to the Modify Legacy Table panel.

Use END twice to return to the **Choose a Definition Option** menu to configure Primary Keys, Relationships, or Column Maps, if necessary.

Define Primary Keys and Define Relationships

When using a VSAM Legacy Table to simulate a DB2 table in Move processes, you must explicitly define Optim primary keys and relationships for it. Generic primary keys and relationships can also be used with Legacy Tables. For information about defining primary keys and relationships, see the *Common Elements Manual*.

Column Maps and Legacy Tables

Configure a Column Map normally, treating Legacy Table columns as DB2 table columns. For information about Column Maps, see the *Common Elements Manual*.

Saving the Legacy Table

After a Legacy Table is defined, it can be saved in the Optim Directory. Once saved, the Legacy Table is available to other users.

Use the END command to exit the Legacy Table editor. Modifications to the Legacy Table are automatically saved. By saving the current Legacy Table definition under a new name, you can use an existing Legacy Table as a prototype and retain the original version.

When defining a Legacy Table as part of a process, you can save the Legacy Table by specifying a fully qualified name. If you do not explicitly save the Legacy Table, it is not stored in the Directory and is available only for the current process.

Legacy Table Complete

When you have completed defining or modifying the Legacy Table, use END to redisplay the **Choose a Definition Option** menu.

IMS Environment Definition

Through an IMS Environment Definition, Move provides a consolidated way to define the information needed to access IMS data.

An Environment Definition simplifies the definition of IMS objects by allowing you to specify the names of the DBD, PSB, and IMS Program Libraries to be used during processing, and, if the data is online to a control region, the IMS System ID and Application Group Name.

Once defined, the Environment Definition name is referenced by a Retrieval Definition and IMS Legacy Tables. This allows Move to access the proper libraries automatically when creating the Optim objects.

- For more information about creating Legacy Tables, see "Legacy Tables" on page 41.
- For more information about creating Retrieval Definitions, see "IMS Retrieval Definition" on page 64.

Choose an IMS Environment Definition

To create or edit an Environment Definition using the DEFINITIONS option on the **Main Menu**, select Option 7 IMS ENVIRONMENT on the **Choose a Definition Option** menu.

The Choose an IMS Environment panel is displayed and prompts for name of the Environment Definition.

```
--------------------------- Choose an IMS Environment -------------------------
Command ===>

IMS Environment:
  Environment Name ===>

Use '_' for DB2 LIKE character ===> NO    Y-Yes,  N-No
```

Figure 43. Choose an IMS Environment

Panel

This panel includes:

Environment Name
Specify the 1- to 8-character name of the IMS Environment Definition. Use DB2 LIKE syntax to display a selection list. Leave blank or enter "%" to display a list of all IMS Environments.

Use '_' for DB2 LIKE character
Indicate whether the underscore, '_', is used as a DB2 LIKE character or literally, as part of the name.

Note: The Environment Definition name must match the name of the Creator ID used to create the Legacy Table referencing IMS data.

Explicit Names

If you specify an explicit value for the **Environment Name**, and:

- The Environment Definition exists, Move displays the named IMS Environment on the Modify IMS Environment panel.
- The Environment Definition does not exist, Move displays the Define IMS Environment panel with all fields blank.

Selection List of IMS Environment Definitions

When you use DB2 LIKE syntax in **Environment Name** or leave it blank, a selection list is displayed.

```
---------------------- Choose An Environment Definition -----------------------
Command ===>                                                  Scroll ===> PAGE

    Line Cmds: S-Select  D-Delete  C-Copy  R-Rename, AT-Attribute   1 OF 24

              ------- Last Modified -------
Cmd Env Name     By            Date
--- --------  --------  -------------------
    ****************************** TOP ***********************************
___ FOPIMS    FOPLEG    2000-05-07 11.48.21
___ FOPIMS01  FOPLEG    2000-11-13 12.30.15
___ FOPIMSO2  FOPLEG    2001-02-05 10.03.55
___ FOPIMS03  FOPLEG    2001-02-06 09.16.41
    ***************************** BOTTOM *********************************
```

Figure 44. Select an Environment Definition

Panel

The panel includes:

Cmd Line command area. Valid line commands are:

- **S** Select an Environment Definition.
- **D** Delete an Environment Definition. After deleting, the message "*DELETED" is displayed.
- **C** Copy an Environment Definition to create a new one. The **Copy Environment** panel prompts for the name of the new Environment Definition. After copying, the message "*COPIED" is displayed.
- **R** Rename an Environment Definition. The Rename Environment panel prompts for the new name of the selected Environment Definition. After renaming, the message "*RENAMED" is displayed.
- **AT** Modify attributes of an Environment Definition. The Object Attributes panel allows you to edit the Environment Definition description and security status (if authorized).

Env Name
The 1- to 8-character name of the Environment Definition.

By The TSO ID of the user that last modified the Environment Definition.

Date The date and time the Environment Definition was last modified.

See "Selection List of Legacy Tables" on page 45 for a discussion of available primary commands.

Select an Environment Definition

On the selection list, type the S line command to select an Environment Definition to modify. The **Modify IMS Environment** panel is displayed.

Copy Environment

To copy an Environment Definition, type the C line command next to the name of the source Environment Definition. The following figure shows the **Copy Environment** panel.

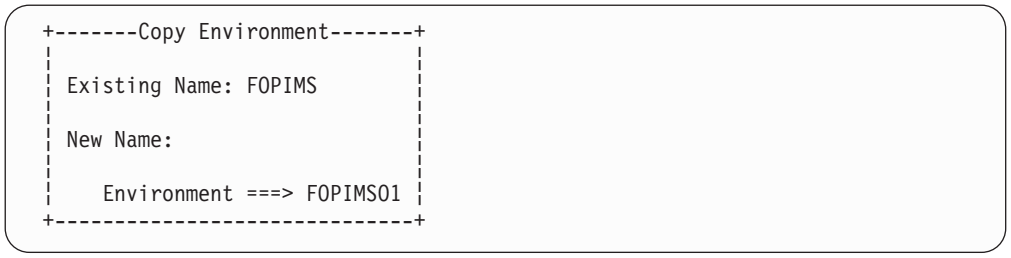


Figure 45. Copy Environment

The **Copy Environment** panel displays the name of the original Environment Definition and prompts for a new name for the copied Environment Definition.

Rename Environment

To rename an Environment Definition, type the R line command next to the name of the Environment Definition. The following figure shows the **Rename Environment** panel.

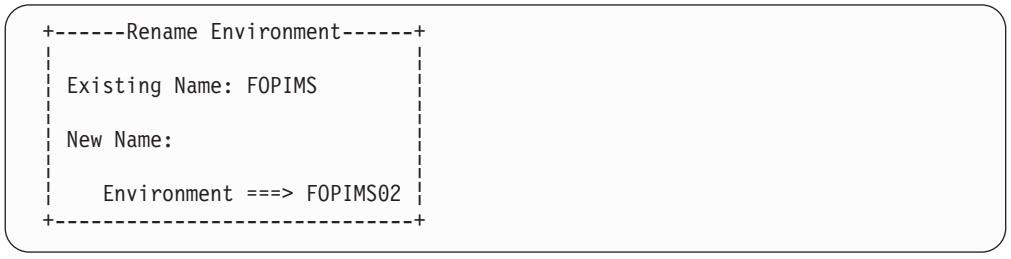


Figure 46. Rename Environment

The **Rename Environment** panel displays the current name of the Environment Definition and prompts for a new name.

Object Attributes

To modify the description and security status attributes of an Environment Definition, type the AT line command next to the name of the Environment Definition. The description and security status are specified on the Object Attributes panel.

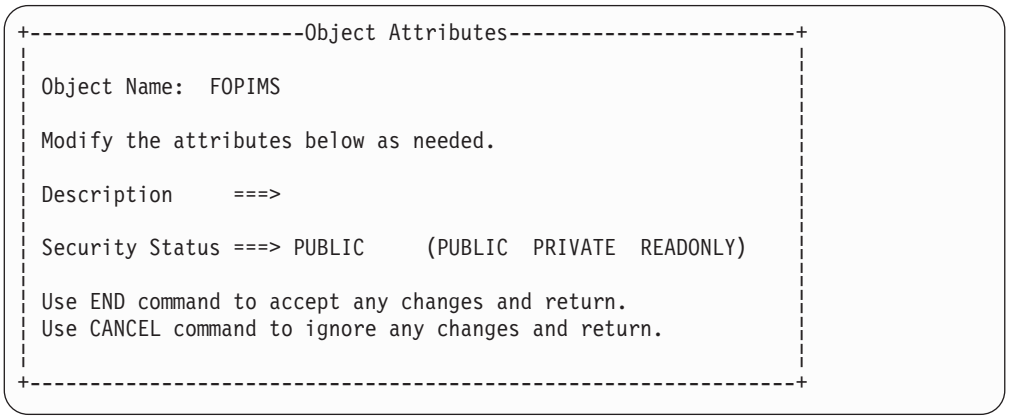


Figure 47. Object Attributes

The Object Attributes panel provides a 40-character area to display and edit the description. An 8-character area is available to specify one of the following security statuses:

Public
Anyone can edit and use.

Private
Only the owner can edit and use.

Readonly
Anyone can use, only the owner can edit.

A site option determines whether security status is available. If it is not available, **Security Status** is not displayed. For additional information about the Object Attributes panel, see the *Common Elements Manual*.

Managing the Selection List

You can use standard ISPF scrolling facilities to scroll the selection list. The following primary commands are available for a selection list of Environment Definitions. For details, see the *Common Elements Manual*.

- BOTTOM
- CANCEL
- DOWN
- END
- FIND
- LOCATE
- OPTIONS
- RESET
- RFIND
- SHOW
- SORT
- TOP
- UP

Note:

- FIND locates a character string anywhere in the list. RFIND repeats the FIND operation. (This command is usually assigned to PF5.)
- LOCATE locates and scrolls to an object name that matches or is greater than the search value.
- SORT arranges the list by values under a column heading (for example, SORT DATE).

- SHOW limits the selection list to objects for which a specific value is displayed.

Define IMS Environment

The Define IMS Environment panel allows you to specify the IMS Program Libraries, the IMS DBD and PSB Libraries, and the IMS System ID and AGN when data is online to a control region. Specifying this information allows Move to access IMS data utilizing the proper libraries.

```
----------------------- Define IMS Environment FOPIMS -------------------------
Command ===>                                                 Scroll ===> PAGE

IMS Program Libraries     ===>
                          ===>
                          ===>

IMS DBD and PSB Libraries ===>
                          ===>
                          ===>
                          ===>

DFSVSAMP DSN/Member Name  ===>

If data is online to IMS, enter the IMS System ID ===>      AGN ===>
```

Figure 48. Define IMS Environment

Panel

This panel includes:

IMS Program Libraries
Enter the names of the IMS Program Libraries to include in the Environment Definition. These libraries define and load the libraries required to run IMS. You may enter up to three library names. You may also enter wildcards to select from a list.

Note:

- All data sets defined as IMS program libraries must be APF-authorized.
- If you have authorized the Optim SFOPLLIB data set, add it to this list.
- If your site uses IMS dynamic allocation, include the name of the data set containing the dynamic allocation load modules.
- If the IMS Program Libraries are already available (e.g., by Linklist or other method), you do not need to enter the library names.

IMS DBD and PSB Libraries
Enter the names of up to four IMS DBD and PSB Libraries to include in the Environment Definition. You must enter at least one library name. You may also enter wildcards in order to select from a list.

The DBD and PSBs within the libraries define the structure of the IMS database as well as the method Move uses to access the data.

DFSVSAMP DSN/Member Name
Specify the name of the DFSVSAMP data set member that contains the IMS buffer parameters to be used when running in batch mode.

Enter the DFSVSAMP data set name to display the **Member Selection List** panel and select the DFSVSAMP data set member.

You may also enter wildcard characters to access the **Select PDS Library** pop-up window and select the DFSVSAMP data set from a list.

IMS System ID
Specify the IMS System ID required to access the IMS data when allocated to a control region (i.e., the data is online to IMS).

AGN Specify the IMS Application Group Name required to access the IMS data when allocated to a control region, if required by your IMS database.

Completed Environment Definition

When you have completed the Environment Definition, use END to save it. The panel from which the Modify/Define IMS Environment panel was invoked is redisplayed. If any referenced libraries cannot be found, an error is displayed.

Using an Environment Definition

Environment Definitions help define IMS Legacy Tables and Retrieval Definitions.

- The Creator ID of the Legacy Table name references the Environment Definition to be used with the table during processing. The Environment Definition identifies the IMS, DBD, and PSB libraries to be referenced when Move processes data using the Legacy Table, as well as information needed to process the data when online to IMS.
- The Retrieval Definition name is in two parts, the name of the Environment Definition and the name of an IMS DBD referenced in a DBD library in the definition. When creating the Retrieval Definition, you must also specify a PSB name and PCB number referenced in a PSB library in the Environment Definition required to access the database records and manipulate the data.

IMS Retrieval Definition

Move gives you the option to define default settings for processing IMS data while allowing you to change specifications for an individual process through a Retrieval Definition.

The IMS Retrieval Definition provides the information necessary to dynamically process IMS data. By creating a Retrieval Definition, you define the default PSB and PCB to be used to access the specified DBD, and you associate segments within the DBD with the default database data sets to be referenced during processing.

The Retrieval Definition name is in two parts, the name of the Environment Definition and the name of an IMS DBD referenced by the Environment Definition. The Environment Definition allows you to access the DBD and PSB included in the referenced libraries. For more information about creating Environment Definitions, see “IMS Environment Definition” on page 59.

Choose a Retrieval Definition

To create or edit a Retrieval Definition using the DEFINITIONS option on the **Main Menu**, select Option 8 IMS RETRIEVAL on the **Choose a Definition Option** menu.

The Choose an IMS Retrieval Definition panel is displayed, and prompts for the Environment Name and the IMS DBD Name.

```
----------------------- Choose an IMS Retrieval Definition --------------------
Command ===>

IMS Retrieval Definition:
  Environment Name ===> %
  IMS DBD Name     ===>

Use '_' for DB2 LIKE character ===> NO    Y-Yes,  N-No
```

Figure 49. Choose an IMS Retrieval Definition

Panel

This panel includes:

Environment Name
Specify the 1- to 8- character name of the IMS Environment Definition that references the specified IMS DBD. Use DB2 LIKE syntax to display a selection list. Leave blank or enter "%" to display a list of Retrieval Definitions for all Environment Definitions with the specified DBD name.

For more information about IMS Environment Definitions, see "Choose an IMS Environment Definition" on page 59.

IMS DBD Name
Specify the 1- to 8- character name of the desired IMS DBD in a DBD library that is referenced in the specified IMS Environment Definition. Use DB2 LIKE syntax to display a selection list. Leave blank or enter "%" to display a list of Retrieval Definitions for all IMS DBDs with the specified Environment Name.

Use '_' for DB2 LIKE character
Indicate whether the underscore, '_', is used as a DB2 LIKE character or literally, as part of the name.

Explicit Names

If explicit values are specified for **Environment Name** and **IMS DBD Name** and:

- The Retrieval Definition exists, Move displays the named Retrieval Definition on the Provide Retrieval Information for DBD panel.
- The Retrieval Definition does not exist, but the specified IMS DBD is referenced in the Environment Definition, Move displays the Provide Retrieval Information for DBD panel with all prompts blank.
- If the Retrieval Definition does not exist, and the specified IMS DBD is not referenced in the Environment Definition, an error is displayed.

Selection List of Retrieval Definitions

Use DB2 LIKE syntax or leave a prompt blank to request a selection list. Move displays a list of Retrieval Definitions on the **Choose a Retrieval Definition** panel.

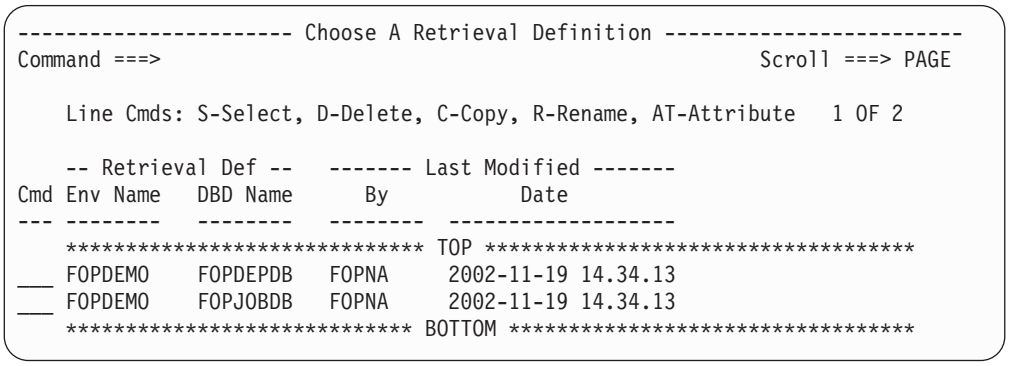


Figure 50. Choose a Retrieval Definition

If no Retrieval Definitions satisfy the criteria, a message is displayed on the Choose an IMS Retrieval Definition panel.

Panel

This panel includes:

Cmd Line command area. Valid line commands are:

- **S** Select a Retrieval Definition.
- **D** Delete a Retrieval Definition. After deleting, the message "*DELETED" is displayed.
- **C** Copy a Retrieval Definition to create a new one. The **Copy Retrieval Definition** panel prompts for the name of the new Retrieval Definition. After copying, the message "*COPIED" is displayed.
- **R** Rename a Retrieval Definition. The Rename Retrieval Definition panel prompts for the new name of the selected Retrieval Definition. After renaming, the message "*RENAMED" is displayed.
- **AT** Modify attributes of a Retrieval Definition. The Object Attributes panel allows you to edit the Retrieval Definition description and security status (if authorized).

Env Name
The 1- to 8- character name of the Environment Definition.

DBD Name
The 1- to 8- character name of a DBD referenced in the Environment Definition.

By The TSO ID of the user that last modified the Retrieval Definition.

Date The date and time the Retrieval Definition was last modified.

See "Selection List of Legacy Tables" on page 45 for a discussion of available primary commands.

Select a Retrieval Definition

On the selection list, type the S line command to select a Retrieval Definition. The **Provide Retrieval Information for DBD** panel displays. See "Provide Retrieval Information for DBD" on page 68 for more information.

Copy Retrieval Definition

On the selection list, type the C line command to copy a Retrieval Definition The following figure shows the Copy Retrieval Definition panel.

```
+---Copy Retrieval Definition---+
|                               |
| Existing Name: FOPJS.FOPDEPDB |
|                               |
| New Name:                     |
|                               |
|    Environment ===> FOPJS     |
|    DBD Name    ===> FOPDEPDB  |
+-------------------------------+
```

Figure 51. Copy Retrieval Definition

The Copy Retrieval Definition panel displays the name of the original Retrieval Definition, Environment Definition, and DBD name, and prompts for a new Environment Definition and DBD name.

Rename Retrieval Definition

On the selection list, type the R line command to rename a Retrieval Definition. The following figure shows the **Rename Retrieval Definition** panel.

```
+--Rename Retrieval Definition--+
|                               |
| Existing Name: FOPJS.FOPDEPDB |
|                               |
| New Name:                     |
|                               |
|    Environment ===> OPTJS     |
|    DBD Name    ===> OPTDEPDB  |
+-------------------------------+
```

Figure 52. Rename Retrieval Definition

The Rename Retrieval Definition panel displays the current name of the Retrieval Definition, Environment Definition, and DBD name, and prompts for a new Environment and DBD name.

Object Attributes

To modify the description and security status attributes of a Retrieval Definition, type AT in **Cmd** next to the name of the Retrieval Definition. The description and security status are specified on the Object Attributes panel.

```
+-----------------------Object Attributes-----------------------+
|                                                               |
| Object Name:  FOPDEMO.FOPDEPDB                                |
|                                                               |
| Modify the attributes below as needed.                        |
|                                                               |
| Description     ===>                                         |
|                                                               |
| Security Status ===> PUBLIC     (PUBLIC  PRIVATE  READONLY)   |
|                                                               |
| Use END command to accept any changes and return.             |
| Use CANCEL command to ignore any changes and return.          |
|                                                               |
+---------------------------------------------------------------+
```

Figure 53. Object Attributes

The Object Attributes panel provides a 40-character area to display and edit the description. An 8-character area is available to specify one of the following security statuses:

Public
Anyone can edit and use.

Private
Only the owner can edit and use.

Readonly
Anyone can use, only the owner can edit.

A site option determines whether security status is available. If it is not available, **Security Status** is not displayed. For additional information about the Object Attributes panel, see the *Common Elements Manual*.

Managing the Selection List

You can use standard ISPF scrolling facilities to scroll the selection list. The following primary commands are available for a selection list of Retrieval Definitions. For details, see the *Common Elements Manual*.

- BOTTOM
- CANCEL
- DOWN
- END
- FIND
- LOCATE
- OPTIONS
- RESET
- RFIND
- SHOW
- SORT
- TOP
- UP

Note:

- FIND locates a character string anywhere in the list. RFIND repeats the FIND operation. (This command is usually assigned to PF5.)
- LOCATE locates and scrolls to an object name that matches or is greater than the search value.
- SORT arranges the list by values under a column heading (for example, SORT DATE).
- SHOW limits the selection list to objects for which a specific value is displayed.

Provide Retrieval Information for DBD

The Provide Retrieval Information for DBD panel allows you to provide the information necessary to access the IMS data by specifying the PSB and PCB to be used to access the referenced DBD and associate each DD with an IMS Database Dataset Name. It also allows you to use DBRC and IMS logging for processing in DL/I mode.

```
-------------- Provide Retrieval Information for DBD: FOPDEPDB ----------------
Command ===>                                                 Scroll ===> PAGE

                                                                        1 of 4
Default PSB Name       ===> FOPDEPPA           PCB Number     ===> 1
Default Dataset Prefix ===>                    Default IMS ID ===> IMSA
Use DBRC               ===> N                  (Y or N)
IMS Log Dataset Name   ===>

Cmd Segment  DD Name  Associated IMS Database Dataset Name
--- -------- -------- ------------------------------------------------------------
*** ******************************** TOP ************************************
___ DEPT     FOPDEPDB 'FOPQA.RT.FOPDEMO.FOPDEPDB'
___ EMPLOYEE
___ POSITION
___ -INDEX   FOPDEPIX 'FOPQA.RT.FOPDEMO.FOPDEPIX'
*** ***************************** BOTTOM ***********************************
```

Figure 54. Provide Retrieval Information for DBD

Panel

This panel includes:

Default PSB Name
Specify the 1- to 8-character name of the default PSB in a PSB library referenced in the associated Environment Definition. The PSB provides access to the IMS services that Move requires to access the database records.

Specify an asterisk to generate a selection list that includes PSBs in the associated Environment Definition.

You can override the default PSB when creating an Access Definition or Table Map that references the Retrieval Definition.

PCB Number
Specify the relative number of the database PCB within the specified PSB that grants Move the authorization to manipulate the data.

Specify an asterisk to generate a selection list of PCBs in the specified PSB. For an overview of this selection list, see "PCB Selection List" on page 70.

You can override the default PCB number when creating an Access Definition or Table Map that references the Retrieval Definition.

Default Dataset Prefix
Optional 1- to 8-character prefix used when specifying Associated IMS Database Dataset Names.

Default IMS ID
Specify the default IMS System ID used to access the IMS data during processing.

Use DBRC
This entry is valid only for IMS processing in DL/I mode (i.e, when an IMS ID is not specified). If appropriate, enter **Y** for yes to use Database Recovery Control (DBRC) to control logging and perform database recovery; otherwise enter **N** for no. IMS uses the online log datasets (OLDS) if the database is accessed in BMP or DBB mode.

The default for a HALDB (High Availability Large DataBase) is **Y**, and that entry cannot be changed.

DBRC use is optional for a non-HALDB, such as HIDAM, HDAM, HISAM, etc. Thus, you may specify **Y** for a non-HALDB, but it is not required.

IMS Log Dataset Name

If appropriate, specify the dataset name for the IMS Log used to perform database recovery. This dataset name is used to dynamically allocate the IEFRDER dataset. It is recommended that you provide a GDG dataset for the IMS log because Optim may make multiple calls to IMS while traversing through the Legacy Tables defined in an Access Definition or Table Map; this would result in the Log dataset being overwritten if a sequential dataset is used. If a GDG is used, Optim will allocate one GDS for each invocation of IMS, which will prevent the IMS log from being overwritten.

If a PSB with a Processing Option (PROCOPT) other than G (for Get) is used while accessing a HALDB in DL/I mode (i.e., an IMS region name is not specified), you must specify the name of the dataset to be allocated for DD Name IEFRDER.

If you specify an IMS Log Dataset Name, when you exit the **Provide Retrieval Information for DBD** panel**,** the Allocate Dataset panel automatically displays. You must provide sufficient Primary and Secondary space units on that panel to allocate the IEFRDER dataset. Failing to do so will cause IMS to abort processing and lock the database from further updates until a recover/rollback is done.

Segment

Lists the segments within the specified DBD. This column cannot be modified.

DD Name

Lists the names of each DD or Data Definition (i.e., the physical data sets) associated with each segment. This column cannot be modified.

Associated IMS Database Dataset Name

Enter the location of the IMS Database Dataset associated with each DD Name in the DBD. This data is then associated with the named Legacy Table during processing.

A Site Option (Require IMS Data Set Names) determines whether you can omit the data set name to allow IMS to dynamically allocate the data set. All users can specify '$MDA' as the data set name to choose dynamic allocation, regardless of this Site Option.

You can override the default IMS Database Dataset name when creating an Access Definition or Table Map that references the Retrieval Definition.

If you are including a data set from an IMS database with multiple data set groups, for each database you must either:

- specify all the data set names, or
- enable dynamic allocation by leaving the data set names blank (if your site option `Require IMS Data Set Names` is set to `N`), or
- enable dynamic allocation by specifying `'$MDA'` for all the data set names

You must use the same option for all the data set groups in a database.

Note: You do not have to specify a dataset name for a DEDB or HALDB because the appropriate dataset name will already be known to the IMS subsystem.

PCB Selection List

When you enter an asterisk in the **PCB Number** prompt, the **PCB Selection List** is displayed, allowing you to select a PCB for the specified PSB. The selection list displays the available PCB numbers, the number of segments in each PCB, and the first six segment names in each PCB.

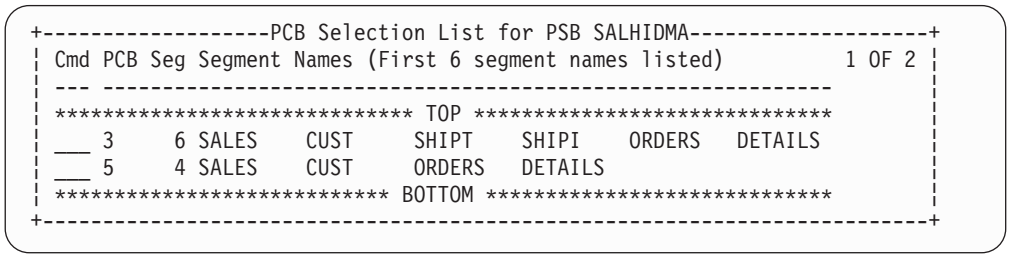


Figure 55. PCB Selection List

Completed Retrieval Definition

When you have completed defining the Retrieval Definition, use END to save it and redisplay the panel from which the Provide Retrieval Information for DBD panel was invoked. If the PSB name, PCB number, or Associated IMS Database Dataset cannot be found, an error is displayed.

Using a Retrieval Definition

Retrieval Definitions provide default values to be used during processing. You can override these defaults when associating a Legacy Table with the database.

- Any IMS Legacy Table that is referenced in an Access Definition must be associated with a specific PSB name, PCB number, and IMS Database Dataset Name to be used in an Extract Process. If you have created a Retrieval Definition that is referenced by the Legacy Table, Move populates the Associate Legacy Tables with Data Sources and the Associate IMS Segments With IMS Database Datasets panels with values from the Retrieval Definition.
- An IMS Legacy Table that is referenced in a Table Map must be associated with a specific PSB name, PCB number, and IMS Database Dataset Name to be used in an Insert Process. If you have created a Retrieval Definition that is referenced by the Legacy Table, Move populates the **Associate Legacy Tables with Data Sources** and the Associate IMS Segments With IMS Database Datasets panels with values from the Retrieval Definition.

Chapter 4. Data Migration

Move provides a set of flexible processes for migrating related data and object definitions from multiple DB2 tables, Legacy records, or both. To migrate a related set of data and object definitions, you specify the:

- Source
- Destination

Specify Source

To specify the source, use an existing Access Definition or create a new Access Definition. The created Access Definition can be temporary, for a single use, or permanent, saved for repeated use. The Access Definition is used as input to the Extract Process. (See the *Common Elements Manual* for a detailed discussion of creating and modifying Access Definitions.)

The Extract Process copies the specified data and object definitions (i.e., table, view, key, index, etc.) to an Extract File. The Extract File is saved and can be reused as needed.

Specify Destination

The Insert Process copies the source data and object definitions to a destination. Move offers flexibility for changing the destination specification or automatically inserting the data and object definitions in a logical manner.

For example, if the destination tables do not exist, Move provides the option of creating DB2 or Legacy tables to match the source before inserting the data. If the named destination tables do exist but do not match the source DB2 or Legacy tables, you can use Column Maps to specify exactly what data is placed in each column. This includes the source data, literal values, special registers, expressions, exit routines and DB2 defaults. (See the *Common Elements Manual* for detailed discussions.)

Legacy Tables

Legacy Tables allow you to process certain IMS, VSAM or sequential data as if it were stored in DB2 tables. Any reference to a table in this section applies to a Legacy Table, unless indicated otherwise.

Materialized Query Tables

A Materialized Query Table (MQT) is a DB2 table used to hold the results of a query against one or more tables. User-maintained MQTs are modifiable and System-maintained MQTs are protected. References to tables in this section apply to MQTs, unless stated otherwise.

Data Migration Menu

To migrate data, select Option 7 MIGRATION on the **Main Menu**. The following panel is displayed.

```
------------------------------ Data Migration --------------------------------
OPTION ===>
                                             SQLID  ===> FOPDEMO
                                             SUBSYS ===> TDB2
1  EXTRACT  - Extract Data from Source Tables   LOCATION ===>
2  INSERT   - Insert Data into Destination Tables
3  LOAD     - Create Load Files and Perform Load
4  CREATE   - Create Tables and Related Object Definitions
5  CONVERT  - Convert Extract File using Table and Column Maps
6  LIST     - List Extract Files in Directory
7  IMPORT   - Import Extract File and Populate Directory

R  RETRY/RESTART   - Retry/Restart an Insert Process
B  BROWSE          - Browse Content of Extract or Control File
```

Figure 56. Data Migration Menu

Panel Options

The available options are:

1 - EXTRACT

Specify the set of data to be extracted. After the set of source data is specified, Move extracts the data and stores it in an Extract File. The extracted data can include the rows from the specified set of source tables and the object definitions for those tables. You can request the object definitions for tables, Materialized Query Tables, primary keys and relationships, indexes, views, synonyms, and aliases.

The specifications for the extracted data can be defined in an Access Definition and stored for repeated use or defined as temporary for one-time use.

The Extract File is used as the input for the other options. If Compare is installed, an Extract File stored on disk can be used as input for the Compare Process. The contents of the Extract File can be modified using the EXTRACT Option only. Other options do not allow you to modify it.

You may choose to create the extract file on tape. Be aware that an extract file on tape cannot be used in a compare process and can only be browsed, inserted, or deleted in batch.

If an unload program is available, it can be used to extract the data from the Image Copy files or directly from DB2.

Conversely, the Extract Files created using this option can be used by Optim for servers. (See the Optim for servers documentation, which describes the Move component for servers.)

2 - INSERT

Specify the destination for the source data in an Extract File. This option inserts the source data into the destination.

When tables or records involved in the insert do not exist at the destination, you may direct Move to create them. In addition, definitions for any other objects that do not exist at the destination may also be selected. By default, the created objects are identical to the source objects.

A Table Map is used to identify the destination tables that correspond to source tables. Additionally, a Column Map can be used for any pair of source and destination tables when the column names or attributes do not match, or when the data values are to be altered.

The destination tables need not be in the same subsystem as the source tables.

3 - LOAD

Create load files from the Extract File. The load files can then be used for input to the DB2 Load Utility or another third-party load facility. (If a site or user option specifies LOADPLUS as the load utility to be used, LOADPLUS is shown as the LOAD option. See the *Common Elements Manual* for information on specifying the load utility.)

4 - CREATE
Create DB2 and Legacy Tables and related objects for which definitions are contained in the Extract File.

5 - CONVERT
Convert the source data in the Extract File. The source data is converted by applying the Table Map and Column Map specifications to obtain a new or revised Extract File. The new Extract File contains the converted data to migrate. Conversion is useful for masking sensitive data and for migrating data from z/OS to another platform, such as DB2 for OS2 and XDB, where the database design may be different.

For details, see the *Common Elements Manual*.

6 - LIST
Display a list of Extract files that match selection criteria you specify. The List process allows you to manage extract files registered in the Optim Directory. With List you can display, delete, browse, generate a report or see extended information for an extract file. You can also select a file to use in an Insert process.

Refer to "List Process" on page 188.

7 - IMPORT
Create entries to register extract files in the current Optim directory. An extract file stored on tape must be registered in the Optim Directory before it can be used in a Convert, Create, Insert, or Report process.

For details see "Import Extract Process" on page 190.

R - RETRY/RESTART
Complete an Insert Process that has not completed successfully. **RETRY** allows you to process rows that have been discarded (e.g., due to RI constraints). **RESTART** allows you to "restart" a process that terminated abnormally because of time or space limitations, or by user request.

For details, see the *Common Elements Manual*.

B - BROWSE
View the contents of an Extract File or a Control File.

Note: The Delete option may be available, depending on your site's license. Thus, Option 4 on this panel is Delete, Option 5 is Create and Option 6 is Convert. You can use the Delete option to delete rows in an Extract File from source DB2 Tables or Legacy Files. The Extract File is retained. Object definitions are not deleted. See "Delete Process" on page 132, for detailed information.

Panel

The panel also includes the following prompts:

SQLID
The current SQLID. Modify this value to connect using a different SQLID.

SUBSYS
The current DB2 subsystem. Modify this value to connect to a different DB2 subsystem.

When connecting to a remote subsystem, this value should be the local subsystem where the remote location is defined.

LOCATION
The remote location. This prompt is displayed if remote access is available. Specify a value to connect to a remote DB2 subsystem. You can use a percent sign (%) to obtain a selection list of available locations. If the connection fails, the session is restarted and the **Main Menu** is redisplayed.

Note: If you leave this prompt blank, the local subsystem is assumed.

The remainder of this section discusses each option on the **Data Migration** menu.

Extract Process

The Extract Process creates an Extract File that contains the selected set of related rows from one or more tables and, if requested, the object definitions for those tables.

The Extract File is used as input to the Move Insert, Load, Create, and Convert processes. The Extract File can be used repeatedly and simultaneously by many users.

An Access Definition identifies the set of data to be extracted in the Extract Process. You can use an existing Access Definition, create a new Access Definition, or create a temporary definition.

Access Definition

Move extracts data by traversing a set of tables. The tables and the relationships used to traverse those tables are identified in the Access Definition. In addition, the Access Definition provides other criteria for extracted data, such as:

- Manually selected primary key values for specific rows in the Start Table. The manual selection process is referred to as Point-and-Shoot and cannot be used if the Start Table is a Legacy Table.
- Selection criteria for rows in one or more tables. Note that criteria applied to Legacy Data must use an internal SQL described in Appendix C, "SQL Grammar for Legacy Tables," on page 211.
- A maximum number of rows to extract from one or more tables.
- A numeric selection factor, for example, to select every twentieth row.

The definitions for tables and columns are always extracted. Primary keys, relationships and indexes are selected by default. In addition, you can select the following object definitions to be included in the extract:

- Aliases
- Triggers
- Views
- User Defined Types
- Synonyms
- User Defined Functions
- Column Field Procedure Names
- Stored Procedures
- Materialized Query Tables

Extracting data to tape

You can use the Extract process to create an extract file on tape that contains the selected set of related rows from one or more tables and, if requested, the object definitions for those tables. The extract file is used as input to the Move Insert, Load, Create, and Convert processes.

An extract file on tape:

- *can be browsed only by using the batch utility REPORT statement*
- *can be inserted only by using batch execution*
- *can be used for a delete process in batch only*
- *can be used in a Convert process, and the converted file is stored on disk*

- *cannot be used in a Compare process*

EXTRACT Process Menu

When you select Option 1 EXTRACT on the **Data Migration** menu, Move displays the EXTRACT Process menu.

```
------------------------------- EXTRACT Process ------------------------------
OPTION ===>                                                 SCROLL ===> PAGE

  1  TABLES               - Specify Set of Tables and Selection Criteria
  2  PATHS                - Specify Traversal Paths via Relationship List
  3  OBJECTS              - Specify Object Definitions to Extract
  4  PERFORM              - Specify EXTRACT Parameters and Perform EXTRACT

Type of Access Definition to Use for EXTRACT ===> P  (P-Perm, T-Temp)

If Permanent, Specify New or Existing Access Definition Name
  Group ===>
  User  ===>
  Name  ===>

  Use '_' for DB2 LIKE Character ===> N  (Y-Yes, N-No)
```

Figure 57. EXTRACT Process Menu

Menu Options

Select an option:

1 TABLES

Define or modify specifications for the tables subject to the Extract Process. This option invokes the Select Tables/Views for AD panel, which is used to list the names of tables (i.e., the Table List) to be included in the extract and provide criteria for data in the tables.

The Table List indicates the type of selection criteria, if any, defined for each table. You can also provide a selection factor and row limits for the listed tables and, using commands, display panels for defining selection criteria, an SQL WHERE Clause, and substitution variables. From the Table List, you can also invoke the Point-and-Shoot facility to select rows from the Start Table.

For detailed information on the Select Tables/Views for AD panel, see the *Common Elements Manual*.

2 PATHS

Display and edit the relationship list. The Specify Relationship Usage panel is used to select the relationships to be traversed when extracting the data. For detailed information on how to specify the relationships and accompanying parameters, see the *Common Elements Manual*.

3 OBJECTS

Display the Specify Object Definitions to EXTRACT panel. Use this panel to select the objects to be extracted. Your selections are profiled and can be used each time an Extract Process includes object definitions.

4 PERFORM

Display the Specify EXTRACT Parameters and Execute panel to provide processing parameters and invoke the Extract Process. Processing parameters include an option to extract object definitions. If an unload program is available, an option allows you to use it for the process.

Type of Access Definition to Use for EXTRACT

Indicate whether the Access Definition you want to use for the Extract Process is temporary or permanent. Specify:

T The Access Definition is temporary. It is discarded after the process is complete.

P The Access Definition is permanent. Save it under the specified Access Definition Name. If you use this setting, you must specify the appropriate **Group**, **User**, and **Name** for the Access Definition.

Access Definition Name
If the Access Definition is permanent, enter the name under which it should be saved in the **Group**, **User**, and **Name** prompts.

You can provide the name of a new or an existing Access Definition. If you provide the name of an Access Definition that does not exist, Move displays the Select Tables/Views for AD panel, prompting you to create a new Access Definition. See the *Common Elements Manual* for details about defining an Access Definition.

Selection List

Leave the prompts blank or use DB2 LIKE syntax to obtain a selection list of available Access Definitions. Use the Select line command, S, to select an Access Definition from the list.

After you select an Access Definition name from the list and use ENTER, the **EXTRACT Process** menu is redisplayed. The name of the selected Access Definition is displayed in **Access Definition Name**.

Specify Options

You can define or modify the Access Definition specifications, whether temporary or permanent, by re-selecting Options 1 or 2. Once the source data has been specified, you can use Option 3 to select object definitions to be extracted. Use Option 4 to perform the extract.

Available Commands

The following primary commands are available from the **EXTRACT Process** menu:

- CANCEL
- END
- OPTIONS

Select Object Definitions to Extract

DB2 table, Legacy Table, and column definitions are always extracted so that tables can be recreated, if needed.

If you select Option 3 on the **EXTRACT Process** menu, you can choose one or more types of object definitions from the Specify Object Definitions to EXTRACT panel. (Primary keys, relationships, and indexes are selected by default, as shown by the SELECT status in Figure 58 on page 79.)

To extract the definitions needed to create a Materialized Query Table, extract the base tables for the MQT and select the Materialized Query Tables object type.

You can choose the object definitions to be extracted by selecting and deselecting object types. Any selected object definition types are extracted for each table that participates in the Extract Process. Your selections are profiled and displayed automatically the next time you use Option 3 on the **EXTRACT Process** menu.

```
------------------- Specify Object Definitions to EXTRACT ---------------------
Command ===>                                                 SCROLL ===> PAGE

Use S Line Command to Select ALL Associated Objects of Specified Type
Use U Line Command to Unselect Associated Objects of Specified Type

Cmd   Status             Object Type
---  --------  --------------------------------
 _   SELECT    Primary Keys and Relationships
 _   SELECT    Indexes
 _   UNSELECT  Views
 _   UNSELECT  Materialized Query Tables
 _   UNSELECT  Aliases
 _   UNSELECT  Synonyms
 _   UNSELECT  Column Field Procedure Names
 _   UNSELECT  Triggers
 _   UNSELECT  User Defined Types and Functions
 _   UNSELECT  Stored Procedures

Note: Catalog Queries to Extract Object Definitions are Expensive
      Selected Objects Extracted for Tables ONLY
      Will Always Extract Index Required by DB2 Primary Key
```

Figure 58. Specify Object Definitions to EXTRACT

Panel

This panel includes:

Cmd Line command area. The available line commands are:

S Select object definition.

U Unselect object definition.

Status Indicate whether an object definition is to be extracted. Displayed as:

SELECT
Object definition is to be extracted.

UNSELECT
Object definition is not to be extracted.

Object Type
List of object definition types that can be extracted. The default selections, for Primary Keys and Relationships and Indexes, are shown with the SELECT status in Figure 58.

The index for the primary key is always extracted when Primary Keys and Relationships are selected, whether or not Indexes is selected. If **Column Field Procedure Names** is selected, the names of the edit and validation exit routines for the table are also extracted.

Only for Tables

The selected object types are extracted only for table objects listed on the Select Tables/Views for AD panel. These selected object definitions are not extracted for an object on the Table List that is not a table. Thus, an alias, synonym, view, or Legacy Table listed on the Select Tables/Views for AD panel is extracted but related object definitions are not. A table made up of the columns included in an alias, synonym, or view is created at the destination for the extracted object.

The DDL for Temporary Tables is extracted and can be used to create Temporary Tables at the destination. However, no keys, relationships, etc., are associated with Temporary Tables and no data is stored in them.

You should consider what is to be created at the destination. If you do not need the related objects (primary keys, relationships, and indexes, etc.) for object definitions other than tables, you need only include the alias, synonym, or view on the Table List. However, if you need the related objects, you can list the base table on the Select Tables/Views for AD panel and select the object type on the Specify Object Definitions to Extract panel, thus extracting the desired object and related objects.

Generic primary keys and relationships are extracted as generic objects and are created as generic unless you modify the Creator ID on the CREATE Object List panel or modify the SQL statements generated to create the objects.

Joined views are extracted only if all tables that make up the view are listed on the Select Tables/Views for AD panel. For Primary Keys and Relationships, the pertinent object definitions for all listed tables, including reference tables, are extracted. For more information about creating object definitions, see "Create Process" on page 158.

Materialized Query Tables

To obtain the definitions for a Materialized Query Table, you must extract the base tables for it and select the Materialized Query Table object type on the Specify Object Definitions to Extract panel. Use this extract file to create the MQT and the base tables at the destination. For more information, see "Insert Process" on page 103 and "Create Process" on page 158.

Available Commands

The following commands are available from this panel:

- CANCEL
- END
- OPTIONS
- RESET

Use END to return to the **EXTRACT Process** menu or CANCEL to abandon your changes and return to the **EXTRACT Process** menu.

Perform the Extract Process

When you select Option 4 PERFORM from the **EXTRACT Process** menu, the Specify EXTRACT Parameters and Execute panel is displayed.

Note: Prior to displaying this panel, the Default Value panel may be displayed if you used a substitution variable in the Access Definition, but did not specify a default value for the variable. For more information, see the *Common Elements Manual*.

```
------------------- Specify EXTRACT Parameters and Execute --------------------
Command ===>

Current AD Name     : FOPDEMO.EXTRACT.SAMPLE
Extract File DSN ===>
Extract          ===> B                      (D-Data,
                                              O-Object Definitions
                                              B-Both)
If Extracting Data:
  Limit Number of Extract Rows ===>          (1-4294967295, Blank/SL)
  Extract Data using           ===>          (D-DB2, B-BMC UnloadPlus)
  Extract Data to Tape         ===>          (Y-Yes, N-No)

Perform Convert with Extract   ===> N        (Y-Yes, N-No)

Extract with Uncommitted Reads ===> N        (Y-Yes, N-No)

Run Process in Batch or Online ===> O        (B-Batch, O-Online)
  If Batch, Review or Save JCL ===>          (N-No, R-Review, S-Save)

Process Report Type            ===> D        (D-Detailed, S-Summary)
```

Figure 59. Specify EXTRACT Parameters and Execute

Panel

This panel includes:

Current AD Name
Name of the currently active Access Definition. This read-only value is provided by Move.

Extract File DSN
Name of a sequential data set for the extracted data. The Extract File name can be specified explicitly by enclosing it in quotes; otherwise, the default prefix as specified on the User Options panel is automatically prepended to the name.

When the Extract Process begins, Move searches for the named data set.

If the data set exists, Move determines whether it is suitable.

- If the data set is suitable, Move replaces any data in the data set with the extracted data.
- If the data set is not suitable, Move does not perform the extract and prompts you to specify a different data set name.

If the data set does not exist, Move prompts for the information needed to allocate the file. See the *Common Elements Manual* for a description of the allocation prompts.

You can obtain a selection list of data sets by using either of the wild card characters, % or *, in the last position. Use the Select line command, S, to select a file from the selection list.

Extract
Contents of Extract File. Specify:

D Only data rows are extracted.

O Only object definitions are extracted.

B Both data and object definitions extracted.

Select Start Table Rows by
Criteria applied to the Start Table, if both selection criteria and a Row List (i.e., a Point-and-Shoot list) are defined for the Start Table. Specify:

R Use only the Row List.

B Extract rows identified in the Row List and any additional rows that satisfy the selection criteria.

If only one type of criteria is defined, this prompt is omitted.

Limit Number of Extract Rows
Maximum number of rows that can be extracted. This limit applies to data rows only and not to object definitions. The Extract Process terminates if the number of extracted rows exceeds this limit. Specify:

value 0 - 4,294,967,295

blank Site-defined limit (S/L)

The distributed default maximum is 10,000. You can set this limit on the Site Options panel.

Extract Data using
If you select a special unload utility on the Site Options panel, this prompt is displayed, offering two options for extracting DB2 data: DB2 and the utility specified in the Site Options panel. Specify:

D Use DB2.

B Use BMC UNLOAD PLUS to access the data in batch.

C Use CDB Auto-Unload (formerly known as SuperUnload) to access the data in batch.

O Use CDB Auto-Online Unload (formerly known as RW-Unload) to access the data in batch.

I Use IBM High Performance Unload to access the data in batch.

Note: Selecting an unload utility when extracting both DB2 and IMS Legacy data causes an error; you must select DB2 to extract this federated data.

Extract Data to Tape
Specify storage medium for the extract file. If you extract to tape, you are prompted for information about the tape file before the extract is processed.

Y Extract file is written to tape. (After you press ENTER, the Figure 64 on page 87 panel displays.)

N Extract file is written to disk.

Perform Convert with Extract
Indicator for Convert processing during Extract. Use the Convert Process to mask sensitive data or alter data values.

Y Convert Process is performed. (After you press ENTER, the Specify Convert Parameters panel is displayed.)

N Convert Process is not performed.

Extract With Uncommitted Reads
Specify whether to extract uncommitted data from the database during the Extract Process.

Y Extract uncommitted data from the database.

N Do not extract uncommitted data from the database

Note: If you choose to extract uncommitted data, the relational integrity of the data in the Extract File may be compromised. Use caution if inserting data into your production database from an Extract File with uncommitted data.

Run Process in Batch or Online

Indicator for type of execution. Specify:

B Batch.

Note: You must specify Batch if you choose `Y-Yes` for `Extract Data to Tape`.

O Online

If an unload program is used, the job is performed in batch, regardless of this setting. If site management has established a maximum number of rows for online processing and the Extract Process exceeds that limit, this option is forced to Batch and cannot be changed. Consult site management for guidelines.

If Batch, Review or Save JCL

Treatment of JCL and control statements for batch execution. Specify:

N Submit job, do not display or save the JCL and control statements.

R Display the JCL and control statements in the ISPF editor for review prior to job submission. You can modify it for the current request or save it to submit later.

S Save the JCL and control statements. Prompts for the name of a file in which to store the JCL and control statements are provided.

Process Report Type

Indicator to include additional information in the Extract Process Report. If selected, detailed information about selection criteria, as well as Column Map usage if converting the Extract File during processing, is displayed.

D Display detailed information in the Extract Process Report.

S Display summarized information in the Extract Process Report.

Available Commands

The following commands are available on this panel:

- CANCEL
- END
- OPTIONS

Extract File Selection List

The following figure shows the pop-up selection list that is displayed when you request a list of Extract File data set names.

```
+------------------Select Extract Data Set------------------+
| Cmd                Data Set Name                1 OF 5  |
| --- ------------------------------------------           |
| ********************** TOP ********************          |
| ___ FOPDEMO.COHEND.XFILE                                 |
| ___ FOPDEMO.CUST.XCUST                                   |
| ___ FOPDEMO.NAD.XFILE                                    |
| ___ FOPDEMO.SENTNER.XFILE                                |
| ___ FOPDEMO.SHIP_TO.TEST                                 |
| ********************* BOTTOM *********************       |
+----------------------------------------------------------+
```

Figure 60. Select Extract Data Set

Use the S (Select) line command to select a data set. Use END to return to the Specify EXTRACT Parameters and Execute panel.

Unload Program Parameters

If an unload program is installed and site management has made it available to Move, you can choose to extract DB2 data directly from DB2 or using the unload program.

If an unload program is used, the following panel is displayed.

```
------------------- Specify EXTRACT Parameters and Execute --------------------
Command ===>

+---------------------Specify Unload Program Parameters--------------------+
|                                                                           |
| Source for Extract Data ===> I       (I-IMAGE COPY, D-DB FILES)           |
|                                                                           |
| If using an Image Copy, specify which Image Copy datasets should be used |
|   Image Copy Criteria   ===> L       (A-First On or After Date/Time,      |
|                                       B-First On or Before Date/Time,     |
|                                       L-Latest Image Copy,                |
|                                       S-Specific Image Copy DSN)          |
|                                                                           |
|   If selecting an Image Copy by Date and Time:                            |
|     Date (YYYY-MM-DD)    ===>                                             |
|     Time (HH.MM.SS)      ===>                                             |
|                                                                           |
|   If selecting an Image Copy by data set name:                            |
|     Image Copy DSN ===>                                                   |
|                                                                           |
| If Start Table is partitioned, you may use a subset of the partitions     |
|   Use Subset           ===> N        (Y-Yes, N-No)                       |
+---------------------------------------------------------------------------+
```

Figure 61. Specify Unload Program Parameters

Image Copy data sets on the same tape volume

To extract data from DB2 image copy data sets in multiple partitions of the same tablespace stored on the same tape volume, you must manually edit the JCL to allocate the data sets. Multiple image copy data sets cataloged on the same tape volume can not be allocated using dynamic allocation. This is a z/OS limitation. If you attempt to use dynamic allocation, the extract process fails with a dynamic allocation error. Refer to the *Common Elements Manual*, section on Allocating External Files, for details.

Panel

This panel includes:

Source for Extract Data
Files used as the data source. Specify:

I Image Copy files are the source.

D DB2 is the source.

If using an Image Copy, specify which Image Copy data sets should be used:

Image Copy Criteria
Criteria for the Image Copy data sets:

A First Image Copy files created on or after a specified date and time.

B First Image Copy files created on or before the specified date and time.

L Most recent Image Copy files.

S Image Copy files designated in **Image Copy DSN**.

If selecting an Image Copy by Date and Time:

Date Specify the date in the format defined for your site.

Time Specify the time in the format defined for your site.

If selecting an Image Copy by Data Set Name:

Image Copy DSN
Specify the fully qualified name for an existing Image Copy file.

If Start Table is partitioned, you may use a subset of the partitions

Use Subset
Partitions used when the Start Table is in a partitioned tablespace. Specify:

Y Display a list of partitions from which you can select those to be included in the process.

N Use all partitions.

Image Copies from Other Subsystems

To process an Image Copy data set created on a different subsystem, you must use a UNL_OBID override statement for each table. See "Batch Overrides" on page 91 for more information.

Selecting a Subset

If you specify Y for **Use Subset**, Move displays a list of partitions, as shown in the following figure:

```
------------------- Specify EXTRACT Parameters and Execute --------------------
Command ===>

+------------------------- Specify Partitions to Use ----------------------+
|                                                                           |
| Select the partitions to be used by placing an 'S' in the field provided  |
| below for each partition.  Enter 'U' to de-select selected partitions.    |
| Enter END to proceed with UNLOAD.                                         |
|                                                                           |
| Partition                Partition Values                     1 of 10     |
| --------- ------------------------------------------------------------   |
| ******************************** TOP ***********************************  |
| ___ 1   S '01000'                                                         |
| ___ 2   S '10000'                                                         |
| ___ 3   S '20000'                                                         |
| S__ 4     '30000'                                                         |
| ___ 5     '40000'                                                         |
| ___ 6     '50000'                                                         |
| ___ 7     '60000'                                                         |
| ___ 8     '70000'                                                         |
| ___ 9     '80000'                                                         |
| ___ 10    '99999'                                                         |
+---------------------------------------------------------------------------+
```

Figure 62. Specify Partitions to Use

Panel

This panel includes:

Partition
An area for line commands and a sequential number are shown for each partition. Line commands are:

S Select a partition. An S next to the sequential number identifies a selected partition.

U De-select the partition.

You can select any number of partitions, however, if you do not select at least one, the **Use Subset** option on the Specify Unload Program Parameters panel is automatically changed to N and all partitions are used.

Partition Values
Up to 55 characters showing the maximum index value for the partition, as defined to DB2. (Although DB2 limits the usable portion of the index value to the first 40 characters, when the value is converted to external value, it may be longer.)

Perform Convert with Extract

If you specify YES to **Perform Convert with Extract**, the Specify Convert Parameters panel is displayed.

```
------------------------ Specify Convert Parameters -------------------------
Command ===>                                                Scroll ===> PAGE

By default, the converted data will be written to the named Extract File.
To retain the original extracted data in this file, specify a Second Extract
 File to store the converted data.  The second Extract File is optional.

Specify a Control File to view any conversion errors.

Extract File DSN           :

Second Extract File DSN ===>
Control File DSN        ===>

Display Table Map and Column Maps ===> N      (Y-Yes, N-No)

Age Date Values                   ===> Y      (Y-Yes, N-No)

Limit Number of Discarded Rows    ===>        (1-4294967295, Blank/NL)

If Destination Tables have a Cluster Index:
   Sort Extract File Rows:        ===> N      (Y-Yes, N-No)
```

Figure 63. Specify Convert Parameters

Panel

This panel includes:

Extract File DSN
Name of the Extract File, stored on tape or disk, that contains the source data for conversion.

Second Extract File DSN
Name of the Extract File for the converted data. If not specified, data is converted to the original file, and replaces the original data. Specify a file name to retain the original Extract File and data.

Note: You cannot write the converted extract file to tape.

Control File DSN
Name of Control File for processing information about the Convert Process.

Display Table Map and Column Maps

This prompt will not be displayed unless you specify Yes for the **Age Date Values** prompt; after you do that, the Process Table Map panel will be displayed and this prompt will appear on the Specify Convert Parameters panel when you return to that panel.

You must have a Table Map to perform the Convert Process. Thus, Move automatically displays the Table Map panel before proceeding with the process. Specify Y to display the Table Map panel a second time, after you define your aging parameters.

For more information about Table Maps and Column Maps, see the *Common Elements Manual*.

Age Date Values

Indicator for aging of date values as part of the Convert Process. Specify:

Y Date values are aged. Specify aging values on the Specify Aging Parameters panel.

These values supplement specifications for columns mapped with AGE functions and are used, if requested, to age DATE and TIMESTAMP columns that are not explicit targets of an AGE function.

N Date values are not aged. Aging specifications on any Column Maps for the process are ignored.

Limit Number of Discarded Rows

Maximum number of rows that can be discarded. When this value is reached, the Convert Process is terminated. Specify:

value 0 - 4,294,967,295

blank No limit (NL)

Sort Extract File Rows

Sort indicator for the data in a destination table with a cluster index. Specify:

Y Sort rows.

N Do not sort rows.

Specify Tape Parameters

If the data is extracted to tape, Move displays the following pop-up to prompt for information about the tape file.

```
------------------- Specify EXTRACT Parameters and Execute --------------------
Command ===>                                                 Scroll ===> PAGE

C +------------------------Specify Tape Parameters-------------------------+
A |                                                                        |
C | Specify the following parameters for the tape file:                    |
A |                                                                        |
S | Tape DSN: FOPDEMO.EXTRACT.FILE.CTAPE                                   |
A |    Tape VolSer          ===>        ($NONE if VOLSER is not required) |
A |    Unit Designation     ===> CTAPE                                     |
A |    File Number on Tape  ===> 1      (1 - 99)                           |
  |                                                                        |
C | Press ENTER key to continue processing.                                |
L | Enter END or CANCEL command to return to prior panel.                  |
R +------------------------------------------------------------------------+
```

Figure 64. Specify Tape Parameters

Complete the following parameters:

Tape VolSer
The volume serial number of your tape. You must specify a value. Enter $NONE if your tape file does not require a volume serial number.

Unit Designation
The generic UNIT name for the tape drive. The default is TAPE.

File Number on the Tape
The number indicating the sequence of the file on the tape. Specify 1, the default value, to overwrite any files on the tape.

Extract Processing

When you have completed the Specify EXTRACT Parameters and Execute panel, press ENTER. Move evaluates the Access Definition to be used and entries on the Specify EXTRACT Parameters and Execute panel. The Extract Process proceeds as follows.

Online Processing

- The Access Definition is evaluated. If the Access Definition has an invalid entry, an appropriate error or warning is displayed. (Details are discussed later in this section.)
- The Extract File is located and its attributes evaluated to ensure that the named file is suitable as an Extract File. If it is not suitable, an error message is displayed and you are prompted for the name of a valid Extract File. If the Extract File does not exist, you are prompted for allocation information and Move allocates the file. (See the *Common Elements Manual* for a description of the allocation prompts.)
- While the Extract Process is executed online, a status report is displayed and updated periodically.
- An Extract Process Report is generated and displayed for browsing.

Batch Processing (including unload programs)

- The Access Definition is evaluated. If the Access Definition contains an invalid entry, an appropriate error or warning is displayed. (Details are discussed later in this section.)
- The Extract File is located and its attributes evaluated to ensure that the named file is suitable as an Extract File. If it is not suitable, a message is displayed and you are prompted for the name of a valid Extract File.

  If the Extract File does not exist, you are prompted for allocation information and Move allocates the file. (See the *Common Elements Manual* for a description of the allocation prompts.)
- The JCL and Batch Utility control statements for the batch process are built. If you have entered Review at the **If Batch, Review or Save JCL** prompt, the JCL and control statements are displayed. (You can modify the JCL and control statements or save them and execute the job later. Details are discussed later in this section.)

  If you have entered Save at the **If Batch, Review or Save JCL** prompt, you are prompted for the name of the file in which to save the JCL and control statements and to indicate whether the job should be submitted after saving. (Details are discussed later in this section.)
- The Extract Process is executed as a batch job. Note the Extract File must be located again when the process is executed.
- An Extract Process Report is generated and stored in the default output file specified in the JCL.

Access Definition Evaluated

Certain error conditions in the Access Definition prevent the Extract Process from proceeding. Other conditions trigger warning messages.

Error Conditions

Database changes can be detected only when the Access Definition is edited or used. Thus, error conditions are most common when an Access Definition is used without prior review. The following error conditions also prevent you from saving an Access Definition after editing it. The error conditions include:

- Duplicate references in the Table List. A table can be referenced only once. You cannot list a table with one or more views, synonyms or aliases of that table, or list more than one view, synonym or alias for a table. To proceed with the Extract Process, remove any duplicate references.

Note: If the Access Definition was created for Access, duplicate references are valid for editing data.

- Invalid Tables in the Table List. The Table List in the Access Definition does not reference any valid tables. This condition can occur when tables are dropped from the database. Also, any table names that are not fully qualified may not reference valid tables when the default Creator ID is changed. To proceed with the Extract Process, correct the table names in the Access Definition.
- Invalid WHERE clause. Selection criteria for one or more tables are invalid. This condition can occur if tables have been changed since the Access Definition was created. (For example, a column referenced in an SQL WHERE Clause has been dropped.) This condition can also occur if the default value you specify for a substitution variable is the incorrect data type or size for the column, or does not conform to SQL syntax. To perform the extract, change the selection criteria or correct the default value for the substitution variable.
- Invalid Start Table. This condition can occur if the table is dropped from the database or the combination of default Creator ID and the unqualified Start Table name do not reference an actual table. (The status for the table is shown as UNKNOWN and it cannot be used as a Start Table.)
- Missing Primary Key. The primary key for a table that is visited more than once in the process is missing. The primary key ensures that multiple copies of a row are not extracted.
- Unauthorized User. The user initiating the Extract Process is not authorized to select data from a table included in the process. (A site and user option allows unauthorized users to create JCL for the Extract Process. For more information, see the *Common Elements Manual*.)

Warnings

A warning indicates a condition that may require your attention, but does not prevent the Extract Process from proceeding. A warning gives you the option of proceeding or aborting the Extract Process. Warnings are issued for the following conditions:

- Relationship in NEW status. A relationship has been added and you have not explicitly selected or unselected it for processing. You can view the relationship list on the Specify Relationship Usage panel and select or unselect individual relationships. The default for NEW relationships is selected or unselected, depending on the Use NEW Relationships setting on the Access Definition Parameters panel. In general, it is advisable to review NEW relationships before using them.
- Relationship in UNKNOWN status. The Default Creator ID for tables referenced in the Access Definition has been modified, causing a relationship to no longer apply.
- Table in UNKNOWN status. A table has been dropped from the database or the Default Creator ID for tables referenced in the Access Definition has been modified, resulting in a reference to a table that does not exist.
- A table in the Access Definition is not traversed. This condition indicates that a relationship does not exist or is not selected to provide a path to this table.
- A relationship in the Access Definition is not traversed. This condition indicates that a relationship is unused in the process.
- RUNSTATS have not been run for a table in the Access Definition. If the table is large, this condition can affect performance when the process is executed.

- A view, synonym, or alias is to be extracted, but object definitions for objects other than primary keys and relationships have been requested. These other object definitions will not be extracted for views, synonyms, or aliases.

Error and Warning Reporting

If one or more error or warning conditions are encountered, the EXTRACT Errors & Warnings panel is displayed. Any error prevents the Extract Process from proceeding. The Extract Process can continue despite warnings.

You may use the SHOW STEPS command to display additional information about how the Extract Process will proceed.

In the following figure, the EXTRACT Errors & Warnings panel is displayed. Three warnings are documented.

```
+------------------- EXTRACT Errors & Warnings ------------------+
|                                                                |
| EXTRACT Process Can Proceed Despite the Following Warnings:    |
|   1 Table(s) in UNKNOWN Status                                 |
|   2 Table(s) will not be Traversed (See SHOW STEPS)            |
|   1 Relationship(s) will not be Traversed (See SHOW STEPS)     |
|                                                                |
| Press ENTER Key to Proceed Despite Warnings                    |
| Enter END Command to Return to EXTRACT Menu to Correct Problem |
|                                                                |
+----------------------------------------------------------------+
```

Figure 65. Extract Process Warnings

Point-and-Shoot Validation

If specified, the data set containing the primary key values for selected rows using Point-and-Shoot is checked as part of the validation of the Access Definition.

A problem is encountered when:

- The Point-and-Shoot file cannot be found.
- The contents of the file specify primary key values for rows that cannot be found.

If a problem is encountered, you are prompted to specify how to proceed. You can continue processing without using the Point-and-Shoot values or respecify the Point-and-Shoot file name.

Batch Execution

For batch execution, Move builds the necessary JCL and Batch Utility control statements. The JOB card information is taken from the JCL specified on the Job Card and Print Options panel.

If you entered YES at the prompt, **Prompt for Changes Before Job Submission** on the Job Card and Print Options panel, the default job card as indicated on that panel is displayed prior to job submission. You may edit the job card and specify whether changes are to apply to the current job only or are to be applied permanently. (See the *Common Elements Manual* for details.)

The information on the Job Card and Print Options panel is used, along with the extract parameters, to build the JCL and control statements required to perform the Extract Process. If you enter Review at the prompt **If Batch, Review or Save JCL** on the Specify EXTRACT Parameters and Execute panel, the complete JCL and control statements are displayed in the ISPF editor. You can edit and save the JCL and control statements. (See the *Batch Utilities Guide* for the EXTRACT statement keywords and values.)

When you have completed reviewing the JCL and control statements, you can submit the job. If you have set the option so that jobs are automatically submitted when END is used, the job is submitted. Otherwise, you will have to explicitly SUBMIT the job from the ISPF editor. (See the *Common Elements Manual* for information on establishing whether jobs are automatically submitted when END is used.)

If you do not want to submit the job, use CANCEL to return to the Specify EXTRACT Parameters and Execute panel. You can modify the specifications or cancel the Extract Process from this panel.

If an error in the job card is encountered, a message is displayed. You can review the job card and correct the error or terminate the Extract Process.

Batch Overrides

If you save the generated batch job to a data set, you can submit the job directly from the ISPF editor instead of from within an online session. When you do so, you can override the default Creator ID, selection criteria, and SQL WHERE clause defined in the Access Definition used for the Extract Process. This is especially useful when several extracts are to be performed for a set of tables that vary only by Creator ID or by some set of selection criteria.

You can override these values for batch execution by using the PSDFOVRD DD statement to point to the desired overrides. (Examples follow the discussion of the overrides.)

Note: With Release 5.5, a generated batch job executes the Batch Utility to perform the specified function. The batch job includes a series of control statements defining the function to be performed. You can edit these control statements directly as an alternative to providing batch overrides. If batch overrides are not available, you must edit the control statements directly. The *Batch Utilities Guide* describes the Batch Utility control statements. (All batch overrides that were valid prior to Release 5.5 will continue to be valid.)

UNL_IMAGECOPY_DSN

To override the Image Copy DSN parameter for an unload program, specify:

```
UNL_IMAGECOPY_DSN     image.file.dsn
```

UNL_IMAGECOPY_DATE

To override the Image Copy Date parameter for an unload program, specify:

```
UNL_IMAGECOPY_DATE     yyyy-mm-dd
```

UNL_IMAGECOPY_TIME

To override the Image Copy Time parameter for an unload program, specify:

```
UNL_IMAGECOPY_TIME     hh.mm.ss
```

UNL_IMAGECOPY_SELECT

To override the Image Copy Date Criteria parameter for an unload program, specify:

```
UNL_IMAGECOPY_SELECT     { A | B | L | S }
```

UNL_OBID

To process an Image Copy data set created on a different subsystem, specify:

```
UNL_OBID    [cid.]tblname  obid
```

cid.tblname

The table name must be specified. If you do not specify the Creator ID (*cid*), the default Creator ID defined in the Access Definition is assumed.

obid The DB2 Object Identifier must be specified and is used to generate the OBID parameter or the ORIGINOBID parameter on the UNLOAD statement. See the appropriate BMC or IBM reference manual for more information.

COMMIT_COUNT

To override the commit count that was specified when the job was created, specify:

```
COMMIT_COUNT   value
```

The value can range from zero to the site limit.

COMMIT_MINUTES

To change commit processing from number of updates to elapsed time, specify:

```
COMMIT_MINUTES   value
```

The value is specified in minutes and will override the commit count. The value can range from 1 to 1440. The process report will be changed to reflect the change from the number of updates to elapsed time.

DEFCID

To override the default Creator ID in the Access Definition, specify:

```
DEFCID     cid
```

cid The default Creator ID to be used. This applies only to tables that are not explicitly qualified in the Access Definition.

Only one DEFCID parameter may be specified for an Extract Process. This override also affects the names of the tables in the relationships on the **Relationship Usage** list. If a relationship is not found for the updated table name, an error occurs when the extract is performed.

SEL

To override the selection criteria in the Access Definition for a table or to specify selection criteria for a table that does not have selection criteria in the Access Definition, specify:

```
SEL     [cid.]table  column  [ selcriteria ]
```

cid.table
The table name is required. If you do not specify the Creator ID (*cid.*), the default Creator ID defined in the Access Definition is assumed.

column
The column name is required.

selcriteria
The selection criteria. This begins with an SQL operator. This specification is limited to 53 characters.

If you do not specify selection criteria, any selection criteria in the Access Definition is ignored for the current Extract Process.

Selection criteria can be specified for one or more columns in the table, but each criteria must apply to a different column.

You can specify only one SEL parameter for each column in a table. You can specify selection criteria overrides for as many columns in as many tables as you want as long as a separate SEL parameter is provided for each column.

SQL

To override the SQL WHERE Clause in the Access Definition for a table or to specify an SQL WHERE Clause for a table that does not have one in the Access Definition, specify:

```
SQL    [cid.]table  [ /correlation/ ]  [ where ]
```

cid.table
The table name must be specified. If you do not specify the Creator ID (*cid*.), the default Creator ID defined in the Access Definition is assumed.

/correlation/
Add or change a correlation name. If you specify a correlation name, it must immediately follow *table* and be enclosed in slashes.

where The SQL WHERE Clause. This must conform to the requirements specified for the Specify SQL WHERE Clause panel. However, the keyword WHERE is not required and the specification here is limited to a maximum of 425 lines.

If you do not specify an SQL WHERE Clause, any SQL WHERE Clause specified in the Access Definition is ignored for the current Extract Process.

You can specify the WHERE Clause override for more than one table as long as a separate SQL parameter is provided for each. You can specify only one SQL parameter for a table.

EVERY_NTH_ROW

To override the numeric value in the Access Definition used as a factor for selecting rows from a table, specify:

```
EVERY_NTH_ROW    [cid.]tblname   value
```

cid.tblname
Table name is required. If you do not specify the Creator ID (*cid*), the default Creator ID defined in the Access Definition is assumed.

value A numeric value to specify a sampling factor for a table (*tblname*). Valid values are 1 through 65,535.

ROW_LIMIT

To override the numeric value in the Access Definition used to limit the number of rows selected from a table, specify:

```
ROW_LIMIT    [cid.]tblname   value
```

cid.tblname
Table name is required. If you do not specify the Creator ID (*cid*), the default Creator ID defined in the Access Definition is assumed.

value A numeric value to limit the number of rows selected from a table (*tblname*). Valid values are 1 through 4,294,967,295.

VAR

To override the default value of a substitution variable assigned in the Access Definition, specify:

```
VAR    varname   value
```

varname
The name of the substitution variable assigned in the Access Definition. A colon (:) in front of *VarName* is optional.

value The value for the substitution variable. You must enclose the value in single quotes if the variable is for a CHAR, VARCHAR, GRAPHIC, VARGRAPHIC, BINARY, VARBINARY, DATE, TIME, or TIMESTAMP column.

Note: If you specify a column name for the default value, do not enclose the value in quotes.

GROUP

To override the Group Selection Processing in the Access Definition for the Start Table or to specify Group Selection Processing when it has not been defined, specify:

```
GROUP    [column  VALUES=values  ROWS=rows]
```

column
The name of the column in the Start Table for which Group Selection Processing is requested. The column must exist in the Start Table.

values The number of distinct values to select for the specified columns.

The value must be in the range 1 and 4,294,967,295. Specify an asterisk to obtain a specific number of rows from all distinct values of the column. (For additional information on Group Selection Processing, see the *Common Elements Manual*.)

rows The number of rows to select for each value of the specified column.

The value must be in the range 1 and 4,294,967,295. Specify an asterisk to obtain all rows for each distinct value of the selected column.

Only one asterisk may be specified, therefore an asterisk cannot be specified for both values and rows.

This specification can be used with most selection criteria. However, the Every Nth specification is ignored.

Specify GROUP with no operands to ignore the Group Selection specifications in the Access Definition for the current Extract Process.

UNKNOWN

To override the default treatment for objects referred to in the Access Definition that no longer exist, specify:

```
UNKNOWN    { FAIL | ALLOW }
```

FAIL Terminate the Extract Process if any tables or relationships named in the Access Definition have become unknown since the batch process was initiated. The report contains a message noting the first unknown object. FAIL is the default.

ALLOW
Bypass the unknown tables and relationships and continue with the Extract Process. The report contains a message listing the unknown objects.

Since the Extract Process uses existing tables and the existing relationships between those tables to traverse the database, be aware that if an unknown table or relationship is bypassed, “related” tables in the Access Definition may not be included even when these tables exist.

UNKNOWN ALLOW is typically used when you override the default Creator ID with DEFCID. Changing the default Creator ID may result in naming tables that do not exist. The UNKNOWN ALLOW parameter lets you direct the Extract Process to skip these “unknown” tables.

WITH_UR

To override the extracting of uncommitted data from the database during the Extract Process, specify:

```
WITH_UR    { Y | N }
```

Use the Y operand to extract uncommitted data from the database. Use N to only archive committed data.

Note: This override is only available if the **Use Uncommitted Reads** site option is set to **U**.

Rules for Parameters

The following rules apply when specifying these parameters:

- One or more parameters may be specified in the JCL.
- Each parameter keyword must begin in the first space of the line.
- The qualifiers for the parameters must be space separated.
- If a parameter spans multiple lines, continue on the next line.
- You can comment the parameter list by specifying an asterisk, *, in the first position of each comment line.
- If multiple selection criteria are specified, they are ANDed or ORed based on your response on the Specify Selection Criteria panel.
- If both an SQL WHERE Clause and selection criteria are specified for an individual table, the clauses are ANDed.
- You can store the parameters in a sequential file or a partitioned data set. The record length should be 80. If it exceeds 80, only the first 80 characters are processed. Sequence numbers are not allowed.

The parameters should conform to the same syntax required when specified directly in the jobstream.

Override Examples

To override the default Creator ID and specify selection criteria for two of the tables in the extract, insert in the JCL:

```
//PSDFOVRD DD *
DEFCID PSTDEMO2
* LIMIT SELECTION TO CUSTOMERS IN NEW JERSEY
* WHO HAVE ORDERS FOR WHICH THE
* FREIGHT CHARGES EXCEEDED $50.00
SEL CUSTOMERS STATE ='NJ'
SEL ORDERS FREIGHT_CHARGES >50.00
```

SEL requires at least one space between the column name and the selection criteria.

1. To override the SQL WHERE Clause for one table in the extract, insert in the JCL:

   ```
   //PSDFOVRD DD *
   * LIMIT SELECTION TO CUSTOMERS IN PRINCETON,
   * NEW JERSEY
   SQL PSTDEMO2.CUSTOMERS WHERE CITY=
    'PRINCETON' AND STATE='NJ'
   ```

2. To specify a sequential file named PST.SAMPLE.PARMS as the source of the parameter list, insert in the JCL:

   ```
   //PSDFOVRD DD DSN=PST.SAMPLE.PARMS,DISP=SHR
   ```

3. To use an Image Copy file named PST.IMAGE.COPY in an Extract Process utilizing an unload program, insert in the JCL:

```
//PSDFOVRD DD *
* CHANGE IMAGE COPY SPECIFICATION TO
* A PARTICULAR DATASET
UNL_IMAGECOPY_SELECT S
UNL_IMAGECOPY_DSN PST.IMAGE.COPY
```

Save JCL

You can save the JCL and Batch Utility control statements, modify them, and execute the process without re-invoking Move. Specify S to the prompt, **If Batch, Review or Save JCL**. The following prompts for the information to save the JCL and control statements.

```
+---------------------------- Save JCL Parameters --------------------------+
|                                                                           |
|  DSN to Save JCL to     ===>                                              |
|  Member (if PDS)        ===>                                              |
|  Replace Existing Data  ===>       Y-Yes, N-NO                            |
|                                                                           |
|  DSN to Hold SYSIN Data ===>                                              |
|  Member (if PDS)        ===>                                              |
|  Replace Existing Data  ===>       Y-Yes, N-NO                            |
|                                                                           |
|  Submit JCL, or Review  ===>       S-Submit, R-Review, N-Neither          |
+---------------------------------------------------------------------------+
```

Figure 66. Save JCL Parameters

Panel

This panel includes:

DSN to Save JCL to
Name of the sequential file or partitioned data set to receive the JCL and control statements.

If you specify a partitioned data set, specify the member name in **Member**.

Member (if PDS)
Name of the member in the partitioned data set specified at **DSN to Save JCL to**. If you specify a member name for a sequential file, an error message is displayed.

Replace Existing Data
Specify whether the generated JCL and control statements replace existing data in the specified file.

DSN to Hold SYSIN Data
Name of the sequential file or partitioned data set to hold SYSIN data.

If you specify a partitioned data set, specify the member name in **Member**.

Member (if PDS)
Name of the member in the partitioned data set specified at **DSN to Hold SYSIN Data**. If a sequential file is specified and you specify a member name, an error message displays.

Replace Existing Data
Specify whether the generated JCL and control statements replace existing data in the specified file.

Submit JCL or Review
Specify whether the JCL and control statements are saved and submitted, displayed for review, or both.

If you select Submit, the JCL and control statements are saved and the job is submitted. If you select Review, use ISPF facilities to save or submit the JCL and control statements. If you select Neither, the JCL and control statements are saved, but not submitted or displayed for review.

Unload Program

If an unload program is used, the job can only be executed in batch. However, disregard the error messages and return codes in the report for the unload program. You should review the Move Extract Process Report to determine whether the job executed successfully.

For example, the Extract Process uses the unload program only to read the data; the data is not written to DDNAME SYSREC. (The Extract Process uses its own facilities to write the data to the Extract File.) For example, UNLOAD PLUS sets a return code of 4 to indicate no records were written to SYSREC although the Extract Process has performed successfully. As another example, UNLOAD PLUS sets a return code of 12 when the Extract Process was successful but terminated prematurely, because of a user limit for the number of rows from an individual table or for the number of rows extracted for the entire process.

The Extract Process Report always contains appropriate messages. Usually these messages are sufficient. However, the following message may be generated when termination is due to processing of the unload program.

Error detected during execution of the Unload Program.
See z/OS Job Log for the error message.

Before invoking an unload program, Move checks for errors to ensure that the selection criteria adhere to restrictions of the unload program. If an error is encountered, Move displays a message. These restrictions are:

1. Expressions before an operator are limited to a single column name.
2. Subselection is not allowed after an operator.
3. Expressions after an operator are limited to a constant or one of the following terms: NULL, CURRENT DATE, or CURRENT TIMESTAMP.
4. The EXISTS predicate is not allowed.

Online Execution Status

When an Extract Process is performed online, Move provides a status notification pop-up window. The content of the window varies depending on whether data and/or object definitions are being extracted. In the following figure, data is being extracted.

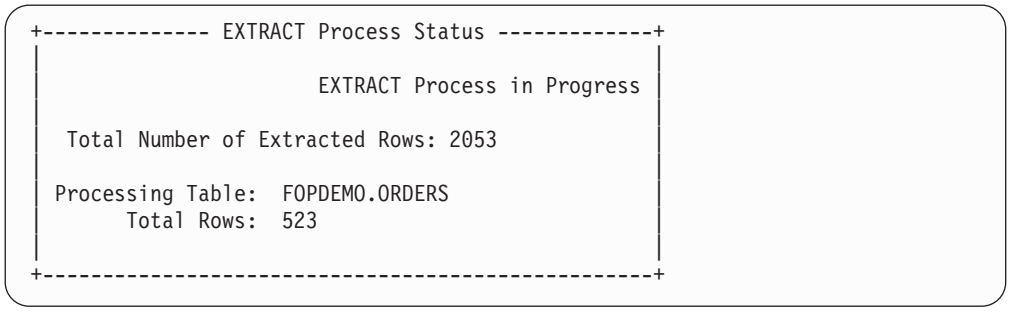


Figure 67. Extract Process Status

The total number of rows that have been extracted is displayed. Also, the name of the currently processing table and total rows that have been extracted from that table are displayed. This is revised:

- After every 1000 rows are extracted for each table to display the current total number of processed rows.
- When the extract for one table is complete and the extract for the next table begins.

When object definitions are extracted, the status panel includes a list of the object definitions (primary keys and relationships, indexes, etc.), and the status of each as one of the following:

COMPLETED
The object definition has been extracted.

IN PROGRESS
The object definition has been selected and is in the process of being extracted.

SELECTED
The object definition has been selected but has not been extracted yet.

UNSELECTED
The object definitions have not been selected.

Extract Process Report

An EXTRACT Process Report is generated as part of the process. This report contains general information and statistics about the process.

Display the Report

The contents of the EXTRACT Process Report can be browsed. When the process is executed online, the EXTRACT Process Report is automatically displayed.

In batch, the report is placed in the default output file as specified in the JCL. You can then display the report as you would the output from any job.

Report Contents

The content of the EXTRACT Process Report reflects what has been extracted–data, object definitions, or both. The report in the following figure indicates that both data and object definitions have been extracted.

```
------------------ EXTRACT Process Report -------------------------------------
 Command ===>                                                SCROLL ===> PAGE

********************** Top of Data ****************************************

                            EXTRACT Process Report

Extract File          : FOPDEMO.TESTJUL
Access Definition     : TEMPORARY ACCESS DEFINITION
Created by            : Job PSTUSR, using SQLID PSTUSR on DB2 Subsystem DDAF
Time Started          : 2014-08-07 11.01.31
Time Finished         : 2014-03-07 11.01.39

File Compression Impact  :
Extract File
  Compression is not available on BASIC or LARGE format datasets.

Process Options:
  Process Mode        : Online
  Retrieve Data using : DB2
  Limit Extract Rows  : 3000000

Total Number of Extract Tables              : 5
Total Number of Extracted Rows              : 34888
Total Number of First Pass Start Table Rows : 3520
Extract file data byte count  :  2,603,172 Bytes (0.002 GB)

     Extracted Object Types  Number
     ----------------------  ------
1    Table-List Tables            5
2    Related Primary Keys         5
3    Relationships                4
4    Related Indexes              5
5    Related Views                1
6    Materialized Query Tables    0

                                 Extracted   Reference
     Extract Tables                 Rows       Table          Data Byte Count
     --------------              ---------   -----------      ------------------
1    PSTSUPP.CUSTOMERS             3520                        1722290
2    PSTSUPP.ORDERS                9321         N               419445
3    PSTSUPP.SALES                  110         N                11206
4    PSTSUPP.DETAILS              21427         N               428540
5    PSTSUPP.ITEMS                  510         N                21691


                    Relationship Usage Report
                                                 Access Type  Key Limit
                                       Relation  ------------ ------------
   Parent Table    Child Table         Name      Parent Child Parent Child
----------------  -----------------  --------  ------ ----- ------ -----
PSTSUPP.CUSTOMERS  PSTSUPP.ORDERS      RCO       **     SCAN

PSTSUPP.ORDERS     PSTSUPP.DETAILS     ROD       **     SCAN

PSTSUPP.SALES      PSTSUPP.CUSTOMERS   RSC       KEY    **

PSTSUPP.ITEMS      PSTSUPP.DETAILS     RID       SCAN   **

** This path was not traversed during this run.

                      ****** End of Report ******
******************************** Bottom of Data ************************
```

Figure 68. Extract Process Report Format

Report Format

The report format includes headings to identify the information. General information is provided. This includes the Extract File name, the Access Definition, the user requesting the extract, the date and time the process was executed, and the processing options for the Extract. This is followed by the statistics for the extracted object definitions and data.

Object Definitions Information

If object definitions are extracted, the report includes the list of types of object definitions and the number of each type that have been extracted. However, if object definitions were not explicitly requested, the DB2 and Legacy Table definitions are always documented in the EXTRACT Process Report.

Relationship Usage Report

The Relationship Usage Report lists each relationship traversed during the Extract Process, displaying the parent and child table in the relationship as well as the name of the relationship. Additionally, the report displays the actual access method used to access rows for processing, table scan or key lookup, and if key lookup is used, the key lookup limit is also displayed.

Note: The Relationship Usage Report displays the actual Access Method used to access rows.

Data Information

If data is extracted, the report includes the total number of tables in the extract and the combined total number of rows extracted from these tables.

The **Total Number of First Pass Start Table Rows** displays the number of rows extracted from the Start Table in the initial pass. This value does not include the number of additional rows that may have been extracted in subsequent passes. Subsequent passes of the Start Table may be performed as a result of specifications for prompts **Q1** and **Q2** on the Specify Relationship Usage panel or RI cycles.

The names of the tables from which data was extracted are listed in the order listed in the Access Definition. The number of rows extracted from each table is also provided.

When a Legacy Table defining legacy data is used as an extract table, the report additionally indicates the associated Legacy data set information for that Legacy Table as shown in the following example:

```
 --------------------------- EXTRACT Process Report ------------------------
 Command ===>                                                SCROLL ===> PAGE
                                                             ROW 0    OF 44
******************************** Top of Data ******************************

                            EXTRACT Process Report

Extract File          : FOPDEMO.LEGACY.LEG_EXTR
Access Definition     : FOPDEMO.LEGACY.CUSTORDS
Created by            : Job FOPLEG, using SQLID FOPDEMO on DB2 Subsystem DNSC
Time Started          : 01-08-06 09.52.33
Time Finished         : 01-08-06 09.52.43

Process Options:
  Process Mode        : Online
  Retrieve Data using : DB2
  Limit Extract Rows  : 90000
  Extract file data byte count  :  383,836 Bytes (.01 GB)

Total Number of Extract Tables              : 2
Total Number of Extracted Rows              : 135
Total Number of First Pass Start Table Rows : 102

     Extracted Object Types          Number
     ------------------------------  ------
1    Table-List Tables                    1
2    Related Primary Keys                 2
3    Relationships                        3
4    Related Indexes                      1

                               Extracted
           Extract Tables        Rows        Associated Legacy Information
     -------------------------  --------  ----------------------------------
1    FOPDEMO.ITEMS                   102
2    FOPDEMO.BKORDER                  33  FOPDEMO.LEGACY.BKORDERS


                   Relationship Usage Report
                                              Access Type   Key Limit
                                   Relation ------------ ------------
Parent Table     Child Table       Name     Parent Child Parent Child
--------------   ----------------- -----    ------ ----- ------ -----
FOPDEMO.ITEMS    FOPDEMO.BKORDER    RIB        **   SCAN

** This path was not traversed during this run.


                      ****** End of Report ******
******************************** Bottom of Data ***************************
```

Figure 69. Associated Legacy Information

In the previous example, the **Associated Legacy Information** lists FOPDEMO.LEGACY.ORDERS as the source of data for the Extract Legacy Table FOPLEG.ORDERS.

Unmatched Point-and-Shoot Keys

If you used the Point-and-Shoot facility or otherwise created a row list to select rows in the Start Table, some rows may have been deleted before the Extract Process was executed. If so, the EXTRACT Process Report lists the primary key values for rows that are not found.

The list of unmatched primary keys follows the list of Extract Tables and is formatted like the following example:

```
3 Rows From Start Table Row List not Found
   FOPDEMO.CUSTOMERS
    07053
    07101
    07103
```

Relationship Usage Report

The Relationship Usage Report lists each relationship traversed during the Extract Process, displaying the parent and child table in the relationship as well as the name of the relationship. Additionally, the report displays the actual access method used to access rows for processing, table scan or key lookup, and if key lookup is used, the key lookup limit is also displayed.

Note: The Relationship Usage Report displays the actual Access Method used to access rows.

Detailed Extract Report

If you request a detailed process report from the Specify EXTRACT Parameters and Execute panel, the report includes the following:

Any Column Maps specified for Convert after Extract. If the Column Map is Local, no Column Map information, Column Map Name, Security Status, etc., is displayed.

```
Column Maps in Use:

Map Name        : FOPDEMO.CM2
Source File     : 'FOPDEMO.PERF.APR14'
Modfied By      : FOPDEMO
Last Modified   : 2004-04-28
Security Status : PUBLIC

Source Table: FOPDEMO.CUSTOMERS   Destination Table: FOPDEMO2.CUSTOMERS

Source Column       Data Type     Destination Column   Data Type       Status
------------------ -------------- -------------------- --------------- -------
CUST_ID            CHAR(5)        CUST_ID              CHAR(5)         EQUAL
CUSTNAME           CHAR(20)       CUSTNAME             CHAR(20)        EQUAL
ADDRESS            VARCHAR(50)    ADDRESS              VARCHAR(50)     EQUAL
CITY               VARCHAR(15)    CITY                 VARCHAR(15)     EQUAL
'PA'               LITERAL        STATE                CHAR(2)         LITERAL
ZIP                CHAR(5)        ZIP                  CHAR(5)         EQUAL
                   UNUSED         YTD_SALES            DECIMAL(7,2)    UNUSED
SALESMAN_ID        CHAR(6)        SALESMAN_ID          CHAR(6)         EQUAL
PHONE_NUMBER       CHAR(10)       PHONE_NUMBER         CHAR(10)        EQUAL
```

Any selection criteria specified in the Access Definition. The report displays each table where selection criteria was specified.

```
          Table        Opr      Column                    Criteria
---------------------- --- --------------- ----------------------------------
FOPDEMO.CUSTOMERS      AND STATE           = 'CA'
                       SQL                 cust_ID < '00070'
                                           and ytd_sales > 2000

FOPDEMO.ORDERS         OR  ORDER_ID        = 88603
                           ORDER_SALESMAN  = 'WE012'
```

Print Report

While browsing the EXTRACT Process Report online, you can use the OUTPUT command to direct the contents of the report to an output file or the printer. A panel is displayed prompting for the necessary information based on the specified output destination. (For details, see the *Common Elements Manual*.)

The report can be scrolled using the ISPF scrolling facilities. You can use the FIND command to locate a specific table.

Control File Overview

Once the Extract File has been created, you can insert data and create object definitions using the Extract File as input.

Extract File

The Extract File can be used in any process listed on the **Data Migration** menu: Insert, DB2 Load, Create, and Convert. Also, since the Extract File is not modified by these processes, any number of users and any number of processes can use it simultaneously. The Extract File ensures a consistent set of data.

Note: If you use an extract file stored on tape in a data migration process, you must execute the process in batch.

Control File

To distinguish the execution of multiple Move processes by several users for the same Extract File, a Control File is generated for each execution of an Insert, DB2 Load, or Convert Process. The Control File is a sequential file that contains information about the process parameters. This file also documents the success or failure of the processing of each row in the Extract File and whether the process completed.

Retry

The Control File identifies rows that are not successfully processed. An identifier indicates the reason for the failure. For example, rows may not be successfully processed when a request conflicts with RI rules—for example, attempting to insert a child row that refers to a non-existent parent row. Based on the information in the Control File, you can correct the problem and execute the process again. For Insert processing you can "retry" the process such that only the rows that were unsuccessful or discarded in the original attempt are processed.

Restart

The Control File also notes whether an Insert Process completed. When the process does not complete, you can "restart" the process at the point at which it was abnormally terminated. An Insert Process can be terminated abnormally when the time or space resources allocated for the process are insufficient.

Abnormal termination can also occur when the process exceeds the user-specified limits. For example, the INSERT Process Parameters and Execute panel prompts for a limit to the number of rows that are discarded because they cannot be processed. When the number of discarded rows reaches the limit set by the parameter, **Limit Number of Discarded Inserts**, the process terminates.

Load Process and Convert Process

A Control File is also generated by the Load Process and the Convert Process. The file documents the success of the process. This file can then be browsed. However, the Move Load Process and the Convert Process cannot be retried or restarted.

Insert Process

The Insert Process is used to insert source data and object definitions from an Extract File into a destination database.

The Insert Process can be performed in several ways. You can specify insert only, update only, or both. If you specify insert only, only new rows are inserted. Thus, a source row is bypassed or discarded when the primary key value matches the value in an existing destination row. If you specify update only, existing destination rows are updated. Therefore, when the primary key value of the source row matches the primary key value in an existing destination row, the destination row is updated. If you specify both, new rows are inserted and existing destination rows are updated.

To perform the Insert Process you specify the destination for the source data stored in the Extract File.

If you want to create the object definitions at the destination without inserting data, use the Create Process, Option 5 on the **Data Migration** menu.

Note: To use an extract file on tape in an insert process, you must use batch processing.

INSERT Process Menu

When you select Option 2 on the **Data Migration** menu, the **INSERT Process** menu is displayed.

```
-------------------------------- INSERT Process --------------------------------
OPTION ===>                                                  SCROLL ===> PAGE

  1  TABLE MAP - Specify Table Map, Column Maps and Table Processing Options
  2  PERFORM   - Specify Parameters and Perform INSERT and/or UPDATE Process

Specify Data Set Names for Extract File and Control File:
  Extract File DSN ===> 'FOPDEMO.SAMPLE.EXTRACT'
  Control File DSN ===> 'FOPDEMO.INSERT.CONTROL'
```

Figure 70. INSERT Process Menu

Panel Options

The available options are:

1 TABLE MAP
Specify the destination table for each source table in the Insert Process. A Table Map must be specified for Option 2; so if you do not select Option 1 first, Move automatically displays the Table Map panel before proceeding with Option 2. When the Table Map is displayed, you must specify the destination Creator ID, **Dest CID**, for the destination tables. By default, Move assumes the base destination table names are the same as the source table names defined in the Extract File.

You can specify Column Maps for one or more destination tables. The Column Maps allow you to specify, on a column-by-column basis, the source data for each destination column.

You also can specify processing options for individual tables on the right-hand page of the Table Map Editor.

2 PERFORM
Specify parameters and perform the Insert Process. Depending on the processing options you specify, the Insert Process inserts source data rows when the primary key value does not match that of a destination row, updates any destination rows when the primary key value matches that of a source row, or both inserts and updates rows.

In addition to selecting an option, specify:

Extract File DSN
The name of the Extract File containing the source data to be inserted. This file must exist. By default, the name of the Extract File created by the last Extract Process is supplied. You can

specify an explicit name by using quotes to delimit the desired name; otherwise, the default prefix as specified on the User Options panel is added to the name you specify.

Note: If the extract file is on tape you must use batch processing for the insert.

Control File DSN
Name of a sequential file that is to be used to accumulate information and statistics about the Insert Process. To specify an explicit name, use quotes to delimit the desired name; otherwise, the default prefix specified on the User Options panel is added to the name you specify.

If the named file exists, the Insert Process will overlay the contents.

If the named file does not exist, you are prompted for allocation information and the file is created by Move. (See the *Common Elements Manual* for a description of the allocation prompts.)

The **Extract File DSN** and the **Control File DSN** values are profiled.

Selection List

You can obtain a selection list for either the Extract File or the Control File by specifying the wild cards, * or %, as the last character in the name. When the list is displayed, use the Select line command, S, to select an entry. A sample of the selection list displayed for Extract File or Control File data set names is provided in Figure 60 on page 83.

Available Commands

The following primary commands are available:

- CANCEL
- END
- OPTIONS

INSERT Process Table Map

When you select Option 1 from the **INSERT Process** menu, the INSERT Process Table Map panel is displayed. Use this panel to specify the destination tables and views and provide processing overrides for individual tables.

```
--------------------------- INSERT Process Table Map --------------------------
Command ===>                                                 Scroll ===> PAGE

Available Commands: APPLY,SAVE,LIST,MAP,POPULATE,ACM,CLEAR,END when Done
                                                                       MORE>>
   Src CID: FOPDEMO                                      Column
  Dest CID: SOFTECH                                   >>  Map ID ===>

   Extract Tables       Destination Table Name     Type   Column Map or "LOCAL"
-------------------- ------------------------>> ------- --------------------
************************************ TOP ************************************
CUSTOMERS            CUSTOMERS                  TABLE
ORDERS               ORDERS                     UNKNOWN
DETAILS              DETAILS                    VIEW
ITEMS                ITEMS                      LEGACY
********************************** BOTTOM ***********************************
```

Figure 71. INSERT Process Table Map

Panel

This panel includes:

Src CID
The default Creator ID for the source tables as specified in the Extract File. This value cannot be modified.

Dest CID
The default Creator ID for the destination tables. Initially, **Dest CID** is blank. A valid value must be specified. Specify the **Src CID** as the **Dest CID** only when you want to reinsert or update the data in the source tables or when inserting into a different subsystem having tables with the same name.

Column Map ID
1- to 8-character Map ID. Use DB2 LIKE syntax or leave blank to display a selection list.

Extract Tables
Names of the DB2, Materialized Query Tables or Legacy Tables in the Extract File. The Creator ID is included only when it differs from the **Src CID**. These values cannot be modified.

Destination Table Name
Names of the destination DB2, Materialized Query Tables or Legacy Tables that correspond to the listed sources. Initially, Move supplies names for the destinations that match the source names.

To edit the list:

- Replace a name by typing over it or selecting a new table from a list. You can request a selection list using the LIST TABLES primary command.
- Clear all names using the CLEAR primary command.
- Prefix all names with a string using the PREFIX primary command.
- Append a string to all names using the SUFFIX primary command.

If you leave a destination table name blank, the Extract File data from the corresponding source table is ignored for the current Insert Process.

Type The type of the object named in **Destination Table Name**. Move supplies this value and it is not modifiable. The possible values are:

TABLE
A DB2 table.

VIEW A view.

UNKNOWN
Non-existent or initial display.

A-TABLE
An alias of a table.

A-VIEW
An alias of a view.

S-TABLE
A synonym of a table.

S-VIEW
A synonym of a view.

UNUSED
A destination table is not specified.

TEMPTBL
Temporary table.

LEGACY
A Legacy Table.

U-MQT
A User-maintained Materialized Query Table

NOT INS
Not insertable (e.g., a joined view or a System-maintained Materialized Query Table).

MOVE automatically creates any destination table that is UNKNOWN. You are prompted for the required information before the process is performed.

Column Map or "LOCAL"
The name of a Column Map to be used to insert the data into the destination table. You must provide a **Column Map ID** or specify the fully qualified Column Map Name.

Enter LOCAL to define a Column Map for the current Insert Process only.

Type the Column Map names or request a selection list, using the LIST MAPS command. Leave blank if a Column Map is not used.

You can use the POPULATE command to insert the name of a Column Map.

If you enter a new Column Map name or LOCAL, Move automatically invokes the Column Map editor to allow you to create the Column Map. To edit an existing Column Map, use the MAP command.

Processing Overrides

The **INSERT Process Table Map** is presented on two "pages". **MORE**, preceded or followed by two arrows, indicates the presence of another page. Use the primary commands **LEFT** and **RIGHT** or the assigned function keys to scroll the page horizontally.

Note: You must enter the **Dest CID** before you can scroll the page horizontally.

To provide processing overrides for selected tables, you can scroll to **Overriding** on the **INSERT Process Table Map** panel.

```
--------------------------- INSERT Process Table Map --------------------------
Command ===>                                                 Scroll ===> PAGE

Available Commands: APPLY,SAVE,LIST,MAP,POPULATE,ACM,CLEAR,END when Done
                                                                      <<MORE
   Src CID: FOPDEMO                                      --Overriding--
  Dest CID: SOFTECH                                   >>  Process Delete
                                                            Mode  Before
   Extract Tables       Destination Table Name     Type    U/I/B  Insert
-------------------- ------------------------>> ------- ------- ------
********************************** TOP ***********************************
CUSTOMERS            CUSTOMERS                  TABLE
ORDERS               ORDERS                     UNKNOWN
DETAILS              DETAILS                    VIEW
ITEMS                ITEMS                      LEGACY
********************************* BOTTOM *********************************
```

Figure 72. Table Map – Processing Overrides

Process Mode and **Delete Before Insert** are displayed on the panel, and are blank by default. These prompts allow you to set the processing options for any table on an individual basis. The default processing options from the Specify INSERT Parameters and Execute panel are used for tables with no overriding parameters. (For a description of the default processing options, see page "Insert Parameters Panel" on page 114.)

Process Mode
The overriding processing mode for selected tables. Specify:

U Update only.

I Insert only.

B Both (update and insert).

Leave **Process Mode** blank to insert data from a table using the default processing mode, specified on the Specify INSERT Parameters and Execute panel.

Delete Before Insert
Option to delete all rows in the destination table prior to inserting data from the Extract File. Specify:

Y Delete all rows prior to the Insert. (**Process Mode** must be I.)

N Do not delete all rows prior to the Insert.

If you specify overriding parameters for any table, a message on the panel indicates that you can view active table-level processing options by scrolling.

Selection List of Destination Objects

The LIST command is available for aliases, maps, synonyms, DB2 and Legacy Tables, and views. For example, to obtain a selection list of available DB2 and Legacy Tables, use the command LIST TABLES. A selection list of available tables with the destination Creator ID is displayed and, at the same time, a number is displayed by each name in **Extract Tables** on the Table Map editor. You can override the destination Creator ID with the LIST TABLES command as in LIST TABLES FOPDEMO.%.

To insert a destination name, type the number of the extract table in **Num** next to the name in the selection list. You can select as many tables from the list at one time as are listed in **Extract Tables** on the Table Map editor. Move automatically places a selected name in **Destination Table Name**, according to the number.

Use Existing Table Map

You can use the APPLY command to populate the Table Map with specifications from a previously defined Table Map. If the source tables in the process match the source tables in the Table Map, Move populates the destination table names from the existing Table Map. APPLY can be used to populate all table names and the **Dest CID** regardless of any entry, or populate only the blank areas.

Destination Table Type

Move automatically revises the **Type** each time you modify a destination table name. If you modify the **Dest CID**, any tables that are specified without an explicit Creator ID automatically use the new **Dest CID**. This may change the **Type** value and require review.

For example, assume the **Dest CID** is SOFTECH and the **Destination Table Name** is CUSTOMERS. The resultant table name is SOFTECH.CUSTOMERS. However, when the **Dest CID** is changed to COHEND, the table name becomes COHEND.CUSTOMERS and may be unknown. Move prompts for the information to create the table COHEND.CUSTOMERS before performing the Insert Process. (This prompt is displayed prior to entry onto the Specify INSERT Parameters and Execute panel.) You can explicitly supply the Creator ID with the **Destination Table Name**. Then, changing the **Dest CID** does not affect the table name.

Duplicate table names are not allowed. Therefore, the same table name cannot be specified twice as a destination table.

ACM Command

If necessary, you can use the ACM command to open the **Choose Access Method** pop-up window.

```
+-------- Choose Access Method -------+
|                              1 of 4 |
| Access Method Values:               |
|   K - Key Lookup                    |
|   S - Table Scan                    |
|   blank - Software Chooses          |
|                                     |
|                              Access |
| Destination Table Name       Method |
| -------------------------  ------ |
| ************** TOP ***************** |
| FOPDEMO.CUSTOMERS                   |
| FOPDEMO.DETAILS                     |
| FOPDEMO.ORDERS                      |
| FOPDEMO.ITEMS                       |
| ************ BOTTOM *************** |
+-------------------------------------+
```

Figure 73. Choose Access Method

The ACM command allows you to override the default method (scan or key lookup) for accessing the parent or child table for each relationship. A scan reads all rows in a table at one time; whereas a key lookup locates rows using a WHERE clause to search for primary or foreign key values.

Note: The default access method is overridden only if the rows are being updated. If the rows are inserted, any changes to the access method are ignored.

For more information, see the *Common Elements Manual*.

Available Commands

The following commands are available on this panel:

- ACM
- APPLY
- BOTTOM
- CANCEL
- CLEAR
- DOWN
- END
- EXPAND
- LIST
- MAP
- OPTIONS
- POPULATE
- PREFIX
- SAVE
- SUFFIX
- TOP
- UP

See the *Common Elements Manual* for details on these commands.

More Information

The *Common Elements Manual* provides detailed information on Column Maps and Table Maps.

Unless one or more Legacy Tables are referenced in the Table Map, use END to return to the Choose a Table Map panel from the display. Use the CANCEL command to abandon any changes made on this panel.

Associate Legacy Tables with Data Destinations

A Legacy Table that is referenced in a Table Map must be associated with a specific data source to be used in an Insert Process. Each time you exit the Table Map Editor using the END command, the Associate Legacy Tables with Data Destinations panel is displayed. The contents of the panel vary based on whether the Legacy Tables in the Table Map reference IMS Data, VSAM or sequential files, or both.

"Legacy Tables" on page 41 provides detailed information about Legacy Tables.

In the following example, the Table Map references two Legacy Tables as the Source Tables (FOPLEG.LITEMS and FOPIMS.I$DETAILS) and as the Destination Tables (FOPLEG2.LITEMS and FOPIMS2.I$DETAILS). FOPLEG.LITEMS and FOPLEG2.LITEMS reference VSAM files and FOPIMS.I$DETAILS and FOPIMS2.I$DETAILS reference IMS data.

```
--------------- Associate Legacy Tables with Data Destinations ----------------
Command ===>                                                 Scroll ===> PAGE

Source Dataset Prefix                    :                          1 of 2
Overriding Destination Dataset Prefix ===>                          MORE>>

Source Legacy Table /       Source Data /                    Dest
                            Destination Dataset              Status
Destination Legacy Table    IMS--Segment    DBD      PSB    PCB IMSID DBRC LOG
--------------------------- ---- -------- -------- -------- --- ---------- ---
********************************* TOP ************************************
FOPLEG.LITEMS               'FOPRT.LEGACY.ITEMS'             LEGACY
  FOPLEG2.LITEMS              'FOPRT2.LEGACY.ITEMS'
FOPIMS.I$DETAILS            IMS  DETAILS  SALEHDAM SALHDAMA 1   IMS9
  FOPIMS2.I$DETAILS                                SALHDAMA 1   IMS9   N    N
******************************** BOTTOM ***********************************
```

Figure 74. Associate Legacy Tables with Data Destinations

Note: The labels displayed on this panel vary based on what type of legacy tables are displayed (i.e., IMS, VSAM, or sequential files). The following labels are displayed ***for IMS files only***: IMS--Segment, DBD, PSB, PCB, IMSID, DBRC, and Log. The following labels are displayed ***for VSAM or sequential files only***: Source Dataset Prefix, Overriding Destination Dataset Prefix, and Dest Status. If more than one file type is displayed, a combination of the labels is displayed.

Panel

This panel includes

Source Dataset Prefix
Displays the prefix for the data sets associated with the VSAM Legacy Tables specified on the Associate Legacy Tables with Data Sources panel.

Overriding Destination Dataset Prefix
Optional 1- to 8- character prefix used by the data sets associated with the VSAM Legacy Tables in the Table Map.

Source Legacy Table/ Destination Legacy Table
Name of the source and destination Legacy Tables referenced in the Table Map. This column cannot be modified.

Source Dataset/ Destination Dataset
IMS--Segment
The Source Dataset is specified in the Access Definition used to create the Extract File. The Source Dataset cannot be modified.

The Destination Dataset is specified as a default in the Destination Legacy Table. If no data set is specified, this field is blank. To enter or modify the Data Destination:

- Type the fully qualified Destination Dataset name, enclosing it in single quotes.
- Type a data set name, without delimiting quotes. The data set name is prefixed with the default prefix specified on the User Options panel unless you provide an Overriding Dataset Prefix. A maximum of 17 characters can be entered as the Overriding Dataset.
- Use a shortcut. Use "=" to copy the Destination Dataset name from the preceding entry. Use "=s" to copy the Source Dataset from the current entry into Destination Dataset (in the preceding panel, using the "=s" shortcut for FOPLEG.LITEMS copies the Source Dataset name, FOPRT.LEGACY.ITEMS, to the Destination Dataset).

If the Table Map contains a Legacy Table that references IMS data, **IMS** is designated and the source and destination segments within the DBD associated with the Legacy Table are displayed.

DBD If the Legacy Table references IMS data, displays the DBDs associated with the source and destination Legacy Tables. This column cannot be modified.

PSB Lists the PSB associated with the source Legacy Table in the Table Map, and allows you to specify the 1- to 8-character name of the PSB used to override the PSB for the destination Legacy Table specified in the Retrieval Definition. If no Retrieval Definition has been created for the destination Legacy Table, the PSB field is blank and a valid PSB must be entered.

The PSB provides access to the IMS services that Move requires to access the database records.

The PSB must be included in the PSB library referenced in the Environment Definition for the destination Legacy Table. Specify an asterisk to generate a selection list that includes PSBs referenced in the Environment Definition for the IMS Legacy Table.

PCB Lists the PCB number associated with the source Legacy Table in the Table Map, and allows you to specify the PCB number used to override the PCB number specified in the Retrieval Definition for the destination Legacy Tables. If no Retrieval Definition has been created for the Legacy Table, the PCB field is blank and a valid PCB number must be entered.

The PCB must exist within the specified PSB and grant Move the authorization to manipulate the data. Specify an asterisk to generate a selection list that includes PCBs in the specified PSB.

Dest Status
IMSID
If the Table Map contains a Legacy Table that references a VSAM or sequential file, the status of the destination table is displayed here.

If the Table Map contains a Legacy Table that references IMS data, **IMSID** lists the IMS System ID associated with the source Legacy Table in the Table Map. You can specify the IMS ID used to override the ID specified in the Environment Definition for the destination Legacy Tables. The IMS ID is required to access the IMS data when allocated to a control region (i.e., the data is online to IMS).

DBRC This entry is valid only for IMS processing in DL/I mode (i.e, when an IMS ID is not specified). If appropriate, enter **Y** for yes to use Database Recovery Control (DBRC) to control logging and perform database recovery; otherwise enter **N** for no. IMS uses the online log datasets (OLDS) if the database is accessed in BMP or DBB mode.

The default for a HALDB (High Availability Large DataBase), is **Y**, and that entry cannot be changed.

DBRC use is optional for a non-HALDB, such as HIDAM, HDAM, HISAM, etc. Thus, you may specify **Y** for a non-HALDB, but it is not required.

LOG This entry is valid only for IMS processing in DL/I mode (i.e, when an IMS ID is not specified). If appropriate, enter **Y** for yes to use an IMS log to perform database recovery; otherwise enter **N** for no.

If you specify Y, you must specify a dataset name for the IMS log on the Associate IMS Segments with IMS Database Datasets panel. The DD Name "IEFRDER" is used to allocate the log dataset on that panel.

If a PSB with a Processing Option (PROCOPT) other than G (Get) is used while accessing a HALDB in DL/I mode, you must specify the name of the dataset to be allocated for DD Name IEFRDER on the Associate IMS Segments with IMS Database Datasets panel.

After you specify the IEFRDER dataset name and exit the Associate IMS Segments with IMS Database Datasets panel, the Allocate Dataset panel automatically displays. You must provide sufficient Primary and Secondary space units on that panel to allocate the IEFRDER dataset. Failing to do so will cause IMS to abort processing and lock the database from further updates until a recover/rollback is done.

If no IMS Legacy Tables are referenced in the Table Map, use END to return to the **INSERT Process** menu. If one or more Legacy Tables are referenced and an IMS ID was not specified, use END to display the Associate IMS Segments with IMS Database Datasets panel. Use the CANCEL command to abandon any changes made on this panel and then return.

Associate IMS Segments with IMS Database Datasets

When you use END to exit the Associate Legacy Tables with Data Destinations panel and one or more Legacy Tables in the Access Definition reference IMS data and an IMS ID was not specified, the Associate IMS Segments With IMS Database Datasets panel is displayed.

This panel allows you to override the default IMS Database Dataset Name specified in the Retrieval Definition.

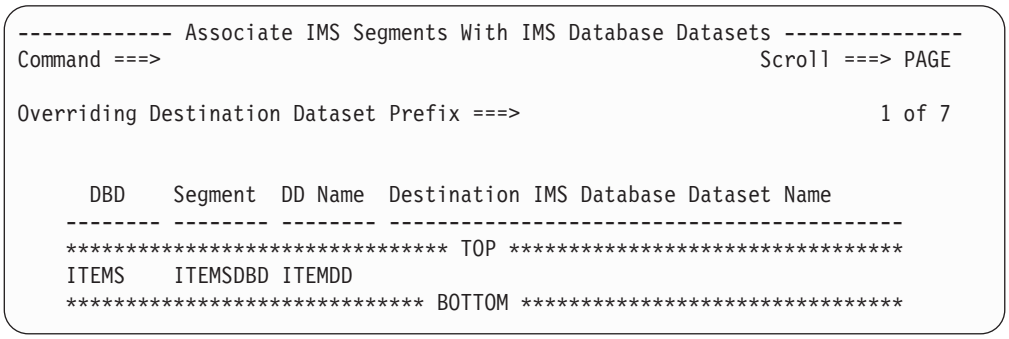


Figure 75. Associate IMS Segments With IMS Database Datasets

Panel

This panel includes:

Overriding Destination Dataset Prefix
Optional 1- to 8-character prefix used when specifying IMS Database Dataset Names.

DBD Lists the DBDs referenced by the Destination Legacy Tables in the Table Map. This column cannot be modified.

Segment
Lists segments within the specified DBD. This column cannot be modified.

DD Name
Lists the names of the DD (i.e., the physical data sets) associated with each segment. This column cannot be modified. If IMS logging was requested, the DD Name IEFRDER is displayed (along with the pseudo-Segment IMSLOG) to identify the Log dataset.

Destination IMS Database Dataset
Name Specify the IMS Database Dataset Name to override the database data set name specified in the Retrieval Definition.

Enter the location of the IMS Database Dataset associated with each DD name in the DBD. This data is then associated with the named Legacy Table, during processing.

A Site Option (Require IMS Data Set Names) determines whether you can omit the data set name to allow IMS to dynamically allocate the data set. All users can specify '$MDA' as the data set name to choose dynamic allocation, regardless of this Site Option.

If IMS logging was requested, you must specify the Log dataset for DD Name IEFRDER. If a default name is displayed from the Provide Retrieval Information panel, you can override that name, if needed.

After you specify the IEFRDER dataset name and exit the Associate IMS Segments with IMS Database Datasets panel, the Allocate Dataset panel automatically displays. You must provide sufficient Primary and Secondary space units on that panel to allocate the IEFRDER dataset. Failing to do so will cause IMS to abort processing and lock the database from further updates until a recover/rollback is done.

Use END to return to the **INSERT Process** menu from the display. Use the CANCEL command to abandon any changes made on this panel.

Note: You do not have to specify a dataset name for a HALDB because the appropriate dataset name will already be known to the IMS subsystem, but you do have to specify the IEFRDER dataset if it was not defaulted from the retrieval information specified on the Provide Retrieval Information panel.

Perform Insert Process

The distinction between performing an Insert Process with insert only, update only, or both insert and update processing is important. The difference rests on how existing rows in the table are processed when inserting rows that have matching primary key values.

When the primary key value of the source row does not already exist in the destination table, there is no conflict and the row is inserted only if you select insert or both as the processing method. If you select update as the processing method, the source row is marked as failed and is not inserted. However, when the primary key value of the source row already exists in the destination table, the source row updates the existing row only if you select update or both as the processing method. If you select insert as the processing method, the source row is marked as failed and is not inserted.

For example, you may want to avoid blindly updating existing rows with duplicate primary key values. You can specify insert processing to identify all rows that are not unique, then review the Extract File using the **Browse Extract File** option to determine which rows were duplicates and take action based on your findings. You can delete specific destination rows in the database to avoid these conflicts and retry the Insert Process. (For details, see the *Common Elements Manual*.)

Non-Unique Primary Keys

When the primary key for the source data is defined in the Optim Directory and is not unique, more than one row in the Extract File may exist with the same primary key value. If this data is then used to insert into a destination table defined with a unique primary key, only the first row with that primary key value in the Extract File is processed.

The additional rows are not processed and are identified as such in the Control File.

When the primary key for the destination table is also defined in the Optim Directory and is not unique, more than one row in the destination table may exist with the same primary key value. For insert processing, the rows in the Extract File are inserted. If you select either update or both as the processing method, the processing is performed as follows:

- If the Extract File contains only one row with a particular primary key value, only one destination row is updated. When multiple rows with the same primary key are present in the destination table, it is indeterminate which of the existing rows will be updated.
- If the Extract File contains multiple rows with the same primary key, a different destination row is updated with each row in the Extract File. That is, a single destination row is updated once although it is indeterminate which row is updated with a specific row from the Extract File. If the processing method is both, when the Extract File contains more rows with the non-unique primary key than are present in the destination table, the additional rows are inserted.

Determine when to use insert, update, or both insert and update processing by the results you want to obtain. Use insert to insert only new rows, update to replace existing rows, or both to insert new rows and update existing rows. You can also request that the rows in the destination table are deleted prior to performing an insert. This enables you to recreate the original set of test data exactly.

Insert Parameters Panel

When you select Option 2 PERFORM from the **INSERT Process** menu, the following panel is displayed to prompt for the parameters needed to perform the Insert Process.

```
---------------------- Specify INSERT Parameters and Execute -------------------
Command ===>

Names for Extract File and Control File:
  Extract File DSN : SAMPLE.FOP.INSERT.DATA
  Control File DSN : EXTRACT.CTRL

Process Options:
  Default Options (Overrides are not currently set in the Table Map):
    Processing Method to Use           ===> B   (I-Insert, U-Update, B-Both)
    For Tables Processed by Insert Only:
      Delete All Rows in Target Tables ===> N   (Y-Yes, N-No)
        If YES, Commit Frequency       ===> T   (T-After Each Table, E-At End)

  Lock Tables During Process      ===> N        (Y-Yes, N-No)
  Age Date Values                 ===> N        (Y-Yes, N-No)
  Commit Every Nth Row            ===>          (1-1000, Blank/SL)
  Limit Number of Discarded Rows  ===> 1        (1-4294967295, Blank/NL)
  Review Propagation Key Sets     ===>          (A-Always, E-Error)

Run Process in Batch or Online    ===> O        (B-Batch, O-Online)
  If Batch, Review or Save JCL    ===> R        (N-No, R-Review, S-Save)

Process Report Type               ===> D        (D-Detailed, S-Summary)
```

Figure 76. Specify INSERT Parameters and Execute

Panel

This panel includes:

Extract File DSN
Name of the Extract File that contains the source data as specified on the **INSERT Process** menu. This value cannot be modified on this panel.

Control File DSN
Name of a sequential file that is to be used to accumulate information and statistics about the Insert Process as specified on the **INSERT Process** menu. This value cannot be modified on this panel.

Processing Method to Use
Process Options allow you to specify default values for tables that do not have processing overrides set in the Table Map Editor. To set the default **Processing Method to Use**, specify:

I Data rows are inserted during the Insert Process when the primary key value of the source row does not already exist in the destination table.

U Data rows are updated during the Insert Process when the primary key value of the source row already exists in the destination table.

B Data rows are both inserted and updated during the Insert Process.

Note:

- A parenthetical note on the Default Options line indicates whether overrides have been set in the Table Map Editor.
- When the PROP function is specified in one or more Column Maps used by the Insert Process, you must use insert processing. (See the *Common Elements Manual* for information on specifying a PROP function in a Column Map.)

Delete All Rows in Target Tables
For tables that use insert only processing, you can specify whether to delete all rows in the destination table prior to inserting data from the Extract File. By deleting all rows prior to insert, you obtain a set of data that exactly matches the data in the Extract File. Specify:

Y Delete before Insert.

N Do not delete before Insert.

Note:

- If site management does not allow user specification, the Delete All Rows in Target Tables and Commit Frequency lines may be omitted from this panel.
- Also, during processing, Move prompts to confirm any cascade deletes caused from deleting rows in the destination.

If YES, Commit Frequency
If rows are to be deleted, indicate the frequency of commits during the delete processing:

T Commit after deleting rows from each table.

E Commit after deleting rows from all tables.

Lock Tables During Process
Specify whether the entire table is to be locked during an Insert Process. Locking the table ensures that other database activity does not interfere with the Insert Process. It will, however, prevent other users from accessing the table.

If you specify YES, a commit is performed only when Move has completed processing a table. This is because a commit causes the table lock to be relinquished.

Site management has the option to establish that tables are not to be locked during Insert. If so established, this option is set to NO and cannot be modified.

Age Date Values
Specify whether date values are to be aged as part of this process. Specify:

Y Date values are to be aged. The **Specify Aging Parameters** panel is displayed. On this panel, specify aging values to be used. These values supplement the specifications for columns mapped with AGE functions and are used, if requested, to age DATE and TIMESTAMP columns not explicit targets of an AGE function.

N Date values are not to be aged. The specifications for aging on the Column Maps included in the process are ignored.

See "Age Date Values" on page 118 for additional information.

Commit Every Nth Row
Specify the frequency of commits. The commit points will affect the starting point in case of a RESTART. Frequent commits will keep page locks to a minimum. The shipped default value is 1000. Specify:

1-4,294,967,295
Absolute value to determine commit point.

blank Site limit (S/L).

Note that this option has no effect if the prompt for **Lock Tables During Insert** is YES. The commit is performed when the processing for a table is completed.

The site-defined limit is displayed at your site to indicate the maximum value you may specify.

Limit Number of Discarded Rows
Specify a limit to the number of rows that can be discarded. If that limit is met, the process is terminated. You can use RESTART to begin the process at the termination point. Specify:

1-4,294,967,295
Terminate the process when a maximum number of rows are discarded.

blank No limit (N/L).

To terminate the process if any rows are discarded, specify 1.

Review Propagation Key Sets
Specify whether the **Propagating Key Set(s**) panel is to be displayed before the Insert Process (with insert only processing) is performed. This option is only displayed when the PROP function has been specified in one or more Column Maps used by the Insert Process. Specify:

A Always display the panel prior to performing the process.

E Display the panel prior to performing the process only when the PROP specifications contain errors. Default.

Run Process in Batch or Online
Specify whether the Insert Process is to be run in batch or online. Specify:

B Batch.

Note: If the extract file is stored on tape, you must use batch execution for the insert process.

O Online

If site management has established a maximum number of rows for online processing and the Insert Process exceeds that limit, this option is set to Batch and cannot be modified. Consult site management for guidelines.

If Batch, Review or Save JCL
Specify whether the JCL and control statements are reviewed prior to job submission. This is specified for batch execution only. Since the JCL and control statements are displayed in the ISPF editor, you can modify them for the current request and save them to submit later. Specify:

N Submit job, do not display or save the JCL and control statements.

R Display the JCL and control statements for review prior to job submission.

S Save the JCL and control statements. Prompts are provided for you to specify the name of a file in which to store JCL and control statements.

Insert Process Report Type
Indicator to include additional information in the Insert Process Report. If selected, detailed information about Column Map usage is displayed.

D Display detailed information in the Insert Process Report.

S Display summarized information in the Insert Process Report.

Available Commands

The available primary commands include:

- CANCEL
- END
- OPTIONS
- SHOW INDEXES

SHOW INDEXES Command

One or more missing indexes may cause performance problems in an Insert Process. Use the SHOW INDEXES command to display the **Index Analysis** pop-up window listing the destination tables of the Insert Process with the status of the supporting indexes. You can use the **Index Analysis** pop-up window as a diagnostic tool for determining whether to create the missing indexes. If the status of the index is Partial or None, creation of the missing index may enhance processing performance.

```
+---------------------- Index Analysis ----------------------+
|                                                 1 of 4     |
| Table Name                 Index Name          Index Status |
| -------------------------  -----------------  ------------ |
| ************************* TOP ***************************** |
| FOPDEMO.CUSTOMERS          XCUSTPK             DBPK         |
| FOPDEMO.DETAILS                                Partial      |
| FOPDEMO.ITEMS              XITEMPK             DBPK         |
| FOPDEMO.ORDERS             XORDRPK             Unique       |
| ********************** BOTTOM **************************** |
+-------------------------------------------------------------+
```

Figure 77. Index Analysis

This panel includes the following:

Table Name
The name of the destination table.

Index Name
The name of the index, if any.

Index Status
The status of the index for each destination table.

DBPK Index exactly matches the database primary key definition for the table.

Unique
A unique index is defined for the table; however, no primary key is defined.

Partial Index exists with only a partial set of the required columns.

None No index exists for the table.

Age Date Values

The Move AGE function requires a separate Data Privacy license.

When you specify Y to the prompt **Age Date Values**, the **Specify Aging Parameters** panel is displayed. The Specify Aging Parameters panel prompts for the values used to age date values. Date values are identified in Column Maps using the AGE function. The values specified on the Specify Aging Parameters panel are used when explicit values are not defined with the function in the Column Map. All explicit values override any specifications on this panel. (For details about the AGE function, see the *Common Elements Manual*.)

You have the option of applying these values to DB2-defined DATE and TIMESTAMP columns also.

```
------------------------- Specify Aging Parameters --------------------------
Command ===>

Aging Specification
  Explicit Date              ===>            YYYY/MM/DD

  Or INCREMENTAL,
    Years                    ===>            (-2500  to +1581)
    Months                   ===>            (-30000 to +30000)
    Weeks                    ===>            (-30000 to +30000)
    Days                     ===>            (-99999 to +99999)
    Business Rules           ===>            (0 to 30000)
  Or TARGET DATING,
    Base Date                ===>            YYYY/MM/DD (Default:Today)
    Target Date              ===>            YYYY/MM/DD

Default Aging Rule Table     ===>            (Default: FOP2RUSA)
Default Aging Rule           ===>
Century Pivot Year           ===>            (00 - 99)
Process Date Columns         ===>            (A-All, U-User Defined)
Report Invalid Dates         ===>            (Y-Yes, N-No)
Report Skipped Dates         ===>            (Y-Yes, N-No)
Output Rows w/ Invalid Dates ===>            (Y-Yes, N-No)
Output Rows w/ Skipped Dates ===>            (Y-Yes, N-No)
```

Figure 78. Specifying Aging Parameters

Panel

This panel includes:

Explicit Date
Specify an explicit date for aging. The date must be in the form YYYY/MM/DD or YYYY/DDD (a Julian date). The aging rule is applied to this date.

Years Adjust the date by a number of years.

+nnnn -nnnn
Increment or decrement the value in the column by a number of years specified as one- to four-digits in the range -2500 to +1581.

A plus or a minus sign preceding the value indicates that the date is to be incremented or decremented. Increment is the default.

Months
Adjust the date by a number of months.

+nnnnn -nnnnn
Increment or decrement the value in the column by a number of months specified as one- to five-digits in the range -30000 to +30000.

A plus or a minus sign preceding the value indicates whether the date is to be incremented or decremented. Increment is the default.

Weeks Adjust the date by a number of weeks.

+nnnnn -nnnnn
Increment or decrement the value in the column by the number of weeks specified as one- to five-digits in the range -30000 to +30000.

A plus or a minus sign preceding the value indicates whether the date is to be incremented or decremented. Increment is the default.

Days Adjust the date by a number of days.

+nnnnn -nnnnn
Increment or decrement the value in the column by a number of days specified as a one- to five-digit number in the range -99999 to +99999.

A plus or a minus sign preceding the value indicates whether the date is to be incremented or decremented. Increment is the default.

Business Rules
Specify the date adjustment by "business" units.

nnnnn Adjust the value in the column by a number of occurrences of the specified business rule date. This number is specified by a one to four digit value in the range 0 to 30000. Incrementing and decrementing is controlled by the rule.

For example, if the Aging Rule is specified as NEXTPAYDAY, the date is adjusted by the specified number of paydays. Therefore, a 4 in **Business Units** adjusts the date to the fourth payday after the date value in the column.

You can specify either calendar units (years, months, weeks, and days) or business units, not both.

TARGET DATING

Base Date
Specify an explicit date as the origination or starting date for calculating the aging amount. The date must be in the form YYYY/MM/DD or YYYY/DDD (a Julian date). If you leave **Base Date** blank, the current date is assumed.

Target Date
Specify an explicit date as the target for calculating the aging amount. The date must be in the form YYYY/MM/DD or YYYY/DDD (a Julian date). The aging amount is determined by the difference between the Base Date and the Target Date.

You must specify a value for only one aging method: EXPLICIT, INCREMENTAL or TARGET DATING. For INCREMENTAL aging, the combined values of Years, Months, Weeks, and Days cannot result in a year value greater than 3999. If the value exceeds 3999, an error occurs on processing.

Other Parameters

Default Aging Rule Table
The name of the aging rule table to be used. If blank, the site default aging rule table is used.

Default Aging Rule
The default aging rule used for any date column not explicitly assigned an aging rule. This must be a value in the aging rule table or blank.

To display a selection list of rules in the current table, specify an asterisk as the first or only character. Use S to select a rule. (For details about aging rule tables, see the *Customization Guide*.)

If **Default Aging Rule** is blank, an aging rule is not applied to any aged data that is not explicitly assigned a rule.

Century Pivot Year
The year used to determine the century to assign to two-digit values. For example, if the Century Pivot Year is 65, all two-digit years that are 65 or greater are assumed to be in the 20th century (19xx); all two-digit years that are less than 65 are assumed to be in the 21st century (20xx). This information is necessary to properly age the data. Specify a two-digit value from 00 to 99. If a value is specified for Pivot Year for an individual column, the Century Pivot Year value is ignored for that column.

Process Date Columns
The type of date columns to be aged. Specify:

A All DATE and TIMESTAMP columns and the columns mapped to AGE are aged.

U Only columns mapped to AGE are aged.

If a Column Map is not defined or AGE is not specified on the selected Column Map, these date values apply only to DATE and TIMESTAMP columns.

Report Invalid Dates
List details of invalid dates encountered during the process in the process report.

Report Skipped Dates
List details of skipped dates encountered during the process in the process report. (Dates are skipped when the value is not a valid date but has special meaning to the application. For example, “000000” or “999999” are not valid dates but may be special indicators for the application. Other examples of skipped dates are those containing only spaces, hex zeroes, or hex “FF”.) For a comprehensive list of values handled as skipped dates, see Appendix A, “Skipped Columns,” on page 207.

Output Rows with Invalid Dates
Specifies whether rows with invalid dates are written to the destination database.

Output Rows with Skipped Dates
Specifies whether the rows with skipped dates are written to the database. For a comprehensive list of values handled as skipped dates, see Appendix A, “Skipped Columns,” on page 207.

When you have completed the aging parameter specifications, use END to proceed with the Insert Process.

View PROP Specifications

The **Propagating Key Set(s)** panel is displayed prior to the execution of the Insert Process, according to your specification for the **Review Propagation Key Sets** prompt. When you specify A, this panel is always displayed prior to performing the process. When you specify E, this panel is displayed only when errors are encountered in the PROP function.

The **Propagating Key Set(s)** panel groups the tables affected by a single PROP function together and identifies the table for which the PROP function is specified. The specifications for determining the value to propagate are also displayed. (For details on specifying the PROP function on the Column Map see the *Common Elements Manual*.)

The following figure demonstrates:

- The literal "JONES" defined in the ORDERS table is to be propagated to the SALES and CUSTOMERS tables.
- The value for the CUST_ID column in the CUSTOMERS table is to be assigned sequence numbers starting with 1 and incremented by 1. This value is then propagated to the ORDERS table.
- The value in the ORDER_ID column of the ORDERS table is to be propagated to the DETAILS table.

This ensures that Move does not insert child rows inappropriately. Note that if the propagated primary key value duplicates an existing value, that row is discarded. Move then discards the rows from related tables whose foreign key columns contain the propagated value. Therefore, if changing the CUST_ID in CUSTOMERS causes a duplicate row, the related ORDERS rows are discarded.

However, to ensure that the related DETAILS rows are also discarded, specify propagate for the ORDER_ID column used to relate ORDERS and DETAILS.

```
--------------------------- Propagating Key Set(s) ----------------------------
 Command ===>                                                 Scroll ===> PAGE
                                                              ROW 0    OF 11
******************************** Top of Data ***********************************
Press PF12 to cancel.  Press END to continue.

 Set No.          Table Name            Column         Column Map Specification
 ------   -------------------------- ---------------- ------------------------

 Set:1    FOPDEMO.SALES               SALESMAN_ID
          FOPDEMO.CUSTOMERS           SALESMAN_ID
          FOPDEMO.ORDERS             *ORDER_SALESMAN     'JONES'

 Set:2    FOPDEMO.CUSTOMERS          *CUST_ID            SEQ(1,1)
          FOPDEMO.ORDERS              CUST_ID

 Set:3    FOPDEMO.ORDERS             *ORDER_ID           ORDER_ID
          FOPDEMO.DETAILS             ORDER_ID
****************************** Bottom of Data ********************************
```

Figure 79. Propagating Key Set(s)

Panel

This panel includes:

Set No.
Number assigned to the set of tables included in the propagation specification.

Table Name
Names of the tables affected by the propagation. These tables are listed from parent to child.

In the figure, in Set 1, propagate is specified on a child table, ORDERS. In Set 2 and Set 3, it is specified on the parent, CUSTOMERS for Set 2 and ORDERS for Set 3.

Column
Name of the column that is the target of the propagation. The column for which the PROP function is specified is identified by an asterisk (*).

Column Map Specification
The value specified in the Column Map to be propagated.

You can scroll the display, as necessary.

Use END to perform the process, or press PF12 to cancel the process request and return to the **INSERT Process** menu. (PF12 has been assigned this special use on the **Propagating Key Set(s)** panel only. Move automatically restores your ISPF values when the Propagating Key Set(s) panel is exited.)

Discarded Rows

When Move is inserting data, rows may be discarded in two ways:

Immediate discards -

During the Insert Process, a row is immediately discarded if a condition exists that cannot be rectified by Move. For example, the primary key value for the row already exists in the destination table.

Pending discards -

A pending discard occurs when the row cannot be inserted at the present time, but the condition preventing the insert may not exist later in the Insert Process. These rows fail the Insert but are held in a pending status while processing continues. As the Insert request proceeds, Move will attempt to insert these pending rows one or more additional times.

This occurs only when there are referential integrity cycles. An RI rule may prevent a row from being added because it references another row that is not present in a related table.

For example, you may not be able to add an ORDERS row that contains a customer ID for a CUSTOMERS row that does not exist in the CUSTOMERS table. Later in the processing, the related CUSTOMERS row is added. When Move re-tries the insert on the pending ORDERS row, the insert completes successfully.

It cannot be determined whether pending discards will be discarded until the end of the Insert Process. Therefore, there could be many more discarded rows than the discard limit. For example, assume the discard limit is 10. There are 5 immediate discards, but during the Insert there are 100 pending discards. If all pending discards are inserted sometime during the process, then the number of discards, 5, is well within the limit. If, however, only 50 of the pending discards are inserted, then the number of discards is 55 and well over the limit but this cannot be determined until the process terminates.

Commits during Cycles

Each time Move completes the Insert Process for a table, it issues a COMMIT statement. This occurs even when Move is processing a cycle and will return to a table later in the Insert Process. That means table locks are held only during the time Move is processing a table. When processing switches to another table, the COMMIT causes the table lock to be relinquished. If that table is processed again, the lock is re-established.

Prompt to Create Table

Before starting the Insert Process, Move checks for any UNKNOWN destination tables. If any destination tables are UNKNOWN, Move displays the CREATE Object List panel with a message indicating that the unknown tables must be created. All object definitions in the Extract File are included. Those object definitions that do not exist, are identified. Assume three tables and their primary keys, relationships, and indexes are included in the Extract File. Also assume that the ORDERS table is UNKNOWN at the destination and the other two tables exist.

Note:

- For a VSAM data set, the Create Process can create the destination Legacy Table, VSAM data set, and any Optim objects associated with the Legacy Table.
- For an IMS data set, the Create Process can only create the destination Legacy Table and any Optim objects associated with the Legacy Table (e.g., Relationships, Primary Keys, Foreign Keys). The Create Process cannot create a destination DBD or IMS data set.

The following panel is displayed:

```
---------------------------- CREATE Object List ---------CREATE MISSING TABLES
Command ===>                                                Scroll ===> PAGE

Primary : CREATE ALL, DROP ALL, DROP EXISTS, DROP CONFLICTS, DROP CHANGED
          DEFAULTS, SHOW                                          1 of 10
   Line : S, U, I, CR(A), DR(A), DB2, OPT, SQL

Cmd  Status     Type              Object Name           Database Tablespace
--- --------  ---------  ----------------------------->> -------- ----------
*** ******************************** TOP ***********************************
___  SELECT   TABLE      SOFTECH.ORDERS                DSOFTECH  SSOFTCH2
___  SELECT     INDEX    FOPDEMO.XORDERPK
___  SELECT     PK(DB2)
___  SELECT     FK(DB2)  RCO
___  EXISTS   TABLE      SOFTECH.CUSTOMERS             DSOFTECH  SSOFTCH1
___  EXISTS     INDEX    FOPDEMO.XCUSTPK
___  EXISTS     PK(DB2)
___  EXISTS   TABLE      SOFTECH.DETAILS               DSOFTECH  SSOFTCH1
___  EXISTS     INDEX    FOPDEMO.XORDETPK
___  EXISTS     PK(DB2)
*** ***************************** BOTTOM *********************************

Review SQL Before Create ===> Y    (Y-YES, N-NO)
```

Figure 80. CREATE Object List with Unknown Destination Tables

The UNKNOWN table and its subordinate objects are identified by the SELECT status. (For this example, it is the first table listed in the figure.) The tables and other objects that exist at the destination are identified by the EXISTS status.

To create any table in SELECT status, a **Database Name** is required; a **Table Space Name** is optional. If you do not explicitly specify values, Move will use default values if they have been established. If a default is not specified for the database name and you do not supply a value, Move will prompt for a database name. If a default is not specified for the table space name and you do not supply a value, the table space name is automatically generated based on the table name.

Establish Defaults

You can establish default values for the database name and the table space name using Option 5 Create Process on the **Data Migration** menu or use the DEFAULTS command. Either displays a menu from

which you select the defaults you want to establish. See “Create Process” on page 158 for more information on specifying defaults.

Select Objects

You can select and unselect individual objects using the Select line command, S, and the Unselect line command, U. Any unselected object definitions are assigned the status UNSEL and are not included when the SQL to create the objects is generated by Move.

You can scroll the list using the UP, DOWN, TOP, and BOTTOM commands.

Create Objects

You can use the CREATE ALL command to direct Move to generate and execute the SQL DDL statements necessary to create the table and other objects that have the SELECT status. Alternatively, you can use the CR line command to create selected objects individually or the CRA line command to create a table and the objects related to it.

Review SQL

You can display the generated SQL statements prior to execution by specifying Yes to the prompt **Review SQL**. (This prompt is provided after the last object on the list.) The SQL statements are displayed in the ISPF editor and may be saved or edited as desired. The SQL is executed when you use END. Use CANCEL to abandon executing the SQL.

Details about Creating Objects

For more information on the CREATE Object List panel, see “Perform Create Process” on page 170. This panel is also displayed when you explicitly request the PERFORM option of the Create Process and the details of this panel are discussed in that section.

Inserting Data

If the missing tables are successfully created, the Insert Process proceeds to load the data after the SQL is executed. (If objects are not created, the Insert Process cannot proceed and a message is displayed. If you do not want to create the missing tables, you can remove their names from **Destination Table Name** on the INSERT Process Table Map panel.)

Online Executions

If the Insert Process is executed online, a panel is displayed noting the progress of the process.

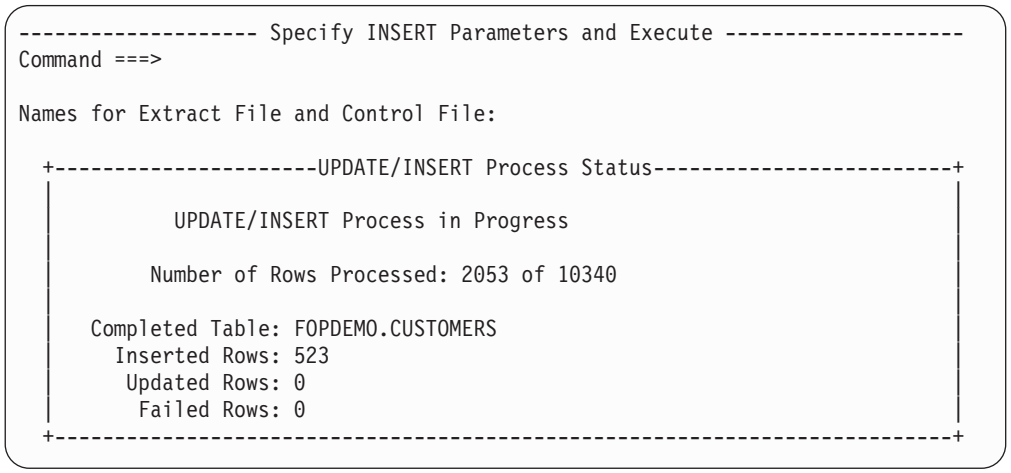


Figure 81. Insert Process Status

The total number of rows that have been inserted out of the total number of rows to be inserted is displayed. Also, the name of the currently processing table and total rows that have been inserted, updated, or failed for that table are displayed. This is revised:

- Every 1000 rows for each table to display the current total number of processed rows.
- When the processing for a table is complete and the processing for the next table begins.

Batch Execution

If you specify batch execution, Move builds the necessary JCL and Batch Utility control statements. The JOB card information is taken from the JCL specified on the Job Card and Print Options panel.

Note: If the extract file is stored on tape, you must use batch execution for the insert process.

If you entered YES to the **Prompt for Changes Before Job Submission** prompt on the Job Card and Print Options panel, the default Job card, as indicated on that panel, is displayed prior to job submission. You may edit the Job card and print options and specify whether your changes are to apply only to the current job submission or to be applied permanently. (See the *Common Elements Manual* for details about job card and print options.)

The information on the Job Card and Print Options panel is used, along with the Insert parameters, to build the JCL and control statements required to perform the Insert Process. If you enter Review to **If Batch, Review or Save JCL** on the Specify INSERT Parameters and Execute panel, the entire JCL and control statements are displayed in the ISPF editor. The JCL and control statements can be edited and saved. (See the *Batch Utilities Guide* for the INSERT statement keywords and values.)

If you have entered Save to **If Batch, Review or Save JCL**, you are prompted for the name of the file in which to save the JCL and control statements and whether the job should be submitted after saving. (Details are discussed later in this section.)

END is used to return from the ISPF editor to Move, however, your response at the prompt, **Submit Jobs with END** on the User Options panel, determines whether the job is automatically submitted. If you enter NO to the prompt, you must submit the job explicitly from the ISPF editor using the SUBMIT command.

If you enter YES, the job is automatically submitted. Use the CANCEL command to return to the Specify INSERT Parameters and Execute panel without submitting the job. You can modify the specifications or cancel the insert request from this panel.

(See the *Common Elements Manual* for information on establishing whether jobs are automatically submitted when END is used.)

If you submit the job and an error in the Job Card is encountered, a message is displayed. You can review the Job Card and correct the error or terminate the Insert Process.

Batch Overrides

If you save the generated batch job to a data set, you can submit the job directly from the ISPF editor instead of from within an online session. When you do so, you can override the default destination Creator ID defined in the Table Map used for the Insert Process. This is especially convenient when you want to apply different Extract Files to a single set of tables or a single Extract File to multiple sets of tables using common Insert Process JCL.

Any Extract File can be used in an Insert Process as long as at least one table name on the file matches one table name on the Table Map. The Creator IDs do not have to match. If any table does not match on the Table Map, it is not included in the process.

Use the PSDFOVRD DD statement in the JCL to provide the desired overrides.

Note: With Release 5.5, a generated batch job executes the Batch Utility to perform the specified function. The batch job includes a series of control statements defining the function to be performed. You can edit these control statements directly as an alternative to providing batch overrides. If batch overrides are not available, you must edit the control statements directly. The *Batch Utilities Guide* describes the Batch Utility control statements. (All batch overrides that were valid prior to Release 5.5 will continue to be valid.)

COMMIT_COUNT

To override the commit count that was specified when the job was created, specify:

```
COMMIT_COUNT   value
```

The value can range from zero to the site limit.

COMMIT_MINUTES

To change commit processing from number of updates to elapsed time, specify:

```
COMMIT_MINUTES   value
```

The value is specified in minutes and will override the commit count. The value can range from 1 to 1440. The process report will reflect the change from the number of updates to elapsed time.

Creator ID

To override the default destination Creator ID specified on the Table Map specify:

```
DEFCID   cid
```

where *cid* is the default Creator ID to be used. This applies only to destination tables that are not explicitly qualified in the Table Map. Only one DEFCID parameter may be specified for an Insert Process.

Date Aging

To override the date aging specifications for the Insert Process, specify one or more of the following:

AGE_AMT_YEAR
For incremental aging, the amount to increment by years.

AGE_AMT_MONTH
For incremental aging, the amount to increment by months.

AGE_AMT_WEEK
For incremental aging, the amount to increment by weeks.

AGE_AMT_DAY
For incremental aging, the amount to increment by days.

About AGE Parameters

The value must be numeric. Specify whether the value increments (+) or decrements (-). Increment is the default. For example, +15 or 15 increments the dates and -15 decrements the dates.

The combination of **AGE_AMT** parameters specifies the aging.

- To specify an explicit date, specify a value for YEAR that is greater than or equal to 1582. Then, values must be specified for MONTH and DAY to define an explicit date. (A value for WEEK is invalid for an explicit date.)
- To specify a date other than an explicit date, you can specify values for any or all units. The valid ranges for the values are:

```
YEAR   -2500 to +1581
MONTH   -30000 to +30000
WEEK   -30000 to +30000
DAY   -99999 to +99999
```

AGE_AMT_RULE
For incremental aging, the amount of occurrences of an aging rule to increment. For example, assume the specified rule is NEXTPAYDAY, specify 4 to age to the fourth payday from the current date in the column.

AGE_BASE_DATE
Specify a base date used by Move to determine the difference between this value and the AGE_TARGET_DATE. The difference is used as the number of days to age the data.

This must be specified in the format:
yyyy/mm/dd or yyyy/ddd

The current date is the default.

AGE_TARGET_ DATE
Specify the target date used by Move to determine the difference between this value and the AGE_BASE_DATE. The difference is used as the number of days to age the data.

This must be specified in the format:
yyyy/mm/dd or yyyy/ddd

This is required if AGE_BASE_DATE is specified.

TABLE
Specifies the name of the aging rule table to be used. Specify the name of a valid partitioned data set member.

AGE_RULE
Indicates the default aging rule to be used for any date not explicitly assigned an aging rule. Specify any value in the aging rule table specified for the TABLE statement. (For more information about the aging rule table, see the *Customization Guide*.)

If not specified, no aging rule is applied.

PIVOT_YEAR
Indicates which century to apply to two-digit year values. This information is used for aging rules and to provide the century in the output if so formatted.

Specify a two-digit value from 00 through 99. This value determines the threshold. If not specified, a pivot year is not used.

For example, assume the value is 65. All two-digit years 65 or over are assumed to be in the 20th century (19xx); all two-digit years that are less than 65 are assumed to be in the 21st century (20xx).

LIST_INVALID
Specifies whether details of the invalid dates encountered during the aging are listed at the beginning of the process report.

Specify Y to list the details or N to not list them. The default is Y.

LIST_SKIPPED
Specifies whether details of the skipped dates encountered during the aging are listed at the beginning of the process report. Dates are skipped when the date cannot be aged because the value is not a valid date but has special meaning to the application.

For example, “000000” or “999999” are not valid dates but may be special indicators for the application. Other examples of skipped dates are those containing only spaces, hex zeroes, or hex “FF”.

Specify Y to list the details or N to not list them. The default is Y.

PUT_INVALID
Specifies whether the rows with invalid dates are written to the database.

Specify Y to write the rows or N to not write them. The default is Y.

PUT_SKIPPED
Specifies whether the rows with skipped dates are written to the database.

Specify Y to write the records or N to not write them. The default is Y.

PROCESS_DATE _COLUMNS
Specifies whether date columns not explicitly mapped are to be aged.

A All DATE and TIMESTAMP columns and the columns mapped to AGE are aged.

U Only columns mapped to AGE are aged.

UNKNOWN

To ignore any tables referred to in the Table Map that do not exist when performing the Insert Process, specify:

```
UNKNOWN    { FAIL | ALLOW }
```

FAIL Terminate the insert if any tables or relationships named in the Table Map are unknown. The report will contain a message listing the first unknown object. This is the default.

ALLOW
Bypass the unknown tables and relationships and continue with the Insert Process. The report will contain a message listing the unknown objects.

UNKNOWN ALLOW is most frequently used when you override the default Creator ID with DEFCID. Changing the default Creator ID may result in naming destination tables that do not exist. The UNKNOWN ALLOW parameter enables you to direct the Insert Process to skip these “unknown” tables.

Store Overrides

You can store these parameters in a sequential file or a partitioned data set rather than specify them directly in the jobstream. However, these parameters must be the only data in the file. (You cannot use the same file used for a batch Extract Process if selection criteria, SQL WHERE Clause, or Group Selection

Processing parameters are also included. Also you cannot use this file for an Extract Process if the YEAR parameter is included.)

Save JCL

You can save the JCL and control statements, modify them and execute the process without re-invoking Move. Specify S to the prompt, **If Batch, Review or Save JCL** prompt. The following prompts for the information to save the JCL and control statements.

```
+---------------------------- Save JCL Parameters --------------------------+
|                                                                           |
|  DSN to Save JCL to     ===>                                              |
|  Member (if PDS)        ===>                                              |
|  Replace Existing Data  ===>       Y-Yes, N-NO                            |
|                                                                           |
|  DSN to Hold SYSIN Data ===>                                              |
|  Member (if PDS)        ===>                                              |
|  Replace Existing Data  ===>       Y-Yes, N-NO                            |
|                                                                           |
|  Submit JCL, or Review  ===>       S-Submit, R-Review, N-Neither          |
+---------------------------------------------------------------------------+
```

Figure 82. Save JCL Parameters

Panel

This panel includes:

DSN to Save JCL to
Name of the sequential file or partitioned data set to receive the JCL and Batch Utility control statements.

If you specify a partitioned data set, specify the member name in **Member**.

Member (if PDS)
Name of the member in the partitioned data set specified for the DSN prompt. If a sequential file is specified and you specify a member name, an error message displays.

Replace Existing Data
Specify whether the generated JCL and control statements replace existing data in the specified file.

DSN to Hold SYSIN Data
Name of the sequential file or partitioned data set to hold SYSIN data.

If you specify a partitioned data set, specify the member name in **Member**.

Member (if PDS)
Name of the member in the partitioned data set specified for the DSN prompt. If a sequential file is specified and you specify a member name, an error message displays.

Replace Existing Data
Specify whether the SYSIN data replaces existing data in the specified file.

Submit JCL or Review
Specify whether the JCL and control statements are saved and submitted, displayed for review, or both. If you select Submit, the JCL and control statements are saved and the job is submitted. If you select Review, use ISPF facilities to save or submit the JCL and control statements. If you select Neither, the JCL and control statements are saved, but not submitted or displayed for review.

Insert Process Report

When the Insert Process completes, it generates a report documenting the activity of the process. The contents of the INSERT Process Report can be browsed.

When the process is executed online, the INSERT Process Report is automatically displayed. Standard ISPF scrolling functions are available. In batch, the report is placed in the default output as specified in the JCL. You can then display the report as you would the output from any job.

Report Contents

The INSERT Process Report is formatted as shown in the figure.

```
---------------------------- UPDATE/INSERT Process Report ---------------------
 Command ===>                                                  Scroll ===> PAGE
                                                               ROW 0    OF 32
********************************** Top of Data ******************************

                             UPDATE/INSERT Process Report

Extract File      : FOPDEMO.SAMPLE.EXTRACT.FILE.DSN
Created by        : Job FOPLEG, using SQLID FOPDEMO on DB2 Subsystem DNSC

Control File      : FOPDEMO.SAMPLE.CONTROL.FILE.DSN
Processed By      : Job FOPLEG, using SQLID FOPDEMO on DB2 Subsystem DNSC
Time Started      : 01-15-06 09.52.33
Time Finished     : 01-15-06 09.52.42

Process Options:
  Lock Tables     : No
  Commit Every Nth: 1000
  Discard Limit   : None
  Delete All Rows : N

Totals:
  Number of Insert Tables  : 4
  Number of Inserted Rows  : 3972
  Number of Updated Rows   : 0
  Number of Failed Rows    : 104     Use 'Browse Control File' for Details
  Extract file data byte count  :  2,383,836 Bytes (0.002 GB)

                                  Inserted    Updated    Failed    Access
            Insert Tables           Rows       Rows       Rows     Method
     -------------------------  ---------  ---------  ---------  ------
  1  SMITH.CUSTOMERS                 132          0          5   KEY
  2  SMITH.ORDERS                    792          0         23   SCAN
  3  SMITH.DETAILS                  2176          0         76   KEY
  4  SMITH.ITEMS                     872          0          0   SCAN

                           ****** End Of Report *****
****************************** Bottom of Data ********************************
```

Figure 83. Insert Process Report Format

Report Format

The report format includes headings to identify the information. This information includes the Extract File name, the Control File name, the user requesting the insert, the date and time of the insert, the processing options for the insert, the number of tables in the insert, the number of successfully inserted and updated rows, and the number of discarded rows.

The sequence in which the tables are listed is the order in which these tables were found in the Extract File. The number of successful and unsuccessful rows is provided on a table-by-table basis.

Aging Information

If aging parameters are specified for the process, the report also includes:

- Any exception conditions encountered for each table. (This is included only when you specify Yes to Report Skipped Dates and Report Invalid Dates.) The following is a sample list of exception conditions for aging ORDER_SHIP_DATE in the ORDERS table:

  Exception Conditions for Table FOPDEMO.ORDERS

  Row 1: Field ORDER_SHIP_DATE (YY/MM/DD) cannot age date: X'0'
  Row 78: Field ORDER_SHIP_DATE (YY/MM/DD) cannot age date: X'1'

- The aging parameters specified for the process. These are listed after the summary information. For example, the following lists specifications for an Insert Process that uses many of the defaults.

```
Processing Parameters:
Default Aging Amount:         ='2000/01/31'
Default Aging Table:          PSAPRULE
Default Aging Rule:           NEXTWORKDAY
Century Pivot Year:           65
Process Date Columns:         Y
Report Invalid Dates:         YES
Report Skipped Dates:         YES
Output Rows With Invalid Dates: YES
Output Rows With Skipped Dates: YES
```

- The aging results for each table include the information as specified on the Specify Aging Parameters panel. The information includes:
  Destination Column/Source Column names
  Number of valid dates
  Number of invalid dates
  Number of skipped dates
  Minimum value encountered
  Maximum value encountered
  Date format
  Aging Rule applied to column
  Rule Table containing Aging Rule applied to column
  Aging Amount applied to column
  Pivot year specifications for column

  (The format for DB2 DATE and TIMESTAMP columns is displayed as DB2 DATE and DB2 TMSTAMP.)

Detailed Process Report

If you request a detailed process report from the Specify INSERT Parameters and Execute panel, the report includes the following:

Any Column Maps specified for the Insert Process. If the Column Map is not Local, Column Map information, (e.g., Column Map Name, Security Status, etc.) is displayed. If the Column Map is local, no Column Map information is displayed.

```
Map Name        : FOPDEMO.CM2
Source File     : 'FOPDEMO.PERF.APR14'
Modfied By      : FOPDEMO
Last Modified   : 2004-04-28
Security Status : PUBLIC

Source Table: FOPDEMO.CUSTOMERS   Destination Table: FOPDEMO2.CUSTOMERS

Source Column       Data Type     Destination Column   Data Type       Status
------------------ ------------- -------------------- -------------- -------
```

```
CUST_ID           CHAR(5)        CUST_ID           CHAR(5)         EQUAL
CUSTNAME          CHAR(20)       CUSTNAME          CHAR(20)        EQUAL
ADDRESS           VARCHAR(50)    ADDRESS           VARCHAR(50)     EQUAL
CITY              VARCHAR(15)    CITY              VARCHAR(15)     EQUAL
'PA'              LITERAL        STATE             CHAR(2)         LITERAL
ZIP               CHAR(5)        ZIP               CHAR(5)         EQUAL
                  UNUSED         YTD_SALES         DECIMAL(7,2)    UNUSED
SALESMAN_ID       CHAR(6)        SALESMAN_ID       CHAR(6)         EQUAL
PHONE_NUMBER      CHAR(10)       PHONE_NUMBER      CHAR(10)        EQUAL
```

Print Report

While browsing, you can use the OUTPUT command to direct the contents of the report to an output file or the printer. A panel is displayed prompting for the necessary information based on the specified output destination. (See the command in the *Common Elements Manual* for further information.)

Delete Process

If your site's license includes the Delete Process, you can use Delete in combination with Extract and Insert to perform a traditional “move” process. That is, you can copy the data to a destination and delete it from the source.

You execute the Delete Process after performing an Extract Process. The Delete Process uses the Extract File as its guide to select the rows that are to be deleted from the database. If you specify that the row contents should be compared, the Delete Process first verifies that the rows in the source database are exactly the same as the rows in the Extract File before deleting those rows. Any rows that do not match exactly are not deleted.

Note: You must execute the Delete process in batch if you are using an extract file that is stored on tape.

Delete Process Parameters

To run the Delete Process from the **Data Migration** menu, select Option 4 DELETE. The following panel is displayed.

```
------------------ Specify DELETE Parameters and Execute --------------------
 Command ===>

 Specify Data Set Names for Extract File and Control File:
   Extract File DSN ===>
   Control File DSN ===>

 Process Options:
   Lock Tables During Process          ===> N      (Y-Yes, N-No)
   Commit Every Nth Row                ===> 1000   (1-1000, Blank/SL)
   Limit Number of Discarded Rows      ===>        (1-4294967295, Blank/NL)
   Compare Row Contents                ===> N      (Y-Yes, N-No)
   Review ACM and Key Lookup Limit     ===> N      (Y-Yes, N-No)

 Run Process in Batch or Online   ===> O      (B-Batch, O-Online)
   If Batch, Review or Save JCL   ===> R      (N-No, R-Review, S-Save)
```

Figure 84. Specify DELETE Parameters and Execute

Panel

The prompts on the panel are

Extract File DSN
Name of the Extract File that contains the source data. You can obtain a selection list of Extract Files using a wild card pattern with * or % as the last character in the name.

Note: If you are using an extract file stored on tape, you must run the process in batch.

Control File DSN
Name of a sequential file to be used to accumulate information and statistics about the Delete Process.

If the file exists, Move overlays the previous data. If the named file does not exist, you are prompted for allocation information and the file is created.

You can obtain a selection list of Control Files using a wild card pattern with * or %, as the last character in the name.

Note: You can browse a Control File to review the status of a Delete Process. For details about browsing a Control File for a Delete Process, refer to the *ARCHIVE User Manual*.

Lock Tables During Process
Application of table locks to the tables involved in the Delete Process. Locking the tables ensures that the other database activity does not interfere with the Delete Process. However, it will prevent other users from accessing the table. Specify:

Y Lock tables for the process.

N Do not lock tables.

If site management has established that tables are not to be locked, this option is set to N and cannot be modified.

Commit Every Nth Row
The frequency of commits. The commit points affect the starting point in case of a Restart. Frequent commits will keep page locks to a minimum. Specify:

1-4,294,967,295
Commit each *n* deletes where *n* is a value from 1 through 4,294,967,295, inclusive.

Blank Use site limit (S/L)

The value specified for **Commit Every Nth Row** is not relevant if **Lock Tables During Delete** is YES. Then, the commit is performed as the processing for each table is completed.

The figure shows the distributed default value of 1,000. At your site, the maximum value defined by site management is displayed.

Limit Number of Discarded Rows
Limit on the number of rows that can be discarded in the Delete Process.

If the limit is met, the process is terminated. You can use Restart to begin the process at the termination point. Specify:

1-4,294,967,295
Maximum number of discards.

Blank No limit (NL).

To terminate the process if any rows are discarded, specify 1.

Compare Row Contents
Indicate whether the Delete Process compares rows of data in the Extract File with rows in the database prior to deletion.

Y Rows are deleted from the database only if they exactly match rows in the Extract File, and rows that do not exactly match are discarded and noted in the Control File.

N Row comparison is not performed. This may improve performance significantly; however, you risk losing any updates to the data in the database since the Extract Process was performed.

Note: If a table does not have an IBM DB2 primary key or an Optim primary key with a unique index, the Delete Process always compares row contents prior to deletion.

Review ACM and Key Lookup Limit
Open a dialog to review the method (scan or lookup) used to access tables for delete processing. Additionally, if key lookup is the method used, you can specify the maximum number of key lookups performed at one time.

Y Open the **Choose Access Method/Key Lookup Limit** pop-up window, allowing you to review the access method and key lookup limit used to delete rows from the database tables.

For more information about the **Choose Access Method/Key Lookup Limit**, see "ACM Command" on page 25.

N Do not review the access method and key lookup limit. (Default.)

Run Process in Batch or Online
Type of execution for the Delete Process. Specify:

B Batch.

Note: If you are using an extract file stored on tape, you must run the process in batch.

O Online

If site management has established a maximum number of rows for online processing and the process will exceed that limit, this option is forced to Batch and cannot be changed. Consult site management for guidelines.

If Batch, Review or Save JCL
Indicate whether to review or save the JCL and utility control statements (valid for batch execution only). Specify:

N Submit the job, do not display or save the JCL and control statements.

R Display the JCL and control statements for review prior to job submission. The JCL and control statements are displayed in the ISPF editor, where you can modify them for the current process and save them to submit later.

S Save the JCL and control statements. Prompts are provided for you to specify the name of a file in which to store the JCL and control statements.

Available Commands

The available primary commands include:

- ACM
- CANCEL
- END
- OPTIONS
- SHOW INDEXES

SHOW INDEXES Command

One or more missing indexes may cause performance problems in a Delete Process. Use the SHOW INDEXES command to display the **Index Analysis** pop-up window listing the tables involved in the Delete Process and the status of the supporting indexes. You can use the **Index Analysis** pop-up window as a diagnostic tool for determining whether to create the missing indexes. If the status of the index is Partial or None, creation of the missing index may improve processing performance.

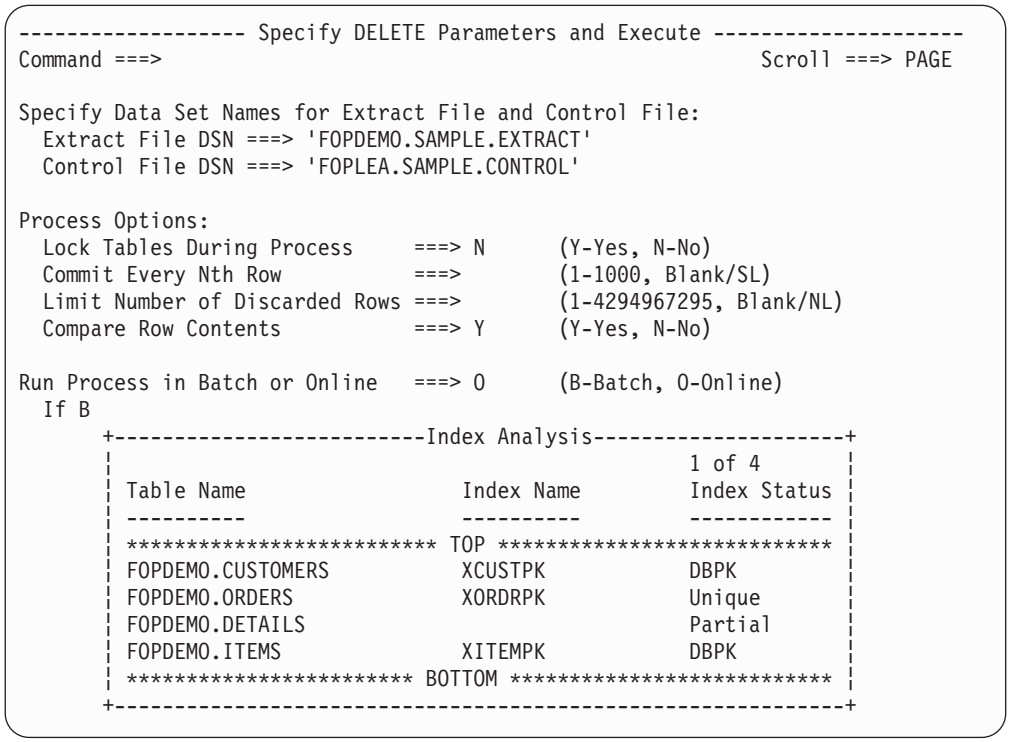


Figure 85. Index Analysis

This pop-up window includes the following:

Table Name
The name of the table.

Index Name
The name of the index, if any.

Index Status
The status of the index for each table.

DBPK Index exactly matches the database primary key definition for the table.

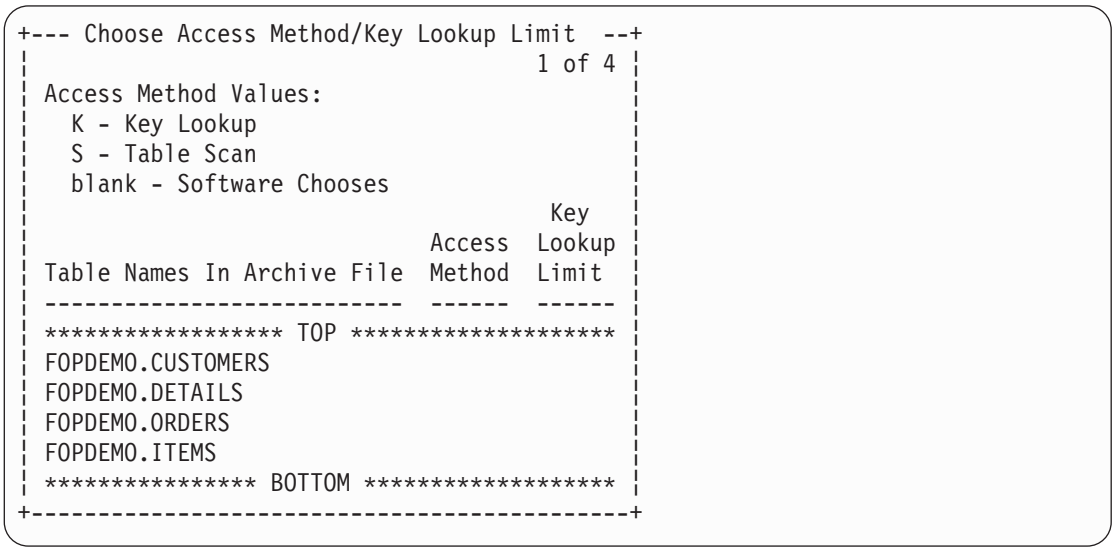
Unique
A unique index is defined for the table; however, no primary key is defined.

Partial Index exists with only a partial set of the required columns.

None No index exists for the table.

ACM Command

If necessary, you can use the ACM command to open the **Choose Access Method / Key Lookup Limit** pop-up window. This window is also displayed prior to the Delete Process if you enter Yes in **Review ACM and Key Lookup Limit**.



It allows you to override the default method (scan or key lookup) for accessing the table in the Archive File. A scan reads all rows in a table at one time; whereas a key lookup locates rows using a WHERE clause to search for primary or foreign key values. Additionally, you can change the maximum number of key lookups performed at one time for a table. Valid values are 1 through 1000.

Note: If no key lookup limit value is specified, then the default value is used. The default value is specified by a user option. See **User Options** in the *Common Elements Manual*.

For detailed information on the Choose Access Method / Key Lookup Limit panel, see the *Common Elements Manual*.

Delete Processing

When you have completed your specifications, press ENTER and the Delete Process begins. If the process is executed online, a panel is displayed showing the progress of the process.

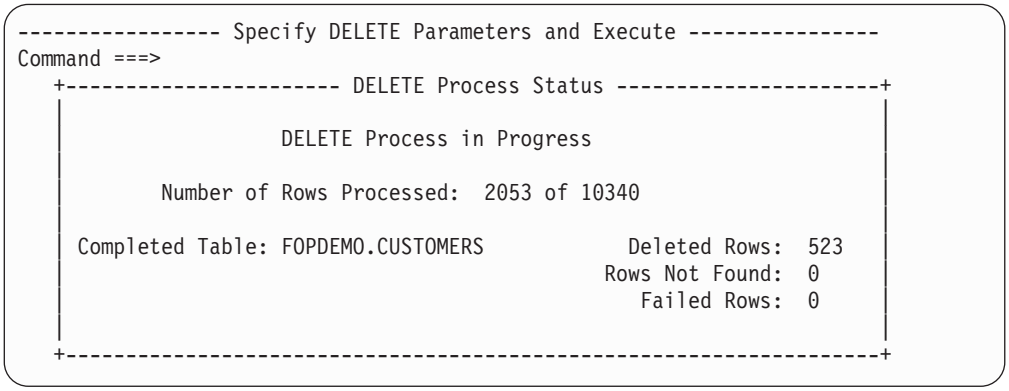


Figure 86. Delete Process Status

This panel shows the number of rows that have been deleted and the number that remain to be deleted. Also displayed are the name of the table that is processing, the number of rows that have been deleted from the table, number of rows that could not be found to be deleted from the table, and number of rows that could not be deleted.

Totals are revised:

- Every 1000 rows for each table to display the current total number of processed rows.
- When the processing for a table is complete and the processing for the next table begins.

Discarded Rows

Rows are discarded when an attempt to delete the row is unsuccessful. This can occur when RI rules prevent the row from being deleted. For example, a row is not deleted if this table has a Delete Restrict relationship to another table that still contains rows. This can only occur if that table was not part of the original Extract since Move will delete rows in the proper order. These discarded rows are noted in the Control File.

Important Note

If the Delete Process is being performed on rows for which the primary key is defined as non-unique in the Optim Directory, a row is deleted at the destination only when all data in all columns in the source row and destination row match. Therefore, each row in the Extract File containing an occurrence of the primary key is compared to each potentially matching row. When a successful match is encountered the row is deleted and the Extract File row marked OK. If no destination rows match the Extract File row, a delete is not performed and the row is marked as NOT FOUND.

Materialized Query Tables

If you delete a table that is a base table for a Materialized Query Table, the MQT is automatically deleted.

Cascade Delete

If you attempt to delete tables that are parents in a relationship defined with cascade delete, Move warns you that descendant rows may be deleted regardless of whether those tables were selected for deleting. Move displays a pop-up to confirm the cascade delete.

Batch Execution

If you specify batch execution on the Specify DELETE Parameters and Execute panel, Move builds the necessary JCL and utility control statements. The JOB card information is taken from the JCL specified on the Job Card and Print Options panel.

If you specified YES to **Prompt for Changes Before Job Submission** on the Job Card and Print Options panel, the job card is displayed prior to job submission. You can edit the job card and specify whether your changes are to apply only to the current job submission or are to be applied permanently. Then, the job card and the Delete parameters are used to build the JCL and control statements required to perform the Delete Process.

Review

If you specify Review to **If Batch, Review or Save JCL** on the Specify DELETE Parameters and Execute panel, the complete JCL and control statements are displayed in the ISPF editor. You can edit and save the JCL and control statements.

Note: See “MOVE_DELETE Batch Utility” on page 140 for information on the batch statement keywords and values.

You can use END to return from the ISPF editor to Move, however, your specification for the prompt **Submit Jobs with END** on the User Options panel, determines whether the job is automatically submitted. If you specify NO to the prompt, you must submit the job explicitly from the ISPF editor using the SUBMIT command. If you specify YES on the User Options panel, the job is automatically submitted when you use END. (See the User Options section in the *Common Elements Manual* for information on establishing whether jobs are automatically submitted when END is used.)

You can use CANCEL to return to the Specify DELETE Parameters and Execute panel without submitting the job. You can modify the specifications or cancel the delete request from this panel.

Save

If you responded Save to **If Batch, Review or Save JCL**, you are prompted for the name of the file in which to save the JCL and control statements and whether the job should be submitted after saving.

Job Card Error

If you submit the job and an error is encountered in the job card, a message is displayed. You can review the job card and correct the error or terminate the Delete Process.

DELETE Process Report

A DELETE Process Report is generated as part of the process. This report contains information including various statistics about the execution of the process.

Display Report Contents

The contents of the DELETE Process Report can be browsed. When the process is executed online, the DELETE Process Report is automatically displayed. Standard ISPF scrolling functions are available.

In batch, the report is placed in the default output as specified on the JCL. You can then display the report as you would the output from any job.

Report Contents

The DELETE Process Report is formatted as shown in the following figure.

```
---------------------------- DELETE Process Report -----------------------
Command ===>                                                Scroll ===> PAGE
                                                            ROW 0     OF 32
****************************** Top of Data ****************************

                            DELETE Process Report

 Extract File      : FOPDEMO.SAMPLE.EXTRACT.FILE.DSN
 Created by        : Job COHEND, using SQLID COHEND on DB2 Subsystem DSNA

 Control File      : FOPDEMO.SAMPLE.CONTROL.FILE.DSN
 Processed by      : Job COHEND, using SQLID COHEND on DB2 Subsystem DSNA
 Time Started      : 01-15-98 09.52.33
 Time Finished     : 01-15-98 09.53.15

 Process Options:
   Lock Tables     : No
   Commit Every Nth: 1000
   Discard Limit   : None
   Delete Limit    : 90000

 Totals:
   Number of Delete Tables   : 4
   Number of Deleted Rows    : 3972
   Number of Failed Rows     : 0
   Number of Rows not Found  : 0
   Extract file data byte count  :  2,383,836 Bytes (0.002 GB)

                              Deleted     Failed      Not     Access  Key
          Delete Tables         Rows       Rows     Found    Method  Limit
     ------------------------ ---------  --------  ---------  ------ ------
 1   FOPDEMO.CUSTOMERS             132         0          0   KEY      100
 2   FOPDEMO.ORDERS                792         0          0   SCAN
 3   FOPDEMO.DETAILS              2176         0          0   KEY      100
 4   FOPDEMO.ITEMS                 872         0          0   SCAN

                          ****** End of Report ******
****************************** Bottom of Data ***************************
```

Figure 87. Delete Process Report Format

Report Format

Report headings identify information such as the Extract File name, the Control File name, the user requesting the Delete, the date and time the process was executed, the processing options for the Delete, the number of tables processed and the number of rows successfully deleted, discarded, and not found.

Tables are listed in the sequence in which they were specified in the Extract File. The number of rows successfully deleted and those unsuccessfully attempted is provided for each table.

If Row Updated

If you specify that the row contents should be compared, Move checks an entire row in the source database to ensure that it matches the row in the Extract File exactly. If another user has updated the row between the time the Extract Process was performed and the time the Delete Process is performed, that row is not deleted.

DB2 RI Rules

Move normally deletes rows from the child table before attempting to delete rows in the parent table. However, for cascading deletes, Move deletes the parent table first and DB2 deletes the child rows. If

deleted child rows are included in the Extract File, Move attempts to delete them later. Since they have been previously deleted by DB2, these child rows are marked as NOT FOUND in the DELETE Process Report.

Print Report

While browsing the DELETE Process Report online, you can use the OUTPUT command to direct the contents of the report to an output file or SYSOUT. A panel is displayed prompting for the necessary information based on the specified output destination. (For details on the OUTPUT command, see the *Common Elements Manual*.)

MOVE_DELETE Batch Utility

Use the MOVE_DELETE Batch utility statement to delete data that has been placed in an Extract File from the DB2 database.

This statement uses DB2 SQL statements to perform the delete. You can use keywords to provide parameters similar to those for the online Delete Process. For most processes, only a few keywords are needed: those to control processing and others to allocate an output file. Keywords to control processing are shown in the statement syntax. For keywords to allocate an output file, see the *Batch Utilities Guide*, File Allocation Parameters section.

```
MOVE_DELETE
EXTRACT_FILE dsname
CONTROL_FILE ( File Allocation Parameters )
[ DELETE_LOCK { YES | NO } ]
[ DELETE_COMMIT_ROWS n ]
[ DELETE_COMMIT_MINUTES n ]
[ DELETE_DISCARD n ]
[ COMPARE_ROW { YES | NO } ]
[ RESTART { YES | NO } ]
[ DEFAULT_KEY_LIMIT n ]
[ ACCESS_METHOD ( cid.tablename, { K | S | E }, key limit ) ]
[ REPORT_LEVEL { DETAIL | SUMMARY } ]
```

EXTRACT_FILE

The name of the Extract File containing the rows to be deleted. EXTRACT_NAME must be included in the MOVE_DELETE statement.

dsname

The fully qualified name of the Extract File.

CONTROL_FILE

Name of the Control File and its allocation parameters. This keyword is required to execute the Delete Process. To name and allocate the Control File, use the keywords shown in the *Batch Utilities Guide*, File Allocation Parameters section.

Processing Keywords Use the following keywords to provide processing options for the MOVE_Delete Process.

DELETE_LOCK

Indicate whether to lock tables during the Delete Process. Locking tables ensures other database activity does not interfere with the Delete Process. However, it will prevent other users from accessing the table.

YES Lock tables. (This setting causes an error if site options prevent a user from locking tables.)

NO Do not lock tables (default).

DELETE_COMMIT_ROWS

The frequency of commits in rows for the Delete Process. The commit points affect the starting

point in case of a Restart. Frequent commits keep page locks to a minimum. If you omit both DELETE_COMMIT_ROWS and DELETE_COMMIT_MINUTES, the site limit is used.

n Commit each *n* number of rows where *n* is a value from 1 through the Site Options Commit Frequency Rate, inclusive.

Note: If DELETE_LOCK is set to YES, DELETE_COMMIT_ROWS and DELETE_COMMIT_MINUTES are ignored. A commit is performed as processing for each table is completed.

DELETE_COMMIT_MINUTES
The frequency of commits in minutes for the Delete Process. If you omit DELETE_COMMIT_MINUTES, DELETE_COMMIT_ROWS determines the commit frequency.

n Commit every *n* minutes, where *n* is 1 through 1440.

DELETE_DISCARD
The maximum number of rows that can be discarded when deleting rows, before terminating the process. If the limit is met, the process is terminated. You can use Restart to begin the Delete Process again at the termination point.

n Specify a value in the range 1 to 4,294,967,295.

blank No limit on discarded rows.

COMPARE_ROW
Indicate whether the Delete Process compares rows of data in the Extract File with rows in the database prior to deletion.

YES Rows are deleted from the database only if they exactly match rows in the Extract File. Rows that do not exactly match are discarded and noted in the Control File. (This setting causes an error if the **Compare Row Contents** site option is not set to USER.)

NO Row comparison is not performed (default). This may improve performance significantly; however, you risk losing any updates to the data in the database since the Extract Process was performed.

RESTART
Indicate whether to restart or retry the delete portion of a Move Process if a processing failure occurs. Optim automatically determines whether to perform a restart or a retry.

YES Restart or retry the delete and, optionally, respecify other MOVE_DELETE keywords.

NO Do not restart or retry the delete (default).

Note: You can also restart or retry the process by adding the RESTART operand to the PARM field on the batch EXEC statement. Use a blank to separate the RESTART operand from the previous operand in the PARM field.

DEFAULT_KEY_LIMIT
The maximum number of keys to be used at one time when using key lookup to process a table. Applies only if a limit was not specified in the Access Definition.

n Specify a value in the range 1 - 100. (Default = 1)

The following conditions must be true to process multiple keys at one time when deleting rows:

- An index on the primary key is defined for the table.
- COMPARE_ROW keyword is NO.
- Row-level Archive Actions are not defined for the Delete Process (e.g., Before Delete of Row).
- The table is not a parent in a DBMS relationship.

ACCESS_METHOD

Indicate how to access the rows in a DB2 table. You may specify this keyword once for each table to be processed. If you omit it for a table, Optim determines how to access the rows in that table. You must specify the parameters within parentheses, separated by commas, and in the following order:

cid.tablename

The table name

K Use key lookup

S Use table scan

E Optim determines the access method.

key limit

Maximum number of keys to be specified in an SQL statement when the access method is K. Specify a number between 1 and 100. You may omit this parameter if the access method is S.

REPORT_LEVEL

The level of detail in the process report.

DETAIL

Produce a detailed report (default).

SUMMARY

Produce a summary report.

Example

Use the following statement to delete data from the DB2 database that had been placed in the Extract File, DEPT14.EXTRACT.TRADES.

```
MOVE_DELETE
   EXTRACT_NAME  DEPT14.EXTRACT.TRADES
   CONTROL_FILE (DSNAME  DEPT14.CTRLFILE  MODE  REP)
   DELETE_COMMIT_ROWS  5000
   DELETE_DISCARD 100
```

Load Process

The Load Process is used to transform the contents of an Extract File to Load utility format and execute a Load utility. The Load utility can be from IBM or from another software vendor.

Those sites using LOADPLUS can display a set of panels specific to LOADPLUS. (See "LOADPLUS Utility Parameters" on page 149 for more information.)

The Load utility can be used in place of the Move Insert Process. This may be desirable when:

- The number of rows to be inserted is so large that the speed of the Load utility offsets the advantages of the Insert Process.
- The data contains Referential Integrity (RI) cycles that make it impossible for the Insert Process to successfully insert all data.
- The site-defined Maximum Insert Rows limit is less than the number of rows in the Extract File.
- You want to insert data without logging. The Load Process prompts you to specify whether the logging is performed.

A database Load utility and the LOAD phase of LOADPLUS require exclusive control of the database. When using the Move Insert Process, the database is available to all users.

Many facilities of the Insert Process are available when using a Load utility. Table Maps can be used to specify different Creator IDs and table names for the destination. Column Maps can be used to specify different column names and to transform data. The Load utility does not provide for update processing. It only performs insert processing. Also, it cannot be performed online.

Note: Loading IMS Legacy Tables is not supported.

Sorting

Generally, the rows in the Extract File are loaded in the order in which they are processed. However, if a cluster index has been defined for a table, you can sort the rows according to that index before loading them.

LOAD Menu

The following panel is displayed when Option 3 is selected from the **Data Migration** menu and LOAD is to be used.

The text on the panel will reflect the Load Utility to be used. The default load utility is specified as a site option. A user option enables you to override this. (For more information, see the *Common Elements Manual*.) The Load utility is the default and, therefore displayed in the following figure.

```
------------------------------- LOAD Process ---------------------------------
OPTION ===>                                                  SCROLL ===> PAGE

  1  TABLE MAP           - Specify Table Map and Column Maps
  2  PERFORM             - Specify LOAD Parameters and Perform LOAD

Specify Data Set Name for Extract File and Control File:
  Extract File DSN ===> 'FOPDEMO.SAMPLE.EXTRACT'
  Control File DSN ===> 'FOPDEMO.SAMPLE.CONTROL'
```

Figure 88. LOAD Process Menu

The available options are:

1 TABLE MAP
Specify the destination tables for each source table in the Load Process. By default, Move assumes that the destination table names are the same as the source table names in the Extract File. However, you must specify a default destination creator ID using this option.

When you specify a Table Map, you may also specify Column Maps for one or more destination tables. These maps allow you to specify on a column-by-column basis the source data for each destination column.

For more information about specifying Table Maps and Column Maps, see the *Common Elements Manual*. Note that only DB2 and Legacy table names are valid when specifying Table Maps for the Load Process. Views, synonyms, and aliases are not acceptable. (This is a DB2 restriction.)

2 PERFORM
Specify the parameters for the Load Process and perform.

Prior to selecting Option 1 or 2, specify:

Extract File DSN
The name of the Extract File containing the source data to be transformed into load format. This file must exist, must be a sequential data set, and must contain extract data.

Control File DSN
The name of the Control File that is to be used to accumulate information and statistics about the

transformation of the Extract File to the load file format. The Control File keeps track of the rows that are discarded due to column mapping problems during the transformation process.

If the named file exists, the Load Process will overlay any previous data.

If the named file does not exist, you are prompted for allocation information and the file is created by Move for you. (See the *Common Elements Manual* for a description of the allocation prompts.)

Explicit Names

To specify the name of an Extract File or a Control File explicitly, use quotes to delimit the desired name; otherwise, it is prefixed based on the user option chosen.

Selection List

You can obtain a selection list of Extract Files or Control Files using the wild card characters * or % as the last character when specifying the name. A sample of the selection list displayed for Extract File or Control File data set names is provided in Figure 60 on page 83.

If only one file matches the selection criteria, it is automatically assumed to be the selected name and a selection list is not provided.

Perform the Load

Select Option 2 PERFORM to specify the parameters and perform the process. Either the Specify LOAD Parameters and Execute panel or the Specify LOADPLUS Parameters and Execute panel is displayed, based upon the load utility that is used.

Load Utility Parameters

The following panel is displayed when DB2, or DB2 and Legacy data are loaded using the LOAD utility:

```
-------------------- Specify LOAD Parameters and Execute ----------------------
Command ===>

Extract File DSN : FOPDEMO.EXTSEP.FILE
Control File DSN : FOPDEMO.EXTSEP.CONTROL

Delete All Rows in Tablespace (REPLACE)    ===> Y (Y-Yes, N-No)
  If NO, Can Tablespace have Rows (RESUME) ===> Y (Y-Yes, N-No)
  If YES, ReUse Dictionary(KEEPDICTIONARY) ===> N (Y-Yes, N-No)
Perform Logging During Load                ===> Y (Y-Yes, N-No)
  If NO, Reset Copy Pending (NOCOPYPEND)   ===> Y (Y-Yes, N-No)
Enforce RI Constraints During Load         ===> N (Y-Yes, N-No)
Create Full Image Copy                     ===> N (Y-Yes, N-No)
  If Yes, Number of Local Copies (COPYDDN) ===> 1 (0, 1, 2)
     Number of Remote Copies (RECOVERYDDN) ===> 0 (0, 1, 2)
Invoke RUNSTATS                            ===> N (Y-Yes, N-No)
  If Yes, Select RUNSTATS method           ===> S (I-Inline, S-Separate step)
  If Yes, Produce statistics report        ===> N (Y-Yes, N-No)
Age Date Values                            ===> N (Y-Yes, N-No)
Sort rows on Cluster Index (if it exists)  ===> Y (Y-Yes, N-No)
Allow Restart on (Keep Work Datasets)      ===> W (W-Warnings,E-Errors,N-Never)
Display Template Assignments               ===> N (Y-Yes, N-No)
Sort Work File Unit (SORTDEVT)  ===>              (Blank-Use DD Statements)
  Number of Sort Work Files     ===>              (1-99, Blank-Sort Default)
Stop if there are 'N' Discards  ===>              (1-2147483647,Blank-No Limit)
Review or Save JCL Before Job Submission   ===> R (N-No, R-Review, S-Save)
Process Report Type                        ===> D (D-Detailed, S-Summary)
Force all LOB data to External PDSE        ===> N (Y-Yes, N-No)
Load DSN Prefix                            ===>
```

Figure 89. Specify LOAD Parameters and Execute

Panel

The prompts on the panel are provided to allow users to supply various parameters for the LOAD utility. All values you specify are profiled.

Delete All Rows in Tablespace
Option to delete all rows in the table space and Legacy Tables. Specify:

Y Delete all rows. Include the REPLACE clause on the LOAD DATA statement.

If you enter YES for this keyword and YES for **Create Full Image Copy**, the COPY utility will be run during the Load process.

If this option is YES, any table in the Extract File with zero rows will be included in the Load Process, regardless of the value of the **Load when Zero Rows** User Option.

N Do not delete rows. Include the RESUME YES or RESUME NO clause depending on entry for next prompt.

Note: If you enter NO for this keyword and YES for **Create Full Image Copy**, the COPY utility will be run after the Load process.

If NO, Can Tablespace have Rows
Option to require empty table space for the process. This setting is relevant only if the **Delete All Rows in Tablespace** prompt is NO. Specify:

Y Table space can have rows. The LOAD DATA statement includes the RESUME YES clause.

N An empty table space is required. The RESUME NO clause is included.

If YES, ReUse Dictionary
Option to reuse the DB2 Compression Dictionary while performing the Load. For additional information, see your IBM Utility Guide. Specify:

Y Reuse the DB2 Compression Dictionary while performing the Load. The LOAD DATA statement includes the KEEP DICTIONARY clause. Y is valid only if a Compression Dictionary exists and the table space has the COMPRESS YES attribute.

N Do not reuse DB2 Compression Dictionary while performing the Load.

Perform Logging During Load
Option to perform logging during the Load. Note that you can perform logging and create a full image copy during the Load. If you elect to create a full image copy as a separate step after the Load, the **Perform Logging During Load** setting has no effect. Specify:

Y Perform logging during the Load. The LOG YES clause is included on the LOAD DATA statement.

N Do not perform logging during the Load. The LOG NO clause is included. If you enter NO, the table space is placed in COPY PENDING status. Consider entering YES for **Reset Copy Pending** or **Create Full Image Copy**.

If NO, Reset Copy Pending

Y Reset the COPY PENDING flag. Entering YES resets the COPY PENDING flag without establishing a recoverable set of data. To establish a recoverable data set and reset the COPY PENDING flag while performing the Load, enter YES for **Create Full Image Copy**. Specify:

N Do not reset the COPY PENDING flag.

Enforce RI Constraints During Load
Option to enforce Referential Integrity constraints during the Load. Specify:

Y Discard any invalid row that is encountered during the Load. The ENFORCE YES clause is included on the LOAD DATA statement.

N Include the ENFORCE NO clause on the LOAD DATA statement. This may be desirable if RI cycles are involved because this may be the only way to insert all data.

Referential Integrity is not checked on a row-by-row basis. Instead, the checks are suspended and the table is in "Check Pending" status. (For more information see "Check Pending Status" on page 157.)

Create Full Image Copy
Option to create a full image copy: Specify:

Y Create a full image copy and reset the COPY PENDING flag.

Note: If you enter YES for **Delete All Rows in Tablespace**, the COPY utility is run during the Load. If you enter NO for **Delete All Rows in Tablespace**, the COPY utility will run as a separate step after the Load.

N Do not create a full image copy. If you enter NO, the table space is placed in COPY PENDING status. Consider entering YES for **Reset Copy Pending**.

If YES, Number of Local Copies
The number of local copies to be created. This setting applies only if **Create Full Image Copy** is YES. Specify:

0 No local copies are created.

1 The primary local copy is created.

2 The primary and backup local copies are created.

Number of Remote Copies
The number of remote copies to be created. This setting applies only if **Create Full Image Copy** is YES. Specify:

0 Remote copies are not created.

1 The primary remote copy is created.

2 The primary and backup remote copies are created.

Invoke RUNSTATS
Option to invoke RUNSTATS in order to ensure that the statistical data required by the DB2 Optimizer is accurately updated. Specify:

Y Invoke RUNSTATS. RUNSTATS is invoked at the table space level and includes all tables and indexes in the table space.

N Do not invoke RUNSTATS.

If Yes, Select RUNSTATS method
The method of collecting statistical information. Specify:

I Collect statistical information during the Load Process.

S Collect statistical information as a separate step.

If Yes, Produce statistics report
Option for additional report information. Specify:

Y Provide additional report information.

N Do not provide additional report information.

Age Date Values
Option to age date values as part of this process. Specify:

Y Age date values. The Specify Aging Parameters panel is displayed. On this panel, specify aging values to be used. These values supplement the specifications for columns mapped with the AGE function and are used, if requested, to age DATE and TIMESTAMP columns that are not explicit targets of an AGE function.

N Do not age date values. The specifications for aging on the Column Maps included in the process are ignored.

For additional information, see "Age Date Values" on page 118.

Sort rows on Cluster Index (if it exists)
Option to sort the data by any cluster index. Specify:

Y Sort data.

N Do not sort data.

Allow Restart on (Keep Work Datasets)
Option to retain work files to enable restartability on a specified level. Specify:

W Retain the files if warnings or errors occur. (The return code is 4 or greater.)

E Retain the files if errors occur. (The return code is 8 or greater.)

N Always delete the files when the step completes.

Note that each tablespace is processed in a separate job step and generates a set of work files. This setting applies to each job step.

Also, when a warning occurs, processing continues, but the job is terminated on an error. The processing that precedes the step that generates the error is retained. You must run the load for the succeeding steps.

Display Template Assignments
Option to display a panel for assigning template names to Load files.

Y Display a pop-up prompting for template names for Load files. Any entry is profiled and remains in effect until you replace it. Entries must reference a file in the template library defined at installation or an error occurs at execution. The Load program uses parameters from the template to dynamically allocate the file, rather than a DD statement.

N Do not display the pop-up. N is the default setting. Any earlier template assignments remain in effect for this execution.

Sort Work File Unit
Option to dynamically allocate work files required by the sort program. When you enter a value for this keyword, the SORTDEVT keyword is included in the Load statement. If you do not supply a value, DD statements for the required files are generated in the job stream.

Number of Sort Work Files
The number of work files for the sort program. When you enter a value, the SORTNUM keyword is included in the Load statement. Specify:

1-99 Any value in this range.

blank Use default value.

Stop if there are 'N' Discards
The maximum acceptable number (1 through 2147483647) of discarded rows. Specify:

1 Terminate the Load Process if any rows are discarded.

>1 Terminate the Load Process when the specified number of rows are discarded.

Review Propagation Key Sets
Option to display the Propagating Key Set(s) panel before the Load Process is performed. This option is presented only when the PROP function is used in one or more Column Maps used by the Load Process. Specify:

A Always display the panel prior to performing the process.

E Display the panel prior to performing the process if the PROP specifications are in error.

For additional information, see “View PROP Specifications” on page 121.

Review or Save JCL Before Job Submission
Option to review the JCL and control statements prior to job submission. Specify:

N Submit job, do not display or save the JCL and control statements.

R Display the JCL and control statements for review prior to job submission. The JCL and control statements are displayed in the ISPF editor, where you can modify them and save them to submit later.

S Save the JCL and control statements. Prompts are provided for you to specify the name of a file in which to store the JCL and control statements.

Process Report Type
The level of information to be included in the Load Process Report. Specify:

D Display a detailed report that includes Column Map information.

S Display summarized information in the report.

Force all LOB data to External PDSE

Indicates whether Large Object (LOB) data from the Archive or Extract File is always to be stored in a Partitioned Data Set - Extended (PDS/E) dataset. When LOB data is stored in a PDS/E dataset, the Load Utility input file (SYSREC) does not contain LOB data. Instead, the Load Utility input file contains reference pointers that point to the PDS/E dataset and member name in which each instance of LOB data is stored. Storing LOB data in a PDS/E dataset reduces the length of table rows in the Load Utility input file. In turn, this allows the Load Utility to load table rows that would otherwise be too long to load. Specify:

Y Always store LOB data from the Archive or Extract File in a PDS/E dataset that is separate from the Load Utility input file.

N Store LOB data from the Archive or Extract File in a PDS/E dataset only when the Load Utility input file would otherwise contain table rows that are greater than 32 KB in size (default).

Load DSN Prefix

Data set name prefix for all loader and field specification files. Specify a prefix up to 35 characters following standard data set naming conventions. This parameter allows Optim to create the required field specification files dynamically during load preparation, instead of statically during JCL generation. When you specify this parameter, field specification statements for all loaded tables and their associated data are stored in dynamically allocated data sets, named as:

dsnprefix.**L***seq*

For loader files, where *dsnprefix* is the prefix specified with this parameter and *seq* is a unique sequential number assigned by Optim.

dsnprefix.**X***seq*

For field specification files, where *dsnprefix* is the prefix specified with this parameter and *seq* is a unique sequential number assigned by Optim.

LOADPLUS Utility Parameters

The following panel is displayed when loading DB2 data and Legacy data using the LOADPLUS utility:

```
------------------ Specify LOADPLUS Parameters and Execute --------------------
Command ==>

Extract File DSN : Z13600MP.FOP.XFILE
Control File DSN : Z13600MP.FOP.CFILE

Delete All Rows in Tablespace (REPLACE)    ===> N (Y-Yes, N-No)
  If NO, Can Tablespace have Rows (RESUME) ===> Y (Y-Yes, N-No)
  If YES, ReUse Dictionary(KEEPDICTIONARY) ===> N (Y-Yes, N-No)
  If YES, Reallocate Datasets (REDEFINE)   ===> N (Y-Yes, N-No)
Reset Copy Pending (NOCOPYPEND)            ===> Y (Y-Yes, N-No)
Create Full Image Copy                     ===> N (Y-Yes, N-No)
  If YES, Number of Local Copies (COPYDDN) ===> 1 (1, 2)
     Number of Remote Copies (RECOVERYDDN) ===> 0 (0, 1, 2)
Invoke RUNSTATS                            ===> N (B-BMC, I-IBM, N-No)
Age Date Values                            ===> N (Y-Yes, N-No)
Sort rows on Cluster Index (if it exists)  ===> Y (Y-Yes, N-No)
Check Data for Duplicate Rows              ===> Y (Y-Yes, N-No)
Ignore Discarded Rows                      ===> N (A-All, D-Dups,
                                                    V-Validproc, N-No)
Stop if there are 'N' Discards  ===>               (1-2147483647,Blank-No Limit)
Review Propagation Key Sets                ===> A (A-Always, E-Errors)
Review or Save JCL Before Job Submission   ===> R (N-No, R-Review, S-Save)
Process Report Type                        ===> D (D-Detailed, S-Summary)
```

Figure 90. Specify LOADPLUS Parameters and Execute

Panel

The prompts on the panel are provided to enable users to supply several parameters to determine which tasks are performed by LOADPLUS and to specify whether the DB2 RUNSTATS utility is to be executed after the data is loaded by LOADPLUS.

The combination of the following prompts determines the parameters of the LOAD DATA statement.

Delete All Rows in Tablespace
Specify whether or not all rows in the tablespace and Legacy Tables are to be deleted. Specify:

Y Delete all rows. The REPLACE clause is included on the LOAD DATA statement.

Note: If you specify YES for this keyword and for **Create Full Image Copy**, the COPY utility will be run during the Load process.

N Do not delete all rows. Either the RESUME YES or the RESUME NO clause is included, based on the next prompt.

Note: If you specify NO for this keyword and YES for **Create Full Image Copy**, the COPY utility will be run after the Load process.

If NO, Can Tablespace have Rows
Specify whether the table space must be empty for the process to be performed. This is only relevant if the **Delete All Rows in Tablespace** prompt is NO.

Y Tablespace can have rows. The RESUME YES clause is included on the LOAD DATA statement.

N An empty table space is required. The RESUME NO clause is included.

If YES, ReUse Dictionary
Specify whether or not to reuse the DB2 Compression Dictionary while performing the Load. For additional information, see your IBM Utility Guide.

Y Reuse the DB2 Compression Dictionary while performing the Load. The LOAD DATA

statement includes the KEEP DICTIONARY clause. Specifying Y is valid only if a Compression Dictionary exists and the table space has the COMPRESS YES attribute.

N Do not reuse DB2 Compression Dictionary while performing the Load.

If YES, Reallocate Datasets
Specify whether the table and index spaces are to be deleted and redefined when **Delete All Rows in Tablespace** is YES.

Y Table and index spaces are redefined. The REDEFINE YES clause is included with REPLACE on the LOAD DATA statement.

N Table and index spaces are not redefined. The REDEFINE NO clause is included with REPLACE on the LOAD DATA statement.

Reset Copy Pending
Specifies whether to reset the COPY PENDING flag after the Load Process is performed.

Y Reset the COPY PENDING flag.

N Do not reset the COPY PENDING flag.

Specifying YES for this option resets the COPY PENDING flag without establishing a recoverable set of data. To establish a recoverable data set and reset the COPY PENDING flag while performing the Load, specify YES for the option **Create Full Image Copy**.

Create Full Image Copy
Specify whether a full image copy is created.

Y Create a full image copy and reset the COPY PENDING flag.

Note: If you specify YES for this keyword and YES for **Delete All Rows in Tablespace**, the COPY utility is run during the Load. If you specify YES for this keyword and NO for **Delete All Rows in Tablespace**, the COPY utility is run after the Load, as a separate step.

N Do not create a full image copy. If you specify NO, the table space is placed in COPY PENDING status. Consider specifying YES to the prompt for **Reset Copy Pending**.

If YES, Number of Local Copies
This setting applies only if **Create Full Image Copy** is YES. Specify the number of local copies to be created:

1 The primary local copy is created.

2 The primary and backup local copies are created.

If **Create Full Image Copy** is NO, this is ignored.

Number of Remote Copies
Specify the number of remote copies to be created:

0 Remote copies are not created.

1 The primary remote copy is created.

2 The primary and backup remote copies are created.

If **Create Full Image Copy** is NO, this is ignored.

Invoke RUNSTATS
Specify whether to invoke RUNSTATS to ensure that statistical data is accurately updated. Specify:

B BMC UPDATEDB2STATS YES clause is included on the LOAD DATA statement; therefore, statistics are gathered during the Load Process.

I IBM RUNSTATS utility is executed after the Load Process. RUNSTATS is invoked at the table space level and includes all tables and indexes in the table space.

N RUNSTATS is not executed.

Age Date Values
Specify whether date values are to be aged as part of this process. Specify:

Y Age date values. The Specify Aging Parameters panel is displayed. On this panel, specify aging values to be used. These values supplement the specifications for columns mapped with the AGE function and are used, if requested, to age DATE and TIMESTAMP columns that are not explicit targets of an AGE function.

N Do not age date values. The specifications for aging on the Column Maps are ignored.

For additional information see "Age Date Values" on page 118.

Sort Rows on Cluster Index (if it exists)
Specify whether the data is to be sorted by the cluster index, if one exists. Sorting may improve performance. Specify:

Y Sort data.

N Do not sort data.

Check Data for Duplicate Rows
Specify whether data is to be checked for duplicate rows.

Y Check all rows. The UNIQUECHECK CLUSTER clause is included on the LOAD DATA statement.

N Rows are not checked.

Ignore Discarded Rows
Specify which, if any, discarded rows are to be ignored.

A Ignore all discarded rows.

D Ignore discarded duplicate rows.

V Ignore rows discarded because of a validation procedure check.

N Do not ignore discarded rows.

If A, D or V is specified, the DISCARDS IGNORE clause with an appropriate operand is specified on the LOAD DATA statement.

Stop Load if there are 'N' Discards
Specify a maximum value, from 1 through 2147483647, as the limit for the number of acceptable discarded rows. When that limit is reached, the load is terminated.

Specify 1 to terminate the load if any rows are discarded. A discarded row is included in the count based on the specification for the **Ignore Discarded Rows** prompt.

Review Propagation Key Sets
Specify whether the Propagating Key Set(s) panel is to be displayed before the Load process is performed. This option is only displayed when the PROP function has been specified in one or more Column Maps used by the Load. Specify:

A Always display the panel prior to performing the process.

E Display the panel prior to performing the process only when the PROP specifications contain errors.

For additional information, see "View PROP Specifications" on page 121.

Review or Save JCL Before Job Submission
Specify whether JCL and control statements are reviewed prior to job submission. Since the JCL and control statements are displayed in the ISPF editor, you can modify them for the current request and save them to submit later. Specify:

N Submit job, do not display or save the JCL and control statements.

R Display the JCL and control statements for review prior to job submission.

S Save the JCL and control statements. Prompts are provided for you to specify the name of a file in which to store the JCL and control statements.

Process Report Type
Specify the information to be included in the Load Process Report:

D Display a detailed report that includes Column Map information.

S Display summarized information in the report.

Load Utility Parameters for Legacy Tables

The following panel is displayed when only Legacy Tables are being loaded:

```
---------------------- Specify LOAD Parameters and Execute ----------------------

Extract File DSN : Z13600MP.FOP.XFILE
Control File DSN : Z13600MP.FOP.CFILE

Delete All Records prior to Legacy Load  ===> N (Y-Yes, N-No)

Age Date Values                          ===> N (Y-Yes, N-No)

Allow Restart on (Keep Work Datasets)    ===> W (W-Warnings, E-Errors, N-Never)

Stop if there are 'N' Discards  ===>            (1-2147483647,Blank-No Limit)

Review or Save JCL Before Job Submission ===> N (N-No, R-Review, S-Save)
```

Figure 91. Specify LOAD Parameters and Execute for Legacy Tables

Panel

The following values are shown in this figure:

Delete All Records prior to Legacy Load
Specify whether or not all records are to be deleted prior to the Load. Specify:

Y Delete all records prior to Load.

N Do not delete all records prior to Load.

Age Date Values
Specify whether date values are to be aged as part of this process. Specify:

Y Age date values. The Specify Aging Parameters panel is displayed. On this panel, specify aging values to be used. These values supplement the specifications for columns mapped with the AGE function and are used, if requested, to age DATE and TIMESTAMP columns that are not explicit targets of an AGE function.

N Do not age date values. The specifications for aging on the Column Maps included in the process are ignored.

Allow Restart on (Keep Work Datasets)
Indicate whether work data sets should be kept.

W Data sets should be kept when warnings are issued by the job (a condition code of 4 was returned).

E Retain data sets only when errors are encountered.

N Delete the data set regardless of condition codes.

Stop if there are 'N' Discards
Specify a maximum number of acceptable discarded rows. When that limit is reached, the load is terminated. Specify an integer from 1 through 2147483647. Specify 1 to terminate the load if any rows are discarded or leave blank for no limit.

Review or Save JCL Before Job Submission
Specify whether JCL and control statements are reviewed prior to job submission. Since the JCL and control statements are displayed in the ISPF editor, you can modify them for the current request and save them to submit later. Specify:

N Submit job, do not display or save the JCL and control statements.

R Display the JCL and control statements for review prior to job submission.

S Save the JCL and control statements. Prompts are provided for you to specify the name of a file in which to store the JCL and control statements.

Job Processing

Once you have completed the appropriate panel, either LOAD Parameters or LOADPLUS Parameters, the job can be submitted.

The JCL and control statements are generated from the specifications on the Job Card and Print Options panel and the parameters panel. Additional jobsteps for the LOAD, COPY and RUNSTATS utilities may also be generated, as required. The DSNs for output and input files, for example, are generated, by default, based on the prefix option chosen on the User Options panel.

No JCL Display

If you have not requested to view the JCL and control statements before job submission and, on the User Options panel you have not requested that job card information should be displayed, press ENTER to submit the job.

Job Card Review

However, if you have specified YES to **Review Job Card** on the User Options panel, the job card information is displayed for your review. You may modify the Job Card information and specify whether these changes apply to the current request only or are to be permanent.

Use END or ENTER to proceed to edit the JCL and control statements or perform the Load Process depending on the response to **Review JCL Before Job Submission**.

JCL Review

If **Review or Save JCL Before Job Submission** on the current parameters panel is Review, the jobstream generated by Move is displayed in the ISPF editor. The jobstream can be edited and saved while displayed in the ISPF editor.

Any changes apply for the current job only and do not affect the specifications on the Job Card and Print Options panel. You may save the JCL and control statements using ISPF facilities. Note that the COPY Utility requires unique data set names for each image copy defined in the COPYDDN and RECOVERYDDN statements.

Save JCL

You can save the JCL and Batch Utility control statements, modify them and execute the process without re-invoking Move. Specify S to the prompt **Review or Save JCL**. The following prompts for the information to save the JCL and control statements.

```
+--------------------------- Save JCL Parameters --------------------------+
|                                                                           |
|  DSN to Save JCL to     ===>                                              |
|  Member (if PDS)        ===>                                              |
|  Replace Existing Data  ===>       Y-Yes, N-NO                            |
|                                                                           |
|  DSN to Hold SYSIN Data ===>                                              |
|  Member (if PDS)        ===>                                              |
|  Replace Existing Data  ===>       Y-Yes, N-NO                            |
|                                                                           |
|  DSN to Hold LOAD SYSIN ===>                                              |
|  Member (if PDS)        ===>                                              |
|  Replace Existing Data  ===>       Y-Yes, N-NO                            |
|                                                                           |
|  Submit JCL, or Review  ===>       S-Submit, R-Review, N-Neither          |
+---------------------------------------------------------------------------+
```

Figure 92. Save JCL Parameters

Panel

This panel includes:

DSN to Save JCL to
Name of the sequential file or partitioned data set to receive the JCL and control statements.

If you specify a partitioned data set, specify the member name in **Member**.

Member (if PDS)
Name of the member in the partitioned data set specified for the DSN prompt. (If a sequential file is specified and you specify a member name, an error message displays.)

Replace Existing Data
Specify whether the generated JCL and control statements replace existing data in the specified file.

DSN to Hold SYSIN Data
Name of the sequential file or partitioned data set to hold SYSIN data.

If you specify a partitioned data set, specify the member name in **Member**.

Member (if PDS)
Name of the member in the partitioned data set specified for the DSN prompt. (If a sequential file is specified and you specify a member name, an error message displays.)

Replace Existing Data
Specify whether the generated JCL and control statements replace existing data in the specified file.

Submit JCL or Review
Specify whether the JCL and control statements are saved, saved and submitted, or displayed for review.

If you select Submit, the JCL and control statements are saved and the job is submitted. If you select Review, use ISPF facilities to save or submit the JCL and control statements. If you select Neither, the JCL and control statements are saved, but not submitted or displayed for review.

For a Load Process using the DB2 LOAD Utility, the following prompts are also displayed:

DSN to Hold LOAD SYSIN
Name of the sequential file or partitioned data set to hold LOAD SYSIN data.

Member (if PDS)
If you specify a partitioned data set at **DSN to Hold LOAD SYSIN**, you must specify the name of the member. (If a sequential file is specified and you specify a member name, an error message displays.)

Note: However, if there are multiple LOAD steps (see "Job Steps"), the LOAD SYSIN must be saved to multiple members. The **Member** prompt is replaced by the **Use Step Name as Member** prompt, which is set to Y and cannot be changed.

Replace Existing Data
Specify whether the generated JCL and control statements replace existing data in the specified file.

Note: If there are multiple LOAD steps, this value is set to Y and cannot be changed.

Automatic SUBMIT

END is used to return from the ISPF editor to Move; however, your specification for the prompt **Submit Jobs with END** on the User Options panel determines whether the job is automatically submitted. If you specify NO to the prompt, you must submit the job explicitly from the ISPF editor using the SUBMIT command.

When **Submit Jobs with END** is YES, use the CANCEL command to return to the Load Process panel without submitting the job.

Controlling when the job is submitted is especially useful. You can prepare the job to be executed later. For example, to minimize contention you can prepare the LOAD job during the day and execute it overnight.

Note: LOADPLUS users can take advantage of the PRELOAD phase that does not prevent other users from accessing the database. PRELOAD does identify discarded rows based on the IGNORE and UNIQUE CHECK options. You can then decide whether or not to execute the LOAD phase based on the return code set by the PRELOAD phase.

Job Steps

The job steps performed are as follows. Note that Step 1 is executed once, but Step 2 may be executed several times. Steps 3, 4, and 5 are optional and, if performed, are executed once.

Step 1 Transform the Extract File to one or more Load Utility input files. During this operation, the Table Map and the Column Map are applied to the data. A Load Utility input file is needed for each table space. Based on the destination tables, Move will determine how many and which table spaces are affected.

The job can also store Large Object (LOB) data from the Archive or Extract File in a Partitioned Data Set - Extended (PDS/E) dataset. When LOB data is stored in a PDS/E dataset, the Load Utility input file (SYSREC) does not contain LOB data. Instead, the Load Utility input file contains reference pointers that point to the PDS/E dataset and member name in which each instance of LOB data is stored. Storing LOB data in a PDS/E dataset reduces the length of table rows in the Load Utility input file. In turn, this allows the Load Utility to load table rows that would otherwise be too long to load. The job stores LOB data in a PDS/E dataset if the maximum size of the table rows would otherwise be greater than 32 KB, or if you specify in the load options that all LOBs are to be stored externally.

Ensure that the PDS/E dataset that is used in the generated JCL is empty. If the PDS/E dataset is not empty, the members that are created in this step might replace members in the existing dataset.

Step 2 LOAD executes a Load Job Step for each table space. The number of times Step 2 is performed is equal to the number of table spaces involved in the load.

If the load is successful, a job step is performed to delete the interim data sets. Whether this step is performed is determined by the return code from the Load Job Step.

LOADPLUS executes the load step as two phases–PRELOAD and LOAD–for each table space. First the PRELOAD is executed for each table space and processing can be paused. Then the LOAD phase is performed for each table space. If requested, the Copy function is performed as part of the LOAD phase.

Step 3 Execute the Check Utility for each table space in Check Pending status that is being loaded. For additional information, see "Check Pending Status".

Step 4 Execute the COPY Utility, if required. The COPY Utility is required for any of these conditions:

- If you are using DB2 Load
- If you specified YES to the prompt Create Full Image Copy
- If you specified NO to the prompt Delete All Rows in Tablespace

Step 5 Execute, if requested, the RUNSTATS utility. This executes a single jobstep for all table spaces.

If the number of jobsteps exceeds 256, Move automatically splits the request into multiple jobs. The jobs must be executed in the proper sequence to maintain the steps in the order generated by Move. To handle this, review the JCL and specify TYPERUN=HOLD to hold the job. Then manually submit the jobs in the correct order.

Check Pending Status

A table space may be placed in Check Pending status when one or more of the following conditions occur:

- Enforce RI Constraints is set to NO. This indicates that data can be loaded into dependent tables without DB2 verifying that it meets RI constraints. Before the database can be used, DB2 must verify that RI rules have not been violated by the load. For example, proper parents must exist for all rows inserted into a child table.
- Delete All Rows in the Tablespace is set to YES. There are two possible scenarios:
  - If a parent table is involved in the load, any other table spaces containing child tables are placed into check pending status. This is because all child rows initially become orphans and the load process may or may not replace all parent rows.
  - If a parent table is not involved in the load but is in a table space that is cleared, any other table spaces containing child tables are placed into check pending status. If any child table's table space is not involved in the load, Move will not generate a check data job for the dependent table space. To alert you to this potential problem, Move compares the number of tables to be loaded into the table space and the number of tables in the table space. When these numbers are different, Move displays a warning. You can terminate the load at this point or proceed. If you proceed, all rows of the parent tables not involved in the load will be deleted and any child table rows will remain orphans. You may be deleting more data than you expected.

Process Complete

After the LOAD is executed, you can browse the Control File to identify any rows that were discarded when transforming the Extract File to the load format. The Load utility produces a report that shows the errors encountered while loading the data.

Create Process

The Create Process is used to migrate object definitions from one Legacy or DB2 subsystem or database to another.

The object definitions are extracted from the source using the Extract Process and stored in the Extract File. The Create Process uses these extracted object definitions to create the objects at the destination. You can select the objects in an Extract File to be created.

The Create Process does not load data. You must use the Insert and Load processes to load data. These processes will create any destination tables that do not exist as well as subordinate object definitions, such as primary keys and relationships, indexes, etc. that have been extracted. However, Insert and Load Processes do not automatically create subordinate objects for existing destination tables. The Create Process must be used to create the subordinate objects for destination tables that exist.

CREATE Process Menu

When you select CREATE from the **Data Migration** menu, the following panel is displayed.

```
------------------------------ CREATE Process --------------------------------
OPTION ===>                                                  SCROLL ===> PAGE

  0  DEFAULTS             - Specify Object Creation Defaults

  1  TABLE MAP            - Specify Table Map
  2  PERFORM              - Specify Objects to Create and Perform CREATE

  3  GRANT                - Grant Table and View Authorizations
  4  SYNONYMS             - Create Additional Synonyms
  5  OUTPUT               - Specify File for Output of SQL

Extract File DSN ===> 'Z13600MP.FOPND.XFILE'
```

Figure 93. CREATE Process Menu

Panel Options

The options on this panel include:

0 Defaults
Specify default values to be used to create tables, tablespaces, indexes, and Legacy Tables. You can also specify default Creator IDs for views, aliases and user defined types (UDTs).

1 Table Map
Specify the names of the destination tables for each source table in the Extract File. You must select this option to specify the Destination Creator ID. By default, *Common Elements Manual* assumes the base destination table names are the same as the names defined in the Extract File. There is no default Destination Creator ID.

2 Perform
Select the object definitions to be created and specify the database and tablespace for them. Commands allow you to create some or all objects in the Extract File.

3 Grant
Specify table and view authorizations for tables and views you have created.

4 Synonyms
Specify additional synonyms for tables and views you have created.

5 Output
Specify the name of a file for the SQL generated by the Create request so that the SQL can be reused. The saved SQL can be edited directly.

Extract File DSN
Specify the name of the Extract File containing the source object definitions. (The Extract File must be created with Release 2.0 or later of Move.)

You must be appropriately authorized to create any object definitions and to grant authority.

Note that for Option 2 Perform, the **Display Object Create** setting on the User Options panel determines when the **Create Object List** appears. See the *Common Elements Manual* for details.

CREATE Process Defaults

Move allows you to provide default values and parameters needed to create tables, tablespaces, views, aliases, indexes, and Legacy Tables.

These default values are used to populate panels and determine behavior in the Create Process or the Create portion of an Insert or Load Process. Before using Move to migrate object definitions, you may want to establish several default values. These defaults are then used each time an object is created using the Create Process, the Insert Process, or the Load Process. You can replace any default values on a panel and, if you do not specify default values, you are prompted as necessary for these values when objects are created.

When you select Option 0 Defaults from the **CREATE Process** menu, the following panel is displayed.

```
------------------------------ CREATE Defaults -------------------------------
OPTION ===>

  1  TABLE DEFAULTS            - Specify Default Table Parameters
  2  TABLESPACE DEFAULTS       - Specify Default Tablespace Parameters
  3  INDEX DEFAULTS            - Specify Default Index Parameters
  4  CREATOR ID DEFAULTS       - Specify Default Creator IDs
  5  LEGACY DEFAULTS           - Specify Default Legacy Parameters
```

Figure 94. CREATE Defaults Menu

Panel Options

The options on this panel include:

1 Table Defaults
Provide default values for several parameters required to create tables.

2 Tablespace Defaults
Provide default values for the creation of tablespaces.

3 Index Defaults
Provide default values for the creation of indexes.

4 Creator ID Defaults
Provide default values for Creator IDs used when creating views, aliases, user-defined types, user-defined functions, or stored procedures.

5 Legacy Defaults
Provide the default data source value saved in new Legacy Tables.

Table Defaults

Select Option 1 TABLE DEFAULTS on the **CREATE Defaults** menu to provide defaults for several parameters used when creating tables.

You can specify values for any prompts on the following panel, but all are optional. If the **Database Name** default is omitted, you will be prompted for a database name when a table is to be created. If you leave any prompt blank, Move omits that parameter when generating the SQL and the DB2 default is used when the object is created.

The specifications on the Table Defaults panel are profiled.

```
------------------------------ Table Defaults --------------------------------
Command ===>

Database Name   ===>
Tablespace Name ===>

Editproc        ===> *          (Pgm Name, *-Same as Source Table)
Validproc       ===> *          (Pgm Name, *-Same as Source Table)
Audit           ===> *          (N-None, C-Changes, A-All, *-Same as Source)
OBID            ===>            (0 – 32767)
Data Capture    ===> *          (N-None, C-Changes, *-Same as Source)
```

Figure 95. Table Defaults

Panel

This panel includes:

Database Name

Default name for the database in which a table is created, as displayed on the **CREATE Object List** panel. Note that you can modify a default database name displayed on the **CREATE Object List**.

Specify a literal, use one or more keywords, or combine literal and keywords to generate a default database name that follows naming conventions for your site. Leave blank if a default database name is not desired. Keywords are:

<CID>

Creator ID for the table as indicated in the table map.

<TBL>

Table name.

For example, to generate a default database name that begins with ARC, followed by the Creator ID, specify **ARC<CID>**; for a default database name that begins with the Creator ID of the table, followed by the table name, specify **<CID><TBL>**.

If a generated name exceeds the 8-character DB2 maximum, it is truncated and a message is displayed.

Tablespace Name

Default name for the tablespace in which a table is created, as displayed on the CREATE Object List panel.

Note that you can modify a default tablespace name displayed on the **CREATE Object List**. Specify a literal, use one or more keywords, or combine literal and keywords to generate a default tablespace name that follows naming conventions for your site. Leave blank if no default tablespace name is desired.

If you do not specify a default tablespace name, the default name is derived from the table name when the table is created. (The IN DATABASE clause is used.) Keywords are:

<DB> Database name for the table.

<CID>
Creator ID for the table as indicated on the table map.

<TBL>
Table name.

For example, for a default tablespace name that begins with MOV, followed by the Creator ID, specify **MOV<CID>**; for a default tablespace name that begins with the Creator ID of the table followed by the database name, specify **<CID><DB>**.

If a generated name exceeds the 8-character DB2 maximum, it is truncated and a message displayed.

Editproc
The edit procedure or exit routine that DB2 invokes when a row in the table is accessed. Specify:

blank No default.

pgmname
Explicit name of the default exit routine.

***** The exit routine specified for the source table, if any, is the default.

Validproc
Validation procedure or exit routine that DB2 invokes when a row in the table is updated. Specify:

blank No default.

pgmname
Explicit name of the default exit routine.

***** Name of the exit routine specified for the source table, if any, is the default.

Audit Table activity to be audited. Specify:

None No default auditing is performed.

Changes
By default, audit insert, update, and delete operations.

All By default, audit all table access.

***** The assignment for the source table, if any, determines the table activity is audited by default.

OBID Specify the integer used as the object identifier for the table if the database for the table is defined as ROSHARE READ.

Data Capture
Information logged for SQL INSERT, UPDATE and DELETE operations. Specify:

None No capture is performed.

Changes
Write additional data about SQL updates to the log.

***** The assignment for the source table determines if data capture is performed.

Tablespace Defaults

Select Option 2 TABLESPACE DEFAULTS on the **CREATE Defaults** menu to provide default values for several parameters used when creating a tablespace. Although Move does not extract definitions for tablespaces, a tablespace may be required for the tables you elect to create.

You can provide values for any prompts on the following panel, but all are optional. Move omits parameters for which you do not provide defaults when generating the SQL; DB2 default values are used.

The values on the Tablespace Defaults panel are profiled.

```
---------------------------- Tablespace Defaults -----------------------------
Command ===>

Using Stogroup ===>              Priqty ===>
                                 Secqty ===>
                                 Erase  ===>                (Y-Yes, N-No)
       or VCAT ===>

Freepage       ===>              (0-255)
Pctfree        ===>              (0-99)
Segsize        ===>              (4, 8, 12, ... 64, Blank - Not Segmented)
Bufferpool     ===>              (BP0-49, BP8K0-9, BP16K0-9, BP32K, BP32K1-9)
Locksize       ===>              (A-Any, P-Page, TS-Tablespace, T-Table, R-Row)
Close          ===>              (Y-Yes, N-No)
Compress       ===>              (Y-Yes, N-No)
Lockmax        ===> SYSTEM       (0-2147483647 or SYSTEM)
CCSID          ===>              (E-EBCDIC or A-ASCII)
Large          ===>              (Y-Yes, N-No)
Numparts       ===>              (1-254)
Max Rows       ===>              (1-255)
Member Cluster ===> N            (Y-Yes, N-No)
```

Figure 96. Tablespace Defaults

Panel

This panel includes:

Using Stogroup
Name of the storage group. A value for this prompt indicates that DB2 defines and manages the data sets for the tablespace.

You may provide a value for **Using Stogroup** or a value for **VCAT**, but not both. If using a storage group, you may also provide values for the following prompts:

Priqty The primary allocation for the data set as an integer value. The default value is based on the **Bufferpool** specification.

For 4K, **Priqty** must be between 12 and 4194304. For 32K, the minimum is 96. Minimums for DB2 version 6.1 and later are: 8K – 24 and 16K – 48.

Secqty
The secondary allocation for the data set as an integer value. The default value must be greater than or equal to 0 and less than or equal to 4194304 for any **Bufferpool** specification.

Erase Disposition of data sets in the tablespace when they are deleted. Specify:

Y Erase.

N Do not erase.

or VCAT
Identifier of the VSAM catalog where the data sets defined for the tablespace are cataloged. This indicates that the tablespace is user-managed.

You may specify a value for **Using Stogroup** or a value for **VCAT**, not both.

Freepage
Frequency with which a page of free space is allocated when the tablespace is loaded or reorganized. Specify:

0-255 Any integer in this range. The DB2 default is 0.

Specify 0 for no free pages, 1 for a free page after every page, 2 for a free page after every two pages, and so forth.

If the tablespace is segmented, the number of free pages must be less than the **Segsize** value.

Pctfree
Percentage of each page that is to be free space when the tablespace is loaded or reorganized. Specify:

0-99 Any integer in this range. The DB2 default is 5 (5%).

Segsize
Segmentation of the tablespace. If an integer is specified, the tablespace is assumed to be segmented. Specify:

4-64 Any integer in this range that is a multiple of 4. The value indicates the number of pages assigned to each segment.

blank Tablespace is not segmented.

Bufferpool
Specify the name of the buffer pool used as the default for tablespaces. The panel shows the valid selections for the installed DB2 version.

Locksize
Locking level for the tablespace. Specify:

A Any locking level.

P Page is the locking level.

TS Tablespace is the locking level.

T Table is the locking level. T can be specified for a segmented tablespace only.

R Row is the locking level.

Close Indicate whether data sets can be closed when not in use if the number of open data sets has reached the limit.

Y Eligible for closing.

N Not eligible for closing.

Compress
Indicate whether to perform data compression. Specify:

Y Data is compressed when the LOAD or REORG utility is run on the table in the tablespace.

N Data is not compressed.

Lockmax
Maximum number of tablespace locks that can be simultaneously in effect. Specify:

0 Unlimited number of locks.

1-2147483647
Explicit number of locks.

SYSTEM
System value is used.

CCSID
Indicate whether the table is EBCDIC or ASCII data.

Large Indicate whether the default is established as Large or not.

Numparts
Specify the number of partitions.

Max Rows
Specify the maximum number of rows per page.

Member Cluster
Indicate the clustering of inserted data.

Y Inserted data is clustered according to the implicit or explicit clustering index.

N DB2 chooses the location of data in the tablespace on the basis of variable space.

Index Defaults

Select Option 3 INDEX DEFAULTS on the **CREATE Defaults** menu to specify default values for parameters used when creating indexes.

You can specify default values for index parameters, but all values are optional. If you leave any prompts on the following panel blank, the DB2 default value is applied.

```
------------------------------ Index Defaults -------------------------------
Command ===>

Index Creator ID ===> *TABLE    *TABLE  - Same as Corresponding Table
                                *SOURCE - Same as Source Index's Creator ID
                                Blank   - Current SQLID
                                Other   - Explicit Creator ID

Using Stogroup   ===>           Priqty ===>
                                Secqty ===>
                                Erase  ===>                (Y-Yes, N-No)
       or VCAT   ===>

Freepage         ===> *        (0-255,              * - Same as Source Index)
Pctfree          ===> *        (0-99,                 * - Same as Source)
Bufferpool       ===> *        (BP0-49,               * - Same as Source)
Close            ===> *        (Y-Yes, N-No,          * - Same as Source)
Defer            ===>          (Y-Yes, N-No)
Copy             ===> N        (Y-Yes, N-No)

Note: Priqty and Secqty may be specified as Explicit Quantities or as a
      Percentage of Extracted Source Index, e.g., 25%
```

Figure 97. Index Defaults

Panel

This panel includes:

Index Creator ID
Creator ID to be used for the name of the index. Specify:

***TABLE**
Creator ID of the table for which the index is being created.

***SOURCE**
Creator ID of the source index.

blank SQLID for the current user.

Other An explicit Creator ID value is supplied.

Using Stogroup
Name of the storage group. A value for this prompt indicates that DB2 defines and manages the data sets for the tablespace. You may also provide values for the following prompts:

Priqty Indicate the primary allocation for the data set as an integer value. Priqty must be between 12 and 4194304.

Secqty
Indicates the secondary allocation for the data set as an integer value. The default value must be greater than or equal to 0 and less than or equal to 4194304.

Erase Indicates whether the data sets in the tablespace are erased when deleted. Specify:

Y Erase.

N Do not erase.

or VCAT
Identifier of the VSAM catalog where the data sets defined for the tablespace are cataloged. This identifier indicates that the tablespace is user-managed.

You may specify a value for **Using Stogroup** or for **VCAT**, not both.

Freepage
Frequency with which a page of free space is allocated when the tablespace is loaded or reorganized. Specify:

0-255 An integer in this range. The default is 0.

***** The value assigned to the source index is used.

Specify 0 for no free pages, 1 for a free page after every page, 2 for a free page after every two pages, and so forth.

Pctfree
Percentage of each page that is free space when the tablespace is loaded or reorganized. Specify:

0-99 An integer in this range. The default is 5 (5%).

***** The value assigned to the source index is to be used.

Bufferpool
Name of the default bufferpool for indexes. The panel shows the valid selections for the installed DB2 version.

Specify * to use the value assigned to the source index.

Close Indicates if data sets can be closed when not in use and the number of open data sets has reached the limit. Specify:

Y Eligible for closing.

N Not eligible for closing.

Defer Indicates to defer building the index during the CREATE INDEX statement.

Y Defer building the Index.

N Build the Index.

Copy Indicates if copy option is used. Specify:

Y Index space can be image copied. Target index also includes copy option.

N Index space cannot be image copied.

Creator ID Defaults

Select Option 4 CREATOR ID DEFAULTS on the **CREATE Defaults** menu to specify a default Creator ID for the views, aliases, UDTs, UDFs, and Stored Procedures you create. The following panel is displayed.

```
---------------------------- Creator ID Defaults -----------------------------
Command ===>

View Creator ID   ===> *TABLE    *TABLE  - Same as Base Table
                                 *SOURCE - Same as Source View's Creator ID
                                 Blank   - Current SQLID
                                 Other   - Explicit Creator ID

Alias Creator ID  ===> *TABLE    *TABLE  - Same as Base Table or View Name
                                 *SOURCE - Same as Source Alias' Creator ID
                                 Blank   - Current SQLID
                                 Other   - Explicit Creator ID

UDT Creator ID    ===> *SOURCE   *TABLE  - Same as Base Table
                                 *SOURCE - Same as Source UDT's Creator ID
                                 Blank   - Current SQLID
                                 Other   - Explicit Creator ID

Stored Procedure/ ===> *SOURCE   *TABLE  - Same as Base Table
  UDF Creator ID                 *SOURCE - Same as Stored Procedure / UDF
                                           Creator ID
                                 Blank   - Current SQLID
                                 Other   - Explicit Creator ID
```

Figure 98. Creator ID Defaults

Panel

This panel includes:

View Creator ID

Creator ID used for the name of the view. Specify:

***TABLE**

Creator ID from the base table.

***SOURCE**

Creator ID from the source view.

blank SQLID of the current user.

Other An explicit Creator ID value is supplied.

Alias Creator ID

Creator ID used for the name of the alias. Specify:

***TABLE**

Creator ID from the base table or the view name.

***SOURCE**

Creator ID from the source alias.

blank SQLID of the current user.

Other An explicit Creator ID value is supplied.

UDT Creator ID
Creator ID used for the name of the user defined type. Specify:

***TABLE**
Creator ID from the base table.

***SOURCE**
Creator ID from the source UDT.

blank SQLID of the current user.

Other An explicit Creator ID is supplied.

Stored Procedure/ UDF Creator ID
Creator ID used for the name of the user defined function and Stored Procedure. Specify:

***TABLE**
Creator ID from the base table.

***SOURCE**
Creator ID from the source UDF and Stored Procedure.

blank SQLID of the current user.

Other An explicit Creator ID is supplied.

Legacy Defaults

Select Option 5 LEGACY DEFAULTS on the **CREATE Defaults** menu to provide the default data source value saved in new Legacy Tables. The following panel is displayed.

```
------------------------------ Legacy Defaults --------------------------------
Command ===>

Default Data Source ===> S       Data Source value saved in new Legacy Tables:
                                 S - Use Source Legacy Table Definition value
                                 D - Use Destination Data Source value from the
                                     Table Map
                                 N - No default Data Source value should be
                                     saved with the Legacy Table
```

Figure 99. Legacy Defaults

Panel

This panel includes:

Default Data Source
Default data source value for newly created Legacy Tables. Specify:

S Sets the data source value for the new Legacy Table to the same value as the source Legacy Table.

D Derives the data source value for the new Legacy Table from the information specified in the Table Map during the table creation process.

N No default data source value is saved with the new Legacy Table.

CREATE Process Table Map

A Table Map is used to specify the names of the tables to be created at the destination. By default, Move assumes the base names of the tables in the Extract File are to be used.

You must specify a **Destination Creator ID**. This option is required in order to execute the Create Process, grant privileges, specify synonyms and other objects, or use the Output option.

When you select Option 1 Table Map from the **CREATE Process** menu, the CREATE Process Table Map panel is displayed. Assume the object definitions for three tables are specified in an Extract File. The following panel is displayed:

```
-------------------------- CREATE Process Table Map ---------------------------
Command ===>                                                 Scroll ===> PAGE

Available Commands: APPLY,SAVE,LIST,CLEAR, END when Complete

   Src CID: FOPDEMO
  Dest CID:                                          >>

   Extract Tables       Destination Table Name     Type
-------------------- ------------------------>> -------
************************* TOP **************************
CUSTOMERS             CUSTOMERS                  UNKNOWN
ORDERS                ORDERS                     UNKNOWN
DETAILS               DETAILS                    UNKNOWN
************************ BOTTOM ************************
```

Figure 100. Create Process Table Map

Panel

This panel includes:

Src CID
The default Creator ID for the source tables as specified in the Extract File. This value cannot be modified.

Dest CID
The default Creator ID for the destination. Initially, **Dest CID** is blank. A valid value must be specified.

Extract Tables
Names of the tables included in the Extract File. The Creator ID is included only when it differs from the **Src CID**. These values cannot be modified.

Destination Table Name
Names of the destination tables that correspond to the listed source tables. Initially, Move supplies the source table names for the destination tables.

You can specify other names by overtyping the name, by requesting a selection list from which to choose, or using the APPLY command. If you leave **Destination Table Name** blank, the corresponding object definitions in the Extract File are ignored for the current Create Process and the objects are not created.

Type The destination type supplied by Move and indicated as:

TABLE
A table.

VIEW A view.

UNKNOWN
Not found or initial display.

A-TABLE
An alias of a table.

A-VIEW
An alias of a view.

S-TABLE
A synonym of a table.

S-VIEW
A synonym of a view.

UNUSED
A destination table is not specified.

TEMPTBL
Temporary table.

LEGACY
A Legacy Table.

S-MQT
System-maintained Materialized Query Table

U-MQT
User-maintained Materialized Query Table

Available Commands

The following commands are available on this panel:

- APPLY
- BOTTOM
- CANCEL
- DOWN
- END
- EXPAND
- LIST
- OPTIONS
- TOP
- UP

Selection List

TablesThe LIST command is available for aliases, records, synonyms, tables, and views. For example, to obtain a selection list of available tables, use the command LIST TABLES and position the cursor on the destination table name you want to supply and press ENTER. A selection list of available tables with the destination Creator ID is displayed. You can override the destination Creator ID with the LIST TABLES command as in LIST TABLES SMITH.%.

Use the Select line command, S, to select a table name from the selection list. Move automatically places the name in **Destination Table Name** where the cursor is positioned.

Duplicate table names are not allowed. Therefore, the same table name cannot be specified twice as a destination table.

Use Existing Table Map

You can use the APPLY command to populate the Table Map with the specifications from a previously defined Table Map. If the source tables in the process match the source tables in the Table Map, Move populates the destination tables from the existing Table Map. APPLY can be used to populate all table names and the Dest CID regardless of any entry, or populate only the blank areas.

Destination Table Type

MOVE automatically revises the **Type** each time you modify a destination table name. If you modify the **Dest CID**, any tables that are listed without an explicit Creator ID automatically use the new **Dest CID**. This may cause the Type value to change, requiring your review. You can explicitly supply the Creator ID with the **Destination Table Name**. If you do this, changing the **Dest CID** does not affect the table name.

Additional Information

Additional information about defining Table Maps is provided in the *Common Elements Manual*.

Perform Create Process

Select Option 2 PERFORM to invoke the Create Process. The CREATE Object List panel includes entries for each destination table in the Table Map and all related object definitions in the Extract File.

You can select the objects to be created and modify the name to be assigned to each object. Use the CREATE ALL primary command to create all selected objects, the CR line command to create specific objects, or the CRA line command to create a single table and all related objects.

Assume the object definitions for three tables, as listed on the panel in Figure 100 on page 168, plus two legacy tables describing legacy data, are involved.

Note:

- For a VSAM data set, the Create Process can create the destination Legacy Table, VSAM data set, and any Optim objects associated with the Legacy Table.
- For an IMS data set, the Create Process can only create the destination Legacy Table and any Optim objects associated with the Legacy Table (e.g., Relationships, Primary Keys, Foreign Keys). The Create Process cannot create a destination DBD or IMS data set.

The CREATE Object List panel is displayed as follows:

```
----------------------------- CREATE Object List -----------------------------
Command ===>                                                 Scroll ===> PAGE

Primary : CREATE ALL, DROP ALL, DROP EXISTS, DROP CONFLICTS, DROP CHANGED
          DEFAULTS, SHOW                                          1 of 24
   Line : S, U, I, CR(A), DR(A), DB2, OPT, SQL

Cmd  Status     Type              Object Name           Database Tablespace
--- --------  ---------  ----------------------------->> -------- ----------
*** ******************************** TOP ***********************************
___ SELECT    TABLE      SOFTECH.ORDERS                DSOFTECH  SSOFTCH1
___ SELECT      INDEX    FOPDEMO.XORDERPK
___ SELECT      PK(DB2)
___ SELECT      FK(DB2)  RCO
___ SELECT      FK(OPT)  TRCO
___ SELECT    TABLE      SOFTECH.CUSTOMERS             DSOFTECH  SSOFTCH1
___ SELECT      INDEX    FOPDEMO.XCUSTPK
___ SELECT      PK(DB2)
___ SELECT      FK(DB2)  RSC
___ SELECT      VIEW     SOFTECH.V_CUST_ORDS
___ SELECT      TRIG(BU) FOPDEMO.CUSTORDS
___ SELECT      TRIG(AI) FOPDEMO.VER_DATE
___ SELECT      STRPROC  CUSORDSP
___ SELECT      UDT      FOPDEMO.CARD_YN
___ SELECT      UDF      C_O_UDF1
___ SELECT      AUX      CUSPHOTO.BMP
___ SELECT      AUX      FOPDEMO.LOB_TBL_BMPS
___ SELECT    LEGACY     FOPTEST.LEGACY.ORDERS
___ SELECT      DATASET  FOPLEG.1999.ORDERS
___ SELECT      PK(OPT)
___ SELECT      FK(OPT)  LCO
___ SELECT      REL      RLCO
___ SELECT    LEGACY     FOPTEST.LEGACY.DETAILS
___ SELECT      DATASET  FOPLEG.1999.DETAILS
___ SELECT      PK(OPT)
___ SELECT      FK(OPT)  LOD
___ SELECT      REL      RLOD
___ SELECT    TABLE      SOFTECH.DETAILS               DSOFTECH  SSOFTCH1
___ SELECT      INDEX    FOPDEMO.XORDETPK
___ SELECT      PK(DB2)
___ SELECT      FK(DB2)  ROD
___ SELECT      UDT      FOPDEMO.CH1
___ SELECT      UDT      FOPDEMO.CH254
___ SELECT      UDT      FOPDEMO.DAT
___ SELECT      UDT      FOPUDT.DBL
*** ***************************** BOTTOM *********************************

Review SQL before Create ===> Y    (Y-Yes, N-No)
```

Figure 101. CREATE Object List

Panel

This panel includes:

Cmd Line command area. The following line commands are available:

- **S** Select object. This object is created if the CREATE ALL command is executed.
- **U** Unselect object. This object is not created if the CREATE ALL command is executed.
- **I** Information. Extended information is available only for tables with a status of CHANGED.
- **CR** Create this object regardless of whether it has the status SELECT or UNSELECT.

CRA Create this table regardless of the status with all related objects that have the status SELECT.

DR Drop an existing object. This command is typically used to drop an object that is no longer needed or wanted.

DRA Drop an existing table and its related objects.

DB2 Switch the type of key or relationship to be created from an Optim definition (OPT) to a DB2 definition (DB2). This command is valid only for Optim primary keys and Optim relationships that are defined using a valid DB2 primary key/foreign key pairing. These relationships are identified as FK(OPT).

OPT Switch the type of key or relationship to be created from a DB2 definition (DB2) to an Optim definition (OPT). Keys or relationships without definitions in the DB2 catalog are assigned to the Optim Directory.

SQL Display the SQL to be used to create an object (for SELECT or UNSELECT status only) or the SQL that was used to create an object during this create session (for CREATED status).

Status Status of the object definition. The possible statuses are:

CHANGED
The object exists, but it has been altered at the destination.

CONFLICT
An object with the specified name exists, but does not correspond to the object on the list.

CREATED
The object was created during this session.

EXISTS
The object exists.

PENDING
Create was requested for a joined view or a relationship but a prerequisite object does not exist. Create the prerequisite object and Move automatically creates the pending object.

SELECT
Object definition is to be created if the CREATE ALL command is executed.

UNSEL
Object definition is not to be created if the CREATE ALL command is executed.

Type Type of object definition as one of the following:

- TABLE
- STRPROC
- LEGACY
- TRIG(*xx)*
- DATASET
- INDEX
- VIEW
- REL
- PK(*type*)
- SYNONYM
- FK(*type*)
- UDF
- ALIAS

- UDT
- AUX
- TEMPTABLE
- S-MQT
- U-MQT

The source of existing or the destination of new primary keys and relationships is noted appropriately with the type. Thus, keys in the DB2 Catalog are designated as PK(DB2) and FK(DB2); those in the Optim Directory are designated as PK(OPT) and FK(OPT) or REL. The objects designated FK(OPT) follow the rules for DB2 foreign keys and can be respecified to be created in the DB2 Catalog. Triggers are designated as A (after) or B (before), followed by a designation for the event (i.e., D (delete), I (insert), or U (update)). The objects designated as REL are relationships in the Directory that are not based on primary key/foreign key pairing and therefore cannot be created in the DB2 Catalog. (For more information about the differences in these relationships, see the *Common Elements Manual*.)

The table type is justified (that is, not indented). Since all other object types are directly related to specific tables, their type is indented to indicate this subordination.

Object Name
Name of the object. The object name may be changed by overtyping this value for any object type except TABLE, LEGACY, or DATASET. When the name is changed, the status is automatically amended. (The name of a table or legacy table can only be changed on the Table Map panel. Data set names can only be changed on the Associate Legacy Tables with Data Sources panel.)

Database
If the table exists, the name of the database which the table belongs to is displayed. If the table does not exist, the default value as specified on the Table Defaults panel is shown. If a default value has not been established, **Database** is blank.

You may type the desired database name directly. This value is retained.

A database name is required. Move prompts for a name if the prompt is blank.

If you enter the name of a database that does not exist, the Create Database panel prompts for the information needed to create it. See "Create Database" on page 180.

Tablespace
If the table exists, the name of the tablespace to which the table belongs is provided. If the table does not exist, the default value is provided as specified on the Table Defaults panel. If a default value has not been established, **Tablespace** is blank.

You may type the desired tablespace name directly or leave blank. The typed value is retained.

If you enter the name of a tablespace that does not exist, the Create Tablespace panel prompts for the information needed to create it. See "Create Tablespace" on page 180.

If you initiate a CREATE for the table and **Tablespace** is blank, DB2 automatically generates a tablespace name based on the table name.

Review SQL Before Create
Indicate whether the SQL generated by Move to create the objects is to be displayed in the ISPF editor prior to execution. Specify:

Y SQL is displayed prior to execution. You can edit and save the SQL.

N SQL is not displayed.

If Yes, you must use the RUN command in the ISPF editor to execute the SQL.

The display includes markers to indicate the first and last entries on the list. A count indicating the relative position of the first object displayed on the list and the total number of objects is provided.

Initial Display

On initial display, the CREATE Object List panel includes an entry with the TABLE type for every destination table listed on the CREATE Process Table Map panel. The table names are listed in the order in which they are specified on the Table Map panel. The Extract File is checked for the other types of object definitions.

Only the object definitions associated with the listed table definitions are included on the CREATE Object List panel. Relationships and joined views are included only if all prerequisite tables are included on the CREATE Process Table Map panel.

Object Definition Status

For the initial display, Move checks each object definition on the list and assigns a status as follows:

- If an object definition matches an existing object at the destination, it is assigned the EXISTS status.
- If an object definition name matches an existing object name but the definition does not match the object, the object definition is assigned the CONFLICT status.
- If an object definition does not exist at the destination, it is assigned the SELECT status.
- If a table object at the destination has been altered, it is assigned the CHANGED status.

The status determines which object definitions are created when the CREATE ALL command is entered.

EXISTS Status

You must execute a DROP EXISTS command to drop all existing tables, except those in CREATED or CONFLICT status and recreate them. You might wish to have new tables with which to work, or you may need to change an attribute or location of a table or tables. In these cases, dropping and recreating the tables may be the most expeditious means to accomplish this.

CONFLICT Status

The CONFLICT status results when the object definition for an object named on the CREATE Object List panel conflicts with an existing object at the destination. This can occur for indexes and relationships. For example, an index definition on the panel is in CONFLICT status if it has the same name as an index for different tables that is defined at the destination.

You can handle object definitions with the CONFLICT status by:

- Changing the name of the object definition in conflict.

  For TABLES, you can respecify the database on this panel or the table name on the Table Map panel. (Changing the database name will also affect the status of the object definitions associated with the table definition.) When a TABLE is in CONFLICT status, all related object definitions are also in CONFLICT status.

  For objects other than TABLES (when the TABLE is not in CONFLICT status), you can respecify the name of the object definition on this panel.
- Using the DR line command to drop the conflicting object at the destination. Then the object definition can be used to create a new object. (You cannot use the DR line command to drop a table that has the WITH RESTRICT ON DROP clause in effect. If you attempt to do so, an appropriate DB2 error is displayed.) You cannot use the DROP ALL primary command to drop objects in conflict.

Due to performance consequences, Move does not check columns for existing tables, primary keys, relationship, foreign keys, and views when creating these objects. If the name and type of the object

definition on the CREATE Object List panel matches that on the destination, it is assigned the EXISTS status.

SELECT Status

When CREATE ALL is executed, Move attempts to create only those object definitions assigned the SELECT status; object definitions having an UNSEL status are bypassed.

You can use the:

- Unselect line command, U, to unselect individual object definitions.
- UNSELECT ALL primary command to unselect all object definitions that have a SELECT status.
- Select line command, S, to select individual object definitions.
- SELECT ALL primary command to select all object definitions that have an UNSEL status.

Note that the CR line command is used to create individual objects regardless of status, and the CRA line command is used to create a table and all related SELECTed objects.

CHANGED Status

CHANGED status indicates an existing destination table has been altered during the SQL preview. This status applies to tables only. CHANGED status is displayed if User Option, **Check Create Table Chg** is Yes. If the option is No, the status is EXISTS.

Modifying the List

You can overtype the name of any object other than a table to change it. If you modify a listed name, Move updates the status appropriately.

You can redisplay the CREATE Process Table Map panel and modify the destination table names. Any destination table names that you remove from the Table Map are deleted from the **CREATE Object List** along with their associated object names. Conversely, any tables that you add to the Table Map are included on the **CREATE Object List**. You cannot insert or delete object definitions from the list directly.

CREATED Status

All objects successfully created during the current session are assigned the CREATED status. Use DROP CREATED to drop tables in CREATED status.

PENDING Status

The PENDING status is assigned to a joined view or a relationship, when an object on which a dependent object definition is based does not exist at the destination and a request is made to create this dependent object. (A request to create any other dependent object results in an error message.)

If the CREATE ALL command is executed, Move can detect these potential pending situations and create the dependent objects after the requisite tables.

If the CR or CRA command is executed, Move checks the object definitions in pending status and creates them if possible and changes the status to CREATED. Otherwise, they remain in PENDING status.

DEFAULTS Command

You can use the DEFAULTS command to display the **CREATE Defaults** menu. From this menu you can select an option and modify the defaults. The changes you make on the default panels only affect those object definitions that have not been explicitly modified by the user and do not already exist. See

"CREATE Process Defaults" on page 159 for additional information.

DROP CONFLICT Command

Use the DROP CONFLICT command to drop all destination objects in CONFLICT status before creating the new objects.

DROP EXISTS Command

Use the DROP EXISTS command to drop all destination objects in EXISTS status, but not in CONFLICT status, before creating the new objects.

DROP CHANGED Command

Use the DROP CHANGED command to drop all destination tables in CHANGED status before creating the new tables.

DROP ALL Command

Use the DROP ALL command to drop all objects in the destination before creating the new objects. The DROP ALL command does not drop objects in conflict, however. Note that the destination tablespace will also be dropped and recreated when CREATE is executed if Yes is selected at **Drop TS with DROP ALL** at the User Options panel.

DROP Specific Objects

You may selectively DROP specific objects prior to executing the CREATE process:

Command
Drops

DROP AUXiliary
All auxiliary objects

DROP DATaset(s)
All data sets

DROP FUNction(s)
All functions

DROP INDex(es)
All indexes

DROP PROcedure(s)
All procedures

DROP REL
All relationships (REL) (This performs the same action as DROP FK(OPT).)

DROP TRIgger(s)
All triggers

DROP TYPe(s)
All types

DROP PK
All primary keys (PK)

DROP FK
All foreign keys (FK)

DROP FK(OPT)
OPT foreign keys

DROP PK(OPT)
OPT primary keys

DROP FK(DB2)
DB2 foreign keys

DROP PK(DB2)
DB2 primary keys

DB2 or OPT

You can use the line commands DB2 and OPT to change the type of primary key or foreign key that is created. By default, the type of key that is created is based on the source type. However, these line commands allow you to switch between the DB2 Catalog and the Optim Directory.

You can use the **Type** to determine the current destination. For example, FK(OPT) designates a relationship that adheres to DB2 requirements for a foreign key to be defined in the OPT Directory, and PK(DB2) designates a primary key to be defined in the DB2 Catalog.

Unlike the DB2 Catalog, the Directory does not require a primary key/foreign key pairing to define a relationship. However, any relationship in the Directory that conforms to the DB2 Catalog requirements is indicated as FK(OPT) on the CREATE Object List panel. Indicating these relationships as FK(OPT) enables users to switch the destination from the Directory to the DB2 Catalog. Any relationships in the Directory that do not conform to the DB2 requirements are indicated as REL and cannot be defined to the catalog.

These different types are also evident in the generated SQL statement. The following examples show the SQL that is generated for relationships. The first example is the SQL for a DB2 foreign key and the second for a comparable OPT key, and for an OPT relationship that is not based on a primary key/foreign key pairing.

OPT to DB2
The SQL for a DB2 foreign key generated from an OPT relationship always includes the DELETE RESTRICT rule. Assume the foreign key RTCO, where SOFTECH.CUSTOMERS is the parent to SOFTECH.ORDERS and the key column CUST_ID, is switched to DB2.

The following SQL would be generated:

```
ALTER TABLE SOFTECH.ORDERS
FOREIGN KEY RTCO (CUST_ID) REFERENCES
SOFTECH.CUSTOMERS
ON DELETE RESTRICT;
```

OPT Relationship and DB2 to OPT
The SQL to generate an OPT relationship from either an OPT relationship or from a DB2 foreign key lists the corresponding columns. Assume the column CUST_ID in SOFTECH.CUSTOMERS is not the primary key. The following sample SQL would be generated to create an OPT relationship named RTCO where the column CUST_ID in SOFTECH.CUSTOMERS is related to the column CUST_ID in SOFTECH.ORDERS.

```
FOP ALTER TABLE SOFTECH.ORDERS
RELATIONSHIP RTCO
(CUST_ID = CUST_ID)
REFERENCES SOFTECH.CUSTOMERS;
```

Although only one column is listed in these examples, multiple columns can be involved. Also,

OPT relationships can include expressions such as substrings of columns, concatenated columns, literals and constants. (For more information about OPT relationships, see the *Common Elements Manual*.)

As documented later in this section, the SQL can be modified prior to being submitted, therefore you can respecify the destination directly.

Special Objects

You can also use the Create process to migrate definitions of special objects:

- Column Field Procedure Name
- User Defined Functions
- Triggers
- Stored Procedures
- User Defined Types
- Large Objects (LOBs)

For these special objects, the same process as described in "CREATE Process Table Map" on page 168 is used. If the extract data being migrated contains definitions for each type of object, the new objects are listed as in Figure 101 on page 171, when Option 2 PERFORM is invoked.

All primary and line commands operate as described previously in this section. You can change object names as well (except tables).

Managing the List

In addition to scrolling facilities, the SHOW command can be used to display only the object definitions for a specific type or a specific status. (The object definitions for the type TABLE, regardless of status, are always displayed.)

For example, the following figure shows the result when SHOW INDEX is entered on the panel in Figure 101 on page 171.

```
----------------------------- CREATE Object List -------------------------------
Command ===>                                                 Scroll ===> PAGE

Primary : CREATE ALL, DROP ALL, DROP EXISTS, DROP CONFLICTS, DROP CHANGED
          DEFAULTS, SHOW                                          1 of 6
   Line : S, U, I, CR(A), DR(A), DB2, OPT, SQL

Cmd  Status     Type              Object Name           Database Tablespace
--- --------  ---------  ----------------------------->> -------- ----------
*** ******************************** TOP ***********************************
___ SELECT    TABLE      SOFTECH.ORDERS                 DSOFTECH  SSOFTCH1
___ SELECT      INDEX    FOPDEMO.XORDERPK
___ SELECT    TABLE      SOFTECH.CUSTOMERS              DSOFTECH  SSOFTCH1
___ SELECT      INDEX    FOPDEMO.XCUSTPK
___ SELECT    TABLE      SOFTECH.DETAILS                DSOFTECH  SSOFTCH1
___ SELECT      INDEX    FOPDEMO.XORDETPK
*** ***************************** BOTTOM *********************************

Review SQL before Create ===> Y    (Y-Yes, N-No)
```

Figure 102. SHOW INDEX on CREATE Object List

You can use repeated executions of the SHOW command (e.g., SHOW INDEX, SHOW TRIGGERS, etc.) to display other types of object definitions or display all object definitions with the command SHOW ALL.

Review SQL

If you specify Yes to **Review SQL Before Create**, the SQL generated by Move to create the selected objects is displayed. Since the SQL is displayed in the ISPF editor, you can edit it directly and save it. Use RUN to execute the SQL. Use END or CANCEL to abandon execution.

SQL Line Command

You can use the SQL line command to display the SQL for any object on the list with the UNSEL, SELECT, or CREATED status. This display is browse-only and the SQL will include any user modifications that were made to create the object. (The SQL line command is not available to display the SQL for existing object definitions because of the lengthy catalog retrieval that would be required.)

Create Performed

After the Create Process has executed, the resulting information from DB2 is automatically displayed as browse-only data in SPUFI format. Assume the relationship RTCO for the ORDERS table, as shown in Figure 101 on page 171, is created.

The DB2 output is displayed as shown in the following figure:

```
 ---------------------------- Browse DB2 Output ---------------- SUCCESSFUL SQL
 Command ===>                                                   SCROLL ===> PAGE
                                                                ROW 0    OF 14
****************************** TOP OF DATA ***********************************
---------+---------+---------+---------+---------+---------+---------+---------+
   FOP ALTER TABLE SOFTECH.ORDERS
     FOREIGN KEY RTCO (CUST_ID) REFERENCES SOFTECH.CUSTOMERS;
---------+---------+---------+---------+---------+---------+---------+---------+
DSNE616I STATEMENT EXECUTION WAS SUCCESSFUL, SQLCODE IS 0
---------+---------+---------+---------+---------+---------+---------+---------+
DSNE617I COMMIT PERFORMED, SQLCODE IS 0
DSNE616I STATEMENT EXECUTION WAS SUCCESSFUL, SQLCODE IS 0
---------+---------+---------+---------+---------+---------+---------+---------+
DSNE601I SQL STATEMENTS ASSUMED TO BE BETWEEN COLUMNS 1 AND 72
DSNE620I NUMBER OF SQL STATEMENTS PROCESSED IS 1
DSNE621I NUMBER OF INPUT RECORDS READ IS 2
DSNE611I NUMBER OF OUTPUT RECORDS WRITTEN IS 14
****************************** BOTTOM OF DATA ********************************
```

Figure 103. DB2 Output from CREATE

Available Commands

The primary commands available on the CREATE Object List panel include:

- BOTTOM
- CANCEL
- CREATE ALL
- DEFAULTS
- DOWN
- DROP ALL
- END
- EXPAND
- OPTIONS
- SELECT ALL
- SHOW

- TOP
- UNSELECT ALL
- UP

Create Database

If you specify the name of a database that does not exist on the **CREATE Object List**, Move prompts you for the information to create it. Note the "DATABASE NOT FOUND" message in the following panel.

```
------------------------------ Create Database ------------ DATABASE NOT FOUND
Command ===>

Database Name       : TSTDB

Bufferpool       ===>              (BP0-49, BP8K0-9, BP16K0-9, BP32K, BP32K1-9)
Index Bufferpool ===>              (BP0-49)
Stogroup         ===>

Review SQL before Create ===> Y    (Y-Yes, N-No)
```

Figure 104. Create Database

Panel

This panel includes:

Database Name
Name of the new database. This value is inserted by Move and cannot be edited.

Bufferpool
Name of the buffer pool used as the default for databases. The panel shows the valid selections for the installed DB2 version.

Index Bufferpool
Name of the default buffer pool for indexes within the database. The panel shows the valid selections (BP0-49). If a value is not specified, the default is the name of the database buffer pool.

Stogroup
Name of the storage group.

Review SQL before Create
Indicate whether the SQL generated by Move to create the objects is to be displayed in the ISPF editor prior to execution. Specify:

Y SQL is displayed prior to execution. You can edit and save the SQL.

N SQL is not displayed.

If Yes, you must use the RUN command in the ISPF editor to execute the SQL.

Create Tablespace

If you specify the name of a tablespace that does not exist on the CREATE Object List, Move prompts you for the information to create it. Note the "TABLESPACE NOT FOUND" message in the following panel.

```
---------------------------- Create Tablespace ---------- TABLESPACE NOT FOUND
Command ===>

Database Name     : TSTDB        Tablespace Name : FOPTEST
Using Stogroup ===>              Priqty ===>
                                 Secqty ===>
        or VCAT ===>             Erase  ===>               (Y-Yes, N-No)
Freepage       ===>              (0-255)
Pctfree        ===>              (0-99)
Segsize        ===>              (4, 8, 12, ... 64, Blank - Not Segmented)
Large          ===>              (Y-Yes, N-No)
Numparts       ===>              (1-254, Blank - Not Partitioned)
Bufferpool     ===>              (BP0-49, BP8K0-9, BP16K0-9, BP32K, BP32K1-9)
Locksize       ===>              (A-Any, P-Page, TS-Tablespace,T-Table,R-Row)
Close          ===>              (Y-Yes, N-No)
Compress       ===>              (Y-Yes, N-No)
Lockmax        ===> SYSTEM       (0-2147483647 or SYSTEM)
CCSID          ===>              (E-EBCDIC or A-ASCII)
Max Rows       ===>              (1-255)
Member Cluster ===> N            (Y-Yes, N-No)

Review SQL before Create ===> Y  (Y-Yes, N-No)
```

Figure 105. Create Tablespace

Panel

This panel includes:

Database Name
Name of the database. This value is inserted by Move and cannot be edited.

Tablespace Name
Name of the new tablespace. This value is inserted by Move and cannot be edited.

Using Stogroup
Name of the storage group. An entry indicates that DB2 defines and manages the data sets for the tablespace. You may also provide entries for the following prompts:

Priqty Indicates the primary allocation for the data set as an integer value. The default value is based on the Bufferpool specification.

For 4K, Priqty must be between 12 and 4194304. For 32K, the minimum is 96. Minimums for DB2 version 6.1 and later are: 8K – 24 and 16K – 48.

Secqty
Indicates the secondary allocation for the data set as an integer value. The default value must be greater than or equal to 0 and less than or equal to 4194304 for any Bufferpool specification.

Erase Indicates whether data sets in the tablespace are erased when deleted. Specify:

Y Erase

N Do not erase

or VCAT
The identifier of the VSAM catalog where the data sets defined for the tablespace are cataloged. This parameter indicates that the tablespace is user-managed.

You may specify a value for Using Stogroup or a value for VCAT, but not both.

Freepage
Frequency of a page of free space when the tablespace is loaded or reorganized. Specify:

0-255 Any integer in this range; the DB2 default is 0.

Specify 0 for no free pages, 1 for a free page after every page, 2 for a free page after every two pages, and so forth.

If the tablespace is segmented, the number of free pages must be less than the SEGSIZE value.

Pctfree
Percentage of each page that is free space when the tablespace is loaded or reorganized. Specify:

0-99 Any integer in this range; the DB2 default is 5 (5%).

Segsize
Indicates if the tablespace is segmented. Specify:

4-64 Any integer that is a multiple of 4 in this range. The value indicates the number of pages assigned to each segment.

blank Tablespace is not segmented.

Large Indicate whether the default is established as Large.

Numparts
Specify the number of partitions.

Bufferpool
Name of the buffer pool used as the default for tablespaces. The panel shows the valid selections for the installed DB2 version.

Locksize
Locking level for the tablespace. Specify:

A Any locking level.

P Page is the locking level.

TS Tablespace is the locking level.

T Table is the locking level. T can be specified for a segmented tablespace only.

R Row is the locking level.

Close Close data set indicator. Specify Yes to close data sets not in use if the number of open data sets has reached the limit.

Compress
Indicates if data compression is performed. Specify:

Y Data is compressed when the LOAD or REORG utility is run on the table in the tablespace.

N Data is not compressed.

Lockmax
Maximum number of locks that can be in effect simultaneously in the tablespace. Specify:

0 Unlimited number of locks.

1-2147483647
Explicit number of locks.

SYSTEM
Use the system value.

CSSID
Indicate whether the table is EBCDIC or ASCII data.

Max Rows
Specify the maximum number of rows per page.

Member Cluster
Specify the clustering of inserted data.

Y Inserted data is clustered by the implicit or explicit clustering index.

N DB2 chooses the location of data in the tablespace on the basis of variable space.

Review SQL before Create
Specify Yes to display the SQL generated by Move to create the tablespace. The SQL is displayed in the ISPF editor, where you can edit it directly and save it. Use RUN to execute the SQL. Use END or CANCEL to abandon execution.

Grant Privileges

In addition to creating the desired objects, the Create Process allows you to specify the DB2 authorizations for the destination tables and views listed on the Table Map as long as you are authorized to do so.

Although the objects must exist prior to executing a grant request, you do not have to specify the authorizations immediately after you create the objects. However, since the Table Map information is not profiled it is usually most convenient to grant privileges directly after you perform the Create Process. If you decide to grant privileges in a separate step at a later time, you can grant privileges to any existing tables or views specified as the destination table on the CREATE Process Table Map panel.

When you select Option 3 GRANT from the **CREATE Process** menu the following panel is displayed. This panel shows the initial values. Any values you specify are profiled and displayed for subsequent requests to grant privileges.

```
------------------------------ Grant Privileges ------------------------------
Command ===>

GRANT  ALL         ===> Y    (Y-Yes, N-No)
       ALTER       ===> N    (Y-Yes, N-No)     INSERT  ===> N    (Y-Yes, N-No)
       DELETE      ===> N    (Y-Yes, N-No)     SELECT  ===> N    (Y-Yes, N-No)
       INDEX       ===> N    (Y-Yes, N-No)     UPDATE  ===> N    (Y-Yes, N-No)
       REFERENCES  ===> N    (Y-Yes, N-No)     TRIGGER ===> N    (Y-Yes, N-No)

TO     PUBLIC ===> Y    (Y-Yes, N-No)
         or
       If NO, Use Following AUTHID(s)
       ________ ________ ________ ________ ________ ________ ________ ________
       ________ ________ ________ ________ ________ ________ ________ ________

       Select items from generated Selection List, then press ENTER or
       use END command to execute GRANT statement or Review SQL

ON     Select List of                ===> T       (T-Tables In Table Map,
                                                    V-Extracted Views)

Review SQL before Granting Privileges ===> Y       (Y-Yes, N-No)
```

Figure 106. Grant Privileges

Panel

This panel includes:

GRANT
Specify the authorizations to be included in the grant request. All authorizations can be granted

by specifying Y to ALL. Specifications for any listed individual authorization are ignored. The following authorizations are granted by ALL or can be granted separately:

- ALTER
- DELETE
- INSERT
- INDEX
- UPDATE
- SELECT
- REFERENCES
- TRIGGER

For each authorization, specify:

Y Privilege is included.

N Privilege is not included.

TO PUBLIC
Grant privileges to all users or specific users. Specify:

Y Privileges are granted to all users.

N Privileges are granted to specific users.

If NO, Use Following AUTHID(s)
Indicate the users for which authorization is granted. Sixteen 8-character areas are provided to specify the AUTHIDs for users. To specify AUTHIDs for more than 16 users, you must re-execute the grant request.

ON Select List of
Select the tables or views that are to be included in the grant request. Specify:

T Tables

V Views

A selection list of the specified object definitions is displayed.

Review SQL before Granting Privileges
Specify whether the SQL generated by this request is displayed for review prior to execution. Specify:

Y SQL is displayed.

N SQL is not displayed.

Select Tables/Views

When you specify T or V in response to **ON Select List of**, a selection list of the specified object type is displayed. The selection list of tables is comprised of those tables included on the **CREATE Process Table Map** panel that have been created or exist. For views, the selection list is comprised of those views with the default Creator ID applied in the Extract File that have been created or that exist. (The default Creator ID for views can be defined on the panel shown in Figure 98 on page 166.)

Use the S line command to select one or more of the objects to be included in the request. After objects are selected, use the U line command to unselect a previously selected object. The block form of the commands, SS and UU, are available.

You can scroll the list using UP, DOWN, TOP and BOTTOM if necessary.

Selections Complete

When you are satisfied with your selections, use END or ENTER.

If you have responded N to **Review SQL before Granting Privileges**, the request is executed.

If you responded Y, the SQL is displayed for review in the ISPF editor. It can be modified and saved. Use RUN to execute the SQL. Use CANCEL or END to abandon execution of the SQL.

After the SQL is executed, the DB2 output is provided in a browse-only display. This output is in SPUFI-like format and includes the executed SQL statement, the DB2 SQLCODE, and any other pertinent execution information. (An example of the display is shown in Figure 103 on page 179.)

Synonyms

This option enables you to specify additional synonyms by providing a list of the synonyms for the tables in the Extract File.

When you select Option 4 SYNONYMS on the **CREATE Process** menu, the CREATE Additional Synonyms panel is displayed. Assume the Extract File that has been specified contains six tables and the CREATE Additional Synonyms panel is displayed as shown in the following figure.

```
------------------------ CREATE Additional Synonyms--------------------------
Command ===>                                                 Scroll ===> PAGE

Use CREATE ALL Primary Command to Create all Selected Synonyms

Available Line Commands:
  S - Select Synonym to be Created
  U - Unselect Synonym to bypass Creation.

Synonym Owner ===>                                          1 of 7

Cmd   Status       Synonym Name               Base Name
---  --------  --------------------  ----------------------------
***  ************************** TOP ******************************
___  SELECT    S_CUSTOMERS         FOPDEMO2.CUSTOMERS
___  UNSEL     S_ORDERS            FOPDEMO2.ORDERS
___  CONFLICT  S_ORDS              FOPDEMO2.ORDERS
___  EXISTS    DETAILS             FOPDEMO2.DETAILS
___  EXISTS    ITEMS               FOPDEMO2.ITEMS
___  SELECT    V_SALES             FOPDEMO2.V_SALES
___  SELECT    V_SHIP_TO           FOPDEMO2.V_SHIP_TO
***  ************************* BOTTOM ****************************

Review SQL before Create ===> _  (Y-Yes, N-No)
```

Figure 107. CREATE Additional Synonyms

Panel

This panel includes:

Synonym Owner
Specify the Authorization ID of the user for whom the synonyms are being created. If the value specified is different from the SQLID currently in use, you must have authorization to switch to that SQLID.

Cmd Line command entry area. Valid line commands are:

S Select the synonym to be created.

U Unselect this previously selected synonym. Do not create this synonym.

Status Indicates if the synonym exists, and, if not, whether it is to be created. The possible values are:

CONFLICT
Synonym exists, but for a different table.

EXISTS
Synonym exists with specified name.

SELECT
Synonym is to be created.

UNSEL
Synonym is not to be created.

Synonym Name
Name to be used as a synonym. **Synonym Name** is initially populated with the synonyms extracted with the base tables from the source, but is unprotected so that you can specify your own names.

Base Name
Name of the table (as specified in **Destination Table** on the CREATE Process Table Map panel).

Review SQL before Create
Specify whether you want to review the SQL before it is executed. Specify:

Y Display SQL.

N Do not display SQL.

Available Commands

The following primary commands are available:

- BOTTOM
- CANCEL
- CREATE ALL
- DOWN
- END
- EXPAND
- OPTIONS
- TOP
- UP

Specifications Complete

When you are satisfied with your selections, use CREATE ALL.

SQLIf you have responded N to **Review SQL before Create**, the request is executed.

If you responded Y, the SQL is displayed for review in the ISPF editor. It can be modified and saved. Use END to execute the SQL. Use CANCEL to abandon execution of the SQL.

After the SQL is executed, the DB2 output is provided in a browse-only display. This output is in SPUFI-like format and includes the executed SQL statement, the DB2 SQLCODE, and any other pertinent execution information. (An example of the display is shown in Figure 103 on page 179.)

Output SQL

This option enables you to save the generated SQL in a data set for editing and future use, but more importantly, it allows you to save the SQL to create all object definitions on the **CREATE Object List** regardless of whether they exist or not. With this stored SQL, the objects can be created any number of times in any subsystem.

When you select Option 5 OUTPUT on the **CREATE Process** menu, the following panel is displayed.

```
---------------------------------- Output SQL ----------------------------------
Command ===>


Output Dataset ===>


Specify which SQL Statements to Output:
  Output SQL for        ===> N    (N-Non Existent Objects Only, A-All Objects)
  Output SQL for        ===> S    (S-Selected Objects Only, A-All Objects)

Review SQL after Output ===> Y    (Y-Yes, N-No)
```

Figure 108. Output SQL

Panel

This panel includes:

Output Dataset
Specify the name of the data set to contain the generated SQL statements. You may specify a partitioned data set or a sequential data set. The data set must be defined with 80-character fixed length records.

If the named data set does not exist, Move prompts for the information required to allocate the data set and allocates it for you.

If the data set does exist, Move overlays any existing data with the SQL statements.

You can display a selection list of data sets using wildcard characters.

Output SQL for (existent or nonexistent objects)
Specify the objects for which SQL is output. Specify:

N Only the SQL for nonexistent objects is output.

A The SQL for all objects is output.

Output SQL for (selected or all objects)
Indicates objects for which SQL is output. Specify:

S Only the SQL for selected objects.

A The SQL for all objects.

Review SQL after Output
Indicates whether you want to review the SQL after it is output. Specify:

Y Display SQL.

N Do not display SQL.

The SQL is written in SPUFI format. It is provided for the object definitions as specified by your responses to the **Output SQL for** prompts. The SQL incorporates the defaults that you have established on the various defaults panels (see "CREATE Process Defaults" on page 159.)

List Process

The List process allows you to manage extract files registered in the Optim Directory. With List you can display, delete, browse, generate a report or see extended information for an extract file. You can also select a file to use in an Insert process.

The first time you select LIST from the Data Migration menu, the following panel is displayed. This gives you the option to specify criteria to filter the list.

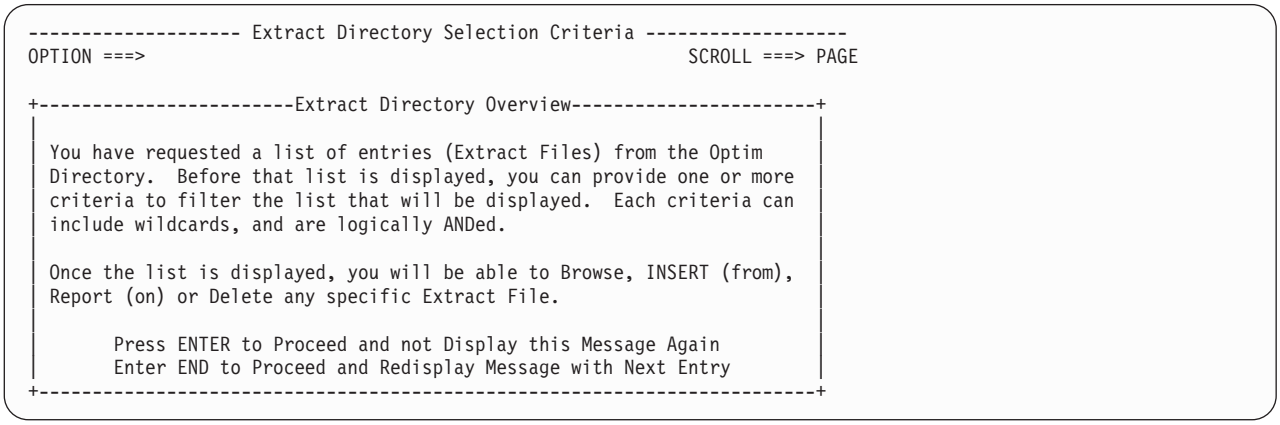


Figure 109. Extract Directory Selection list overview

Pressing **ENTER** displays the panel where you specify filtering criteria:

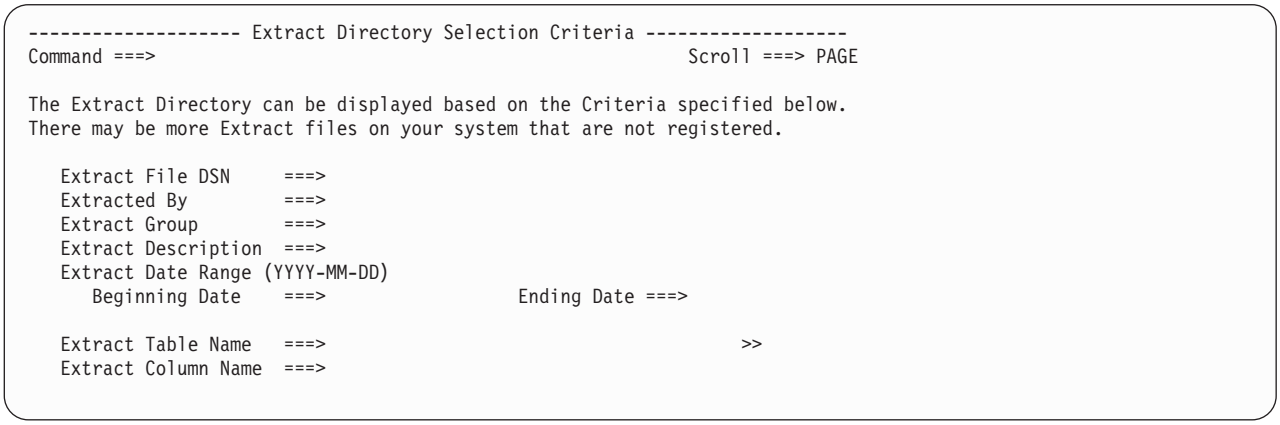


Figure 110. Extract Directory Selection Criteria

The options on this panel include:

Extract File DSN
: Name of the extract file. Enter a name to list the entry for a specific extract file, or leave this field blank to list entries for all extract files in the Directory. You can use DB2 LIKE syntax to specify a pattern.

Extracted By
: The user ID for the extract files. Supply a user ID to list only extract files created by that user. Leave this field blank to list all extract files for all users or use DB2 LIKE syntax to specify a pattern.

Extract Group
: A user-specified group ID. Specify a group ID to list only extract files associated with that group. Leave this field blank to list extract files or use DB2 LIKE syntax to specify a pattern.

Extract Description
User-specified description for the extract file. Specify a description to list only the file with that description. Leave this field blank to list extract files regardless of description or use DB2 LIKE syntax.

Extract Date Range
Limit the list to extract files created in a date range. You can specify a beginning date, an ending date, or both:

Beginning Date
List extract files created on and after that date.

Ending Date
List extract files created before and on that date.

To list extract files created in a date range, specify a beginning date and an ending date.

Extract Table Name
To list extract files that include a specific table, specify the fully-qualified table name.

Extract Column Name
To list extract files that include a specific column, specify the column name prefixed by the table name.

When you press **ENTER** after completing filtering specifications, the Extract Files in Directory displays.

List Extract Files Display

```
------------------------ Extract Files in Directory ------------------------
Command ===>                                                Scroll ===> PAGE

    Primary: DETAIL, HIDE/REFRESH, CLEAR, REPORT, SHOW, FIND       1 OF 15
       Line: I-Info, B-Browse, REP-Report, INS-Insert
             D-Del, AD-Access Definition, AT-Attribute

Cmd Stat    Date    File Name                                    Group    Unit
--- ---- ---------- -------------------------------------------- -------- ----
    ******************************** TOP ***********************************
___      2011-07-14 RDEFAL1.EXTRACT.ACTHDAM                               DISK
___      2012-09-18 RDEFAL1.ARCHIVE                                       DISK
___      2013-06-10 PSTJS.RFM138.V720.DDAF.BATCH.XF1.DATA.CTAPE           TAPE
___      2013-06-10 PSTJS.RFM138.V720.DDAF.BATCH.XF1.DATA.DASD            DISK
___      2013-06-10 PSTJS.RFM138.V720.DDAF.BATCH.XF1.OBJ.CTAPE            TAPE
___      2013-06-10 PSTJS.RFM138.V720.DDAF.BATCH.XF1.OBJ.DASD             DISK
___      2013-06-10 PSTJS.RFM138.V720.DDAF.ONLINE.XF1.BOTH.DASD           DISK
___      2013-06-10 PSTJS.RFM138.V720.DDAF.ONLINE.XF1.DATA.DASD           DISK
___      2013-06-10 PSTJS.RFM138.V720.DDAF.ONLINE.XF1.OBJ.DASD            DISK
___      2013-06-10 PSTJS.RFM138.V720.DDAF.BATCH.XF1.BOTH.CTAPE           TAPE
___      2013-06-10 PSTJS.RFM138.V720.DDAF.BATCH.XF1.BOTH.DASD            DISK
___      2013-06-12 PSTJS.RFM138.V710.DDAF.IEBGNR.XF1.DATA.CTAPE V710     TAPE
___      2013-06-12 PSTJS.RFM138.V710.DDAF.IEBGNR.XF1.BOTH.CTAPE          TAPE
___      2013-06-27 PSTJS.RFM138.TEST.EXTRACT.DASD.OBJ                    DISK
```

Figure 111. List Extract Files panel

This panel includes:

Cmd Line command area. These line commands are available:

AD Display the Access Definition Display Parameters panel, which allows you to specify criteria for displaying the access definition.

AT Display or edit attributes of an extract file, including the group name and description.

B Display the extract file Browse Parameters panel.

Note: Only extract files stored on disk can be browsed.

D Display the Delete Extract Options pop-up. You can delete an extract file's directory entry, the extract file, or both.

I Display the extended information for the extract file.

INS Display the Insert Process menu.

Stat Status of the extract file. Possible values are:

DEL Directory entry for this file has been deleted.

Date Date the extract file was created, in DB2 format.

File Name
Fully-qualified name of the file.

Group Group designation for the file, if any.

Unit Type of storage unit for the extract file. Possible values are:

DISK File is stored on accessible disk

MIGR File has been migrated externally using a Hierarchical Storage Management (HSM) or similar system.

TAPE File is stored on tape

UNK An entry for the file is in the Directory but the file does not exist. This can occur when a file is deleted but the Directory entry is not deleted.

Import Extract Process

An extract file, whether stored on disk or tape, must be registered in the Optim Directory before it can be used in some processes. For a Convert, Create, Insert, or Report process, a Directory entry is required for the file. Use the Import Extract process to register an extract file in the Directory. You can register files created on any subsystem. Additionally, extract files that were copied to tape storage (using a utility such as IEBGENER) can be registered.

A Site Option (Register DASD Extract file) controls use of the Import Extract process to register extract files stored on disk. The setting for a User Option (Register DASD Extracts) determines whether Optim automatically registers extract files created on disk. Refer to the *Customization Guide* , section on Customizing the Site Options in the Full Install information. For details on user options see the *Common Elements Manual*, User Options section.

When you select IMPORT from the Data Migration menu, this panel is displayed:

```
------------------------------ Import Extract ------------------------------
Command ===>                                                Scroll ===> PAGE

Enter the Extract File to be added to the Directory

Extract File DSN     ===> 'PSTCBR.MQT11'

Extract Group        ===> GRP

Extract Description  ===>
Run Import in Batch or Online  ===> O          (B-Batch, O-Online)
  If Batch, Review or Save JCL ===> R          (N-No, R-Review, S-Save)
```

Figure 112. Import Extract panel

The options on this panel include:

Extract File DSN
Fully-qualified name of the file for which you are creating a Directory entry.

Extract Group
Group designation for the file.

Extract Description
1- to 40-character description for the file.

Run Import in Batch or Online
Specify **B** to run the import process in batch or **O** to run the process online.

Note: You must run the import process in batch for an extract file stored on tape.

If Batch, Review or Save JCL
Choose whether to review JCL before the batch process is submitted. If you choose to review it, the JCL is displayed in the ISPF editor where it can be modified and saved to submit later. Specify:

N No. Submit the job without displaying or saving the JCL.

R Display the JCL for review.

S Save the JCL. You are prompted to supply the name of a file.

Browse Extract File

Move provides a browse facility that allows you to review the contents of an Extract File or Control File. Browsing an Extract File is useful prior to inserting data into the database. Note that an extract file stored on tape can be browsed only by using the batch utility REPORT statement.

Browsing a Control File is useful in examining discarded rows when an Insert, Convert, or Load Process does not complete successfully. The browse facility works in four modes.

- Table Mode provides a dynamically formatted display of related data from an Extract File. You display data in Table Mode by selecting rows from the Start Table, or another designated table, and joining to related rows in other tables in the Extract File. Once you have located the desired set of related data, you can print it or save it to a data set. (For details about browsing related data in Table Mode, see the *Common Elements Manual*.)
- In Report Mode, you can generate, browse, write to disk, and print a report on the contents of an Extract File or Control File. This read-only report includes all data in the file or all data in a selected table.
- Summary Mode provides a summarized listing showing only the tables in the Extract File and the row counts for each (i.e., data rows are omitted).
- In Access Definition Mode, you can browse the Access Definition used to create an Extract File.

Select Option B BROWSE on the **Data Migration** menu to invoke the browse facility. The following panel is displayed.

```
------------- Extract, Archive or Control File Browse Parameters --------------
Command ===>                                                 SCROLL ===> PAGE

Provide Extract, Archive or Control File Data Set Name:
  DSN              ===>

Browse Mode        ===> R                          (T-Table, R-Report
                                                    S-Summary, A-Access Def)
If Table Mode, specify
  Table Name       ===>                         >> (Blank for Start Table)
  Begin with       ===> D                          (D-Data, S-Sel Crit,Q-SQL)
If begin with S or Q
  Case Sensitive   ===> Y                          (Y-Yes, N-No  If NO, any
                                                    dense indexes are skipped)
If Other than Table Mode, specify
  Table Name       ===>                         >> (Blank for all tables)
  If output to Disk, specify                       (Blank for temp. dataset)
    Output DSN     ===>

For Control File Only:
  Show Row Status  ===> Y                          (Y-Yes, N-No, X-Explain)
  Filter Data      ===> A                          (E-Error Rows Only, A-All)

If Display Length Exceeds File Width ===> W        (C-Change File, W-Wrap Data)
```

Figure 113. Extract, Archive or Control File Browse Parameters

Note: The title of the Browse Parameters panel and the **Data Set Name** prompt may vary depending on which Optim components are currently installed at your site.

Panel

This panel includes:

Data Set Name

Specify the name of a valid Extract or Control File data set by typing the full name or using SQL LIKE syntax to select from a list. A sample of the selection list displayed for Extract or Control File data set names is provided in Figure 60 on page 83. (Note that you can also browse Archive Files.) A name that is not enclosed in single quotes is prefixed with the default **Dataset Prefix** value, specified on the User Options panel.

If both an Extract File and a Control File are present for a process, you may browse either to review the data. If, however, you want to review row status or selectively display rows according to row status, you must specify the Control File. Only the Control File contains information about row status. (See "Row Status" on page 198 for a list of possible row status values.)

Browse Mode

Type of browse. Specify:

T Browse contents of Extract File dynamically, by selecting and displaying related data.

R Browse contents of Extract or Control File in static, report format.

S Browse a summarized listing showing only the names of tables in the Extract File and the row counts for each table (i.e., data rows are omitted).

A Browse the Access Definition used to create the Extract File.

Note: When you supply a Control File DSN, **Browse Mode** is ignored and the browse is processed automatically in Report Mode (i.e., all data rows are included).

If Table Mode, specify

Table Name

Specify the name of the first table in the Extract File to be browsed. You must include the Creator ID with the table name if different from the default Creator ID. Leave **Table Name** blank to begin browsing with the Start Table or use SQL LIKE syntax to obtain a selection list of tables in the Extract File. A value in **Table Name** is ignored if **Browse Mode** is R, S, or A.

Use the LIST TABLES command to obtain a selection list of tables in the Extract File. If you use LIST TABLES when **Browse Mode** is R, S, or A, the selected table name is placed in the **Table Name** setting for **If Other than Table Mode, specify**.

Begin with

Indicates the use of criteria in the initial data display. This value is ignored if **Browse Mode** is R, S, or A.

D Display all data in the table referenced in **Table Name**. Do not use criteria to select data for initial browsing. D is the default setting.

S (For Archive Files only.) Display a panel to specify selection criteria for browsed data.

Q (For Archive Files only.) Display a panel to specify an SQL WHERE Clause for browsed data.

If Begin with S or Q (Archive Files only)

Case Sensitive

(For Archive Files only.) When selection criteria or SQL WHERE clause is specified to browse data, indicates whether search is case sensitive.

If Other than Table Mode, specify

Table Name

Specify the name of a table to browse. Leave **Table Name** blank to browse data from all tables in the Extract File. If **Browse Mode** is R, the report displays results only for the table name specified. This value is ignored if **Browse Mode** is T, S, or A.

If output to Disk, specify

Output DSN

Specify the name of the data set for the report, if the data is to be saved. If the specified data set does not exist, you are prompted for allocation information. (See the *Common Elements Manual* for a description of the allocation prompts.) Leave blank to use a temporary data set. This value is ignored if **Browse Mode** is T, S, or A.

For Control File Only:

Show Row Status

Settings for the display of Row Status in a Control File. This value is ignored if you do not provide a Control File DSN. Specify:

Y Row status is included.

N Row status is not included.

X Include explanations of errors with the SQL error code and the constraint or column name, if any. For more information about the SQL errors documented in the Control File, see “SQL Error Codes” on page 199.

The row status shows the result of processing each row. For example, the status may show whether a row was discarded. For a list of Row Status values, see “Report Mode” on page 195.

Filter Data
Indicator for including all rows in the Extract File or only rows that have been discarded. This setting is ignored if you do not provide a Control File DSN. Specify:

E Only rows in error, the discarded rows, are included.

A All rows are included.

If Display Length Exceeds File Width
The action taken if the display length of the data exceeds the width of the file. This value is used only if the Report result will be output to a file and printed. Specify:

C Change file characteristics to accommodate the data. For example, if the line length of the file is 100 and the output result requires a value of 130, change the line length.

W Do not change the file characteristics. Wrap the data onto multiple lines.

Available Commands

The following commands are available on the Extract, Archive or Control File Browse Parameters panel.

- CANCEL
- END
- EXPAND
- LIST TABLES
- OPTIONS

Table Mode

Table Mode allows you to browse an Extract File online, using various techniques to focus on the data of interest. This section discusses the techniques for qualifying the data display.

Unless you indicate a different table name to begin a browse session, all rows in the extracted Start Table are displayed on the Browse panel. (Note that the layout and functions of this panel mirror those of the Access editor.)

```
------------------- Extract Browse: FOPDEMO.SAMPLE.EXTRACT --------------------
Command ===>                                                 Scroll ===> PAGE

Cmd F == Table: FOPDEMO.ORDERS(T1) ======================== 1 OF 19 === MORE>>
      ORDER_ID CUST_ID ORDER_DATE ORDER_TIME FREIGHT_CHARGES ORDER_SALESMAN
      -------- ------- ---------- ---------- --------------- --------------
*** ********************************** TOP ************************************
___        205   00192  1997-05-24  12.12.51       48.52          NE012
___        206   00093  1997-05-24  12.12.51       48.52          SW012
___        207   00067  1997-05-24  12.12.51       48.52          WE012
___        208   03189  1997-05-24  12.12.51       48.52          NW012
___        209   00143  1997-05-24  12.12.51       48.52          SW012
___        210   00239  1997-05-24  12.12.51       48.52          NW012
___        211   00284  1997-05-24  12.12.51       48.52          SC012
___        212   00327  1997-05-24  12.12.51       48.52          SC012
___        213   00371  1997-05-24  12.12.51       48.52          NE012
___        214   00415  1997-05-24  12.12.51       48.52          NC012
___        215   02221  1997-05-24  12.12.51       48.52          SE012
___        216   00019  1997-05-24  12.12.51       48.52          SC012
___        217   00110  1997-05-24  12.12.51       48.52          SE012
___        288   00131  1997-05-24  12.12.51       48.52          SW012
___        333   01210  1997-05-24  12.12.51       48.52          SE012
___        417   00448  1997-05-24  12.12.51       48.52          SE012
___        727   00420  1997-05-24  12.12.51       48.52          NE012
___
```

Figure 114. Browse – Initial Display of Data

See the *Common Elements Manual* for a description of the screen elements on the Browse panel, the join facility, techniques for managing the browse display, and creating a report about the contents of the display. Information about the commands available on the **Browse** panel is provided in the *Common Elements Manual*, as well as the *Command Reference Manual*.

Qualify the Data Display

You can focus the display of data on the Browse panel in several ways. At the most basic level, you qualify the display of data when specifying the Extract File for browsing on the **Extract, Archive or Control File Browse Parameters** panel. Unless you specify a different table in **Table Name**, a Table Mode browse of an Extract File begins with a display of all data rows from the Start Table.

Note: When browsing an Archive File only, you can further narrow the scope of the data displayed on the **Browse** panel by defining selection criteria or an SQL WHERE clause. (For information about using selection or SQL criteria when browsing an Archive File, see the *Archive User Manual*.)

Report Mode

Report Mode allows you to create a permanent or temporary data set of the contents of an Extract or Control File. You can browse this data set online or print it. The report is sequential, and includes all data from all tables in the file or all data from a single table.

Move organizes data in the report by table, which can be useful when reviewing the contents of a file. Normal ISPF scrolling techniques are used to browse the report.

The contents of the Extract File or Control File can be printed. For additional information, see the *Batch Utilities Guide*.

Specify Contents of Report

To generate a report, you must provide the name of a valid Extract or Control File on the Extract, Archive or Control File Browse Parameters panel and indicate R as the **Browse Mode**, as shown in the following figure.

```
------------- Extract, Archive or Control File Browse Parameters --------------
Command ===>                                                 SCROLL ===> PAGE

Provide Extract, Archive or Control File Data Set Name:
  DSN              ===> 'FOPDEMO.SAMPLE.CONTROL'

Browse Mode        ===> R                          (T-Table, R-Report
                                                    S-Summary, A-Access Def)
If Table Mode, specify
  Table Name       ===>                         >> (Blank for Start Table)
  Begin with       ===>                            (D-Data, S-Sel Crit,Q-SQL)
If begin with S or Q
  Case Sensitive   ===>                            (Y-Yes, N-No  If NO, any
                                                    dense indexes are skipped)
If Other than Table Mode, specify
  Table Name       ===>                         >> (Blank for all tables)
  If output to Disk, specify                       (Blank for temp. dataset)
    Output DSN     ===>

For Control File Only:
  Show Row Status  ===> Y                          (Y-Yes, N-No, X-Explain)
  Filter Data      ===> A                          (E-Error Rows Only, A-All)

If Display Length Exceeds File Width ===> C        (C-Change File, W-Wrap Data)
```

Figure 115. Browse Parameters for Report Mode

Note: The title of the Browse Parameters panel and the **Data Set Name** prompt may vary depending on which Optim components are currently installed at your site.

If you want to view the contents of a single table in the file, provide the name of the table in **Table Name** under **If Other than Table Mode, specify**. Leave **Table Name** blank to view the contents of all tables in the file. You must also provide the name of a data set in **Output DSN**, if saving the generated report to disk. If you leave **Output DSN** blank, Move creates a temporary data set that is discarded when you exit the Browse facility.

Control Files

Browsing a Control File is helpful to review the status of an Insert, Load, or Convert Process.

Assume that you have specified a Control File named FOPDEMO.SAMPLE.CONTROL and that all rows and their status are to be included in the display. The following figure shows the formatted contents of the Control File.

```
 BROWSE    SYS00300.T104310.RA000.FOPKDS.R0130827    Line 00000000 Col 001 080
 Command ===> _____________________________________________ Scroll ===> PAGE

******************************** Top of Data ********************************

              Optim - Extract/Control File Print Report

Extract File     : FOPDEMO.SAMPLE.EXTRACT
File Created By  : Job FOPDEMO using SQLID FOPDEMO
File Created On  : October 26 2000 at 10:35 AM from DB2 Subsystem DSNC
Report Printed On: October 26 2000 at 10:43 AM from DB2 SubSystem DSNC

Control File     : FOPDEMO.SAMPLE.CONTROL
Processing Status: Update/Insert Process Complete
Processed by     : Job FOPDEMO using SQLID FOPDEMO
Processed on     : October 26 2000 at 10:36 AM to DB2 Subsystem DSNC


Number of Tables in the Extract File: 4
Number of Tables Processed in Report: 4


Table: FOPDEMO.CUSTOMERS
```

Figure 116. Browse Control File - Statistics

Panel

This panel includes the following information:

Extract File
Name of the Extract File.

File Created By
Job name and SQL ID used to create the file.

File Created On
Date, time, and system on which the file was created.

Report Printed On
Date, time, and system on which the report was printed.

Control File
Name of the Control File for which the report is created.

Processing Status
Status of the process (e.g., Insert, Load, or Convert Process).

Processed by
Job name and SQL ID used to process the file.

Processed on
Date, time, and system on which the report was processed.

Number of Tables in the Extract File
Number of tables in the Extract File.

Number of Tables Processed in Report
Number of tables processed in the report.

Table Statistics
Fully qualified table name.

Data Headings
DB2 column names used as headings for the rows from each table.

Status Row
Indicator of the result of processing each row.

Bottom of Data
Indicator for the last row in the report.

Row Status

To view the rows from each table in the Control File, scroll the display. The following figure displays several rows from the CUSTOMERS table using a complex Access Definition and Extract Process. The **Status** of each row is listed on the panel. (**Status** is provided only when browsing a Control File.)

```
 BROWSE    SYS94031.T141746.RA000.COHEND.R0000049    Line 00000019 Col 001 080
 Command ===> _____________________________________________ Scroll ===> PAGE

Status      CUST_ID CUSTNAME             ADDRESS
----------- ------- -------------------- -------------------------------------
OK:     1     07006 Excalibur Video      35 Seminary Ave
OK:     1     07260 Five Star Videos     123 Howe Lane
OK:     1     07235 Jack's               Grafton Plaza
POSTPONED     07440 Monarch Movies       280 Chestnut Street
OK:     1     07201 Movie Buff           400 Merrimac Road
OK:     1     07101 Movie Mania          572 Front Street
OK:     1     07126 Movie Rentals        101 Munson Drive
OK:     1     07118 Movie Store          752 State Road
OK:     1     07203 Movies-R-Us          1772 Bridge St
OK:     1     07191 Popcorn              15 Crystal Park
OK:     2     07156 Prime Tyme           982 Upper State Street
OK:     3     07140 ProMusic             84 Second Ave
UNPROCESSED   07160 Reely Great Videos   590 Frontage Road
UNPROCESSED   07053 Replay Video         9032 Dickerson Street
UNPROCESSED   07150 Rick's Flicks        823 Chestnut Street
UNPROCESSED   07140 Showcase             1150 Indiana Terrace
UNPROCESSED   07141 Showcase II          57 Rock Hollow Drive
```

Figure 117. Browse Control File - Status of Each Row

The following are the possible values for row status:

OK: nnnnn
The row was successfully processed. The number represents the Logical Unit of Work in which it was processed. (A Logical Unit of Work ends with each commit.)

UNPROCESSED
The row has not been processed. This occurs when a process has not been performed yet, the process was aborted before handling this row, or the row was not part of the process.

DB2: -nnn
The row could not be processed because of a DB2 error. The number represents the DB2 SQLCODE. (For a list of SQL codes that are accompanied with an explanation, if requested, see "SQL Error Codes" on page 199.)

RI ERROR
The row could not be processed because of a violation of RI rules defined to DB2. This status is provided after retrying a row in a cycle and the row is not successfully inserted when the process completes. (Note that when a cycle is not involved, a DB2 diagnostic is displayed in the format DB2: -nnn.)

POSTPONED
The row could not be processed because of a violation of RI rules, but may be successfully processed later in the cycle.

However, the process was terminated before this row could be reprocessed. This status is also set for rows that failed because of DB2 errors that are being retried.

CONV ERROR
The row was discarded because one or more columns could not be properly converted from the Extract File format to the database format. This can occur when the Extract File column contains NULL and the DB2 column is defined as NOT NULL or when the Extract File column value and the DB2 column data types are not compatible. This row cannot be restarted or retried. (For details on data type compatibility, see the *Common Elements Manual*.)

DUP PK
The row was discarded because of duplicate primary key values in the Extract File. If the destination table is defined to DB2 with a unique primary key but the Extract File contains multiple source rows with the same key value, only the first row in the Extract File is applied; the remaining rows are discarded and given the DUP PK status. A duplicate row cannot be restarted or retried. This condition can occur only with update processing.

EXIT ERROR
The row was discarded by a user column exit. This row cannot be restarted or retried.

SQL Error Codes

Rows with certain SQL error codes are treated as row errors. When you specify X for **Show Row Status,** pertinent error messages are included. The following are the SQL error codes and the accompanying messages.

-161 THE RESULTING ROW DOES NOT SATISFY THE VIEW DEFINITION

-404 STRING IS TOO LONG FOR DESTINATION COLUMN *name*

-407 DESTINATION COLUMN *name* CANNOT HAVE NULL VALUE

-530 INSERT OR UPDATE OF FOREIGN KEY *name* IS INVALID

-531 PRIMARY KEY HAS DEPENDENT ROW IN RELATIONSHIP *name*

-532 RELATIONSHIP *name* RESTRICTS THE DELETION OF A ROW

-545 CHECK CONSTRAINT *name* HAS BEEN VIOLATED

-551 USER DOES NOT HAVE PRIVILEGE TO PERFORM THE OPERATION

-552 USER DOES NOT HAVE PRIVILEGE TO PERFORM THE OPERATION

-629 FOREIGN KEY *name* CANNOT CONTAIN NULL VALUES

-652 VIOLATION OF INSTALLATION DEFINED PROCEDURE *name*

-681 COLUMN *name* IN VIOLATION OF FIELD PROCEDURE

-803 INDEX IN INDEXSPACE *name* DOES NOT ALLOW DUPLICATE VALUES

About Conversion Errors

When a conversion error occurs, the column containing the error is displayed and an arrow, >, is placed next to the data in error. The arrow highlights the location of the error and can be used on the FIND command to locate these errors.

Extract Files

Browsing an Extract File in Report Mode is helpful to review the contents of the file. You can include all data from all tables in the file, or all data from a single table. Data is formatted as follows. (Rows have been omitted from the table data to show the beginning and end of the display for a table.)

```
 BROWSE    SYS00300.T104310.RA000.FOPKDS.R0130827    Line 00000000 Col 001 080
 Command ===> _____________________________________________ Scroll ===> PAGE

******************************** Top of Data ********************************

                 Optim - Extract File Print Report

Extract File     : FOPDEMO.SAMPLE.EXTRACT
File Created By  : Job FOPDEMO using SQLID FOPDEMO
File Created On  : September 21 2006 at 10:35 AM from DB2 Subsystem DSNC
Report Printed On: October 26 2006 at 10:43 AM from DB2 SubSystem DSNC

Number of Tables in the Extract File: 4
Number of Tables Processed in Report: 4


Table: FOPDEMO.CUSTOMERS

CUST_ID CUSTNAME             ADDRESS
------- -------------------- --------------------------------------------------
00266   Talkies              3315 U.S. Highway 1
...
...
00373   The Movie Buff       34 Plains Road
--------------------------------------------------------------------------------
Display of Table FOPDEMO.CUSTOMERS Complete -- 704 Rows were Printed
```

Figure 118. Browse Extract File - Report Mode

Panel

This panel includes the following information:

Extract File
Name of the Extract File.

File Created By
Job name and SQL ID used to create the file.

File Created On
Date, time, and system on which the file was created.

Report Printed On
Date, time, and system on which the report was printed.

Number of Tables in the Extract File
Number of tables in the Extract File.

Number of Tables Processed in Report
Number of tables processed in the report.

Table Statistics
Fully qualified table name.

Data Headings
DB2 column names used as headings for the rows from each table.

Status Row
Indicator of the result of processing each row.

Bottom of Data
Indicator for the last row in the report.

Summary Mode

Use Summary Mode to review general information about the contents of an Extract File. Provide the name of a valid Extract File on the Extract, Archive or Control File Browse Parameters panel and indicate S as the **Browse Mode**.

The Summary Report is displayed as follows:

```
 BROWSE    SYS01129.T131847.RA000.FOPDEMO.R0104653   Line 00000000 Col 001 080
 Command ===> _____________________________________________ Scroll ===> PAGE

******************************** Top of Data ********************************

                 Optim - Extract File Print Report

Extract File     : FOPDEMO.EXTRACT.FILE
File Created By  : Job FOPDEMO using SQLID FOPDEMO
File Created On  : September 21, 2006 at 01:02 PM from DB2 Subsystem DSNA
Report Printed On: October 4, 2006 at 01:18 PM from DB2 SubSystem DSNA

                                                 Space Required
 Nbr   Table Name                  Row Count     Tracks or Cylinders
----   -------------------------  ---------     ------    ---------
   1   FOPDEMO.CUSTOMERS                145          1            1
   2   FOPDEMO.DETAILS                   48          1            1
   3   FOPDEMO.ITEMS                     18          1            1
   4   FOPDEMO.ORDERS                     4          1            1
   5   FOPDEMO.SALES                      7          1            1
   6   FOPDEMO.SHIP_INSTR                39          1            1
   7   FOPDEMO.SHIP_TO                  108          1            1

Total counts:                           369          7            7

                            ****** End of Report ******
******************************** Bottom of Data ******************************
```

Figure 119. Summary Mode Display

Panel

This panel includes:

Extract File
Name of the Extract File.

File Created By
Job name and SQL ID used to create the file.

File Created On
Date, time, and system on which the file is created.

Report Printed On
Date, time, and system on which the report is printed.

Next, the names of the tables contained in the Extract File are listed with the number of rows extracted from each table. A total row count is included following the individual row counts.

Use END or CANCEL to return to the Extract, Archive or Control File Browse Parameters panel.

Access Definition Mode

Browsing in Access Definition Mode allows you to view the Access Definition used to create the Extract File if the AD is extracted with the data. To browse in Access Definition Mode, provide the Extract File DSN and indicate A as the **Browse Mode**. Before displaying the Access Definition, Move prompts you to indicate the column options to display.

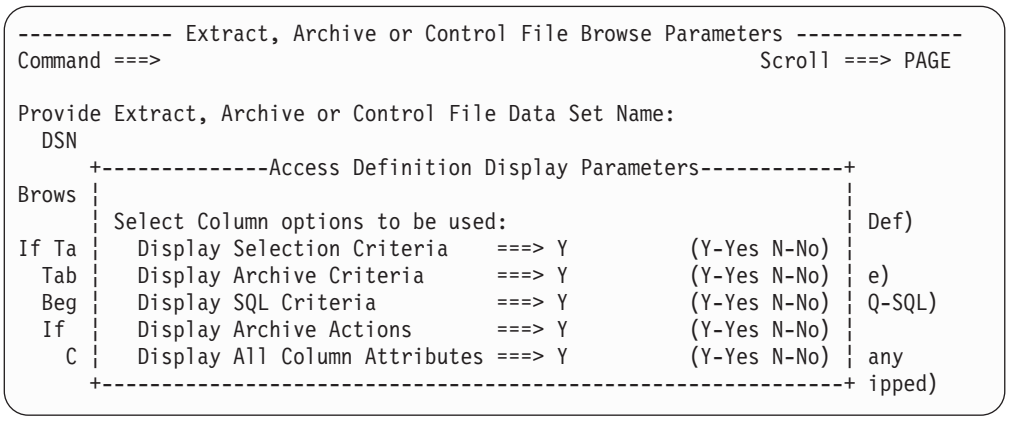


Figure 120. Browse Extract File - AD Display Parameters

Select Column options to be used:

Display Selection Criteria

Yes Display any selection criteria.

No Do not display selection criteria.

Display Archive Criteria

Yes Display archive criteria.

No Do not display archive criteria.

Display SQL Criteria

Yes Display any SQL statements.

No Do not display SQL statements.

Display Archive Actions

Yes Display any Archive Actions.

No Do not display Archive Actions.

Display All Column Attributes

Yes Display all column attributes.

No Do not display column attributes.

The following is an example of an Access Definition report when all column options are selected. (The display has been modified slightly for inclusion.)

```
 BROWSE   SYS00304.T095607.RA000.FOPKDS.R0132973    Line 00000000 Col 001 080
 Command ===> _____________________________________________ Scroll ===> PAGE

******************************** Top of Data ********************************

                 Optim - Extract File Print Report

Extract File     : FOPDEMO.SAMPLE.EXTRACT
File Created By  : Job FOPDEMO using SQLID FOPDEMO
File Created On  : September 21, 2006 at 09:56 AM from DB2 Subsystem DSNC
Report Printed On: October 30, 2006 at 09:59 AM from DB2 SubSystem DSNC

ACCESS DEFINITION : FOPDEMO.SAMPLE.EXTRACT

Security Status   : PUBLIC
Default Creator ID: FOPDEMO
Start Table       : CUSTOMERS

ACCESS DEFINITION PARAMETERS

  Dynamically Add New Tables     : Yes
  Modify Selection/Sort Criteria : Yes
  Begin Table Display With       : Data
  Changes to AD During Edit      : Permanent
  Use NEW Relationships          : Yes
  Apply Crit in Self Reference   : Yes
  Expiration Value               : None


SUBSTITUTION VARIABLES FOR THIS ACCESS DEFINITION

Variable     Prompt                              Value
------------ ----------------------------------- ------------------------------
:STATE_VAR   ENTER A VALUE FOR STATE             'NM'


TABLES/VIEWS IN THIS ACCESS DEFINITON
                                                    --Extract Parms--         Ac
(CreatorID).Table/View Name   Status        Ref DAA EveryNth RowLimit Type    Ri
--------------------------- --------------- --- --- -------- -------- ------  --
CUSTOMERS                   SEL/SQL          N   N                   TABLE   DE
....

RELATIONSHIPS
               Child
  Status Q1 Q2 Limit  Parent Table                Child Table                Na
  ------ -- -- ----- --------------------------- -------------------------- ---
  SELECT Y  N        FOPDEMO.CUSTOMERS           FOPDEMO.ORDERS             RCO
  ......

TABLE NAME: FOPDEMO.CUSTOMERS

  List of Columns With Selection Criteria

  Column Name                   Data Type       Selection Criteria
  ----------------------------- --------------- ------------------------------
  STATE                         CHAR(2)         = :STATE_VAR
```

Figure 121. AD Extract File Report

Panel

The Access Definition report includes the following information:

Extract File
Name of the Extract File.

File Created By
Job name and SQL ID used to create the file.

File Created On
Date, time, and system on which the file was created.

Report Printed On
Date, time, and system on which the report was printed.

Access Definition
Name of the Access Definition used to create the Extract File.

Description
A description of the Access Definition.

Modified By
ID of the last user to modify the Access Definition.

Last Modified
Date the last modification was made.

Security Status
The security status (i.e., PUBLIC, PRIVATE, or READ ONLY) of the Access Definition.

Default Creator ID
ID of the Access Definition creator.

Start Table
Start Table used in the Access Definition.

Access Definition Parameters

Dynamically Add New Tables
Indicates whether the user can add new tables that are not included in the Access Definition and can be accessed via a JOIN command.

Modify Selection/ Sort Criteria
Indicates whether selection and sort criteria can be specified or modified when browsing data while defining an Access Definition.

Begin Table Display With
Indicates the beginning display type if an Access Definition is used to browse data from the Access Definition panels.

Changes to AD During Edit
Indicates whether changes to an Access Definition during the edit or browse session apply to the current session only or are saved for future use.

Use NEW Relationships
Indicates whether relationships that are NEW and have not been specifically selected or unselected are traversed by the Extract Process.

Apply Crit in Self Reference
Indicates whether selection criteria is applied when a table is self-referenced. This setting applies only when browsing or editing data, using ACCESS.

Expiration Value
Number of days until expiration or the expiration date of the Archive File. (For Archive Files only.)

Use END or CANCEL to return to the Extract, Archive or Control File Browse Parameters panel.

Available Commands

Several primary commands are available to navigate the display.

- CANCEL
- DOWN
- END
- FIND
- LEFT
- RIGHT
- RFIND
- UP

Appendix A. Skipped Columns

Frequently, values that are not valid dates are inserted into date columns to indicate special handling or conditions. Rather than treat these non-date values as invalid or as errors, Move “skips” them.

That is, when a column contains such a value, the column is bypassed. Since there is no error, processing continues with the next date column. The user can indicate whether skipped values are noted in the Aging Report and if rows with skipped dates are written to the output file.

To determine whether a column should be skipped, Move evaluates the column value.

- If the column contains all spaces, hex zeros (low-values) or hex “FF” (high-values), it is skipped.
- If the column does not contain only those values, Move parses the column based on the specified date format or user exit, if specified, and then examines the values for each unit of the format. Based on site-specific definitions, the value may be skipped. Typical skipped dates include 0000/00/00 and 99992/31. Check with site management for a list of skipped values.

Appendix B. Date Formats

Date formats specify the format of a date column. These are encoded internally as a list of possible data types in a single format table. New formats can be added easily to the table without requiring coding for each individual format.

Each format is specified by its name. You specify these formats on the Aging Specifications panel available from the Column Map editor. On this panel, you can display a selection list of values appropriate for the specific column data type by entering an asterisk in **Input Date Format** and **Output Date Format**.

The name will actually be qualified by the data type of the column. This means Move supports a date format of MMDDYY as a character column and also as a decimal column even though these are processed differently.

Date Components

The formats distributed with Move are formatted with the following characters to represent the date component.

CC Two-digit century.

YY Two-digit year without century.

YYY Three-digit year relative to 1900.

YYYY *or*
CCYY Four-digit year.

MM Two-digit month.

MMM Three-character abbreviation for month, such as Jan or JAN.

DD Two-digit day.

DDD Three-digit Julian day.

DDDDDD
Lilian date (number of days since Oct.14, 1582).

/ Slash in date.

- Dash in date.

***** Any delimiter in date.

U Unsigned decimal. The “U” precedes the format.

Examples

Move supports a wide variety of internal date storage schemes. For instance, a YYMMDD date column may be stored in a variety of ways:

- 6-byte character column
- 3-byte packed unsigned column
- 4-byte packed-decimal column
- 4-byte packed-decimal column with high-order bits indicating century

Character formats, numeric formats, as either packed decimal or binary columns, are allowed for any format without delimiters.

The following are examples of date formats.

- MMDDYY
- YYMMDD
- DDMMYY
- YYDDD
- MM*DD*YY
- YY*MM*DD
- DD*MM*YY
- YYDDD
- YY*DDD
- YYMM
- YY*MM
- DDMMMCCYY
- MMM*DD*CCYY
- CCYYMMDD
- CCYY*MM*DD

Appendix C. SQL Grammar for Legacy Tables

When you use selection criteria or SQL statements to find specific data in a file described by a Legacy Table, the syntax and grammar may differ slightly from SQL syntax and grammar you are accustomed to using with DB2.

The following rules apply to SQL statements used internally by Optim Legacy:

- No DISTINCT after SELECT
- No arithmetic expressions (only columns (eventually qualified), literals or parameters)
- No functions
- No subselect in WHERE clause
- Only one table in the FROM clause
- No ORDER BY
- No GROUP BY
- No END keyword or operator (e.g. semicolon) required

Any level of complexity, using parentheses and boolean operators, can be expressed in a WHERE clause. All comparison operators are supported, as are BETWEEN, IS NULL, IN, and LIKE operators, with their NOT form.

SELECT... **FROM** *creatorid.tablename* **WHERE**:

WHERE

Create a WHERE clause in the lines provided after the Select statement, using LIST COL and LIST VAR commands to complete the statement. You can type directly into the panel, and select column names and operators from the lists. Selected column names and operators are inserted in the text box at the cursor position.

Dates must be expressed as string literals using all or part of the format:
'YYYY_MM_DD_HH_MM_SS_FFF[FFF]'
where the separators can be underscore (_), dash (-),
colon (:), front slash (/), period (.), or blank space.

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Index

Special characters

A

B

C

D

E

F

G

I

J

L

M

N

O

P

Q

R

S

T

U

V

W

Z

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