IBM InfoSphere Optim for z/OS
Version 11 Release 3

Archive User Manual

IBM

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Contents

About this publication

This document explains how to use Archive for data retention, application retirement, and data growth management. Use Archive to extract sets of relational data, delete them from your database, and search, browse, and restore all or part of the archived data.

Chapter 1. Introduction

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

Overview

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 explains how to use Archive for data retention, application retirement, and data growth 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 *Move User Manual*, the *Access User Manual*, and the *Compare User Manual*.

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 *Move User Manual*, the *Access User Manual*, and the *Compare 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

Archive facilitates data retention, application retirement, and data growth management.

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

After creating an Archive File,Archive selectively removes data from the production database according to your instructions, maximizing database performance and response time. An indexing feature allows you to quickly search Archive Files for needed information and, if necessary, restore all or a precisely selected, referentially intact, portion of the data.

The larger a database, the more time it takes to load, unload, search, reorganize, index, and optimize. Yet, databases often grow relentlessly, with concurrent deterioration in the performance of mission-critical

applications. Over time, information needed for sound decisions becomes more difficult to access. Response times increase while the level of service decreases.

Archiving data with Archive is a simple two-step process. You first create an Access Definition to specify the tables and relationships that define the set of referentially intact data to be archived. In the Access Definition, you also indicate any data to be deleted from the production database after archiving. In the second step, Archive copies the data described in the Access Definition to an Archive File on disk or tape, creates indexes used to find archived data, and deletes the selected data from the database.

The powerful, yet safe, delete feature resolves the problems of deleting production data. Using standard facilities for all operations, Archive quickly and accurately deletes all or a portion of the archived data. For example, you might want to archive data for customers that have been inactive for the past year. You can create an Archive File of all data pertaining to the inactive customers and delete only the order and payment history from the production database, leaving intact the master account information, such as name and address.

Search facilities allow you to browse Archive Files, specifying criteria to narrow the search. Search results are presented in an interactive display, allowing you to research archived data without having to restore it to your production system.

If archived data must be restored, Archive can reassemble data from hundreds of tables, identify the pertinent set of related rows, and restore them. The Archive Restore Process allows you to restore archived data to the production database or to a separate database and accommodates the restoration of archived data when the data model has changed. In addition, you can find or restore data using criteria that differ completely from that used to create the archive.

Archive addresses a critical operational need for organizations with large, complex databases. Old data can be archived in a precise, scientific manner and production databases optimized for peak performance. Archived data can be browsed or selectively restored as needed. With Archive, a company can maximize its investments in applications and operational platform and Archive Files can be stored on the most cost-effective medium, reducing disk expenses. At the same time, the level of IT service is maximized because production database searches and response times are minimized. Programmers and database administrators are not required to spend hours writing and debugging complex archive and one-time restoration programs.

Since Archive runs as a TSO/ISPF application, the Help and Tutorial facility in ISPF is also supported. Menu-driven prompt screens or panels are used to specify the data to archive, search, or restore. Intelligent screen handling technology provides simultaneous display of multiple tables, pop-up windows, context-sensitive online help, and tutorials.

Information Lifecycle Management

Archive enables you to respond to the growing need to ensure information privacy and preserve data for audit or legal purposes. Establishing policies to dispose of information at the end of its lifecycle is equally important. Use the Archive batch utility Subset process to meet these requirements. Features of the Subset process allow you to select rows from the original archive and create a file with a retention period that is different from the source archive file. When you create a subset file you can specify a Point-and-Shoot list, override variables used in the source archive file, change relationship properties and control whether a table is processed as a reference table. Additionally you can register the subset file in the archive directory, create an index for it, and add it to a collection. Refer to the *Batch Utilities Guide* for details.

Processing Flow

To archive a set of related data, you must define the source of the data and specify the destination, or Archive File.

If necessary, you may review or restore some, or all, data in the Archive File.

Archive Process

An Archive Process is the process of copying data from one or more related tables to an "Archive File."

An Archive File is a sequential file that contains the archived data and information about that data. The accompanying information defines the characteristics of the data and includes the object definitions for the archived data. (Object definitions allow you to re-create tables, keys, indexes, and so forth.) Once stored, data in an Archive File can be browsed or restored repeatedly. You can also generate reports from the archived data.

To perform an Archive Process, specify
- The names of the tables for archiving, selecting one table as the starting point or Start Table.
- The relationships among the selected tables that are used for the Archive Process. This step is optional. By default, all relationships are used.

You can qualify the rows that are archived by specifying selection criteria for any table or selecting specific rows in the Start Table.

Objects needed to recreate archived data are also stored in the Archive File. The archived objects include table and column definitions and any of the following subordinate objects, if present:
- Primary Keys
- Column Field Procedure Names
- Relationships
- Triggers
- Indexes
- User-Defined Types
- Views
- User-Defined Functions
- Aliases
- Stored Procedures
- Synonyms

Access Definition

Information that is used for the Archive Process—table names, relationships, and selection criteria—is recorded in an Access Definition. You can use Archive to create a temporary Access Definition for a single Archive Process, or a permanent, saved Access Definition for reuse. Permanent Access Definitions can be used with all Optim components. Access Definitions are described in detail in the *Common Elements Manual*.

Restore Process

Once an Archive File is created, the data contained in the file can be restored into database tables. These tables may or may not reside in the same DB2 subsystem.

Restore processing is executed based on the processing method (insert, update, or both) specified. The Restore Process inserts an archived row 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 an archived row, or does both. Archive also processes tables that do not have primary keys.

Table Maps in the Restore Process

Table Maps are used to match archived tables to the destination tables. Using Table Maps, individual tables can be excluded from restoration and tables with unlike names can be mapped. You can also specify table-level processing options, including the processing method (insert, update, or both) to use for the Restore.

You can use an existing Table Map (APPLY command), or define the Table Map while defining the other specifications for the process.

When the columns in the destination table match the columns in the archive table, Archive automatically inserts the data. When the columns do not match, Column Maps can be used. Table Maps are described in detail in the *Common Elements Manual*.

Column Maps in the Restore Process

Column Maps are used to match archive columns to destination columns that have different column names. These maps also enable users to specify defaults, expressions, and exit routines to populate destination columns. Although Archive automatically handles many transformations, exit routines can be used for more complex processing. Column Maps are described in detail in the *Common Elements Manual*.

Create Objects in the Restore Process

If destination tables do not exist, Archive generates the appropriate SQL DDL statements to create the tables, as part of the Restore Process. The created tables are identical to the archive tables, with the destination columns taking on the attributes of the corresponding archive columns.

You can also create objects, such as primary keys, relationships, and indexes, that have been archived with the data.

Other Processes

Several other processes or facilities are provided in addition to Archive and Restore.

Load Process

The Archive File can be transformed to DB2 Load format to take advantage of the DB2 Load Utility to restore large volumes of data. (This option can be modified to use BMC LOADPLUS.)

Create Process

Objects in an Archive File can be used to create tables, primary keys, relationships, indexes, views, aliases, synonyms, column field procedure names, triggers, user-defined types and functions, and stored procedures without restoring the archived data.

Convert Process

The data in the Archive File can be transformed according to parameters in the Table Map and Column Maps and saved as modified. Convert is useful for masking sensitive data after archiving and is described in the *Common Elements Manual*.

List Archive Files

Archive lists, online or in batch, Directory entries for Archive Files, according to descriptive criteria you supply. Using the list, you can search or browse Archive Files online or request a batch search of data archived on tape or disk. Batch searches use selection criteria specified online or created from earlier batch searches.

You can also use the list to restore archived data from selected Archive Files, delete Archive Files or Directory entries, or review Directory information for selected Archive Files.

Retry Process

Retry can be executed when one or more rows in the Archive File could not be restored. When a Restore Process cannot restore a specific row, that row is marked as discarded. The Retry Process attempts the previous operation for the discarded rows only. Retry is described in the *Common Elements Manual*.

Restart Process

Restart can be executed when a process does not complete successfully. A process may terminate due to resource restrictions, such as space allocation or time limitations. Restart continues the interrupted process from the last commit point. Archive tracks the last successfully committed row in the Archive File, and restarts the process with the next row in the file. Restart is described in the *Common Elements Manual*.

Browse

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

General Information

This section presents general information about Archive, including a description of the elements common to the Optim components, terminology used to describe Archive, and the sample database.

Note: For general information about naming conventions and screen format and handling, see 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 Optim components:
- Export/Import
- Retry/Restart
- Convert
- Browse

The various options that allow you to manage Optim are described in the *Common Elements Manual*.

Terminology

This section describes some common terms and their relationship to Archive usage.

These and other terms are described in the *Common Elements Manual*.

Access Definitions

With Archive, you can define and store a description of the set of data that is archived. This description is an Access Definition. An Access Definition incorporates a variety of specifications, including:
- The list of tables from which data is archived.
- The relationships used in the Archive Process and the direction of traversal.
- Indexes and date criteria for the archived data.
- 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 archived 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. (For example, you can change date criteria for a column in the Start Table to archive sets of related data for different periods of time.) Once saved, the same Access Definition can be used by Access to browse and edit data, by Compare to compare data, and by Move to extract data.

An Access Definition name consists 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 value for each person (user) in the group.

Archive Collection

An Archive Collection is a list of Archive Files that can be logically unioned as a single data source for Open Data Manager (ODM) access. For example, ODM uses an Archive Collection to provide access to data in multiple Archive Files, even if all files do not include a specific table or column or if the attributes of data in a column vary from file to file. When an ODM connection is made using a collection name, the Archive Files in the collection are unioned and presented to an ODM user as though a single Archive File is being accessed.

Archive File

An Archive File is a sequential file on disk or tape that contains the archived data and information about the data characteristics. Once an Archive File is created, data in it can be searched, browsed, and restored.

An Archive File provides safe, unmodified, storage of archived data. The Archive File can also be used by Move to insert data, or by Compare as a source file.

Column Maps

A Column Map is a set of specifications used by Archive to determine the archived data used to populate each destination column in the Restore Process.

The Column Map name consists of two parts: `mapid.mapname`.

The *mapid* is frequently used to group Column Maps by user or project.

Column Maps can also be used and created by Move 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.)

Object Definitions

Object definitions are the parameters required by DB2 to create an object. Archive stores this information in the Archive File in order to recreate tables and subordinate objects, if needed, when restoring data. The following objects are stored in the Archive File:

- 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

Primary Keys

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

Archive requires primary keys when:

- Archiving data from a table that has two or more parents. The primary key guarantees that the archived rows are unique.
- Restoring data. The primary key determines if an archived row is used to create a new row in the database or is used to update an existing row.
- Selecting rows from the Start Table during a Point-and-Shoot session.

Optim Directory

The Optim Directory contains information needed to access DB2 data. This information includes user-specified

- Access Definitions
- Column Maps
- Primary Keys
- Table Maps
- Relationships
- Archive Entries and Indexes

Access Definitions, Column Maps, Table Maps, Archive Entries, and Archive Indexes are unique to Optim, but primary keys and relationships are often available from the DB2 Catalog. Archive uses information in the DB2 Catalog whenever possible. However, if DB2 Catalog information is not available, you can use Archive facilities to specify and store the information in the Optim Directory.

Referential Integrity Rules

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

Relationships

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

In the DB2 Catalog, a relationship is defined by a primary key/foreign key pairing. The foreign key is the set of columns in a child table that describes the correspondence with the primary key columns in the parent table. For example, the foreign key CUST_ID in the ORDERS table is related to the primary key column CUST_ID in the CUSTOMERS table.

However, Optim relationships do not require primary key/foreign key pairing. You can define relationships in the Optim Directory that pair any compatible columns between two tables. You can also define Optim relationships using substring and concatenation functions for columns, as well as literal and constant values. Optim relationships are defined by and available to all components of Optim interchangeably. An Optim relationship cannot be defined for a Materialized Query Table.

Table Maps

A Table Map is a set of specifications used by Archive in a Restore Process to match tables in the Archive File to destination tables.

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

The *mapid* is frequently used to group Table Maps by user or project.

Table Maps can also be used and created by Move 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, Materialized Query Tables (MQTs), views, aliases, and synonyms. These objects are manipulated similarly. The differences in handling are noted where pertinent.

An MQT is a DB2 table that contains the results of a query against one or more tables. MQTs can be user-maintained and modifiable, or system-maintained and protected. You can create an MQT and reference it in Optim objects, with these exceptions:
- You cannot define Optim relationships for MQTs.
- A System-MQT can be used only in Optim processes that do not modify the data.

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 Optim without fear of disrupting your production database.

The sample database is used in the sample session in Section 2. Session Overview and in other examples in this manual. This database includes the following tables (names are prefixed with the Creator ID FOPDEMO).
- OPTIM_CUSTOMERS
- OPTIM_ORDERS
- OPTIM_DETAILS
- OPTIM_ACTIONS
- OPTIM_SALES
- OPTIM_FEMALE_RATES
- OPTIM_SHIP_INSTR
- OPTIM_ITEMS
- OPTIM_SHIP_TO
- 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 between them. The arrows indicate the flow from parent to child. Note that the OPTIM_ prefix for the table names is not shown in the chart.
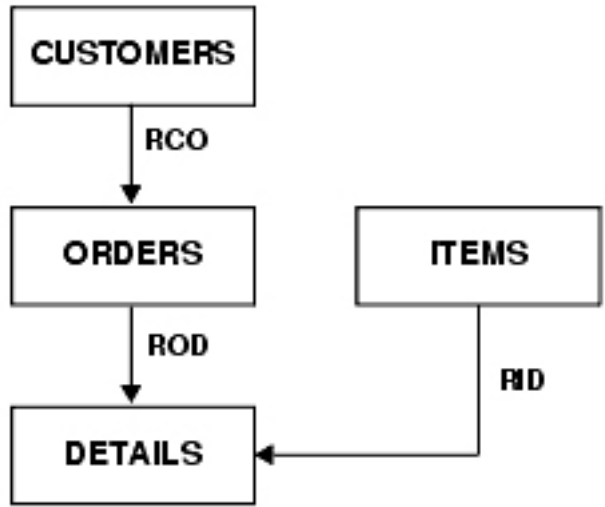
Note: If you use the Chapter 2, "Session Overview," on page 11 as a tutorial, note that relationships may have been added to the sample database at your facility during training or other activities.

Chapter 2. Session Overview

To highlight key facilities provided with Archive, the following overview presents a brief sample session.

In this sample session, you use the sample database described in "Sample Database" on page 9 to create a sequential Archive File of orders shipped before March 1, 1998. The Archive File is a representation of the tables shown in the diagram and includes the orders-related contextual information, such as customer name, address, and inventory information.

Note: The table names in the sample scenario are shown without the OPTIM_ prefix. To use the scenarios, prefix the table names with OPTIM_

There are two steps in the Archive Process:
1. Define the data to be archived, as well as the data to be deleted after archiving.
2. Perform the process to copy the data to an Archive File and delete the selected data from the database.

Successfully archiving the data is only half the solution. You must be able to use the archived data. In the sample session, you use the Archive List facility to search the Archive File for orders for a single inventory item, then browse the related data to obtain customer information, and create a printable report. Although you will not restore the related data to a database in this sample scenario, you can do so easily using the same criteria used to locate the data.

This sample session begins with the Main Menu and provides step-by-step instructions to perform the following tasks.
- Archive orders shipped before March 1, 1998.
- Delete the archived ORDERS rows and related DETAILS rows from the sample database, but retain CUSTOMERS and ITEMS.
- Search the archived DETAILS for a particular ITEM_ID.
- Browse to obtain the related CUSTOMERS data.
- Generate a report from the browsed data.

Main Menu

When you invoke Archive, the Main Menu is displayed.

The Main Menu display at your site may vary depending upon the Optim components that are installed. Options 1 through 4 are available only if Access is installed; Option 7 (MIGRATION) is available only if Move or Compare is installed; Option 8 (COMPARE) is available only if Compare is installed. If an option is not available, it is marked with an asterisk.

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

0  OPTIONS         - Site and User Options      SQLID  ===> FOPDEMO
1  BROWSE TABLE    - Browse a DB2 Table          SUBSYS ===> DSNA
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

Main Menu Options

To select an option, type the one-character identifier that corresponds to the function and press ENTER.

0   OPTIONS

Specify product 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 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 Optim primary keys, relationships, Access Definitions, Column Maps, Table Maps, Legacy Tables, IBM IMS™ Environment Definitions, IMS Retrieval Definitions, and Archive Collections, or to 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. You can use the COMPARE option to compare one set of tables with another. These processes are documented in the *Move User Manual* and 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. These processes are documented in this 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 Optim components and their releases. The status for each component is identified as "In Evaluation: n Days Left" or "Not Installed." Administrator privilege is required to enable or disable a component. This facility is documented in the *Customization Guide*.

Main Menu Prompts

The main menu contains prompts for values used by the DB2 subsystem.

Values in the prompts are profiled. The 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.

Archive Data

Archive uses an Access Definition to determine the data to archive.

You can create or edit an Access Definition in two ways:
- Before invoking the Archive Process, select Option 5 ADS or Option 6 DEFINITIONS from the Main Menu. The Access Definition is saved in the Optim Directory.
- During the Archive Process, you can save the Access Definition in the Optim Directory or use it in the current process only.

See the *Common Elements Manual* for more information on defining and editing Access Definitions.

To begin the Archive Process, select Option 9 ARCHIVE to display the Archive and Restore menu.

```
------------------------ Archive and Restore --------------------------------
OPTION  ===>


                                       SQLID  ===> FOPDEMO
                                       SUBSYS ===> DSNA
1  ARCHIVE    - Archive Data           LOCATION ===>
2  RESTORE    - Restore Data
3  DELETE     - Delete Archived Data from DB2 Tables
4  LIST       - List Archive Directory
5  IMPORT     - Import Archive File and Populate Directory
6  UPDATE     - Update Archive File Indexes
7  LOAD       - Create Load Files and Perform Load
8  SUBSET     - Create Subset of Existing Archive File
9  CREATE     - Create Tables and Related Object Definitions
A  CONVERT    - Convert Archive File using Table and Column Maps



R  RETRY/RESTART   - Retry/Restart Delete After Archive or Restore process
B  BROWSE          - Browse Content of Archive, Extract, or Control File
L  LOG             - Browse Archive Log
```

Figure 2. Archive and Restore Menu

To define the subset of related data for archiving and to perform the Archive Process, select Option 1 ARCHIVE. The ARCHIVE Process menu displays.

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

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

   B  BROWSE ARCHIVE FILE - Browse contents of Archive File

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

If Permanent, Specify New or Existing Access Definition Name
   GROUP ===> GRP
   USER  ===> FOPDEMO
   NAME  ===> ARCHIVE

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

Figure 3. ARCHIVE Process Menu

To create the Access Definition, you must:
- List the tables to archive.
- Specify criteria for data to be archived, if necessary. (If no criteria are specified, all data in the listed tables is archived.)
- Select the relationships between tables that Archive traverses in the Archive Process.

For this sample session, enter P at the **Type of Access Definition to Use for Archive** prompt to create a permanent Access Definition, saved in the Optim Directory. (A permanent Access Definition can be re-used in later Archive Processes. A temporary Access Definition is not saved. It is for the current process only.)

As the next step in this sample session, specify a unique three-part Access Definition name in **GROUP**, **USER**, and **NAME**. The three-part name for the Access Definition in this sample session is GRP.FOPDEMO.ARCHIVE, as shown in Figure 3 on page 14. (Values in these prompts are ignored if you specify T to create a temporary Access Definition. You are creating a new Access Definition in this sample session, but to edit and use an existing Access Definition, you must enter the name.)

Select Tables

To create the Access Definition, you must specify the names of the tables from which data is archived.

After entering "P" to create a permanent Access Definition, and the name, select Option 1 TABLES on the **ARCHIVE Process** menu to display the Select Tables/Views for AD panel.

```
-- Select Tables/Views for AD: GRP.FOPDEMO.ARCHIVE ---------------------------
Command ===> GET TABLES RELATED ALL                      Scroll ===> PAGE

 Primary : COL,SEL,SQL,REL,POINT,GET TABLES RELATED,INDENT,ARC,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,ARC,ACT,STA
                                                Table 1 of 1 <<MORE
Default Creator ID ===> FOPDEMO                                          >>
Start Table        ===> ORDERS                                          >>
Start Table Options   : None
                                            Ref        Archive
Cmd    Status      (CreatorID.)Table/View Name    Tbl   DAA  RowLimit  Type
--- ----------- ------------------------------->>  ---   ---  -------- -------
*** ****************************** TOP **********************************
___             ORDERS                                   N   _____   TABLE
*** ****************************** BOTTOM ******************************
```

Figure 4. Using the GET TABLES RELATED Command

Note: Archive automatically provides the SQLID specified on the Main Menu as the Default Creator ID. For this sample session, change the Default Creator ID to FOPDEMO in order to use the tables in the sample database, which are named with this Creator ID.

You can use any of several methods to provide the names of tables for archiving. One method is to type the table names onto the panel. In this sample session, a date in the ORDERS table determines the data that is archived. Thus, in Figure 4, ORDERS is specified as the Start Table or the table from which data is first archived. Type the table name, ORDERS, in **Start Table** and press ENTER to insert the name in the Table List. If desired, you can then insert lines in the Table List using the I line command and type additional table names directly into the list. Alternatively, you can use primary or line commands to complete the list.

GET TABLES RELATED Command

The GET TABLES RELATED command inserts the names of tables related to an indicated table. You indicate the table by using the name as an operand or by positioning the cursor on the line with the desired name before executing the command. If a single table is listed, that table name is the assumed operand for the GET TABLES RELATED command and need not be specified on the command line.

When you press ENTER, Archive checks the DB2 Catalog and the Optim Directory to determine the tables related to ORDERS and adds those names to the list. (In this example, CUSTOMERS and DETAILS are directly related to ORDERS.) Use the ALL operand with the GET TABLES RELATED commands to insert the names of tables directly related to the CUSTOMERS and DETAILS tables and the names of tables related to those tables, and so on.

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.

Type GET TABLES RELATED ALL on the command line, or use the GRA line command, and press ENTER to list all tables related to ORDERS. The list includes some tables that are not needed for archiving. Use the D line command to delete all table names except ORDERS, CUSTOMERS, DETAILS and ITEMS from the list. The final list of tables for this sample session is shown in the following figure.

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

 Primary : COL,SEL,SQL,REL,POINT,GET TABLES RELATED,INDENT,ARC,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,ARC,ACT,STA
                                                 Table 1 of 4 <<MORE
Default Creator ID ===> FOPDEMO                                            >>
Start Table        ===> ORDERS                                            >>
Start Table Options   : None
                                           Ref          Archive
Cmd   Status      (CreatorID.)Table/View Name   Tbl   DAA  RowLimit  Type
--- ----------- ------------------------------->>  ---   ---  -------- -------
*** ****************************** TOP **********************************
___            ORDERS                                 N           TABLE
___            CUSTOMERS                        N     N           TABLE
___            DETAILS                          N     N           TABLE
___            ITEMS                            N     N           TABLE
*** ****************************** BOTTOM *******************************
```

Figure 5. Related Tables Included

Additional Commands

You can also use the LIST TABLES and LIST TABLES RELATED commands to display a list of database tables. You can then select from the displayed list. Use the ACT command to define actions to be executed during an Archive or a Restore process at one or more predefined points. An action consists of a single SQL statement or call to a stored procedure.

See the *Common Elements Manual* for more information about the ACT command and Archive Actions.

Use standard ISPF facilities to scroll and edit the list of table names on the Select Tables/Views for AD panel. For example, you can use the UP and DOWN commands to scroll the display.

Specify Criteria

There are several types of criteria, of which you can use one or more to select the data in the listed tables for archiving.

- Use Archive criteria to select data according to age, as determined by one or more date columns, and to select columns to be indexed in the Optim Directory. Archive criteria are combined with any other criteria to define the set of data that is archived in an Archive Process.

    To define Archive criteria, display the **Specify Archive Criteria for AD** panel by using an ARC command.

- Use selection criteria to select data according to values in one or more columns. For example, you can use selection criteria to archive related rows that have an "Inactive" indicator in a column. As a second example, you can combine selection criteria with Archive criteria to establish categories of data, creating separate Archive Files by geographic area or product category to send to remote sites.

    To specify simple selection criteria, use an SEL command to display the Specify Selection Criteria for AD panel. For more complex criteria, use an SQL command to specify an SQL WHERE clause.

- Use the POINT command to invoke the Point-and-Shoot facility, allowing you to manually select Start Table rows. This feature is useful if the data lacks an appropriate date field or Active/Inactive indicator.

Archive Criteria

This introductory sample session archives all ORDERS rows with an ORDER_SHIP_DATE earlier than March 1, 1998, with the related rows in the CUSTOMERS, DETAILS and ITEMS tables. Since ORDER_SHIP_DATE is a date field, archive criteria provide the best way to select the desired orders. Use the ARC line command to display the Specify Archive Criteria for AD panel, which lists columns in the ORDERS table.

```
-- Specify Archive Criteria for AD: GRP.FOPDEMO.ARCHIVE ----------------------
Command ===>                                              Scroll ===> PAGE

Table Name: FOPDEMO.ORDERS                       Col 1 of 8     <<MORE
Combine All Column Criteria by ==> A   (A-AND, O-OR)

Cmd      Column Name      IDX           Criteria
---    ------------------ ---  -------------------------------------------------
***    **************************** TOP ********************************
___      ORDER_ID           N
___      CUST_ID            N
___      ORDER_DATE         N
___      ORDER_TIME         N
___      FREIGHT_CHARGES    N
___      ORDER_SALESMAN     N
___      ORDER_POSTED_DATE  N
___      ORDER_SHIP_DATE    N
***    **************************** BOTTOM ********************************
```

Figure 6. Specify Archive Criteria for AD

Date Criteria

To define the needed date criteria, type the DC (for "Date Criteria") line command in **Cmd** for the ORDER_SHIP_DATE column and press ENTER. Archive displays the Define Date Criteria pop-up window:

```
-- Specify Archive Criteria for AD: GRP.FOPDEMO.ARCHIVE ----------------------
Command ===>                                              Scroll ===> PAGE

Table Nam                                             8     <<MORE
Combine A +----------------Define Date Criteria----------------+
          |                                                    |
Cmd    C  | Column Name     : ORDER_SHIP_DATE                  |
---   ----| Date Format    ===> YY/MM/DD                       | -----------
***   ****| Pivot Year     ===> 55           (00 to 99)        | ***********
___    ORDE|                                                    |
___    CUST|        Archive Data With Dates Earlier Than        |
___    ORDE|                                                    |
___    ORDE| Specific Date ===> 1998-03-01      YYYY-MM-DD     |
___    FREI|        Or                                          |
___    ORDE| Years        ===>               (up to +1581)    |
___    ORDE| Months       ===>               (up to +30000)   |
DC    ORDE| Weeks        ===>               (up to +30000)   |
***   ****| Days         ===>               (up to +99999)   | ***********
          +----------------------------------------------------+
```

Figure 7. Define Date Criteria

Date Format and Pivot Year

Archive needs certain information in order to interpret a date. If the datatype for a column is DB2DATE or TIMESTAMP, this information is provided by DB2. For other datatypes, however, you must provide the **Date Format** and **Pivot Year**. The datatype for ORDER_SHIP_DATE is CHAR. Enter the following information:

- "YY/MM/DD" (the format for dates in ORDER_SHIP_DATE) in **Date Format**.
- "55" as the **Pivot Year** (i.e., the year Archive uses to interpret a two-digit year as occurring in the 20th century (before 2000) or the 21st century (2000 or later). If the year is greater than or equal to the pivot year value, a date before 2000 is assumed.

Date

In addition to information needed to interpret the date, Archive must have date criteria to determine the data to be archived. Typically, you would specify an interval in units of years, months, weeks and days. Archive subtracts the interval from the current date to determine the cutoff date and archives data with a date older than the calculated date. Specifying an interval allows you to use the Access Definition without modification in successive Archive Processes. For this sample session, however, type "1998-03-01" in **Specific Date**.

Use END to return to the Specify Archive Criteria panel. The designation DATE_CRITERIA and the specified criteria are displayed in **Criteria** for the ORDER_SHIP_DATE column.

```
-- Specify Archive Criteria for AD: GRP.FOPDEMO.ARCHIVE -----------------------
Command ===>                                              Scroll ===> PAGE

Table Name: FOPDEMO.ORDERS                          Col 1 of 8     <<MORE
Combine All Column Criteria by ==> A    (A-AND, O-OR)

Cmd      Column Name     IDX             Criteria
---   ------------------ ---  -------------------------------------------------
***   ***************************** TOP **********************************
___      ORDER_ID          N
___      CUST_ID           N
___      ORDER_DATE        N
___      ORDER_TIME        N
___      FREIGHT_CHARGES   N
___      ORDER_SALESMAN    N
___      ORDER_POSTED_DATE N
___      ORDER_SHIP_DATE   N   DATE CRITERIA : 1998-03-01
***   **************************** BOTTOM ********************************
```

Figure 8. Specify Archive Criteria

Index Columns

You can direct Archive to create an index for columns in archived tables. Two types of index entries are stored in the Optim Directory. A sparse index takes up less space than a dense index and may be useful in determining candidate Archive Files to search or browse. A dense index allows you to locate Archive Files that have a specific value in an indexed column. Use the Specify Archive Criteria panel to designate columns for indexing, as well as to specify date criteria.

As the next step in this sample session, you select columns in the DETAILS table for indexing. Use END to return to the Select Tables/Views panel and use the ARC line command to display the Specify Archive Criteria for AD panel for the DETAILS table.

```
-- Specify Archive Criteria for AD: GRP.FOPDEMO.ARCHIVE ----------------------
Command ===>                                              Scroll ===> PAGE

Table Name: FOPDEMO.DETAILS                              Col 1 of 4    <<MORE
Combine All Column Criteria by ==> A   (A-AND, O-OR)

Cmd     Column Name     IDX             Criteria
---    ------------------ ---  --------------------------------------------------
***    ****************************** TOP ********************************
___    ORDER_ID            N
___    ITEM_ID             N
___    ITEM_QUANTITY       N
___    DETAIL_UNIT_PRICE   N
***    ***************************** BOTTOM ********************************
```

Figure 9. Index FOPDEMO.DETAILS

The IDX command allows you to set all **IDX** values to S (to create a sparse index), D (to create a dense index) or N (no index) for the listed columns. For this sample session, however, type D in **IDX** for ORDER_ID and ITEM_ID to select these columns in the ORDERS table for indexing.

```
-- Specify Archive Criteria for AD: GRP.FOPDEMO.ARCHIVE ----------------------
Command ===>                                              Scroll ===> PAGE

Table Name: FOPDEMO.DETAILS                              Col 1 of 4    <<MORE
Combine All Column Criteria by ==> A   (A-AND, O-OR)

Cmd     Column Name     IDX             Criteria
---    ------------------ ---  --------------------------------------------------
***    ****************************** TOP ********************************
___    ORDER_ID            D
___    ITEM_ID             D
___    ITEM_QUANTITY       N
___    DETAIL_UNIT_PRICE   N
***    ***************************** BOTTOM ********************************
```

Figure 10. Index Columns

Use END to return to the Select Tables/Views panel, where the ARC status indicates that date criteria, indexing, or both are specified for the ORDERS and DETAILS tables.

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

 Primary : COL,SEL,SQL,REL,POINT,GET TABLES RELATED,INDENT,ARC,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,ARC,ACT,STA
                                                  Table 1 of 4 <<MORE
Default Creator ID ===> FOPDEMO                                          >>
Start Table        ===> ORDERS                                          >>
Start Table Options   : None
                                              Ref       Archive
Cmd    Status      (CreatorID.)Table/View Name Tbl   DAA RowLimit  Type
---  -----------  ----------------------------->>   ---   ---  --------  -------
*** ******************************** TOP **********************************
___   ARC         ORDERS                                 N    _____  TABLE
___               CUSTOMERS                          N   N    _____  TABLE
___   ARC         DETAILS                            N   N    _____  TABLE
___               ITEMS                              N   N    _____  TABLE
*** ****************************** BOTTOM *********************************
```

Figure 11. ARC Status

Delete After Archive

Once the ORDERS that meet the specified criteria are archived with the related contextual information from the other listed tables, there is no need to retain the archived ORDERS and DETAILS data in the production database. However, the archived CUSTOMERS and ITEMS data should remain in the production database, because this data is pertinent to recent and future orders.

For this sample session, overtype the default N in **DAA** (for Delete After Archive) for ORDERS and DETAILS with Y to instruct Archive to delete archived data from those tables. Use END to return to the ARCHIVE Process menu.

Select Relationships

After defining criteria for the archived data, the next step in an Archive Process is to choose the relationships traversed to archive the data.

Select Option 2 PATHS on the ARCHIVE Process menu to display the Specify Relationship Usage panel. (You can also use the REL primary command to open this panel directly from the Select Tables/Views panel.)

```
------------------------ Specify Relationship Usage --------------------------
Command ===> SHOW STEPS                                  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      ORDERS               DETAILS            ROD    DB2
___   NEW    Y N      CUSTOMERS            ORDERS             RCO    DB2
___   NEW    Y N      ITEMS                DETAILS            RID    DB2
*** ***************************** BOTTOM ******************************
```

Figure 12. Specify Relationship Usage

Archive lists all DB2 and Optim relationships for tables named on the Select Tables/Views for AD panel. In the initial display of the relationship list for this Access Definition, all relationships have the NEW status. A default Access Definition option determines whether NEW relationships are selected automatically. You can explicitly select or unselect a listed relationship, using the S or U line commands. For this sample session, type S in **Cmd** for the relationships ROD, RCO and RID, and U for any other relationships that may be listed.

Values in **Q1** determine whether parent rows are archived to satisfy RI rules and those in **Q2** whether additional children of rows archived because of **Q1** are also archived. For this sample session, the default selections are appropriate. See the *Common Elements Manual* for more information on questions **Q1** and **Q2**.

SHOW STEPS Command

Use the SHOW STEPS command to analyze the traversal path. Archive displays the Process Steps Report panel, describing the traversal path as a series of steps performed in the Archive Process.

```
--------------------------- Process Steps Report ---------------------------
 Command ===>                                          Scroll ===> PAGE
                                                       ROW 0    OF 17
****************************** Top of Data ******************************

Step  1: Extract Rows from Start Table FOPDEMO.ORDERS.  Selection Criteria
         and/or Statistical Controls are used, these Determine the Rows
         Selected.

Step  2: Extract Rows from FOPDEMO.CUSTOMERS which are Parents of Rows
         Previously Archived from FOPDEMO.ORDERS in Step 1 to satisfy an RI
         rule using Relationship RCO.

Step  3: Extract Rows from FOPDEMO.DETAILS which are Children of Rows
         Previously Archived from FOPDEMO.ORDERS in Step 1 using Relationship
         ROD.

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

****************************** Bottom of Data ****************************
```

Figure 13. Process Steps Report

The SHOW STEPS facility is a powerful tool for checking relationship specifications before executing an Archive Process. You can change specifications, as necessary, to archive the set of relationally intact data you require.

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

This dialog 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* for further information.
- 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 blank 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 to analyze indexes for selected relationships in the Access Definition and to determine if new indexes are needed. 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 3
AD: GRP.FOPDEMO.ARCHIVE


Parent Ix    Child Ix
Stat/Needed  Stat/Needed  Relationship                  Parent Table
-----------  -----------  ----------------------------  ----------------------
******************************** TOP **************************************
NotAnlyzed   None       Y FOPDEMO.ORDERS.RCO            FOPDEMO.CUSTOMERS
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 a second time to return to the Archive Process menu.

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

Create the Archive File

After you complete the Table List, specify criteria for the archived data and choose relationships for the traversal path, you are ready to execute the Archive Process.

Select Option 4 PERFORM on the ARCHIVE Process menu to display the Specify ARCHIVE Parameters and Execute panel.

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

Current AD Name          : GRP.FOPDEMO.ARCHIVE
Archive File DSN       ===> 'FOPDEMO.ARCHIVE.FILE'
Control File DSN       ===>
Archive Group          ===> ARC1998              (Any 8 Character Designation)
Archive Description    ===>
Archive Collection     ===>                      (*=Selection List)

Create Duplicate Archive File  ===> N            (Y-Yes, N-No)
Limit Number of Archive Rows   ===>              (1-1001, Blank-Site Max)
Archive Data to Tape           ===> N            (Y-Yes, N-No)
Defer Delete After Archive     ===>              (Y-Yes, N-No)
Review Archive Delete List     ===> N            (Y-Yes, N-No)
Copy File to External Storage  ===> N            (Y-Yes, N-No)
Archive File Retention Period  ===>              (blank, nD, nY, yyyy-mm-dd)
Archive With Uncommitted Reads ===> N            (Y-Yes, N-No)

Run Archive 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 16. Archive Process Parameters

In order to archive the data described in the Access Definition, you must indicate the names of sequential files at the **Archive File DSN** and **Control File DSN** prompts, as applicable. Archive places the archived

data in the Archive File and records process status information in the Control File. If a table contains an indexed column, you also must indicate the name of the data set for the Archive Index at the **Archive Index File DSN** prompt. (For the sample session, assume the data sets are allocated. If they are not, Archive prompts for allocation information and creates the files.)

Control File DSN

Archive displays the Control File DSN prompt if the Access Definition instructs Archive to delete archived data. (That is, **DAA** is Y for any table on the Table List.) The Control File documents processing success or failure for each deleted row and indicates whether the Delete Process completes. If the Delete Process fails, you can review the Control File to diagnose the error. After correcting any problems, you can restart or retry the Delete Process.

Naming Conventions

Values specified for **Archive Group** and **Archive Description** may be useful in locating candidate Archive Files later when searching or browsing Archive Files. For this sample session, a **Group** designation in the form ARC*yyyy* indicates the year of the most recent data in the file and the **Description** is the month. Type "ARC1998" in **Archive Group** and "FEBRUARY" in **Description**.

The remaining prompts on this panel allow you to:

- Automatically add the Archive File to a specified Archive Collection.
- Create a duplicate Archive File.
- Limit the number of rows of data that are archived to prevent an unexpectedly large number of rows from being archived in error.
- Archive to tape rather than disk. This option is not used in the sample session, but if you archive to tape, Archive prompts for information needed for the tape file.
- Defer execution of the delete after archive instructions until a later time. This option allows you to verify that data is properly archived before deleting it or to avoid the overhead of deleting data in the production environment, by deleting offline.
- Review a list of archived rows to "double check" before deleting data from production database tables. (Note that this option is displayed only when the corresponding Site Option is enabled).
- Execute in batch or online and, if in batch, to review the JCL and Batch Utility control statements.

For this sample session, you are using DB2 to create an Archive File on disk and executing the process online. Specify the parameters, as shown in Figure 16 on page 23, and press ENTER to continue the Archive Process. (For details about all parameters on the Specify ARCHIVE Parameters and Execute panel, refer to "Perform the Archive Process" on page 50.)

Delete After Archive Parameters

If rows are to be deleted from the production database during execution, Archive displays a pop-up to prompt for additional parameters that pertain only to the Delete Process.

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


+-----------------Specify Delete After Archive Parameters-----------------+
¦                                                                         ¦
¦ Lock Tables During Delete        ===> Y      (Y-Yes, N-No)              ¦
¦ Commit Every Nth Row             ===>        (1-1000, Blank/SL)         ¦
¦ Limit Number of Discarded Rows   ===>        (1-4294967295, Blank/SL)   ¦
¦ Compare Row Contents             ===> Y      (Y-Yes, N-No)              ¦
¦ Review ACM and Key Lookup Limit  ===> N      (Y-Yes, N-No)             ¦
+-------------------------------------------------------------------------+


Defer Delete After Archive     ===> N        (Y-Yes, N-No)
Review Archive Delete List     ===> N        (Y-Yes, N-No)
Copy File to External Storage  ===> N        (Y-Yes, N-No)
Archive File Retention Period  ===>          (blank, nD, nY, yyyy-mm-dd)
Archive With Uncommitted Reads ===>          (Y-Yes, N-No)

Run Archive 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-Detailed, S-Summary)
```

Figure 17. Delete After Archive Parameters

Locking tables prevents other users from accessing them. For this reason, a site option is typically set to prevent locking. If locking is allowed at your site, leave the **Lock Tables During Delete** value as N and **Commit Every Nth Row** blank.

Type "1" in **Limit Number of Discarded Rows** to terminate the process if any rows cannot be processed. If the Delete Process terminates because a row cannot be processed, you can check the Control File to determine the error and retry the Delete Process.

Compare Row Contents determines whether or not the rows marked for deletion are compared to the database before being deleted. Depending upon a site option, you may be able to modify this value. Type "Y" to delete rows from the database only if they exactly match rows in the Archive File. Type "N" to delete the rows without first comparing them.

Review ACM and Key Lookup Limit opens the **Choose Access Method/Key Lookup Limit** dialog allowing you to review and change the access 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.

Press ENTER to execute the process.

Helpful Information

Before executing the Archive Process, Archive evaluates the Access Definition and, if warranted, displays error or warning messages. You can correct or ignore warning conditions. However, you must correct any error conditions in order to execute the process. If, in this sample session, any warning messages are displayed, press ENTER to continue.

There are three steps in the Archive Process.
- Extract data model information.
- Extract the data.
- Delete appropriate data.

Archive displays status information as the Archive and Delete Processes execute, showing the type of process, the total number of rows processed, the name of the table that is currently processing, and the number of rows in the table that are processed. If a Delete Process is executing, Archive also displays the number of rows not found and the number not successfully deleted (failed).

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

Current AD Name          : GRP.FOPDEMO.ARCHIVE
Archive File
Control File +------------ARCHIVE Process Status------------+
Archive Inde |                                              |
Security Sta |   Extracting Related DB2 Object Definitions  |
Archive Grou |                                              |         Designation)
Archive Desc |   Status              Object Type            |
Archive Coll | -----------     ----------------------------- |
             | COMPLETED       Primary Keys and Relationships |
Create Dupli | COMPLETED       Indexes                      |
Limit Number | SELECTED        Views                        | Site Max)
Archive Data | SELECTED        Aliases                      | load Plus)
Archive Data | SELECTED        Synonyms                     |
Defer Delete | SELECTED        Field Proc Names             |
Review Archi | SELECTED        Triggers                     |
Copy File to | SELECTED        User Defined Types & Functions |
Archive File | SELECTED        Stored Procedures            | yyyy-mm-dd)
Archive With +----------------------------------------------+
```

Figure 18. Archive Process Status – Extract Object Definitions

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

Current AD Name          : GRP.FOPDEMO.ARCHIVE
Archive Fil
Control Fil +--------------ARCHIVE Process Status-------------+
Archive Ind |                                                |
Security St |         Archive Process in Progress            |
Archive Gro |                                                |     esignation)
Archive Des |   Total Number of Archived Rows: 2421          |
Archive Col |                                                |
            |   Processing Table:  FOPDEMO.ORDERS            |
Create Dupl |       Total Rows:  0                           |
Limit Numbe |                                                |  te Max)
Archive Dat | Will Return to Table Due to Traversal Path     |  ad Plus)
Archive Dat +------------------------------------------------+
```

Figure 19. Archive Process Status

Archive Process Report

Archive generates an ARCHIVE Process Report. If the Delete Process is executed, Archive includes a DELETE Process Report. When the process is executed in batch, you can direct the report to a data set or SYSOUT. The report is displayed at the end of an online process. Due to the large size of the report, only a portion is shown in the example:

```
                        ARCHIVE Process Report

Archive File         : FOPDEMO.ARCHIVE.FILE
Access Definition    : GRP.FOPDEMO.ARCHIVE
Archive Retention Date: None
Archive Expiration   : None
Archive Description  : None
Archive Group        : ARC1998
Created by           : Job FOPDEMO, using SQLID FOPDEMO on DB2 Subsystem DSNA
Time Started         : 2014-03-12 12.49.20
Time Finished        : 2014-03-12 12.49.20

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

Process Options:
  Process Mode       : Online
  Archive Data using : DB2
  Limit Archive Rows : 10000

Total Number of Archive Tables          : 4
Total Number of Archived Rows           : 275
Total Number of First Pass Start Table Rows : 47
Archive file data byte count : 42,080 Bytes

      Archived Object Types         Number
      ----------------------------- ------
1     Table-List Tables                4
2     Related Primary Keys             4
3     Relationships                    4
4     Related Indexes                  3
5     Related Views                    0
6     Related Aliases                  0
7     Related Synonyms                 0
8     Field Procs                      0
9     Triggers                         0
10    User Defined Types & Functions   0
11    Stored Procedures                0

                        Archived  Delete After  Reference
        Archive Tables      Rows     Archive       Table     Data Byte Count
      ------------------- --------- ------------  ---------   ---------------
1     FOPDEMO.CUSTOMERS       47        NO                          25128
2     FOPDEMO.ORDERS         119        NO          N                6902
3     FOPDEMO.SALES           84        NO          N                8379
4     FOPDEMO.SHIP_TO         25        NO          N                1671

                Relationship Usage Report

                                          Access Type   PK Limit
                              Relation ----------- ------------
   Parent Table        Child Table      Name  Parent Child Parent Child
------------------------- ------------------------- -------- ------ ----- ------ -----
FOPDEMO.CUSTOMERS         FOPDEMO.ORDERS             RCO      **    KEY           100
FOPDEMO.ORDERS           FOPDEMO.DETAILS            ROD      **    KEY            50
FOPDEMO.ITEMS            FOPDEMO.DETAILS            RID      SCAN   **    100

** This path was not traversed during this run.

                        DELETE Process Report

Archive File     : FOPDEMO.ARCHIVE.FILE
Created by       : Job FOPDEMO, using SQLID FOPDEMO, on DB2 Subsystem DSNA

Control File     : FOPDEMO.CONTROL.FILE
Processed by     : Job FOPDEMO, using SQLID FOPDEMO, on DB2 Subsystem DSNA
Time Started     : 1999-07-06 14.22.09
Time Finished    : 1999-07-06 14.22.21

Process Options:
  Lock Tables    : No
  Commit Every Nth: 1000
  Discard Limit  : None
  Delete Limit   : 90000

Totals:
  Number of Delete Tables  : 3
  Number of Deleted Rows   : 241
  Number of Failed Rows    : 33      Use 'Browse Control File' for Details
  Number of Rows Not Found : 0
```

Figure 20. Archive and Delete Process Reports

Note the list of Archived Object Types. Archive automatically copies all required object definitions to the Archive File. The archived objects include all DB2 and Optim relationships, whether or not used in the Archive Process, and all other DB2 and Optim objects needed to reproduce the data or support applications. In the event of a data model change, you can use the archived object definitions to restore archived data to the new data model.

Use the OUTPUT command to direct an online report to a data set or to SYSOUT if you want to retain the report; otherwise, the report is discarded.

After reviewing the report, use END to return to the ARCHIVE Process menu. Use END a second time to display a confirmation prompt and press ENTER to save the Access Definition. Archive displays the Archive and Restore menu.

Find and Browse Archived Data

This sample session demonstrates how to search an Archive File on disk to determine if it contains orders for a specific item.

Using the same criteria used for the search, you then browse the Archive File to locate the rows for customers that purchased the item. You can generate a printable report from the browsed data, or output a report to a data set where you can print or review it using ISPF commands. The criteria used to locate the data can also be used to restore it to the production database or create a new database. However, the data is not restored in this sample session.

Using the List Option

To begin the search, select Option 4 LIST from the Archive and Restore menu to request a list of Archive Directory entries.

Before compiling and displaying the list, Archive prompts for information needed to choose the entries for the list by displaying the Archive Directory Selection Criteria panel. This panel is the starting point for reviewing information about Archive Files and for searching and browsing the files, and restoring the data in them.

```
-------------------- Archive Directory Selection Criteria ---------------------
Command ===>                                              Scroll ===> PAGE

The Archive Directory can be displayed based on the Archive Criteria
specified, or the results of a previous Batch Search process.

Display Directory based on ===> A    (A-Archive Criteria, B-Batch Search)

If Searching, specify one or more criteria (DB2 Like syntax permitted)
   Archive File DSN      ===>
   Archived By           ===> FOPDEMO
   Archive Group         ===> ARC1998
   Archive Description    ===>
   Archive Date Range (YYYY-MM-DD)
      Beginning Date     ===>               Ending Date ===>

   Archive Table Name    ===>                                    >>
   Archive Column Name   ===>

If using Batch Search results, specify
   Batch Search Results DSN ===>
```

Figure 21. Archive Directory Selection Criteria

The contents of the list are determined by selection criteria that you provide or by the results of a previous batch search. (A search of Archive Files on tape or a global search of Archive Files is performed in batch or, as a preliminary step, you might request a batch search to eliminate candidates when a large number of files must be searched.) For this sample session, the first step is to specify criteria needed to locate the appropriate Archive File.

Under the naming conventions for this sample session (see the discussion of "Naming Conventions" on page 24), a **Group** designation in the form ARC*yyyy* indicates the year of the most recent data in the file and the value in **Description** indicates the month.

To qualify the list of files, type:
- "A" in **Display Directory based on** to indicate that criteria are used.
- Your User ID in **Archived by**.
- "ARC1998" in **Archive Group**.

Press ENTER to display the Archive Files panel, listing the files created under the specified User ID in the **Group** ARC1998. To confirm that only these files are listed, type DETAIL on the command line and press ENTER to display **User** and **Description**. As shown in the following figure, these values satisfy the values specified on the Archive Directory Selection Criteria panel.

```
----------------------------- Archive Files --------------------------------
Command ===>                                            Scroll ===> PAGE

    Primary: SEARCH, DETAIL, HIDE/REFRESH                    1 OF 3
       Line: S-Search, I-Info, B-Browse, REP-Report, R-Restore
             D-Del, T-Tag, CLR-Clear, AD-Access Definition
             CPY-Copy To Centera or Tivoli


          Date    File Name                                Group    Unit
Cmd Stat  User    Description                              Security
--- ----  ----------  --------------------------------------------------- ----
    ***************************** TOP *****************************************
___       1999-08-12 FOPDEMO.ARCHIVE.FILE                 ARC1998  DISK
          FOPDEMO    FEBRUARY
___       1999-10-11 FOPDEMO.ARCHIVE.FILE1                ARC1998  DISK
          FOPDEMO    APRIL
___       1999-12-13 FOPDEMO.ARCHIVE.FILE2                ARC1998  DISK
          FOPDEMO    JUNE
    *************************** BOTTOM ****************************************
```

Figure 22. Archive Files List

Manage the List

A three-entry list, like that shown in Figure 22, is easily managed. Over time, a list of Archive Directory entries may become extensive, however. Archive provides facilities that allow you to
- Sort entries in the list by values under any of the list headings.
- Locate and scroll to occurrences of a specific string in the list (using the FIND and RFIND commands).
- Limit the list to entries that include a specified string (using the SHOW command).

See "Manage the Archive Files List" on page 136 for more information about these commands and others used to manage the list.

Select the File
As described for this sample session, the **Group** designation indicates the most recent shipping date year for orders in the file and the **Description** is the month. If the first Archive File was created in August 1999, FOPDEMO.ARCHIVE.FILE contains all orders shipped through February 1998.

FOPDEMO.ARCHIVE.FILE1 in the preceding figure contains ORDERS shipped in March and April 1998 and FOPDEMO.ARCHIVE.FILE2 contains ORDERS shipped in May and June. Thus, FOPDEMO.ARCHIVE.FILE is the only candidate for a search.

Extended Information

Before searching the file, use the I line command to review indexes and other information for tables in the file to determine if the ITEM_ID for the recalled product, CH006, falls within the range of possible values for that column. Archive displays directory information for the selected Archive File on the Extended Archive Directory Information panel.

```
------------------ Extended Archive Directory Information --------------------
  Command ===>                                               Scroll ===> PAGE
                                                             ROW 0     OF 38
******************************* Top of Data *********************************
Archive File DSN  : FOPDEMO.ARCHIVE.FILE
Dense Index DSN   : FOPDEMO.ARCINDEX.FILE
Archived By       : SQLID FOPDEMO on DB2 subsystem DSNA
Retention Date    : None
Group Name        : ARC1998
Description       : FEBRUARY
File Created On   : 1999-08-12 14.05
Created By        : FOPDEMO
Security Status   : Not In Use
Unit Type         : DISK
Access Definition : GRP.FOPDEMO.ARCHIVE
Expiration Date   : None
Archive ID        : 1228726303


Table FOPDEMO.CUSTOMERS has 306 rows archived.

Index Information for Table FOPDEMO.CUSTOMERS
     No Indexes Specified

Table FOPDEMO.DETAILS has 2052 rows archived.

Index columns for Table FOPDEMO.DETAILS

     Dense Index for Column ITEM_ID
     Dense Index for Column ORDER_ID

Table FOPDEMO.ITEMS has 102 rows archived.

Index columns for Table FOPDEMO.ITEMS
     No Indexes Specified

Table FOPDEMO.ORDERS has 978 rows archived.

Index columns for Table FOPDEMO.ORDERS
     No Indexes Specified
****************************** Bottom of Data *******************************
```

Figure 23. Extended Directory Information

As shown in Figure 23, a dense index exists for the column ITEM_ID in the DETAILS table. You can search the index for ITEM_ID CH006. Use END to return to the Archive Files panel.

Search an Archive File

Having determined that FOPDEMO.ARCHIVE.FILE is a candidate in the search for orders for Item CH006, use the S line command to display the Archive Search Criteria – Tables panel, needed to begin to search data in the file.

```
--------------------- Archive Search Criteria - Tables ----------------------
Command ===>                                               Scroll ===> PAGE


                                                     1 of 4
Line : SEL,SQL,CLR
Archive File DSN : FOPDEMO.ARCHIVE.FILE

Use Case Sensitive Search      ===> Y    (Y-Yes, N-No (Bypass Dense Index))
Resolve Search Using           ===> I    (I-Index, C-Accessible Data, A-All)
Run Search in Batch or Online  ===> O    (B-Batch, O-Online)
  If Batch, Review or Save JCL? ===> N   (N-No, R-Review, S-Save)
  Print Matching Rows?         ===> N    (N-No, Y-Yes)
  Batch Search Results DSN ===> FOPDEMO.BATCH
Cmd  Status   FND   CreatorID.Table/View Name
--- --------- --- ------------------------------------------------------------
******************************** TOP *************************************
___            FOPDEMO.CUSTOMERS
___            FOPDEMO.DETAILS
___            FOPDEMO.ITEMS
___            FOPDEMO.ORDERS
******************************* BOTTOM ************************************
```

Figure 24. Search Criteria – Tables

Search Index or File

Archive maintains a sparse index for every column in every archived table. This index is in the Archive File. When you created FOPDEMO.ARCHIVE.FILE in "Create the Archive File" on page 23, you also directed Archive to create an entry in the Archive Directory for a dense index for specified columns in the DETAILS table. If you specify criteria for a column that is indexed in the Archive Directory, this index can be searched online. If the column is not indexed in the Directory, Archive creates a temporary sparse index online.

The **Resolve Search Using** prompt allows you to specify the method for resolving the search (for example, search the online index or the file). Use a temporary or sparse index search to eliminate one or more Archive Files from further consideration because the search criteria fall outside the sparse index range. You can then clear and re-specify the criteria to search the files that are not eliminated in the sparse index search. To be certain an Archive File contains data that matches the search criteria, you must search a dense index that corresponds to the column for which you specified search criteria, or search the file.

For this sample session, specify Y for **Use Case Sensitive Search** and I for **Resolve Search Using** to direct Archive to search the dense index.

Specify Criteria

The DETAILS table contains information about each ordered item. After you locate the DETAILS rows for the appropriate ordered item, you can locate each related ORDERS row. You can then locate the related CUSTOMERS rows for information about the customers that placed each order.

To specify search criteria, type the SEL line command at the **Cmd** prompt for FOPDEMO.DETAILS and press ENTER to display the Archive Search Criteria – Columns panel.

```
-------------------- Archive Search Criteria - Columns ----------------------
Command ===>                                            Scroll ===> PAGE

Use INF Line Command to Display Index Range, END where Complete
                                                            1 of 4
Archive File DSN : FOPDEMO.ARCHIVE.FILE
Table Name       : FOPDEMO.DETAILS
Combine All Column Criteria by  ===> O (A-AND, O-OR)


Cmd Column              Idx  Search Criteria
--- ----------------- --- --------------------------------------------------
******************************** TOP ***********************************
___   ORDER_ID             D
___   ITEM_ID              D
___   ITEM_QUANTITY
___   DETAIL_UNIT_PRICE
****************************** BOTTOM **********************************
```

Figure 25. Search Criteria – Columns

Tab to **Search Criteria** for ITEM_ID and type = 'CH006' to search for rows with that value in the ITEM_ID column. Use END to return to the Archive Search Criteria – Tables panel where the SEL **Status** indicates selection criteria are specified for the DETAILS table. Although you can select other tables for criteria, no further criteria are required for this sample session.

Execute Search

Press ENTER to execute the search. The YES in **FND** indicates the table contains rows that match the search criteria. (If a sparse or temporary index is searched, UNK in **FND** indicates that the criteria fall within the index ranges.)

```
-------------------- Archive Search Criteria - Tables -----------------------
Command ===>                                            Scroll ===> PAGE


                                                            1 of 4
Line : SEL,SQL,CLR
Archive File DSN : FOPDEMO.ARCHIVE.FILE

Use Case Sensitive Search       ===> N   (Y-Yes, N-No (Bypass Dense Index))
Resolve Search Using            ===> I   (I-Index, C-Accessible Data, A-All)
Run Search in Batch or Online   ===> O   (B-Batch, O-Online)
  If Batch, Review or Save JCL? ===> N   (N-No, R-Review, S-Save)
  Print Matching Rows?          ===> N   (N-No, Y-Yes)
  Batch Search Results DSN ===> FOPSJD.BATCH
Cmd  Status   FND   CreatorID.Table/View Name
--- --------- --- ------------------------------------------------------------
******************************** TOP ***********************************
___              FOPDEMO.CUSTOMERS
___  SEL      YES FOPDEMO.DETAILS
___              FOPDEMO.ITEMS
___              FOPDEMO.ORDERS
****************************** BOTTOM **********************************
```

Figure 26. FND Status after Search

After you determine that the Archive File contains orders for the product, you can browse the file to obtain the names and addresses of customers that ordered the product. Use END to redisplay the Archive Files panel, where the FND status is indicated for the file.

```
------------------------------ Archive Files --------------------------------
Command ===>                                              Scroll ===> PAGE

     Primary: SEARCH, DETAIL, HIDE/REFRESH                    1 OF 3
         Line: S-Search, I-Info, B-Browse, REP-Report, R-Restore
               D-Del, T-Tag, CLR-Clear, AD-Access Definition
               CPY-Copy To Centera or Tivoli


           Date     File Name                               Group    Unit
Cmd Stat   User     Description                             Security
--- ----  ----------  -------------------------------------------------- ----
    ***************************** TOP **************************************
___ FND   1999-08-12 FOPDEMO.ARCHIVE.FILE                   ARC1998  DISK
          FOPDEMO    FEBRUARY
___       1999-10-11 FOPDEMO.ARCHIVE.FILE1                  ARC1998  DISK
          FOPDEMO    APRIL
___       1999-12-13 FOPDEMO.ARCHIVE.FILE2                  ARC1998  DISK
          FOPDEMO    JUNE
    *************************** BOTTOM *************************************
```

Figure 27. FND Status on Archive Files List

Browse an Archive File

Use the B line command to begin browsing the Archive File, FOPDEMO.ARCHIVE.FILE.

Archive displays the Archive File Browse Parameters panel, shown in the following figure. Archive inserts the name of the Archive File in **Archive File DSN**. (For more information about the panels in this discussion and about browsing an Archive File, see "Browse an Archive File" on page 195.)

```
------------- Extract, Archive or Control File Browse Parameters --------------
Command ===>                                              SCROLL ===> PAGE

Provide Extract, Archive or Control File Data Set Name:
  DSN              ===> FOPDEMO.ARCHIVE.FILE

Browse Mode        ===> T                        (T-Table, R-Report
                                                  S-Summary, A-Access Def)
If Table Mode, specify
  Table Name       ===> DETAILS               >> (Blank for Start Table)
  Begin with       ===> S                        (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 ===> C      (C-Change File, W-Wrap Data)
```

Figure 28. Specify Archive File Browse Parameters

Archive provides four browse modes:

• In Report Mode, you can browse, write to disk, or print a read-only report on the contents of an Archive File. You can indicate whether all data in the file or all data in a selected table is included.

- In Table Mode, you can browse an interactive display of related data in an Archive File. You can limit the display to specific data by selecting rows from a table and joining to related rows from other archived tables in the file. When finished, you can print or save related data to a data set.
- In Summary Mode, you can view a list of the tables in the Archive File and the row counts for each table. Data rows are omitted.
- In Access Definition Mode, you can view information about the Access Definition used to select data for the Archive File.

Specify T as the **Browse Mode** for the sample session.

ORDERS is the Start Table for the archived data. To browse the DETAILS table, you must type DETAILS in **Table Name.** You can begin browsing with all data in the DETAILS table. However, for this sample session, specify S to begin the browse with rows that match selection criteria. Press ENTER.

Criteria

When you begin a browse session with selection criteria, Archive displays the Archive Selection Criteria – Columns panel to specify or modify selection criteria. If the Archive Option, **Share Search in Directory** is set to Y, any criteria specified earlier in the session are displayed. (See the *Common Elements Manual* for more information.)

```
-------------------- Archive Selection Criteria - Columns --------------------
Command ===>                                                 Scroll ===> PAGE

Use INF Line Command to Display Index Range, END where Complete
                                                        1 of 4
Archive File DSN : FOPDEMO.ARCHIVE.FILE
Table Name       : FOPDEMO.DETAILS
Combine All Column Criteria by  ===> O (A-AND, O-OR)


Cmd Column               Idx  Search Criteria
--- ------------------   ---  -------------------------------------------------
******************************** TOP **********************************
___  ORDER_ID            D
___  ITEM_ID             D  = 'CH006'
___  ITEM_QUANTITY
___  DETAIL_UNIT_PRICE
****************************** BOTTOM **********************************
```

Figure 29. Browse Criteria

The criteria specified for the earlier search are used to select rows in the DETAILS table for browsing. If no criteria are displayed, type the criteria for ITEM_ID, as shown in Figure 29. Use END to display a list of rows that match the criteria.

```
-------------------- Archive Browse: FOPDEMO.ARCHIVE.FILE --------------------
Command ===>                                                  Scroll ===> PAGE

Cmd F == Table: FOPDEMO.DETAILS(T1) ======================= 1 OF 36 ==========
     ORDER_ID ITEM_ID ITEM_QUANTITY DETAIL_UNIT_PRICE
     -------- ------- ------------- -----------------
*** ******************************* TOP ********************************
___     29809   CH006         1         14.00
___     30001   CH006         2         14.00
___     30003   CH006         1         14.00
___     88190   CH006         5         14.00
___     35229   CH006         2         14.00
___     30010   CH006         1         14.00
___     80022   CH006         6         14.00
___     41857   CH006         2         14.00
___     34578   CH006         5         14.00
___     34287   CH006         5         14.00
___     32303   CH006         5         14.00
___     31181   CH006         3         14.00
___     30055   CH006         6         14.00
___     30002   CH006         2         14.00
___     29934   CH006        12         14.00
___     29908   CH006         3         14.00
```

Figure 30. Details Rows with ITEM_ID CH006

As shown in the preceding example, 36 DETAILS rows match the criteria, but the necessary name, address, and telephone number information is in the related CUSTOMERS rows. Use the Join facility to access related data from other tables in the Archive File. (See the *Common Elements Manual* for more information on that facility.)

You must first join the displayed DETAILS rows to related rows in the ORDERS table. You may then join ORDERS to CUSTOMERS to display a segment of archived data for each DETAILS row with ITEM_ID CH006.

Using one method to join ORDERS to DETAILS, type the J line command in **Cmd** for the first DETAILS row and press ENTER. Archive presents a selection list of tables in the Archive File that are directly related to DETAILS.

```
--------------------- Archive Browse: FOPDEMO.ARCHIVE.FILE ---------------------
Command ===>                                                Scroll ===> PAGE

Cmd F == Table: FOPDEMO.DETAILS(T1) ======================= 1 OF 36 ==========
      ORDER_ID ITEM_ID ITEM_QUANTITY DETAIL_UNIT_PRICE
      -------- ------- ------------- -----------------
*** ******************************** TOP ********************************
j__      29809
___      30001    +--------Select One or More Related AD Tables--------+
___      30003    ¦ Cmd    CreatorID.TableName      From  Type  1 OF 2 ¦
___      88190    ¦ ---  ------------------------------------          ¦
___      35229    ¦ ****************** TOP ******************           ¦
___      30010    ¦ ___  FOPDEMO.ORDERS           DB2   PARENT         ¦
___      80022    ¦ ___  FOPDEMO.ITEMS            DB2   PARENT         ¦
___      41857    ¦ **************** BOTTOM ****************            ¦
___      34578    +---------------------------------------------------+
___      34287
___      32303    CH006          5          14.00
___      31181    CH006          3          14.00
___      30055    CH006          6          14.00
___      30002    CH006          2          14.00
___      29934    CH006         12          14.00
___      29908    CH006          3          14.00
```

Figure 31. Select Related Tables

In the sample data, only the ORDERS table is related to CUSTOMERS. Use the S line command to select
ORDERS and press ENTER to view both the selected DETAILS row and the related ORDERS row.

```
--------------------- Archive Browse: FOPDEMO.ARCHIVE.FILE ---------------------
Command ===> JOIN CUSTOMERS                                 Scroll ===> PAGE

Cmd F == Table: FOPDEMO.DETAILS(T1) ======================= 1 OF 36 ==========
      ORDER_ID ITEM_ID ITEM_QUANTITY DETAIL_UNIT_PRICE
      -------- ------- ------------- -----------------
___      29809   CH006          1          14.00

Cmd F == Table: FOPDEMO.ORDERS(T2) ========================= 1 OF 1 === MORE>>
      ORDER_ID CUST_ID ORDER_DATE ORDER_TIME FREIGHT_CHARGES ORDER_SALESMAN
      -------- ------- ---------- ---------- --------------- --------------
*** ******************************** TOP ********************************
___      29809   00411 1998-01-26 07.13.28         23.89          NC003
*** ****************************** BOTTOM ******************************
```

Figure 32. Details and Items

After displaying ORDERS, you can join and display related CUSTOMERS data. To use an alternative
method to join the CUSTOMERS row related to the displayed ORDERS row, type the JOIN primary
command on the command line with CUSTOMERS as the operand. Press ENTER. Archive automatically
displays the related CUSTOMERS row.

```
-------------------- Archive Browse: FOPDEMO.ARCHIVE.FILE --------------------
Command ===>                                             Scroll ===> PAGE

Cmd F == Table: FOPDEMO.DETAILS(T1) ======================= 1 OF 36 =========
      ORDER_ID ITEM_ID ITEM_QUANTITY DETAIL_UNIT_PRICE
      -------- ------- ------------- -----------------
___      29809   CH006             1            14.00

Cmd F == Table: FOPDEMO.ORDERS(T2) ======================= 1 OF 1 === MORE>>
      ORDER_ID CUST_ID ORDER_DATE ORDER_TIME FREIGHT_CHARGES ORDER_SALESMAN
      -------- ------- ---------- ---------- --------------- --------------
___      29809   00411 1998-01-26  07.13.28           23.89           NC003

Cmd F == Table: FOPDEMO.CUSTOMERS(T3) ===================== 1 OF 1 === MORE>>
      CUST_ID      CUSTNAME           ADDRESS           CITY       STATE
      ------- -------------------- ================== --------------- -----
*** ******************************* TOP ********************************
___    00411  Five Star Videos     123 Howe Lane      Bonanza Grove    MN
*** ******************************* BOTTOM ********************************
```

Figure 33. Related Details, Orders and Customers

To review the related CUSTOMERS row for each of the DETAILS rows, position the cursor on the DETAILS window and scroll. The ORDERS and CUSTOMERS windows are automatically scrolled to the rows related to the displayed DETAILS row.

Wide Data

When a row of data does not fit on the screen, scroll horizontaly. For example, place the cursor on the CUSTOMERS window and scroll RIGHT to display the telephone number or other information.

As an alternative to scrolling a row horizontally, you can use the SIDELABELS command to display the data vertically. Use the SIDELABELS primary command, indicating the table to be displayed in sidelabels format. (See the *Common Elements Manual* for more information on browsing wide data.)

For this sample session, type SIDELABELS on the command line and position the cursor in the CUSTOMERS window. Press ENTER. The sidelabels display is shown in the following figure.

```
-------------------- Archive Browse: FOPDEMO.ARCHIVE.FILE --------------------
Command ===> DOWN DETAILS                                Scroll ===> PAGE

== Table: FOPDEMO.CUSTOMERS(T3) ===============================ROW    1 OF 1 ==
== LineCmd ==> ___          Row Status:             COLUMN 1 OF 9

CUST_ID      : 00411
CUSTNAME     : Five Star Videos
ADDRESS      : 123 Howe Lane
CITY         : Bonanza Grove
STATE        : MN
ZIP          : 02100
YTD_SALES    :   2550.00
SALESMAN_ID  : NE003
PHONE_NUMBER : 6128901234
******************************** BOTTOM ********************************
```

Figure 34. Customers Table in Sidelabels View

Scroll in Sidelabels Format

To view the sidelabels display for the CUSTOMERS row related to the next DETAILS row, use the DOWN primary command and specify the DETAILS table as an operand (e.g., DOWN DETAILS).

Use the SID line command to return to the joined display, where the set of rows matches the scrolled sidelabels display. The following figure shows the joined display after scrolling to the fourth DETAILS row with CH006 in the ITEM_ID column. (Note the "4 OF 36" indicator.)

```
-------------------- Archive Browse: FOPDEMO.ARCHIVE.FILE --------------------
Command ===> REPORT                                        Scroll ===> PAGE

Cmd F == Table: FOPDEMO.DETAILS(T1) ====================== 4 OF 36 ==========
      ORDER_ID ITEM_ID ITEM_QUANTITY DETAIL_UNIT_PRICE
      -------- ------- ------------- -----------------
___      88190   CH006           5            14.00

Cmd F == Table: FOPDEMO.ORDERS(T2) ======================= 1 OF 1 === MORE>>
      ORDER_ID CUST_ID ORDER_DATE ORDER_TIME FREIGHT_CHARGES ORDER_SALESMAN
      -------- ------- ---------- ---------- --------------- --------------
___      88190   00407  1998-01-26 15.15.00         13.30           NC012

Cmd F == Table: FOPDEMO.CUSTOMERS(T3) ===================== 1 OF 1 === MORE>>
      CUST_ID      CUSTNAME           ADDRESS          CITY      STATE
      ------- -------------------- ================== -------------- -----
*** ******************************* TOP *********************************
___    00407  Captain Video        Box 1492          Ball Club      MN
*** ******************************* BOTTOM *********************************
```

Figure 35. Joined Display, after Scrolling

Generate a Report

While browsing, you can use the REPORT primary command to generate a report about the contents of the display. Archive prompts for the report specifications with the Specify Report Options pop-up.

```
-------------------- Archive Browse: FOPDEMO.ARCHIVE.FILE --------------------
Command ===>                                               Scroll ===> PAGE

Cmd F == Table: FOPDEMO.DETAILS(T1) ==========================ROW   4 OF 36 ==

+-------------------------Specify Report Options----------------------------+
|                                                                           |
|                                                                           |
| Table Name, Tn, or LAST    ===> DETAILS                    >>             |
| Process All Tables or One  ===> A          A-All, N-Named Table Only      |
| Report Title               ===> CUSTOMERS FOR CH006 BEFORE 3/98           |
| Output Type                ===> D          D-Dataset, S-Sysout, J-Job     |
|   If Dataset/Job: DSN       ===> FOPDEMO.CH006                            |
|   If Sysout/Job:  Class     ===> *          A - Z, 0 - 9, *               |
|             Destination    ===>                                          |
|             Hold           ===> N          Y-Yes, N-No                   |
|   If Job:    Review JCL    ===> N          Y-Yes, N-No                   |
| Display Report Parameters  ===> Y          Y-Yes, N-No                   |
+---------------------------------------------------------------------------+
```

Figure 36. Specify Report Options

For this sample session, the report is output to a data set, where it can be browsed or printed, using standard ISPF commands. For this sample session, specify:

- "DETAILS" as the table for which all rows are printed.
- "A" to process all tables.
- "CUSTOMERS FOR CH006 BEFORE 3/98" for **Report Title**.
- "D" (for data set) as the **Output Type**.

- The name of the output data set, "FOPDEMO.CH006" for the DSN.
- "Y" to request a display of report parameters.

Note that any values specified for **If Sysout/Job: Class**, **Destination**, and **Hold** are ignored unless **Output Type** is S; any value for **If Job: Review JCL** is ignored unless **Output Type** is J.

Press ENTER to continue. If the output data set does not exist, Archive prompts for the information needed to allocate it.

When you specify Y for the **Display Report Parameters** prompt, Archive displays the Report Format Parameters pop-up.

```
-------------------- Archive Browse: FOPDEMO.ARCHIVE.FILE --------------------
Command ===>                                                  Scroll ===> PAGE

Cmd F == Table: FOPDEMO.DETAILS(T1) ======================== 1 OF 36 =========

  +-----------------------Report Format Parameters-----------------------+ --+
  |                                                                       |   |
  | Lines per Page                 ===> 57    0-No Titles, 20-999         |   |
  | Maximum Report Rows per Table  ===>       blank-Editor Max Fetch Rows |   |
  | Report Line Width              ===> 132   80-n, Blank-Maximum         |   |
  | Oversized Lines                ===> W     T-Truncate, W-Wrap Data     |   |
  | Maximum Character Column Width  ===>      Blank-Maximum Display Width  |   |
  | New Page per Start Table Row   ===> N     Y-Yes, N-No                 |   |
  | Blank Lines between Levels      ===> 1    0 - 3                       |   |
  | Blank Lines between Rows        ===> 0    0 - 3                       |   |
  | Blanks between Columns          ===> 1    0 - 20                      |   |
  | Indent for Subordinate Tables   ===> 2    0 - 40                      |   |
  | Omit Table Name Heading Line    ===> N    Y-Yes, N-No                 |   |
  | Omit Subordinate Table Headings ===> N    Y-Yes, N-No                 |   |
  | Omit Redundant Table Headings   ===> N    Y-Yes, N-No                 |   |
  | Show Inactive Multi-Way Tables  ===> Y    Y-Yes, N-No                 |   |
  |                                                                       |   |
  | Press ENTER to continue, END or CANCEL to exit report.                |   |
  +-----------------------------------------------------------------------+   |
```

Figure 37. Report Format Parameters

Use this panel to format the report as desired and press ENTER to generate the report. Archive displays the status of the process while the report is generated in a pop-up window, as shown in the following figure.

```
  +---------------Archive Report Status---------------+
  |                                                   |
  |   Rows processed from the primary table: 16       |
  |                                                   |
  |   Total rows processed for all tables  : 46       |
  |                                                   |
  |   Total lines written to output file   : 100      |
  +---------------------------------------------------+
```

Figure 38. Archive Report Status

When processing is finished, Archive redisplays the Archive Browse panel with a message indicating the status of the process. The message "REPORT COMPLETE" indicates the report processed successfully.

```
-------------------- Archive Browse: FOPDEMO.ARCHIVE.FILE -----REPORT COMPLETE
Command ===> REPORT                                           Scroll ===> PAGE

Cmd F == Table: FOPDEMO.DETAILS(T1) ======================= 4 OF 36 ==========
     ORDER_ID ITEM_ID ITEM_QUANTITY DETAIL_UNIT_PRICE
     -------- ------- ------------- -----------------
___     88190   CH006            5            14.00

Cmd F == Table: FOPDEMO.ORDERS(T2) ======================== 1 OF 1 === MORE>>
     ORDER_ID CUST_ID ORDER_DATE ORDER_TIME FREIGHT_CHARGES ORDER_SALESMAN
     -------- ------- ---------- ---------- --------------- --------------
___     88190   00407 1998-01-26 15.15.00         13.30          NC012

Cmd F == Table: FOPDEMO.CUSTOMERS(T3) ===================== 1 OF 1 === MORE>>
     CUST_ID      CUSTNAME           ADDRESS          CITY      STATE
     ------- -------------------- ================== --------------- -----
*** ******************************** TOP ********************************
___    00407  Captain Video       Box 1492          Ball Club     MN
*** ****************************** BOTTOM ******************************
```

Figure 39. Report Complete

The report is shown in the following figure, formatted according to the parameters in Figure 37 on page 39, and displayed in an ISPF editor.

```
 BROWSE    FOPDEMO.CH006                       Line 00000000 Col 001 080
 Command ===>                                        Scroll ===> PAGE
****************************** Top of Data ********************************
1999-08-13 11.34                           CUSTOMERS FOR CH006 BEFORE 3/98

ORDER_ID ITEM_ID ITEM_QUANTITY DETAIL_UNIT_PRICE
--------------------------------------------------------------------------------
 29809   CH006            1            14.00

 ORDER_ID CUST_ID ORDER_DATE ORDER_TIME FREIGHT_CHARGES ORDER_SALESMAN  ORDER_P
 --------------------------------------------------------------------------------
  29809   00411 1998-01-26 07.13.28        23.89          NC003        1998-01-

  CUST_ID      CUSTNAME           ADDRESS          CITY      STATE ZIP
  --------------------------------------------------------------------------------
   00411  Five Star Videos    123 Howe Lane      Bonanza Grove   MN   0210

30001   CH006            2            14.00

  30001   00046 1998-02-09 13.59.01        23.78          SC012        1998-02-

  00046  Movies Galore      Willow Grove Mall, S Cash        AR   9150
```

Figure 40. Archive Browse Report

The report can be printed or browsed using ISPF commands. Often a report is all that is needed to contact a customer or correct a problem. However, the criteria used to browse and locate the data in the report can also be used to restore data to a database. See "Restore Archived Data" on page 81 for information on restoring data from an Archive File.

Summary

In this sample session, you have archived and viewed the sample data.

You have accomplished the following:

- Archived orders. To do this, you selected tables for archiving, specified archive criteria to select orders shipped before March 1, 1998, and selected the relationships to traverse. You also selected tables for deletion of archived data.
- Searched the Archive File. To do this, you specified criteria to obtain a list of candidate Archive Files and reviewed extended information to select a file. You then specified selection criteria to search archived DETAILS for a particular ITEM_ID.
- Browsed the Archive File to obtain the related CUSTOMERS data. To do this, you used the same selection criteria to list the pertinent DETAILS rows and joined to the related ORDERS and CUSTOMERS rows.
- Generated a report from the browsed data.

The selection criteria used to search the Archive File and browse the data in it can also be used to restore the selected segment of archived data to the original database. Alternatively, you can create a new database from all or a segment of the archived data. See "Restore Archived Data" on page 81 for more information on restoring data from an Archive File.

Although you can use the same criteria for different processes, as illustrated in this sample session, you can also specify different criteria at any time. New criteria may be needed for a different process or to continue the current process with different data or different Archive Files.

The following sections of this user manual provide additional information about Archive and are intended as a reference for Archive users.

Chapter 3. Archive and Restore Data

Archive provides facilities that allow you to archive and restore data.

For example, you can do the following:
* Archive precisely defined sets of relationally intact data from database tables.
* Search, browse, or restore selected archived data.

Archive Process

To archive a set of related data, you must specify the source database and the destination Archive File.

Specify the source by using an existing Access Definition or creating 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 Archive Process. (See the *Common Elements Manual* for a detailed discussion of creating and modifying Access Definitions.)

Specify the destination by providing the name of an Archive File for the archived data. The Archive Process copies the specified data and object definitions (i.e., table, view, key, index, etc.) to the Archive File. The Archive File is saved and can be searched, reviewed, or restored as needed.

Restore Process

When you restore data from an Archive File, the file is the source. You provide criteria to select the set of related data from the Archive File. Archive automatically restores the data and objects in a logical manner and allows you to change the destination specifications, as needed.

For example, if restoring archived data to tables that do not exist, Archive provides the option of creating tables to match those from which the Archive File was created. If named tables exist but do not match the original tables, you can use Column Maps to direct the data to each destination column. Mapped data includes the source data, literal values, special registers, expressions, exit routines, and DB2 defaults. (See the *Common Elements Manual* for further information.)

Archive and Restore Menu

To archive data, select Option 9 ARCHIVE on the Main Menu.

The following panel is displayed.

```
,----------------------- Archive and Restore --------------------------------
| OPTION  ===>
|
|
|                                       SQLID  ===> FOPDEMO
|                                       SUBSYS ===> DSNA
| 1  ARCHIVE   - Archive Data           LOCATION ===>
| 2  RESTORE   - Restore Data
| 3  DELETE    - Delete Archived Data from DB2 Tables
| 4  LIST      - List Archive Directory
| 5  IMPORT    - Import Archive File and Populate Directory
| 6  UPDATE    - Update Archive File Indexes
| 7  LOAD      - Create Load Files and Perform Load
| 8  SUBSET    - Create Subset of Existing Archive File
| 9  CREATE    - Create Tables and Related Object Definitions
| A  CONVERT   - Convert Archive File using Table and Column Maps
|
|
| R  RETRY/RESTART   - Retry/Restart Delete After Archive or Restore process
| B  BROWSE          - Browse Content of Archive, Extract, or Control File
| L  LOG             - Browse Archive Log
`------------------------------------------------------------------------------
```

Figure 41. Archive and Restore Menu

Archive and Restore Menu Options

Use the Archive and Restore menu to select Archive and Restore options.

The available options are:

1 - ARCHIVE
> Specify the set of data to archive. After the source data is specified, this option archives the data and stores it in an Archive File. The archived data includes rows from the specified set of source tables and object definitions for those tables. The archived objects include tables, primary keys, relationships, indexes, views, synonyms, aliases, triggers, column field procedure names, user defined types and functions, and stored procedures.

> Specifications for the archived data can be stored in an Access Definition for repeated use or defined as temporary for one-time use.

> The Archive File can be used as input for the Optim components. For example, if Compare is installed, the Archive File can be used as input for the Compare Process. The contents of the Archive File can be modified only through the Archive Option. The other options do not modify it.

2 - RESTORE
> Restore selected archived data to the original or a different database.

3 - DELETE
> Delete rows from the production database based on the contents of the Archive File.

4 - LIST
> List Archive Files that match selection criteria for contents, attributes, or both. You can browse, search, and restore data in an Archive File or delete listed Archive Files.

5 - IMPORT
> Copy entries for Archive Files from one Optim Directory to another.

6 - UPDATE
> Update the indexes for tables in an Archive File.

7 - LOAD
> Use the Load Process to transform the contents of an Archive File to Load utility format and

execute a Load utility to restore selected archived data to a database. (If a site or user option specifies BMC's 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 to Use.")

8 - SUBSET
Generate a file containing a subset of the data in an Archive File. All functions available for an Archive File are also available for a Subset File, if the Subset File is imported to create a Directory entry.

9 - CREATE
Use the Create Process to recreate a DB2 database or selected database objects using archived object definitions in an Archive File.

A - CONVERT
Apply data transformations specified in a Table Map and a set of Column Maps to the contents of an Archive File resulting in a "converted" version of the file. Convert can be used to mask sensitive data after archiving.

Note: The converted file does not contain the archived object definitions. The converted data cannot be selectively restored and the "Extract File" cannot be registered in the Archive Directory; however, data in the converted file can be inserted or used to update the database and can also be used in a Compare Process.

For details, see the *Common Elements Manual*.

R - RETRY/RESTART
Complete a Delete or Restore Process that has not completed successfully.

Use RETRY to process any rows that may be discarded due to RI constraints during a Restore Process or during an Archive Process with Delete After Archive specifications.

Use RESTART 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
Specify criteria and tables and selectively browse the contents of an Archive File or Control File.

L - LOG
Browse a list of Archive Processes and review information about a selected process.

The remainder of this section discusses each of these options.

Archive and Restore Menu Prompts

The Archive and Restore menu contains prompts for values used by the DB2 subsystem.

The panel also includes:

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.

Archive Data

The Archive Process is used to create an Archive File. An Archive File is a sequential file that contains the selected set of related rows from one or more tables and the object definitions for those tables.

The Archive File is used as input to the Archive Restore and Browse Processes. Many users can access the Archive File repeatedly and simultaneously.

The data in an Archive File can be indexed, browsed, and, if restored, mapped to more recent database tables, even if the tables have been altered in the interim.

Archive uses criteria in an Access Definition to traverse a set of tables and select data to archive. The Access Definition is either temporary or reusable and identifies the related data that is archived. The set of archived rows can be specified by:
* Providing selection criteria for one or more tables.
* Manually selecting specific rows in the Start Table. (This selection process is referred to as Point-and-Shoot.)

The objects required to restore the data are included in the Archive File. Archived objects are:
* Tables
* Views
* Columns
* Synonyms
* Primary Keys
* Column Field Procedure Names
* Relationships
* Triggers
* Indexes
* User-Defined Types and Functions
* Aliases
* Stored Procedures

Note: Auxiliary Tables and objects, such as table definition or primary key for a table underlying a view, alias, or synonym specified on the Access Definition Table List are not archived. If you archive data using a subset view, you cannot restore it.

ARCHIVE Process Menu

When you select Option 1 ARCHIVE on the Archive and Restore menu, the ARCHIVE Process menu is displayed.

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

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

   B  BROWSE ARCHIVE FILE  - Browse contents of Archive File

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

If Permanent, Specify New or Existing Access Definition Name
   GROUP ===> GRP
   USER  ===> FOPDEMO
   NAME  ===> ARCHIVE

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

Figure 42. ARCHIVE Process

Archive Process Menu Options

Select an option.

1 TABLES

Define or modify the set of tables used for the Archive Process. This option invokes the Select Tables/Views for AD panel, used to specify the tables included in the Archive Process (the Tables List) and define archive or selection criteria, an SQL WHERE clause, or substitution variables. This panel lists the types of criteria that are defined and can be used to 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 modify the relationship list. This option invokes the Specify Relationship Usage panel, used to select the relationships traversed when archiving the data. For detailed information about this panel and how to use it, see the *Common Elements Manual*.

3 OBJECTS

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

4 PERFORM

Specify execution parameters and invoke the Archive Process. This option invokes the Specify ARCHIVE Parameters and Execute panel, used to provide the Archive File data set name and description and to specify other execution parameters.

B BROWSE ARCHIVE FILE

Review the contents of an Archive or Control File. This option invokes the Extract, Archive or Control File Browse Parameters panel, used to provide information needed by ARCHIVE to display the desired data.

Temporary or Permanent

Indicates whether the specifications for the Archive Process are discarded after the process or saved in the Optim Directory. If they are discarded, specify T (temporary) at the prompt, **Type of Access Definition to Use for Archive**. If they are saved in the Directory, specify P (permanent). You must provide the name of an Access Definition if the specifications are stored permanently.

Access Definition Name

If the specifications are permanent, indicate the name of the Access Definition used for the process. The panel prompts correspond to the three parts of the Access Definition name:

GROUP

USER

NAME

Create a New Access Definition

If you specify the name of an Access Definition that does not exist, Archive prompts you to create a new Access Definition. The Select Tables/Views for AD panel is displayed. See the *Common Elements Manual* for information on defining an Access Definition.

Selection List

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

Select the Access Definition and press ENTER to redisplay the **ARCHIVE Process** menu with the name of the selected Access Definition in **Access Definition Name** or use END to return to the **ARCHIVE Process** menu without selecting an Access Definition.

Specify Options

You can define or modify the Access Definition specifications, whether temporary or permanent, by selecting Option 1 or 2. These options display panels discussed in other sections of this manual.

After the source data has been specified, use Option 3 to perform the archive.

Archive Process Menu Commands

The following primary commands are available when the ARCHIVE Process menu is displayed:
* CANCEL
* END
* OPTIONS

Select Object Definitions to Archive

DB2 table and column definitions are always archived so that tables can be restored. If you select Option 3 on the ARCHIVE Process menu, you can choose one or more additional types of object definitions to archive.

From the Specify Object Definitions to ARCHIVE panel, you can choose the type of object definitions to be archived by using the select (S) and unselect (U) line commands. Objects of the selected types are archived for each table that participates in the Archive Process. Your selections are profiled and displayed automatically the next time you use Option 3 on the ARCHIVE Process menu.

Note: You cannot archive objects with long names that are not compatible with Optim. Use this option to remove these objects from the Archive Process.

```
------------------ Specify Object Definitions to ARCHIVE ---------------------
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
 _     SELECT      Views
 _     SELECT      Materialized Query Tables
 _     SELECT      Aliases
 _     SELECT      Synonyms
 _     SELECT      Column Field Procedure Names
 _     SELECT      Triggers
 _     SELECT      User Defined Types and Functions
 _     SELECT      Stored Procedures


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

Figure 43. Specify Object Definitions to ARCHIVE

Specify Object Definitions to ARCHIVE 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 archived.

> **SELECT**
> Object definition is to be archived.
>
> **UNSELECT**
> Object definition is not to be archived.

Object Type
> List of object definition types that can be archived. The index for the primary key is always archived when **Primary Keys and Relationships** is 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 archived.

Only for Tables

The selected object types are archived only for tables listed on the Select Tables/Views for AD panel; they are not archived for an alias, synonym, or view listed on the Select Tables/Views for AD panel. A table made up of the columns included in an alias, synonym, or view is created at the destination for the archived object.

The DDL for Temporary Tables is archived 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 an alias, synonym, or view, 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 ARCHIVE panel, thus archiving the desired object and related objects.

Generic primary keys and relationships are archived 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 archived 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 archived. For more information about creating object definitions, see "Create Process" on page 166.

Materialized Query Tables

To obtain the definitions for a Materialized Query Table, you must archive the base tables and select the Materialized Query Table object type on the Specify Object Definitions to ARCHIVE panel. Use this Archive File to create the MQT and the base tables at the destination. For more information, see "Restore Archived Data" on page 81 and "Create Process" on page 166.

Specify Object Definitions to ARCHIVE Panel Commands

The following commands are available from this panel:

* CANCEL
* END
* OPTIONS
* RESET

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

Perform the Archive Process

When you select Option 4 PERFORM from the ARCHIVE Process menu to perform the archive, the Specify ARCHIVE 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 on the Substitution Variable Display panel. For details, see the *Common Elements Manual*.

```
------------------- Specify ARCHIVE Parameters and Execute --------------------
Command ===>                                              Scroll ===> PAGE

Current AD Name            : GRP.FOPDEMO.ARCHIVE
Archive File DSN       ===> 'FOPDEMO.ARCHIVE.FILE'
Control File DSN       ===> 'FOPDEMO.CONTROL.FILE'
Archive Index File DSN ===> 'FOPDEMO.ARCINDEX.FILE'
Security Status        ===> PUBLIC              (PUBLIC, READONLY, PRIVATE)
Archive Group          ===> ARC1998            (Any 8 Character Designation)
Archive Description    ===>
Archive Collection     ===>                    (*=Selection List)

Create Duplicate Archive File  ===> N          (Y-Yes, N-No)
Limit Number of Archive Rows   ===>            (1-1001, Blank-Site Max)
Archive Data using             ===> D          (D-DB2, B-BMC Unload Plus)
Archive Data to Tape           ===> N          (Y-Yes, N-No)
Defer Delete After Archive     ===> N          (Y-Yes, N-No)
Review Archive Delete List     ===> N          (Y-Yes, N-No)
Copy File to External Storage  ===> N          (Y-Yes, N-No)
Archive File Retention Period  ===>            (blank, nD, nY, yyyy-mm-dd)
Archive With Uncommitted Reads ===> N          (Y-Yes, N-No)

Run Archive 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 44. Specify ARCHIVE Parameters and Execute

This panel includes:

Current AD Name
> Name of the Access Definition used to create the Archive File. This information is inserted by Archive and cannot be edited.

Archive File DSN
> Specify the name of a sequential data set for the archived data. The Archive File name can be specified explicitly by enclosing it in quotes; otherwise, the default prefix, as specified on the User Options panel, is prefixed to the name.

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

Control File DSN
> Specify the name of a sequential data set for the Control File. The Control File name can be specified explicitly by enclosing it in quotes; otherwise, the default prefix, as specified on the User Options panel, is prefixed to the name.

> The **Control File DSN** prompt is present only if you indicate Y in **Delete After Archive** for any table on the Table List. Archive creates a Control File during the Delete Process to facilitate Retry/Restart processes, if needed. The file documents the success or failure of processing for each deleted row and indicates whether the Delete Process completes.

> When this prompt appears, Archive also prompts for Delete After Archive parameters. See "Specify Delete After Archive Parameters" on page 60 for further information.

Archive Index File DSN
> If a table contains an indexed column, specify the name of a data set for the Archive Index. This prompt is present only if a table contains an indexed column. The Archive Index File DSN can be specified explicitly by enclosing it in quotes; otherwise the default prefix, as specified on the User Options panel, is prefixed to the name. If the data set does not exist, it will be allocated for you.

Note: If you specified an IDX of D (for dense index) on the Specify Archive Criteria for AD panel, the Archive Index File is a Virtual Storage Access Method (VSAM) file that must be SMS-managed.

Security Status
Access privileges for the Archive File. This prompt is displayed only if Archive security is activated for the site:

PUBLIC
Any user can access or edit the file.

READONLY
Any user can access the file, but only the Archive Administrator or the user that created the file can edit it.

PRIVATE
Only the Archive Administrator or the user that created the file can access or edit the file.

Archive Group
Specify up to 8 characters to identify a group of Archive Files. Use a group designation to organize Archive Files by department, project, or other logical designation.

Archive Description
Specify an optional 1 to 40 character description of the file or its contents.

Archive Collection
If appropriate, specify the name of the Archive Collection to which the Archive File should be added. Each collection is identified by a Collection ID of up to eight characters, and a Collection Name of up to 12 characters, such as FOPWD.COLLECTION. Type the appropriate collection name or type an asterisk (*) and press ENTER to display a selection list from which you can select the appropriate collection. When the selection list is displayed, type an S in **Cmd** next to the desired collection and press ENTER to display that selection on the Specify ARCHIVE Parameters and Execute panel. See "Archive Collections" on page 219 for further information on Archive Collections.

You can add an Archive File to only one Archive Collection on the Specify ARCHIVE Parameters and Execute panel, but you can add an Archive File to multiple Archive Collections in Batch mode (i.e., if you type a **B** for Batch in Run Archive in Batch or Online). See the *Batch Utilities Guide* for information on adding an Archive File to multiple collections using the COLLECTION keyword.

Selection Criteria and Row List
If both a Row List and Selection Criteria have been established for the Start Table, indicate whether Start Table rows are selected using the Row List only or using both the Row List and Selection Criteria. Specify:

R   Use Row List Only.

B   Use both.

This prompt is present only if you used the Point-and-Shoot row selection method for Start Table Options on the **Select Tables/Views for AD** panel and you specified Archive or Selection Criteria for the Start Table. See the *Common Elements Manual* for more information.

Create Duplicate Archive File
Indicator for a duplicate, or utility, copy of the Archive File to be used for backups, or at an alternate physical location, for example, a remote database. A duplicate Archive File can also be placed in protected storage, for disaster recovery. Specify:

Y   Create duplicate Archive File.

N   Do not create duplicate Archive File.

If **Y**, you must provide the file name as described in "Specify Parameters for Duplicate Archive File" on page 56.

Limit Number of Archive Rows

The maximum number of rows of data that can be archived. This limit applies to data rows only and not to objects. The Archive Process is terminated if the number of archived rows exceeds this limit. Specify:

value   1 to site-defined limit

blank   Site-defined limit

The Archive Administrator specifies the site-defined limit on the Site Options panel.

Archive Data using

If you select a special unload utility on the Site Options panel, this prompt offers two options for retrieving the data: DB2 and the utility specified on the Site Options panel. Specify:

D   Use DB2 SQL facilities to access the data.

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.

Archive Data to Tape

Storage medium for the Archive File. Specify:

N   Store the Archive File to disk.

Y   Store the Archive File to tape.

If you store the Archive File to tape, Archive prompts for information about the tape file before executing the Archive Process. (See "Archive Data to Tape" on page 58 for additional information.)

Defer Delete After Archive

Indicator for timing of delete after archive. This prompt is displayed if Y is specified in **DAA** for one or more tables listed on the Select Tables/Views for AD panel. The value is profiled. (The Archive Administrator specifies the default value for this prompt on the Site Options panel.) Specify:

N   Delete after archive.

Y   Defer execution of delete after archive. You can use the Delete Option from the Archive and Restore menu to delete archived data or use a batch offline Delete Process. (See "Offline Delete Archive Process" on page 113.) An offline Delete Process is recommended if you are archiving data using Image Copies.

Review Archive Delete List

Indicator for displaying the list of tables before executing the Archive Process. The Archive Administrator must enable this option on the Site Options panel. Specify:

N   Do not display list of tables.

Y   Display list of tables to allow you to change delete after archive settings for the current Archive Process. (See "Review Archive Delete List" on page 59 for additional information.)

Copy File to External Storage

Indicator for saving a copy of the Archive File on external storage (i.e., EMC Centera networked

storage system or IBM Tivoli® Storage Manager backup device). The Archive Administrator must configure the **Storage Site Options** on the Site Options panel to enable this option. Specify:

Y Save a copy of the Archive File on an external storage server.

N Do not save a copy of the Archive File on an external storage server.

Note: You can save a copy of the Archive File to an external storage server or to tape. You cannot copy the Archive File to both.

If you store the Archive File on external storage, Archive prompts for information about the server before executing the Archive Process. (See "Specify Storage Options" on page 61 for additional information.)

Archive File Retention Period

The retention period for the Archive File. You cannot delete or overwrite the Archive File, its associated Archive Directory entry, or any associated Archive Index File until after the specified retention period.

This prompt is displayed only when the Site Option, **Specify Arc File Retention**, is set to User. The value is profiled. Specify:

blank No retention period is assigned.

nD The number of days to retain the Archive File.

nY The number of years to retain the Archive File.

yyyy-mm-dd, yyyy/mm/dd, or yyyy.ddd

An explicit date, after which you can delete or overwrite the Archive File.

Enter a year from 1900-2155. For *ddd* values, enter a day from 000-366.

NOLIMIT PERM, NEVER, 1999.365, 1999.366, 1999/12/31, or 99/12/31

The retention period does not expire.

Note:

- You can alter the retention period assigned to an Archive File, or add a retention period to an existing Archive File, using the ALTER statement of the IBM Utility program, IDCAMS. Archive automatically recognizes any change to the retention period.
- Any Archive File assigned a retention period over 9999 days or 27 years is considered permanent, and can only be deleted or overwritten if you use the ALTER statement of IDCAMS to reduce the retention period.

Archive With Uncommitted Reads

Specify whether to archive uncommitted data from the database during the Archive Process.

Y Archive uncommitted data from the database.

N Do not archive uncommitted data from the database

Note: If you choose to archive uncommitted data, the relational integrity of the data in the Archive File may be compromised. Use caution if restoring data from an Archive File with uncommitted data.

Commit Every Nth Archive Action

The number of Archive Action executions that trigger a commit. This prompt is displayed only if Archive Actions are specified for one or more tables listed on the Select Tables/Views for AD panel. (See the *Common Elements Manual*.) The value is profiled. Specify:

1-65,535

The number of executed Archive Actions that trigger a commit.

blank No commits for executed Archive Actions.

Note:

- Entering a number invokes the HOLD option which may cause contention issues for other database users.

- Entering a number greater than zero ensures that a commit is performed when processing is finished for a table for which archive actions are specified. (The action counter is reset to zero for the next table to be processed.) If you specify a number that is adequately high, a commit is performed for a table only at the end of processing.

Run Archive in Batch or Online

Indicator for executing the Archive Process in batch or online. Specify:

B   Batch

O   Online

If data is retrieved using an unload program, 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 Archive 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

For batch execution, indicator for treatment of JCL and Batch Utility control statements. 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. 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.

S   Save the JCL and control statements. Prompts are provided for you to specify the name of a file for the JCL and control statements.

Process Report Type

Indicator to include additional information in the Archive Process Report. If selected, detailed information about selection criteria and Archive Actions is displayed.

D   Display detailed information in the Archive Process Report.

S   Display summarized information in the Archive Process Report.

The following commands are available on this panel:
- CANCEL
- END
- OPTIONS

Archive File Selection List

The following figure shows the selection list that is displayed when you request a list of data set names.

```
------------------ Specify ARCHIVE Parameters and Execute --------------------
Command ===>                                              Scroll ===> PAGE

Current AD Name          : GRP.FOPDEMO.ARCHIVE
Archive File DSN      ===> 'FOP%'
Control File DSN      ===> 'FOPDEMO.CONTROL.FILE'
Archive Index File DSN ===> 'FOPDEMO.ARCINDEX.FILE'
Security St
Archive Gro +------------Select Extract Archive Data Set---------------+
Archive Des ¦ Cmd               Data Set Name                 1 OF 29  ¦
Archive Col ¦ --- ----------------------------------------------      ¦
            ¦ ******************** TOP ********************            ¦
Create Dupl ¦ ___  FOPDEMO.ARCHIVE.CONTROL                            ¦
Limit Numbe ¦ ___  FOPDEMO.ARCHIVE.CONVERT                            ¦
Archive Dat ¦ ___  FOPDEMO.ARCHIVE.FILE                               ¦
Archive Dat ¦ ___  FOPDEMO.EXT.LRM1$DB2                               ¦
Defer Delet ¦ ___  FOPTEST.OPT.CONTROL                                ¦
Review Arch ¦ ___  FOPTEST.OPT.EXT                                    ¦
Copy File t ¦ ___  FOPTEST.OPT.EXT.ALL.DB2                            ¦
Archive Fil ¦ ___  FOPTEST.OPT.EXT.BATCH                              ¦
Archive Wit ¦ ___  FOPTEST.OPT.EXT.DB2LOAD                            ¦
            ¦ ___  FOPTEST.OPT.EXT.DB2LOADA                           ¦
Run Archive ¦ ___  FOPTEST.OPT.EXT.DB2LOADY                           ¦
  If Batch, +--------------------------------------------------------+
```

Figure 45. Select Archive Data Set

Use the S line command to select a data set. Press ENTER or use END to return to the Specify ARCHIVE Parameters and Execute panel.

Specify Parameters for Duplicate Archive File

If you enter Yes in **Create Duplicate Archive File**, you must specify the name of a sequential data set for the duplicate data. Enter the file name in **Duplicate File DSN** on the **Specify Parameters for Duplicate Archive File** pop-up window. The Duplicate File name can be specified explicitly by enclosing it in quotes; otherwise, the default prefix, as specified on the User Options panel, is prefixed to the name. If you wish to add the file to the Optim Directory, enter Y in **Add To Directory**.

```
------------------ Specify ARCHIVE Parameters and Execute --------------------
Command ===>                                              Scroll ===> PAGE

 +-------------Specify Parameters for Duplicate Archive File-------------+
 ¦                                                                       ¦
 ¦  Archive File DSN     : FOPDEMO.DEMOFILE                              ¦
 ¦                                                                       ¦
 ¦  Duplicate File DSN ===>                                             ¦
 ¦                                                                       ¦
 ¦  Add To Directory   ===> N                      (Y-Yes, N-No)        ¦
 ¦                                                                       ¦
 ¦                                                                       ¦
 ¦  Press ENTER key to continue processing.                             ¦
 ¦  Enter END or CANCEL command to return to prior panel.               ¦
 +----------------------------------------------------------------------+
```

Figure 46. Duplicate Archive File Parameters

Specify Unload Program Parameters Panel

If an unload program is installed and site management has made it available to Archive, users can indicate whether the data is archived directly from DB2 or from the unload program.

If an unload program is used, the prompts shown in the following figure are displayed.

```
------------------ Specify ARCHIVE Parameters and Execute --------------------
Command ===>                                               Scroll ===> PAGE

  +-------------------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 47. Unload Program Parameters for Archive

The panel prompts for the following:

Source for Extract Data
> The type of file used as the data source. Specify:

> **I**   Image Copy file.

>> **Note:** If you archive data using an Image Copy file, it is advisable to defer the Delete After Archive and use an offline Delete Process. (See "Offline Delete Archive Process" on page 113 for more information.)

> **D**   Database VSAM file.

Image Copy Criteria
> The Image Copy data set that is used. Specify:

> **A**   First Image Copy file created on or after the **Date** and **Time** specified on the panel.

> **B**   First Image Copy File created on or before the **Date** and **Time** specified on the panel.

> **L**   Latest Image Copy file. Values in **Date** and **Time** are ignored.

> **S**   Image Copy file named in **Image Copy DSN**.

Date   Specify the date in the format defined for your site.

Time   Specify the time in the format defined for your site.

Image Copy DSN
> Specify the fully qualified name for an existing Image Copy file.

Use Subset
> Partition selector for the Archive Process when the Start Table is in a partitioned tablespace. Specify:

> **Y**   Select a subset of partitions to be included in the process (Archive displays a list of partitions).

> **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 for the Archive Process" on page 67 for more information.

Image Copy data sets on the same tape volume

To archive or 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 archive or extract process fails with a dynamic allocation error. Refer to the *Common Elements Manual*, section on Allocating External Files, for details.

Select a Subset
If you specify Y for **Use Subset**, a list of partitions is displayed. The following is an example of the list.

```
------------------ Specify ARCHIVE Parameters and Execute --------------------
Command ===>                                              Scroll ===> PAGE

 +----------------------- Specify Partitions to Use ----------------------+
 |                                                                        |
 |  Select the partitions to be used by placing an 'S' in the field provided |
 |  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 48. Specify Partitions to Use

The partitions are numbered in the **Partition** column. In this column, you can enter S to select and U to unselect a partition. Selected partitions are identified by an S. You can scroll the list.

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.

The **Partition Values** area displays 55 characters. Although DB2 limits the usable portion of the partition value to the first 40 characters, when the value is converted to external value, it may be longer. Only the first 55 characters are displayed.

Archive Data to Tape
If the data is archived to tape, Archive displays the following pop-up to prompt for information about the tape file.

```
------------------- Specify ARCHIVE 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.ARCHIVE.FILE                                     ¦
A ¦     Tape VolSer          ===>          ($NONE if VOLSER is not required) ¦
A ¦     Unit Designation     ===> TAPE                                  ¦
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 49. 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.

Review Archive Delete List

You can request a list of tables in the Access Definition with current **DAA** (delete after archive) settings via the DAA primary command, if that feature is enabled by your Archive Administrator.

```
------------------- Specify ARCHIVE Parameters and Execute --------------------
Command ===>                                             Scroll ===> PAGE

Current AD Na
Archive File  +---------- Delete After Archive Specification ---------+
Control File  ¦                                                       ¦
Archive Index ¦   Specify Y to delete rows after Archive.             ¦
Security Stat ¦   Enter END command when done.                        ¦ TE)
Archive Group ¦                                          1 of 4       ¦ tion)
Archive Descr ¦                                                       ¦
Archive Colle ¦      CreatorID.Table Name                Delete       ¦
              ¦      ------------------------------------ ------       ¦
Create Duplic ¦      ****************** TOP *********************      ¦
Limit Number  ¦      FOPDEMO.ORDERS                        Y          ¦ AX)
Archive Data  ¦      FOPDEMO.CUSTOMERS                      N          ¦ s)
Archive Data  ¦      FOPDEMO.DETAILS                        Y          ¦
Defer Delete  ¦      FOPDEMO.ITEMS                          N          ¦
Review Archiv ¦      ***************** BOTTOM *******************      ¦
Copy File to  +-------------------------------------------------------+ dd)
```

Figure 50. Delete After Archive Specifications

Use prompts on this pop-up to change previously specified delete after archive settings for the current Archive Process only. The DAA primary command allows you to change all settings to Y or N. Changes made on this panel are not reflected in the Access Definition.

Cascade Delete

A table listed on the Delete After Archive Specifications pop-up for which you specify Y in **Delete** may be a parent in a relationship defined with cascade delete. If dependent tables affected by the cascade delete are not also in the Access Definition, Archive re-displays the Specify ARCHIVE Parameters and Execute panel. It does not execute the Archive Process.

Specify Delete After Archive Parameters

If **DAA** is Yes for any table listed on the Select Tables/Views for AD panel or if you change the value in **Delete** for a table listed on the Delete After Archive Specifications pop-up to Y, Archive prompts for information needed to delete data from the database.

```
------------------ Specify ARCHIVE Parameters and Execute --------------------
Command ===>                                              Scroll ===> PAGE


  +----------------Specify Delete After Archive Parameters----------------+
  |                                                                       |
  | Lock Tables During Delete       ===> Y       (Y-Yes, N-No)            |
  | Commit Every Nth Row            ===> 1000    (1-1000, Blank-No Limit) |
  | Limit Number of Discarded Rows  ===>         (1-4294967295, Blank/NL) |
  | Compare Row Contents            ===> Y       (Y-Yes, N-No)            |
  | Review ACM and Key Lookup Limit ===> N       (Y-Yes, N-No)           |
  +-----------------------------------------------------------------------+
```

Figure 51. Delete After Archive Parameters

The pop-up includes the following prompts:

Lock Tables During Delete

        Locks tables during the Delete Process. Specify:

        Y   Lock the table and perform a commit when Archive has completed processing a table. The commit relinquishes the table lock.

                Note: Locking a table ensures that other database activity does not interfere with the Process. Locking, however, prevents other users from accessing the table.

        N   Do not lock a table during Delete Processing.

        Note: This option has no effect if the Lock Tables During Delete prompt is Yes, in which case the commit is done when table processing is completed.

Commit Every Nth Row

        The frequency of commits. The commit points determine the starting point in case of a RESTART. Frequent commits release resources and keep page locks to a minimum. Specify:

        1 to site maximum

                Number of rows processed to trigger a commit. The site-defined limit, displayed at your site, indicates the maximum value you may specify.

        blank Your site limit.

Limit Number of Discarded Rows

        The maximum number of rows that can be marked as discarded. If that limit is met, the process is terminated. You can use RESTART to begin the process at the termination point. Specify

        1-4294967295

                Number of discarded rows to terminate the process.

        blank No limit.

To terminate the process if any rows are discarded, specify 1 as the maximum.

Compare Row Contents

Indicator for comparing rows prior to deletion. (Site management may set this value, and prevent modification.)

Y   Rows are deleted from the database only if they exactly match rows in the Archive File. Rows that do not exactly match are discarded and noted in the Control File.

N   Row comparison is not performed.

Note:

- If a table does not have a DB2 primary key or an Optim primary key with a unique index, the Delete Process always compares row contents prior to deletion.
- Specifying N may improve performance significantly; however, you risk losing any updates to the data in the database since the Archive was performed.

Review ACM and Key Lookup Limit

Open a dialog to review the access 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 109.

N   Do not review the access method and key lookup limit. Default.

Specify Storage Options

If the data is to be copied to an external storage server (i.e., either a Centera or Tivoli Server), Archive displays the following pop-up to prompt for information about the server.

```
+------------------------Specify Storage Options------------------------+
|                                                                       |
| Storage Device                   ===>          (C-Centera, T-Tivoli)  |
|                                                                       |
| Centera Options:                                                      |
| Centera Pool Name                ===> FOPBOX   (%-Selection List)      |
| Delete Archive File After Process ===> N       (Y-Yes, N-No)          |
| Minimum File Retention           : N          (D-Def,I-Int,F-Inf,N-None) |
|   If Interval, Years             : 99         (0-0)                   |
|             Days                 : 1          (0-30)                  |
|                                                                       |
| Tivoli Options:                                                       |
| Tivoli Node Name                 ===>          (%-Selection List)      |
| Delete Archive File After Process ===> N       (Y-Yes, N-No)          |
| Filespace Prefix                 ===>                                  |
| Management Class                 ===>                                  |
|                                                                       |
| Press ENTER key to continue processing                                |
| Enter END or CANCEL command to return to prior panel                  |
+-----------------------------------------------------------------------+
```

Figure 52. Specify Storage Options

Complete the following parameters:

Storage Device

Specify whether you want to save a copy of the Archive File to a Centera or Tivoli server.

Note: You can only save a copy of an Archive File to either a Centera server or a Tivoli server.

C   Save a copy of the Archive File to the specified Centera server.

T   Save a copy of the Archive File to the specified Tivoli server.

Centera Options

The following options only apply if you are saving a copy of your Archive File to a Centera networked storage system.

Centera Pool Entry Authorization (PEA) File
> Access to the Centera Server may be secured with a Pool Entry Authorization (PEA) file. A PEA file prevents unauthorized storage or retrieval of data from a Centera Server. To use a PEA file with Optim, the Archive Administrator must create the file and specify the file name in the site options.

> **Centera Pool Name**
>> Specify the name of the Centera Pool in which you want to copy the Archive File, or enter % to display the Centera Pool Name List pop-up window.

>> **Note:** If the Centera Pool Name used to copy the Archive File to the Centera Server is deleted from Site Options, the Archive File cannot be recalled from the Centera Server.

> **Delete Archive File After Process**
>> Indicator to delete the Archive File from disk upon completion of the Archive Process.

>> **Y**   Automatically delete the Archive File stored on disk.

>> **N**   Do not delete the Archive File from disk.

> **Minimum File Retention**
>> Determine the length of time each Archive File is retained on the Centera Server before it can be deleted. (This option is only available if the Archive Administrator has configured Centera Site Options on the Site Options panel to enable this option.) Specify:

>> **D**   Use the Centera default minimum retention period, based on the Centera configuration.

>> **I**   Protect an Archive File from deletion for a specified period. You can specify a number of years, days, or a combination of both.

>> **F**   Keep an Archive File on Centera forever; the file cannot be deleted.

>> **N**   A minimum retention period is not used. An Archive File can be deleted from Centera at any time.

> **If Interval,**
>> **Years** If Interval is selected, enter the number of years (0-100) to protect an Archive File from deletion.

>> **Days** If Interval is selected, enter the number of days (0-18,300) to protect an Archive File from deletion.

>> **Note:** The combined total of years and days must be greater than 0. The maximum number of years and days you can specify is determined by Centera Site Options on the Site Options panel.

Tivoli Options

The following options only apply if you are saving a copy of your Archive File to a Tivoli Storage Manager backup device.

Tivoli Node Name

Specify the name of the Tivoli Node in which you want to copy the Archive File, or enter % to display the Tivoli Node List pop-up window.

Note: If the Tivoli Node used to copy the Archive File to the Tivoli Server is deleted from Site Options, the Archive File cannot be recalled from the Tivoli Server.

Delete Archive File After Process

Indicator to delete the Archive File from disk upon completion of the Archive Process.

Y   Automatically delete the Archive File stored on disk.

N   Do not delete the Archive File from disk.

Filespace Prefix

Enter the name of the file space prefix to be associated with the Archive Files saved to the Tivoli Server. (Optional)

Note: Entering a Filespace Prefix overrides the prefix specified in the Node Definition.

Mgmt. Class

Enter the name of the management class object to be associated with Archive Files saved to the Tivoli Server. (Optional)

Note: Entering a Management Class overrides the class specified in the Node Definition.

Centera Pool Name List

If you enter % for **Centera Pool Name**, the Centera Pool Name List pop-up window displays.

```
+------------------Centera Pool Name List-------------------+
¦ Cmd          Pool Name     Description        1 OF 3 ¦
¦ --- -------------------------------------------------    ¦
¦ ********************** TOP ************************       ¦
¦ ___  MAIN        Main Pool                               ¦
¦ ___  SECOND      Secondary Pool                          ¦
¦ ___  TEST        Test Pool                               ¦
¦ ********************** BOTTOM **********************      ¦
+----------------------------------------------------------+
```
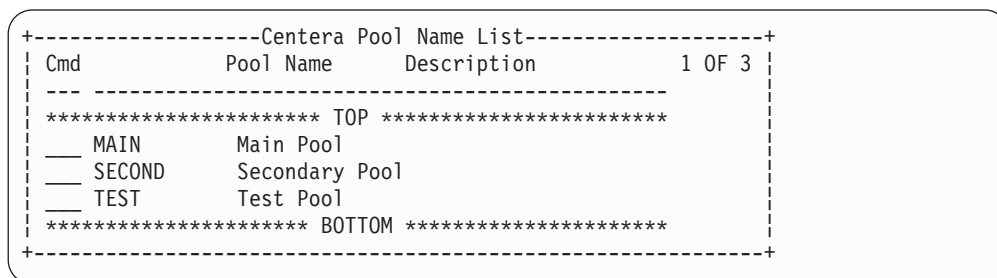
Figure 53. Centera Pool Name List

This pop-up includes:

Cmd   Area for line commands. The available line command is:

S   Select a Centera Pool Name, adding it in the Specify Storage Options pop-up.

Pool Name

The 1- to 8-character Centera Pool Name.

Description

The 1- to 30-character description of the Centera Pool Name.

Tivoli Node Name List

If you enter % for **Tivoli Node Name**, the Tivoli Node Name List pop-up window displays.

```
+----------------------------Tivoli Node List--------------------------------+
|                                                                            |
| Line Commands: I-Insert  D-Delete  S-Select  U-Update  P-Ping              |
|                                                                            |
| Cmd                       Node Name    Description                         |
| ---  ---------------------------------------------------------------       |
| ******************************* TOP ********************************        |
| ___  TIVOLI1   Main Tivoli Server                                          |
| ___  AIXTIV1   Aix Tivoli Server                                           |
| ***************************** BOTTOM *******************************        |
+----------------------------------------------------------------------------+
```

Figure 54. Tivoli Node Name List

This pop-up includes:

Cmd   The line commands area. Valid line commands are:

    S   Select an existing Tivoli Node Name, adding it in the Specify Storage Options pop-up.

Node Name
    The 1- to 64-character Tivoli Node Name.

Description
    The 1- to 30-character description of the Tivoli Node Name.

Archive Processing

Begin an Archive Process by pressing the ENTER key. When the process begins, Archive evaluates the Access Definition and your entries on the Specify ARCHIVE Parameters and Execute panel.

The Archive Process proceeds as described in this section.

Online Processing

- 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.)
- If an Optim Directory entry for the Archive File exists, Archive prompts to replace the existing entry or cancel the Archive Process. If you cancel the process, you may specify a different data set name. However, if no entry exists or you choose to replace the existing entry, Archive searches for the named data set.
- If you selected **Create Duplicate Archive File**, Archive prompts for information about the duplicate Archive File.
- If you selected **Archive Data to Tape**, Archive prompts for information about the tape file.
- If you selected **Review Archive Delete List**, Archive displays the Delete After Archive Specifications dialog allowing you to change the tables from which rows are deleted.
- If you selected **Copy File to External Storage**, Archive prompts for information about the Archive File being copied to the Centera or Tivoli Server.
- If the data set does not exist, Archive prompts for the information needed to allocate the file. See the *Common Elements Manual* for a description of the allocation prompts.
- If the data set exists, Archive determines whether it is suitable for an Archive File. If the data set is suitable, the Archive Process overlays the data in it.
- If the named data set is not suitable, Archive does not perform the archive and prompts you to provide a different data set name.
- The Archive Process is executed online. A status report is displayed and updated periodically during the processing.
- An Archive 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.)
- If an Optim Directory entry for the Archive File exists, a message will prompt you to replace the Directory entry or cancel the process.
- If archiving data to tape, Archive prompts for information about the tape file.
- If the Archive File does not exist, you are prompted for allocation information and the file is allocated by Archive. (See the *Batch Utilities Guide* for details.)
- The JCL and Batch Utility control statements are built. If you have responded Review to **If Batch, Review or Save JCL**, the JCL and control statements are displayed. (You can modify the JCL and control statements or save them and execute the job later. See the *Batch Utilities Guide* for the ARCHIVE statement keywords and values.)

  If you have responded Save to **If Batch, Review or Save JCL**, you are prompted for the name of the file for the saved JCL and Batch Utility control statements and whether the job should be submitted after saving. (Details are discussed in "Batch Archive Process Execution" on page 67.)
- The Archive Process is executed as a batch job.
- An Archive Process Report is generated and stored in the default output file specified in the JCL.

Access Definition Error Conditions

A few error conditions in the Access Definition prevent the Archive Process from proceeding. Other conditions cause warning messages.

Error conditions can result when an existing Access Definition is used without review. Changes to the database may be undetected until the Access Definition is edited or used. The following error conditions also prevent you from saving an Access Definition that you are editing:

- Duplicate references to a table are encountered. A table can be included on the list only once. You cannot specify a table and views, synonyms or aliases of that table, or specify more than one view, synonym, or alias of a table. To perform the archive, delete the duplicate entries.

  If the Access Definition was created for Access, duplicate entries are valid for editing.
- A valid table is not specified. The list of tables in the Access Definition does not contain any valid tables. This error can occur if the tables have been dropped from the database. Also, any listed table names that are not fully qualified are affected when the default Creator ID is changed. To perform the archive, re-specify the tables in the Access Definition.
- A WHERE clause is invalid. Selection criteria, for one or more tables, regardless of how specified, are invalid. This error can occur if changes have been made to the tables since the Access Definition was created (for example, a column used in an SQL WHERE clause has been dropped). This error 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 archive, change the selection criteria or correct the default value for the substitution variable.
- The Start Table is invalid. This error can occur if the table is dropped from the database or the default Creator ID is changed and the Start Table name is not fully qualified. The table is then marked as UNKNOWN and cannot be used as a Start Table.
- The primary key is missing. The primary key is required to ensure that multiple copies of the same row are not archived when a table is visited more than once.
- The user requesting the archive does not have authorization to select data from a table that is included. (A site and user option, called "Defer Auth-Check for Batch," allows unauthorized users to create JCL for the Archive Process. For more information, see the *Common Elements Manual*.)
- A table for which a delete operation is requested is a parent in a relationship that has been redefined with cascade delete.

Warnings

A warning message is issued for every condition that may require your attention, but these conditions do not prevent the archive from proceeding. When warning messages are issued, you are given the option to proceed or to abort the Archive Process. Warning messages are issued for the following conditions:

- A relationship is in NEW status. This warning indicates that a relationship has been added to the list and you have not explicitly selected or unselected it. You can use the Specify Relationship Usage panel to view the relationship list and specifically select or unselect individual relationships. You can use the **Use NEW Relationships** prompt on the Access Definitions Parameters panel to indicate the desired default for NEW relationships as selected or unselected. In general, you should review these relationships before using them.
- A relationship is in UNKNOWN status. This warning occurs when the **Default Creator ID** for the Access Definition has been changed, and a relationship, defined for tables named with the original Creator ID, does not exist when tables are named with the new Creator ID.
- A table is in UNKNOWN status. This warning occurs when the **Default Creator ID** has changed causing the name of the table to change and a table with the new name does not exist. UNKNOWN also occurs when the table has been dropped from the database.
- A table specified in the Access Definition is not traversed for the process. This warning indicates that a relationship is not selected to provide a path from the Start Table to this table.
- A relationship specified in the Access Definition is not traversed for the process. This warning indicates that a relationship is not used during the process.
- A table specified in the Access Definition has not had RUNSTATS run against it. If the table is large, this may have performance consequences when the archive is performed.
- Objects, such as table definition or primary key, for the table underlying a view, alias, or synonym specified on the Access Definition Table List are not archived.

Error and Warning Reporting

If errors or warnings are encountered, the ARCHIVE Errors & Warnings panel is displayed. Any error prevents the Archive Process from proceeding. The Archive Process can continue despite warnings.

You can use the SHOW STEPS command to display additional information about the Archive Process.

In the following figure, the ARCHIVE Errors & Warnings panel is displayed. Two warnings are documented.

```
------------------- Specify ARCHIVE Parameters and Execute --------------------
Command ===>                                                Scroll ===> PAGE

Current AD Name          : GRP.FOPDEMO.ARCHIVE
Arch
Cont +-------------------ARCHIVE Errors & Warnings-------------------+
Arch |                                                              |
Secu |  ARCHIVE Process Can Proceed Despite the Following Warnings:  |
Arch |    2 Table(s) will not be Traversed (See SHOW STEPS)          |
Arch |    2 Relationship(s) will not be Traversed (See SHOW STEPS)   |
Arch |                                                              |
     |  Press ENTER Key to Proceed Despite Warnings                 |
Crea |  Enter END Command to Return to ARCHIVE Menu to Correct Problems |
Limi +--------------------------------------------------------------+
```

Figure 55. Archive Process Warnings

Point-and-Shoot Validation

If specified, the data set containing the primary key values for rows selected 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 Archive encounters either problem, you are prompted to change the Point-and-Shoot file name or to continue processing without using the Point-and-Shoot values.

Batch Archive Process Execution

Archive builds the necessary JCL and Batch Utility control statements for execution. 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 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 specify whether changes apply to the current job only or are to be applied permanently. (See the *Common Elements Manual* for further information.)

The information on the Job Card and Print Options panel is used, along with the archive parameters, to build the JCL and Batch Utility control statements required to perform the Archive Process. If you enter Review at the prompt, **If Batch, Review or Save JCL** on the Specify ARCHIVE Parameters and Execute panel, the complete JCL and control statements are displayed in the ISPF editor. You can edit and save the displayed JCL and control statements. (See the *Batch Utilities Guide* for the ARCHIVE statement keywords and values.)

When you have completed reviewing the job, you can submit it. If you have set the option to automatically submit jobs when END is used, the job is submitted. Otherwise, you must explicitly SUBMIT the job from the ISPF editor. (See the *Common Elements Manual* for information on the "Submit Jobs with END" option that establishes 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 ARCHIVE Parameters and Execute panel. You can modify the specifications or cancel the Archive 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 Archive Process.

Resubmitting a Batch Delete

If a processing failure occurs during the delete portion of a batch Archive Process, you can restart the process by adding the RESTART operand to PARM on the batch EXEC statement and resubmitting the job with no other changes. Separate the RESTART operand from the previous operand in PARM with a blank. (This is an alternative to returning to the online system to initiate restart of the process.)

Batch Overrides for the Archive Process

If you save a generated batch job to a data set, you can submit the job directly from the ISPF editor rather than from within an online session. Submitting the job directly is especially useful when performing several Archive Processes that vary only by Creator ID for the tables or by selection criteria.

When you submit a batch job directly, you can provide overrides to defer the execution of delete after archive specifications or replace the default Creator ID, selection criteria, and SQL WHERE clause in the Access Definition. Use the PSDFOVRD DD statement to provide the desired overrides. The following overrides are intended to be used only in a batch Archive Process. Do not use them in any other process, including a Deferred Delete Process. (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 or provide batch overrides, if available. If batch overrides are not

available for your purpose, 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 remain valid.)

Archive Date Criteria

To replace archive date criteria in the Access Definition, specify:

```
ARCHIVE_DATE_YEAR     [cid.]table   column  value
ARCHIVE_DATE_MONTH    [cid.]table   column  value
ARCHIVE_DATE_WEEK     [cid.]table   column  value
ARCHIVE_DATE_DAY      [cid.]table   column  value
ARCHIVE_DATE_EXPLICIT [cid.]table   column  yyyy-mm-dd
```

cid.table
> Table name is required. If you do not specify the Creator ID (*cid*), the default Creator ID in the Access Definition is used.

column   Column name must be specified. If the column does not have date criteria specified, an error occurs.

value   Value is required. Value must be a positive number greater than zero.

ARCHIVE_DEFER_DELETE

To replace the **Defer Delete After Archive** specification on the Specify ARCHIVE Parameters and Execute panel, specify:

ARCHIVE_DEFER_DELETE { Y | N }

Use the Y operand to defer any delete after archive specifications in the Access Definition. Use N to delete, according to the Access Definition specifications, when the Archive File is created.

COMPARE_ROW

To set the indicator for comparing rows before deleting them, specify:

COMPARE_ROW { Y | N }

This override allows you to determine whether rows are compared before deleting. (Use this keyword only if the **Compare Row Contents** Site option is set to USER.)

ARCHIVE_DSN

To specify a new data set name for the Archive File, specify:

ARCHIVE_DSN *data.set.name*

This override allows you to use one set of saved JCL to create Archive Files with different names.

ARCHIVE_DSN_DUP

To specify a new data set name for the duplicate Archive File, specify:

ARCHIVE_DSN_DUP *data.set.name*

This override is valid if duplicate files are active according to a Site Option.

ARCHIVE_INDEX_DSN

To specify a new data set name for the Archive Index File, specify:

ARCHIVE_INDEX_DSN *data.set.name*

This override allows you to use one set of saved JCL to create Archive Files and Index Files with different names.

ARCHIVE_INDEX_DSN_DUP

To specify a new data set name for the duplicate Archive Index File, specify:

ARCHIVE_INDEX_DSN_DUP *data.set.name*

This override is valid if duplicate files are active according to a Site Option.

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 Criteria parameter for an unload program, specify:

UNL_IMAGECOPY_SELECT { A | B | L | S }

A   First Image Copy file created on or after the specified Date and Time.

B   First Image Copy File created on or before the specified Date and Time.

L   Latest Image Copy file. Any Date and Time values are ignored.

S   Image Copy file. The name is provided as the Image Copy DSN parameter.

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 for deletes 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 deletes 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.

ARCHIVE_ACTION_COMMIT

To override the value for the commit interval for archive actions that was specified when the job was created, specify:

ARCHIVE_ACTION_COMMIT value

The value can range from 0 to the site limit. If no commit interval was specified previously, an override value greater than zero will activate the commit interval. If you specify an override value of zero, commits will not be performed for archive actions.

DEFCID

To override the default Creator ID in the Access Definition, specify:

DEFCID *cid*

cid   The default Creator ID. This Creator ID applies only to tables that are not explicitly qualified in the Access Definition.

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 archive is performed.

Only one DEFCID parameter may be specified for an Archive Process.

Bypass Archive Process Selection Criteria

To replace or bypass selection criteria in the Access Definition, specify:

SEL [*cid.*]*table colname* [*selcriteria*]

cid.table
        Table name is required. If you do not specify the Creator ID (*cid*), the default Creator ID defined in the Access Definition is assumed.

colname

> Column name is required.

selcriteria

> Selection criteria. Specify replacement criteria or leave blank to ignore Access Definition criteria for the current process. Selection criteria must conform to the format required on the Specify Selection Criteria for AD panel (see the *Common Elements Manual*). A replacement specification cannot exceed 53 characters.

Selection criteria can be specified for one or more columns in the table. However, each must apply to a different column. You can specify only one SEL parameter for each column in a table.

Override SQL in Access Definition

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.*]*tblname* [*/correlation/*] [*where*]

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.

/correlation/

> Add or change a correlation name. If you specify a correlation name, it must immediately follow *tblname* and be enclosed in slashes.

where The SQL WHERE clause. The clause 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 Archive 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 the site limit.

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 the site limit.

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.

UNKNOWN

To override the default treatment for relationships referred to in the Access Definition that no longer exist, specify:

UNKNOWN { FAIL | ALLOW }

FAIL Terminate the Archive Process if any relationships named in the Access Definition have become unknown since the batch process was initiated. The report contains a message noting the first unknown relationship. FAIL is the default.

ALLOW
> Bypass the unknown relationships and continue with the Archive Process. The report contains a message listing the unknown relationships.

Relationships must exist in the database to traverse between the tables used in the Archive Process. However, be aware that bypassing an unknown relationship may also exclude "related" tables listed in the Access Definition even when these tables exist.

UNKNOWN ALLOW is useful when you use DEFCID to override the default Creator ID. The change in the default Creator ID may result in names of relationships that do not exist. Use the UNKNOWN ALLOW override to direct the Archive Process to skip these "unknown" relationships.

REPLACE_ARCHIVE_DIR

To override a User option governing the replacement of Archive Directory entries in a batch Archive Process, specify:

REPLACE_ARCHIVE_DIR { Y | N }

Use the Y operand to replace any existing Directory entry. Use N to cause an error when a Directory entry for the Archive File exists.

CENTERA_VALIDATE

To override validation of the Centera Pool at the beginning of the Archive Process, specify:

CENTERA_VALIDATE DEFER

If validation is done at the start of the Archive Process and the pool is invalid, the process is terminated. If validation is deferred and the pool is invalid, the Archive File can be copied to Centera using the Archive Files panel.

TIVOLI_VALIDATE

To override validation of the Tivoli Node at the beginning of the Archive Process, specify:

TIVOLI_VALIDATE DEFER

If validation is done at the start of the Archive Process and the alias is invalid, the process is terminated. If validation is deferred and the node is invalid, the Archive File can be copied to Tivoli using the Archive Files panel.

WITH_UR

To override the archiving of uncommitted data from the database during the Archive Process, specify:

WITH_UR { Y | N }

Use the Y operand to archive 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 Override Parameters

The following rules apply when specifying these overrides:
- One or more overrides may be included in the JCL.
- Each override keyword must begin in the first space of the line.
- The qualifiers for the overrides must be separated by a space.
- If an override spans multiple lines, continue on the next line.
- You can comment the list by specifying an asterisk, *, in the first position of each comment line.
- If multiple selection criteria are specified, they are ANDed or ORed according to 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 overrides in a sequential file or a partitioned data set. If record length exceeds 80, only the first 80 characters are processed. Sequence numbers are not allowed.
- The overrides must conform to the syntax required when specified directly in the jobstream.

Archive Process Override Examples
1. To override the default Creator ID and specify selection criteria for two of the tables in the archive, insert the following in the JCL:

```
//PSDFOVRD  DD  *
DEFCID   FOPDEMO2
* 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
```

You must include one or more spaces between the column name and the selection criteria.

2. To specify a sequential file named FOP.SAMPLE.PARMS as the source of the parameter list, insert in the JCL:

```
//PSDFOVRD  DD  DSN=FOP.SAMPLE.PARMS,DISP=SHR
```

3. To use an Image Copy file named FOP.IMAGE.COPY in an Archive 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   FOP.IMAGE.COPY
```

Save Archive Process JCL

You can save the JCL and Batch Utility control statements, modify them, and execute the process, without reinvoking Archive. 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 56. Save JCL Parameters

The following prompts are displayed:

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 at the **Member** prompt.

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 at the **Member** prompt.

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 and submitted, or displayed for review. Specify:
>
> **S**   for Submit, in which case the JCL and control statements are saved and the job is submitted.
>
> **R**   for Review, in which case you can use ISPF facilities to save or submit the JCL and control statements.
>
> **N**   for Neither, in which case 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 error messages and return codes in the report for the unload program. You should review the Archive Process Report to determine if the job executed successfully.

For example, the Archive Process uses the unload program to read the data; the data is not written to DDNAME SYSREC. (The Archive Process uses its own facilities to write the data to the Archive File.) Therefore, an UNLOAD PLUS return code of 4 indicates no records are written to SYSREC, although the Archive Process has performed successfully. As another example, an UNLOAD PLUS return code of 12 occurs when the Archive Process is successful but terminates prematurely because of a user limit for the number of rows archived from an individual table or for the number of rows archived in the entire process.

The Archive Process Report always contains appropriate messages that are usually sufficient. However, the following message may be generated when termination is due to unload processing.

```
Error detected during execution of the Unload Program.
See z/OS Job Log for the error message.
```

Before invoking an unload program, Archive checks for errors to ensure that the selection criteria adhere to the unload program restrictions. If an error is encountered, Archive displays a message. These restrictions are:

- Expressions before an operator are limited to a single column name.
- Subselection is not allowed after an operator.
- Expressions after an operator are limited to a constant or one of the following terms: NULL, CURRENT DATE, or CURRENT TIMESTAMP.
- The EXISTS predicate is not allowed.

Archive Process Online Execution Status

When an Archive Process is performed online, Archive provides a status notification pop-up window. In the following figure, data is being archived.

```
+---------------ARCHIVE Process Status-------------+
|                                                  |
|          ARCHIVE Process in Progress             |
|                                                  |
|   Total Number of Archived Rows:   2053          |
|                                                  |
|   Processing Table:  FOPDEMO.ORDERS              |
|         Total Rows:  523                         |
|                                                  |
+--------------------------------------------------+
```

Figure 57. Archive Process Status

The total number of rows that have been archived, the name of the currently processing table, and the total rows that have been archived from that table are displayed. This display is revised:

- After every 1000 rows for each table are archived.
- When the archive for one table is done and the archive for the next table begins.
- When the Archive File is copied to a Centera or Tivoli Server.

The status panel also includes a list of the objects (primary keys and relationships, indexes, etc.), and the status of each as:

COMPLETED
> The object has been archived.

IN PROGRESS
> The object has been selected and is in the process of being archived.

SELECTED
> The object has been selected, but not archived yet.

UNSELECTED
> The object has not been selected.

External Storage Process Status

If the Archive File is to be copied to external storage (e.g., Centera or Tivoli Server), a pop-up window displays once the Archive File has been saved to disk. This pop-up displays the current status of the Archive File being copied to external storage. The following graphic displays the Centera Process Status pop-up:

```
+--------Centera Process Status--------+
|                                      |
|   Creating Centera Archive File      |
|                                      |
|   Status            Task Name        |
|   -----------       ------------------- |
|   IN PROGRESS      File Creation     |
+--------------------------------------+
```

Figure 58. Centera Process Status

Archive Process Report

An ARCHIVE Process Report is generated as part of the Archive Process.

For an online process, the report is displayed automatically and can be browsed. In batch, the report is placed in the default output file, as specified in the JCL, and can be displayed as would the output from any job.

The ARCHIVE Process Report reflects the archived data and objects. Due to the large size of the report, only a portion is shown in the example:

```
                        ARCHIVE Process Report

Archive File        : FOPDEMO.ARCHIVE.FILE
Access Definition   : GRP.FOPDEMO.ARCHIVE
Archive Retention Date: None
Archive Expiration  : None
Archive Description : None
Archive Group       : ARC1998
Created by          : Job FOPDEMO, using SQLID FOPDEMO on DB2 Subsystem DSNA
Time Started        : 2014-03-12 12.49.20
Time Finished       : 2014-03-12 12.49.20


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


Process Options:
  Process Mode       : Online
  Archive Data using : DB2
  Limit Archive Rows : 10000


Total Number of Archive Tables          : 4
Total Number of Archived Rows           : 275
Total Number of First Pass Start Table Rows : 47
Archive file data byte count : 42,080 Bytes

      Archived Object Types         Number
      ----------------------------  ------
 1    Table-List Tables                4
 2    Related Primary Keys             4
 3    Relationships                    4
 4    Related Indexes                  3
 5    Related Views                    0
 6    Related Aliases                  0
 7    Related Synonyms                 0
 8    Field Procs                      0
 9    Triggers                         0
10    User Defined Types & Functions   0
11    Stored Procedures                0

                          Archived   Delete After   Reference
          Archive Tables     Rows      Archive        Table      Data Byte Count
      --------------------- --------- ------------   ---------   ---------------
 1    FOPDEMO.CUSTOMERS        47        NO                          25128
 2    FOPDEMO.ORDERS          119        NO            N              6902
 3    FOPDEMO.SALES            84        NO            N              8379
 4    FOPDEMO.SHIP_TO          25        NO            N              1671

                  Relationship Usage Report

                                          Access Type    PK Limit
                                 Relation ------------ ------------
   Parent Table          Child Table        Name    Parent Child Parent Child
------------------------ ------------------------ -------- ------ ----- ------ -----
FOPDEMO.CUSTOMERS        FOPDEMO.ORDERS           RCO       **    KEY           100
FOPDEMO.ORDERS           FOPDEMO.DETAILS          ROD       **    KEY            50
FOPDEMO.ITEMS            FOPDEMO.DETAILS          RID      SCAN    **    100

** This path was not traversed during this run.


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

Figure 59. Archive Process Report Format

Archive Process Report Format

The report is formatted with headings that identify the information. General information includes the Archive File name, the Access Definition, the user requesting the archive and the date and time the process was executed, processing options for the archive, and statistics about the archived objects and data and any deleted data. The report can be scrolled using the ISPF scrolling facilities. You can use the FIND command to locate a specific table.

Object Information

The report includes a list of object types and the number of each type that have been archived. The table definitions are also documented in the ARCHIVE Process Report.

Data Information

The report includes the total number of tables in the archive and the combined total number of rows archived from these tables.

The **Total Number of First Pass Start Table Rows** is the number of rows archived from the Start Table in the initial pass. This count does not include additional rows that may have been archived in subsequent passes. Subsequent passes of the Start Table may occur as a result of RI cycles, or the **Q1** and **Q2** specifications on the Specify Relationship Usage panel.

The names of the tables from which data is archived are listed with the number of rows archived from each table. A Yes, No, or Defer indicates Delete After Archive status.

Unmatched Point-and-Shoot Keys

If you used the Point-and-Shoot facility or a row list to select rows in the Start Table, some may have been deleted before the Archive Process was executed. If so, the report lists the primary key values for rows that were not found. The list of unmatched primary keys follows the list of Archive Tables and is formatted as in the following example:

```
3 Rows From Start Table Row List not Found

  FOPDEMO.ORDERS
        25
       406
     11905
```

Relationship Usage Report

The Relationship Usage Report lists each relationship traversed during the Archive 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 Archive Process Report

If you request a detailed process report from the Specify ARCHIVE Parameters and Execute panel, the report includes the following:

Any Archive Actions specified in the Access Definition. The report displays the name of each table associated with an Archive Action.

```
         Table                            Action Name and SQL Statement
---------------------- ----------------------------------------------------------
FOPDEMO.CUSTOMERS        Before Extract of the First Row From a Table:
                            INSERT INTO FOPRJS.ACTLOG (TYPE, CHAR1, CHAR2)
                            VALUES ('X1', :PST_USER_ID, :PST_CURRENT_DATETIME);
```

Any selection criteria specified in the Access Definition. The report displays each table where selection criteria were 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'
```

Delete Process Report

If any delete operations are performed in the Archive Process, a DELETE Process Report is included with other data.

```
                          DELETE Process Report

Archive File      : FOPDEMO.ARCHIVE.FILE
Created by        : Job FOPDEMO, using SQLID FOPDEMO, on DB2 Subsystem DSNA

Control File      : FOPDEMO.CONTROL.FILE
Processed by      : Job FOPDEMO, using SQLID FOPDEMO, on DB2 Subsystem DSNA
Time Started      : 1999-07-06 14.22.09
Time Finished     : 1999-07-06 14.22.21

Process Options:
  Lock Tables     : No
  Commit Every Nth: 1000
  Discard Limit   : None
  Delete Limit    : 90000

Totals:
  Number of Delete Tables  : 3
  Number of Deleted Rows    : 241
  Number of Failed Rows    : 33      Use 'Browse Control File' for Details
  Number of Rows Not Found : 0
                                 Deleted     Failed       Not    Access   PK
          Delete Tables           Rows       Rows        Found   Method  Limit
    -------------------------- --------- --------- --------- ------ ------
1    FOPDEMO.ORDERS                   19         0         0   PKEY     100
                    ****** End of Report ******
****************************** Bottom of Data *******************************
```

Figure 60. Archive Process Report - Delete Process

The information presented and the format of this report is similar to that of the ARCHIVE Process Report. In addition, statistics about **Deleted Rows**, **Failed Rows**, and **Not Found Rows** are provided. You can browse the Control File in Report Mode to determine why rows failed and use Retry/Restart to complete the process, after correcting any problems. See "Report Mode" on page 200 in this manual for detailed information, and see the *Common Elements Manual* for additional information.

Print Archive Process Report

While browsing the ARCHIVE 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 prompts for the necessary information according to the specified output destination. (See the *Command Reference Manual* for details.)

Control File Overview

The Control File is a sequential file that contains information about process parameters, documents the success or failure of processing for each row, and indicates whether the process completes.

Each Archive Process that includes a "delete after archive" instruction generates a Control File. Each Restore Process also generates a Control File.

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 (e.g., a row in a child table cannot be restored if no parent exists for that row). By analyzing the information in the Control File, you can determine how to correct the problem and execute the process again. For Restore processing you can "retry" the process so that only the rows that were unsuccessful or discarded in the original attempt are processed.

The Control File also indicates whether a process completed. When the process does not complete, you can "restart" the process at the point it was abnormally terminated. A Restore Process can terminate abnormally when the allocated time or space resources are insufficient or the user ends the process prematurely.

Abnormal termination also occurs when the process exceeds the user-specified limits. For example, the RESTORE 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.

Restore Archived Data

You can use the Restore Process to select data from an Archive File and restore it to the original or a different database.

The Archive File contains a set of related rows from database tables and the object definitions to re-create the tables, if necessary. A Restore Process does not modify the Archive File. Thus, data in the file can be restored or browsed simultaneously by any number of users.

On the Restore Parameters panel, specify insert, update, or both as the default processing method for all tables.

- **Insert**

  Only new rows are inserted. Thus, an archived 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 archived 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 global default processing method is used.

You can use selection criteria to define a selective restore. When you specify selection criteria, Archive creates an Archive Subset File during the Restore Process.

A Restore Process can be executed online or in batch. Online execution may be most appropriate for unanticipated or infrequent restorations of small amounts of archived data. Regularly scheduled restorations or restorations of large amounts of data can be set up online and saved to be run in batch, using batch overrides to customize the job. (See "Batch Overrides" on page 100 for more information.) Your archiving strategy may also require automatic restorations of archived data, however. With Archive, you can use batch statements generated by an application to search for and restore data. (See the *Batch Utilities Guide* for details about the Batch Utility control statements.)

Restore Process Menu

When you select Option 2 RESTORE on the Archive and Restore menu or use the R line command on the Archive Files panel, the Archive RESTORE Process menu is displayed.

```
------------------------ Archive RESTORE Process ----------------------------
OPTION ===>                                              SCROLL ===> PAGE


  1  TABLE MAP            - Specify Table Map and Column Maps
  2  PATHS                - Specify Traversal Paths via Relationship List
  3  SELECTION CRITERIA   - Specify Selective Restore Criteria
  4  PERFORM RESTORE      - Specify Restore Parameters and Perform Restore

  B  BROWSE ARCHIVE FILE  - Browse contents of Archive File

  R  REFERENCE TABLES     - Reference Table Settings (If Selective Restore)



Specify Data Set Names for Archive and Control Files
  Archive File DSN        ===> 'FOPDEMO.ARCHIVE.FILE'
  Control File DSN        ===> FOPDEMO.CONTROL
  Archive Subset File DSN ===>
```

Figure 61. Archive RESTORE Process

Menu Options

Select an option:

1 TABLE MAP

Specify the destination tables for each archived table in the Restore Process. A Table Map is required to restore an Archive File. If you do not use this option to create a Table Map, Archive displays the RESTORE Process Table Map panel when you select Option 4 PERFORM RESTORE.

You can specify Column Maps for selected destination tables. Use a Column Map to specify, on a column-by-column basis, the archived data for each destination column.

You can also specify processing options for each archived table, and define substitution variables to use in the selective restore criteria.

2 PATHS

Display and modify the relationship list. This option invokes the Specify Relationship Usage panel, used to select the relationships traversed when selecting the data to restore. You cannot add relationships that are not in the Archive File. For detailed information about this panel and how to use it, see the *Common Elements Manual*.

3 SELECTION CRITERIA

Specify criteria needed to select the data to restore (a selective restore). Using this option, you can specify a Start Table different from the one used to archive the data, define criteria for multiple

columns in multiple tables, use substitution variables to define criteria, and combine criteria with AND or OR operators. You can also use the Point-and-Shoot feature to select Start Table rows for data to be restored.

4 PERFORM RESTORE

Specify the parameters for the Restore Process and perform the Restore. The Restore Process inserts unmatched rows in the destination table, updates any matching destination rows, or both inserts and updates rows, depending on your processing requirements.

B BROWSE ARCHIVE FILE

Browse an Archive, Subset, or Control File. For detailed information about the Browse facility, see "Browse an Archive File" on page 195.

R REFERENCE TABLES

If selective restore criteria have been specified, you can include additional reference tables from the Archive File or remove the existing reference table specification for tables. For more information, see "Select Reference Tables" on page 93.

Menu Prompts

In addition to selecting an option, specify:

Archive File DSN

Name of the file containing the data to restore. This file must exist and can be an Archive File, or an Extract File created with MOVE. By default, the name of the Archive File specified in the most recent Archive Process is supplied. Use single quotes to delimit the desired name; otherwise, the default prefix specified on the User Options panel is added to the name.

Note that selective restoration is available for Archive Files only. You must restore all data from an Extract File.

Note: Entering the name of an Archive File that exists only on an external storage server (e.g., a Centera or Tivoli Server), automatically recalls the Archive File to disk. The Allocate Dataset panel is displayed if the Archive File is to be restored to a new location.

Control File DSN

Name of a sequential file to contain information and statistics about the Restore Process. Use single quotes to delimit the desired name; otherwise, the default prefix, specified on the User Options panel, is added to the specified name.

If the named file exists, the Restore Process overlays the contents. If the named file does not exist, Archive prompts for allocation information and creates the file. (See the *Common Elements Manual* for information on allocating the file.)

Archive Subset File DSN

Name of a sequential file to contain the subset of data that is restored when criteria are specified in a Restore Process. This file is a valid Archive File that can be browsed or restored or, if imported, searched. If needed, it is used for Restart Processing. (Note that you can also create a subset Archive File independently. See "Create Subset of Archive File" on page 158 for information.)

This prompt is displayed only if criteria for a selective restore are specified. If the named file exists, the Restore Process overlays the contents. If the named file does not exist, Archive prompts for allocation information and creates the file. (See the *Common Elements Manual* for information on allocating the file.)

Archive File DSN, **Control File DSN**, and **Archive Subset DSN** values are profiled.

Selection List

You can obtain a selection list for the Archive 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 Archive File or Control File data set names is provided in Figure 45 on page 56.

Note: The selection list displays only Archive Files saved on disk. Archive Files that exist only on an external storage server (e.g., a Centera or Tivoli Server) must be entered manually.

Available Commands

The following primary commands are available:
- CANCEL
- END
- OPTIONS

RESTORE Process Table Map

When you select Option 1 from the RESTORE Process menu, the RESTORE Process Table Map panel is displayed.

Use this panel to specify the destination tables and views, to indicate the Archive tables to restore, to provide processing overrides for individual tables, and to define substitution variables, if necessary.

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

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

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

Figure 62. RESTORE Process Table Map

This panel includes:

Src CID
> Default Creator ID for the source tables as specified in the Archive File. This value cannot be modified.

Dest CID
> Default Creator ID for the destination tables. Initially, this prompt is blank. A valid value must be specified. Specify the value in **Src CID** as the **Dest CID** to restore the data into the source tables or, when in a different DB2 subsystem, to restore into tables with the same Creator ID.

Column Map ID
> Default prefix for any listed Column Maps. If you do not include a value, you must include the appropriate Map ID with any listed Column Map names.

Archive Tables
> Names of the tables in the Archive File. The Creator ID is included if it differs from the value in **Src CID**. These values cannot be modified.

Destination Table Name

Names of the destination tables. The same table name cannot be specified twice.

Initially, Archive provides a list of names that match the names of tables in the Archive File. When restoring from an Archive File, only the names of tables for which Delete After Archive was specified are provided; if no tables were marked for deletion, no names are provided.

To edit the list:

- Prefix a name with a Creator ID different from the default specified in **Dest CID**.
- 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.

To prevent restoration of data from a table in the Archive File, blank the destination table name.

Type   Type of object named in **Destination Table Name**. Archive supplies this value and it is not modifiable. The possible values are:

TABLE
> Table

U-MQT
> User-maintained Materialized Query Table

VIEW View

UNKNOWN
> Non-existent table or no value in **Dest CID**

A-TABLE
> Alias of a table

A-VIEW
> Alias of a view

S-TABLE
> Synonym of a table

S-VIEW
> Synonym of a view

UNUSED
> Blank

TEMPTBL
> Temporary table

NOT INS
> Not insertable (e.g., a joined view or a System-maintained Materialized Query Table)

When restoring, Archive creates any UNKNOWN destination tables. See "CREATE Process Menu" on page 166 for additional information.

Column Map or "LOCAL"

Names of Column Maps used to insert data into the destination tables. Specify one of the following:

blank Do not use a Column Map.

LOCAL
> Define a Column Map for the current Restore Process only. Archive displays the Column Map editor to allow you to create the Column Map.

mapid.columnmap

> Use the specified Column Map. Prefix the Column Map name with Map ID if different from the value in **Column Map ID**. Enter Column Map names by:
>
> - Typing names manually.
> - Requesting a selection list, using the LIST MAPS primary command.
> - Using the POPULATE primary command.
>
>   If a specified Column Map does not exist, Archive prompts to create the Column Map or to return to the RESTORE Process Table Map panel, where you may change the specification.

Overrides

The RESTORE Process Table Map is presented on two screens, a left-hand and a right-hand "page." **MORE**, preceded or followed by two arrows, indicates the presence of a 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 restoring selected tables, you can scroll to display the right-hand portion of the RESTORE Process Table Map panel.

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

Available Commands:APPLY,SAVE,LIST,MAP,POPULATE,ACM,REL,ACT,CLEAR,END when Done
                                                                       <<MORE
  Src CID: FOPDEMO                                       --Overriding--
  Dest CID:                                       >>      Process
                                                           Mode
  Archive Tables        Destination Table Name   Type     U/I/B
-------------------- ------------------------>> ------- --------------
********************************** TOP ***********************************
ORDERS                ORDERS                     UNKNOWN
CUSTOMERS             CUSTOMERS                  UNKNOWN
DETAILS              DETAILS                    UNKNOWN
ITEMS                ITEMS                      UNKNOWN
********************************* BOTTOM *********************************
```

Figure 63. Table Map – Processing Overrides

The following prompts are displayed, and they are blank by default.

Process Mode

> The overriding restore process mode for selected tables. Specify:
>
> **U**   Update only.
>
> **I**   Insert only.
>
> **B**   Both (update and insert).
>
> **Process Mode** allows you to set the restore processing options for any table on an individual basis. Leave **Process Mode** blank to restore data from a table using the default processing mode, specified on the Specify RESTORE Parameters and Execute panel. (For a description of the global default processing options, see Restore Method to Use.)
>
> If you specify an overriding parameter for any table, a message on the left-hand portion of the panel indicates that you can view active table-level processing options by scrolling.

Use Existing Table Map

You can populate the current Table Map with specifications from a previously defined Table Map. Use the APPLY command to select from a list. If the listed **Archive Tables** match the source tables in the selected Table Map, Archive populates **Destination Tables** with names from the Table Map. Variations of the APPLY command allow you to populate all table names and the **Dest CID** regardless of any entry, or populate blank areas only.

Destination Table Type

Archive revises the value in **Type** each time you modify a destination table name. If you modify the **Dest CID**, any listed table names without an explicit Creator ID are prefixed with the new **Dest CID**. This change to the fully qualified name may change the **Type** value and require review.

For example, if the **Dest CID** is specified as OPTIM and the **Destination Table Name** as ORDERS, the resultant table name is OPTIM.ORDERS. However, changing the **Dest CID** to COHEND, changes the table name to COHEND.ORDERS. If the table COHEND.ORDERS does not exist, Archive changes **Type** to UNKNOWN and prompts for information to create the table COHEND.ORDERS before displaying the RESTORE Process Parameters and Perform panel and performing the Restore Process. Specify the **Destination Table Name** with Creator ID to prevent a change in the **Dest CID** from affecting the table name.

Selection List of Destination Objects

Use the LIST command to list available aliases, maps, synonyms, tables, or views for **Destination Table Name**. For example, to obtain a selection list of available tables with the Destination Creator ID, type the command, LIST TABLES, and position the cursor on the **Destination Table Name**, before pressing ENTER. Override the destination Creator ID by specifying a Creator ID with the LIST TABLES command, as in LIST TABLES SMITH.%.

To insert a table name, type the number of the Archive Table in **Num** next to the destination table name in the selection list. You may select any number of tables from the list at one time. Archive automatically places a selected name in **Destination Table Name** with the same number.

ACTION Command

You may specify Restore Process Actions for a Table Map. The ACTION command is used to develop an SQL statement to be executed at one or more predefined points in a Restore Process. Note that any Restore Process Actions defined in a Table Map override Actions specified in the Access Definition used to archive the data. See the *Common Elements Manual* for detailed information on using Actions in a Restore Process Table Map and using Actions in Access Definitions.

SQL Grammar for Search and Restore

See Appendix C, "SQL Grammar for Search and Restore," on page 237 for information on SQL grammar for Search and Restore Processes.

LIST SUBS Command

Before you can use a substitution variable in selection criteria or SQL WHERE clauses to describe the data to restore, you must define that variable on the Substitution Variable Display panel. Use the LIST SUBS command to display the Substitution Variable Display panel. This panel is initially populated with any substitution variables from the Access Definition used to create the Archive File. You can define other substitution variables, which apply to the current Restore Process only.

You can provide a default value and a prompt string for each substitution variable you define. If you do not provide a default value on the Substitution Variable Display panel, you must provide a value at run time of the Restore Process. (See the *Common Elements Manual* for further information about the Substitution Variable Display panel.)

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 64. Choose Access Method

This 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.

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

Available Commands

The following commands are available on this panel:

- ACM
- CLEAR
- LIST SUBS
- REL
- ACTIONS
- DOWN
- MAP
- SAVE
- APPLY
- END
- OPTIONS
- SUFFIX
- BOTTOM
- EXPAND
- POPULATE
- TOP
- CANCEL
- LIST
- PREFIX
- UP

See the *Command Reference Manual* for information on these commands.

For additional information about Table Maps and Column Maps, see the *Common Elements Manual*.

Specify Selective Restore Criteria

When you select Option 3 from the RESTORE Process menu, the Archive Selection Criteria – Tables panel is displayed. Use this panel to provide the criteria that describe the desired set of related data in the Archive File.

You can provide selection criteria or SQL WHERE clauses to describe the data to restore. You can specify selection criteria or SQL WHERE clauses using a substitution variable that has been defined on the Substitution Variable Display panel. (For details, see the *Common Elements Manual*.) You can also use Point-and-Shoot to manually select data to restore (see the *Common Elements Manual* for details).

After specifying selection criteria or an SQL WHERE clause, the Archive Selection Criteria - Tables panel displays the type of criteria specified under the **Status** heading. To search the Archive File using the criteria, press Enter, and the results are displayed under the **FND** heading.

When you specify selection criteria, Archive creates an Archive Subset File during the Restore Process. Rows that do not meet the selection criteria are bypassed during the Restore Process.

All rows from reference tables specified in the Access Definition used to create the Archive File are automatically included in the Archive Subset File, unless selection criteria are specified for the tables. If you specify selection criteria for the Restore Process, you can change reference table specifications using the Reference Table Selection panel, which is described in "Select Reference Tables" on page 93.

```
-------------------- Archive Selection Criteria - Tables ----------------------
Command ===>                                           Scroll ===> PAGE

Use POINT Primary Command to Specify a Point and Shoot list, END when Complete
Primary: POINT                                             1 of 4
  Line : SEL,SQL,CLR
Archive File DSN: FOPDEMO.ARCHIVE.FILE                        Unit: DISK


Use Case Sensitive Search      ===> N   (Y-Yes, N-No (Bypass Dense Index))
Resolve Search Using           ===> A   (I-Index, C-Accessible Data, A-All)
Default Creator ID             ===> FOPDEMO                          >>
Start Table                    ===> CUSTOMERS                        >>


Cmd  Status   FND   CreatorID.Table/View Name
---  --------- ---  -------------------------------------------------------------
******************************** TOP **********************************
___              FOPDEMO.CUSTOMERS
___              FOPDEMO.DETAILS
___              FOPDEMO.ITEMS
___              FOPDEMO.ORDERS
******************************** BOTTOM ********************************
```

Figure 65. Archive Selection Criteria – Tables

This panel includes:

Archive File DSN
> The name of the Archive File from which data is restored. This value cannot be modified on this panel.

Unit   Storage media for the Archive File as one of the following:

> **CENT** Archive File is only found on a Centera Server, and may be recalled to disk if accessed.

DISK   Archive File is in accessible disk storage.

MIGR   Archive File has been migrated externally using a Hierarchical Storage Management (HSM) or similar system.

TAPE   Archive File is on tape.

TIV   Archive File is only found on a Tivoli Server, and may be recalled to disk if accessed.

UNK   If restoring multiple Archive Files, files are on different media. If restoring a single Archive File, the Archive Entry is present but the Archive File is not.

Use Case Sensitive Search
> Indicator for case-sensitive search. Specify:

> **Y**   Search matching the case of criteria, exactly as specified. You must use a case-sensitive search to search a dense index.

> **N**   Search without regard to the case of criteria.

Resolve Search Using
> Specify the method for resolving the search.

> **I**   Search indexes only. If the search cannot be resolved using indexes, do not search Archive Files. (Use this method to locate a file on tape without mounting tape files.)

> **C**   Search disk and migrated indexes and, if the search cannot be resolved using indexes, search disk and migrated Archive Files, also.

> **A**   Search all indexes and, if necessary, all Archive Files, regardless of storage media.

Default Creator ID
> The default Creator ID for tables from which data is restored.

Start Table
> The Start Table needed to select data from the Archive File to be restored.

Cmd   Area for line commands used to select the tables for criteria or to clear criteria for a table. Specify:

> **B or BRO**
> > Browse data in the selected table.

> **CLR**   Clear the criteria for the selected table.

> **SEL**   Display the Archive Selection Criteria – Columns panel for each selected table.

> **SQL**   Display the Enter an SQL WHERE Clause for a Table or View panel for each selected table. See the *Common Elements Manual* for further information.

Status   Indicator for search criteria for the table, as one of the following:

> **blank**   No search criteria are specified.

> **SEL**   Selection criteria are specified.

> **SQL**   SQL WHERE clause is specified.

FND   Search status indicator for the table, as one of the following:

> **blank**   No search criteria are defined for the table.

> **YES**   Search criteria satisfied. Data matches the criteria, if searching the Archive File or dense index.

> **NO**   Criteria not satisfied, no matches found.

> **UNK**   Search criteria potentially satisfied by searching a sparse or temporary index.

CreatorID.Table/View Name
> Name of the table or view, prefixed with the Creator ID. This value cannot be modified.

Available Commands

The following commands are available when the Archive Selection Criteria – Tables panel is displayed.

- BOTTOM
- END
- POINT
- CANCEL
- EXPAND
- TOP
- DOWN
- OPTIONS
- UP

Archive Selection Criteria - Columns Panel

Use the Select line command, SEL, to display the Archive Selection Criteria – Columns panel, used to specify criteria for the data. The Archive Selection Criteria – Columns panel, listing columns in the ORDERS table, is shown in the following figure. After you specify criteria for the data to restore, use END to return to the Archive Selection Criteria – Tables panel.

```
------------------- Archive Selection Criteria - Columns ---------------------
Command ===>                                               Scroll ===> PAGE

Use INF Line Command to Display Index Range, END where Complete
                                                          1 of 8
Archive File DSN : FOPDEMO.ARCHIVE.FILE
Table Name       : FOPDEMO.ORDERS
Combine All Column Criteria by  ===> O (A-AND, O-OR)


Cmd Column              Idx  Search Criteria
--- ------------------ --- --------------------------------------------------
******************************** TOP *************************************
___  ORDER_ID            D
___  CUST_ID             D
___  ORDER_DATE
___  ORDER_TIME
___  FREIGHT_CHARGES
___  ORDER_SALESMAN
___  ORDER_POSTED_DATE
___  ORDER_SHIP_DATE
****************************** BOTTOM ************************************
```

Figure 66. Archive Selection Criteria – Columns

This panel includes:

Archive File DSN
Name of the Archive File, which cannot be modified on this panel.

Table Name
Name of the selected table or view, which cannot be modified on this panel.

Combine All Column Criteria By
Operator used to combine criteria for multiple columns. Specify:

A   Select data that matches criteria for all columns.

O   Select data that matches criteria for any column.

Cmd   Area for line commands. Specify:

CLR   Clear criteria for the column.

INF Display index and other information about the column.

Column
The name of the column, which cannot be modified here.

Idx Index indicator. Possible values are:

blank Archive index for this column does not exist.

T Temporary sparse index for this column exists.

S Sparse index for this column exists.

D Dense index for this column exists.

Search Criteria
Specify the selection criteria for each column. Valid expressions are:

```
EQ substring            = substring
NE substring            ¬= substring
GT substring            > substring
LT substring            < substring
LE substring            <= substring
GE substring            >= substring
IN (list,of,values)  NOT IN (list,of,values)
IS NULL                 IS NOT NULL
LIKE pattern            NOT LIKE pattern
BETWEEN x AND y         NOT BETWEEN x AND y
```

If the Archive Option, **Share Search in List** is Y, criteria remain and are displayed each time you invoke the Archive Search Criteria – Columns panel with a Search, Browse, or Restore line command. (See the *Common Elements Manual* for further information on the **Share Search in List** option.) Thus, you can specify criteria to search an Archive File or index and use the same criteria to restore or browse the data. Using the END command from the Archive Files panel clears the criteria.

If you specify criteria for a column that is not indexed, Archive creates a temporary sparse index for the column. The temporary index remains in effect until you use END from the Archive Files panel.

Specify Criteria on the Archive Selection Criteria – Columns Panel

Specify criteria by supplying an appropriate operator and a corresponding value or a list of values. For example, entering = '00168' in **Selection Criteria** for the CUST_ID column, restores all orders in the Archive File for customer 00168. You can also specify selection criteria using a substitution variable that has been defined on the Substitution Variable Display panel. The substitution variable must be preceded by a colon (:). (For details, see the *Common Elements Manual*.) For example, to restore all orders for a specific customer using a substitution variable defined as :CUSTID, enter = :CUSTID in **Selection Criteria** for the CUST_ID column.

Available Commands Archive Selection Criteria – Columns Panel

The following commands are available when the Archive Selection Criteria – Columns panel is displayed:
- BOTTOM
- END
- POINT
- CANCEL
- EXPAND
- TOP
- DOWN

- OPTIONS
- UP

Use END to exit the Archive Selection Criteria – Columns panel.

Select Reference Tables

If a selective restore is used, you can select Archive File tables to use as reference tables in the Restore Process. All rows in a reference table are restored, unless selection criteria are specified for the table.

By default, the reference tables specified in the Access Definition used to create the Archive File are included in a selective restore.

After selective restore criteria have been specified, you can select reference tables using option R on the RESTORE Process menu to open the Reference Table Selection panel. Use this panel to specify additional reference tables from the Archive File or remove the existing reference table specification for tables.

```
------------------------ Archive RESTORE Process ---------------------------
Command ===>                                             Scroll ===> PAGE


  1  TABLE MA +------------------ Reference Table Selection ---------------+
  2  PATHS    |                                                            |
  3  SELECTIO |   Specify Y or N to indicate a reference table.            |
  4  PERFORM  |   Enter END command when done.                             |
           |                                                1 of 5         |
  B  BROWSE A |                                                            |
           |            CreatorID.Table Name                Ref           |
  R  REFERENC |       ------------------------------------- -----          |
           |       ******************* TOP ********************           |
Specify Data |       FOPUSER.CUSTOMERS                       N            |
  Archive Fil |       FOPUSER.ORDERS                          N            |
  Control Fil |       FOPUSER.SALES                           N            |
  Archive Sub |       FOPUSER.DETAILS                         N            |
           |       FOPUSER.ITEMS                            Y            |
           |       ****************** BOTTOM *******************           |
           +------------------------------------------------------------+
```

Figure 67. Reference Table Selection

In the Reference Table Selection panel, specify Y for a reference table or N for a table not used as a reference table. By default, reference tables from the Access Definition have a Y specified.

Perform Restore Process

When archived data is restored into an existing database, the archived rows are inserted and/or updated.

Archived rows are inserted if they do not match rows in the destination database. Archived rows replace (update) any rows with the same primary key value.

Duplicate Primary Key Values

Data in the Archive File or in the destination database may have duplicate primary key values when the primary key is defined in the Directory. Only the first row of archived data with a duplicate primary key value is restored into a destination table with a single matching row. Additional archived rows with the same primary key value are discarded (i.e., written to the Control File).

If a destination table has multiple rows with the same Optim primary key value, archived rows with matching values replace the destination rows, in indeterminate order. If the number of destination rows

exceeds the number of restored archive rows, the excess destination rows remain in the destination table. If the number of archived rows exceeds the number of matching destination rows, the excess archived rows are inserted into the destination table.

Specify Restore Parameters Panel

When you select Option 4 PERFORM from the RESTORE Process menu, the Specify RESTORE Parameters and Execute panel is displayed to prompt for the parameters needed to perform the Restore Process.

Note: Prior to displaying this panel, the Default Value panel may be displayed if you used a substitution variable in the selective restore criteria, but did not specify a default value for the variable on the Substitution Variable Display panel. For details, see the *Common Elements Manual*.

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

Names for Archive File and Control File:
  Archive File DSN : FOPDEMO.ARCHIVE.FILE
  Control File DSN : FOPDEMO.ARCHIVE.CONTROL

Process Options:
  Default Options (Overrides are not currently set in the Table Map):
    Restore Method to Use        ===> B          (I-Insert, U-Update, B-Both)

  Limit Number of Restore Rows   ===>            (1-500, Blank/SL)
  Lock Tables During Process     ===> N          (Y-Yes, N-No)
  Commit Every Nth Row           ===>            (1-50, Blank/SL)
  Limit Number of Discarded Rows ===>            (1-50, Blank/SL)
  Review Propagation Key Sets    ===>            (A-Always, E-Errors)

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 68. Specify RESTORE Parameters and Execute

The prompts on this panel include:

Archive File DSN
Name of the Archive File that contains the source data as specified on the **RESTORE Process** menu. This value cannot be modified on this panel.

Control File DSN
Name of a sequential file used to accumulate information and statistics about the Restore Process. This value cannot be modified on this panel.

Restore 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. (A parenthetical note on the **Default Options** line indicates whether overrides have been set in the Table Map Editor.) If site management allows user choice, you can set the default **Restore Method to Use** by specifying:

I   Data rows are inserted during the Restore Process. An error condition occurs if a row to be restored matches a destination row.

U   Data rows are updated during the Restore Process. An error condition occurs if a row to be restored does not match a destination row.

B   Data rows are both inserted and updated during a Restore Process. If a row to be restored matches a destination row, the destination row is updated; if the restored row does not match a destination row, it is inserted.

If a colon (:) precedes the setting, the Archive Administrator has configured the Restore Method and only the Administrator can change the setting.

Note: When the PROP function is specified in one or more Column Maps used by the Restore Process, you must use insert processing. (See the *Common Elements Manual* for information on specifying a PROP function in a Column Map.)

Limit Number of Restore Rows

The maximum number of rows of data to be restored. The Restore Process is terminated if the number of restored rows exceeds this limit. Specify:

1 to site maximum
Number of discarded rows to terminate the process.

blank Your site limit.

Lock Tables During Process

Indicator for table locking during processing. Locking the table ensures that other database activity does not interfere with the Restore Process. It does, however, prevent other users from accessing the table.

A commit relinquishes the table lock. If you specify YES, a commit occurs only when Archive has completed processing a table.

Commit Every Nth Row

Indicates the frequency of commits. The commit points determine the starting point in a RESTART. Frequent commits release resources and keep page locks to a minimum. Specify:

1 to site maximum
Number of rows processed to trigger a commit.

blank Your site limit.

Note: This option has no effect if the prompt for Lock Tables During Insert is YES. If so, the commit is performed when the processing for a table is completed.
The site-defined limit, displayed at your site, indicates the maximum value you may specify.

Limit Number of Discarded Rows

Indicates the maximum number of rows that can be marked as discarded. If that limit is met, the process is terminated. You can use RESTART to begin the process at the termination point. Specify:

1-n Number of discarded rows to terminate the process, where n is your site limit.

blank No limit.

To terminate the process if any rows are discarded, specify 1.

Review Propagation Key Sets

Specify whether the Propagate Key Set(s)panel is to be displayed before the Restore Process is performed. This option is displayed only when the PROP function has been specified in one or more Column Maps used by the Restore 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

Indicates whether the Restore Process is run in batch or online. Specify:

B Batch

O Online

If site management has established a maximum number of rows for online processing and the Restore 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
> Indicates whether the JCL and Batch Utility control statements are reviewed prior to job submission. This specification is 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. (Archive prompts for the name of a file in which to store the JCL and control statements.)

Process Report Type
> Indicator to include additional information in the Restore Process Report. If selected, detailed information about selection criteria, Start Table, Archive Actions, and Column Map usage is displayed.
>
> **D**   Display detailed information in the Restore Process Report.
>
> **S**   Display summarized information in the 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 a Restore Process. Use the SHOW INDEXES command to display the Index Analysis pop-up window listing the destination tables of the Restore 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. See "Create Process" on page 166 for further information.

The following figure shows an example of an Index Analysis pop-up window.

```
+--------------------- Index Analysis ---------------------+
|                                         1 of 3           |
|  Table Name               Index Name    Index Status     |
|  ----------------------   ------------   -----------     |
|  *********************** TOP *************************    |
|  FOPDEMO.ITEMS            XITEMPK        DBPK             |
|  FOPDEMO.ORDERS           XORDRPK        Unique           |
|  FOPDEMO.DETAILS                         Partial          |
+----------------------------------------------------------+
```
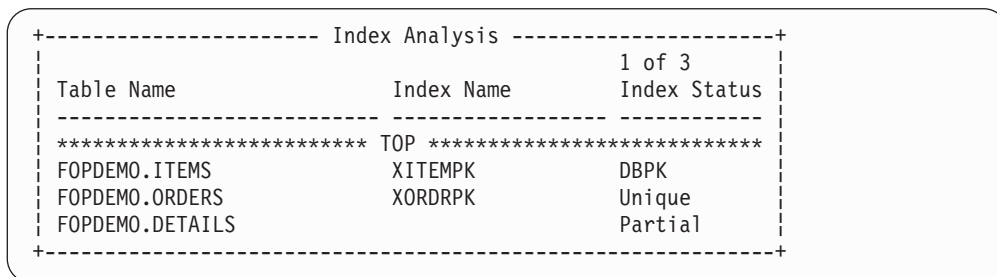
Figure 69. Index Analysis

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.

View PROP Specifications

The Propagating Key Set(s) panel is displayed prior to the execution of the Restore 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 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 a 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 Archive does not insert child rows inappropriately. Note that if the propagated primary key value duplicates an existing value, that row is discarded. Archive 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 related ORDERS and DETAILS.

```
-------------------------- Propagating Key Set(s) ----------------------------
Command ===>                                              Scroll ===> CSR
                                                            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.ORDER              *ORDER_ID          ORDER_ID
          FOPDEMO.DETAILS             ORDER_ID
****************************** Bottom of Data ********************************
```

Figure 70. Propagating Key Set(s)

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 Archive RESTORE Process menu. (PF12 has been assigned this special use on the Propagating Key Set(s) panel only. Archive automatically restores your ISPF values when the Propagating Key Set(s) panel is exited.)

Discarded Rows

When Archive is restoring data, rows may be discarded in two ways:

Immediate discards

During the Restore Process, a row is discarded immediately if a condition exists that cannot be rectified by Archive. For example, if a system error occurs, or space in the destination table is not available.

Pending discards

A pending discard occurs when the row cannot be restored at the present time, but the condition preventing the restore may be resolved later in the Restore Process. These rows fail the Restore but are held in a pending status while processing continues. As the Restore request proceeds, Archive attempts to restore a pending row at least once more.

A pending discard is possible only when there are referential integrity cycles. An RI rule may prevent a row from being restored because it references another row that is not present in a related table.

For example, you may be unable to restore an ORDERS row because it does not have a parent row in the CUSTOMERS table. Later in the processing, the related CUSTOMERS row is restored. When Archive again tries to restore the pending ORDERS row, the restore is successful.

Pending discards are not discarded until the end of the Restore Process. Therefore, at the end of the process, the number of discarded rows may exceed the discard limit. For example, assume a discard limit of 10. If, during the Restore Process, there are 5 immediate discards and 100 pending discards, which are restored later in the process, the final number of discards, 5, is within the limit. If, however, only 50 of the pending discards are restored, the final number of discards is 55.

Commits During a Cycle

Each time Archive completes the Restore Process for a table, it issues a COMMIT statement, even if Archive is processing a cycle and must return to the table later in the Restore Process. Thus, a table lock is in effect only for the time Archive is processing a table. When processing moves to another table, a table lock is relinquished and re-established if that table is processed again.

Prompt to Create Table

Before starting the Restore Process, Archive checks for UNKNOWN destination tables. If any destination tables are UNKNOWN, Archive displays the CREATE Object List panel with a message indicating that the unknown tables must be created. All objects in the Archive File are listed. Objects that do not exist are identified. See "Create Process" on page 166 for additional information about the CREATE Object List panel and the Create Process.

Online Execution

If the Restore Process is executed online, a panel is displayed noting the progress of the process.

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

Names for Archive File and Control File:
  Archive File DSN : FOPDEMO.ARCHIVE.FILE

  +------------------------RESTORE Process Status-----------------------+
  |                                                                     |
  |            RESTORE Process in Progress                              |
  |                                                                     |
  |         Number of Rows Processed: 2053 of 10340                    |
  |                                                                     |
  |  Processing Table: FOPDEMO.CUSTOMERS                                |
  |      Inserted Rows: 523                                             |
  |       Updated Rows: 0                                               |
  |        Failed Rows: 0                                               |
  |                                                                     |
  +---------------------------------------------------------------------+
```

Figure 71. Restore Process Status

The number of rows restored, and the number of rows remaining, is displayed. Also, the name of the table in process and the total rows that have been restored (inserted, updated, or failed) for that table are displayed. The panel is refreshed every 1000 rows for each table to display the current total number of processed rows. It is also refreshed when the processing for a table is complete and the processing for the next table begins.

Batch Execution

If you specify batch execution, Archive builds the necessary JCL and Batch Utility control statements. The JOB statement information is taken from the JCL specified on the Job Card and Print Options panel.

If you enter YES at 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 specify whether changes apply to the current job only or are to be applied permanently. (See the *Common Elements Manual* for further information.)

The information on the Job Card and Print Options panel is used, along with the Restore parameters, to build the JCL and Batch Utility control statements required to perform the Restore Process. If you enter Review at the **If Batch, Review or Save JCL** prompt on the Specify RESTORE Parameters and Execute panel, the complete 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 RESTORE statement keywords and values.)

If you enter Save at the **If Batch, Review or Save JCL** prompt, you are prompted to provide the name of a file in which to save the JCL and Batch Utility control statements and to indicate whether the job is submitted after saving. (Details are discussed later in this section.)

Use END to return from the ISPF editor to Archive. However, your response to the **Submit Jobs with END** prompt on the User Options panel determines whether the job is automatically submitted. If you enter NO to the prompt, you must explicitly submit the job 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 RESTORE Parameters and Execute panel without submitting the job. You can modify the specifications or cancel the Restore process from this panel.

See the *Common Elements Manual* for information on the "Submit Jobs with END" option that establishes whether jobs are automatically submitted when END is used.

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 Restore Process.

Resubmitting an Existing Job

If, during a batch Restore Process, one or more rows are discarded because an attempt was made to restore a child row before the parent rows are inserted in the database, you can retry the process without returning to the online system by adding the RESTART operand to the end of PARM on the EXEC statement of the batch job and resubmitting the job. Use the same procedure to restart a Restore Process that fails for some reason. The RESTART operand must be separated from the previous operand in PARM by a blank.

Batch Overrides

If you save a generated batch job to a data set, you can submit the job directly from the ISPF editor rather than from within an online session. Submitting the job directly is especially convenient when you want to apply different Archive Files to a single set of tables or a single Archive File to multiple sets of tables using common Restore Process JCL. When you submit the job directly, you can override the default destination Creator ID defined in the Table Map used for the Restore Process.

Any Archive File can be used in a Restore 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 to provide the desired overrides. These overrides are intended to be used only in a batch Restore Process. Do not use them in any other process.

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 or provide batch overrides, if available. If batch overrides are not

available for your purpose, 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 remain valid.)

ARCHIVE_DSN

To specify a new data set name for the Archive File, specify:

ARCHIVE_DSN *data.set.name*

This override allows you to use one set of saved JCL to restore Archive Files with different names.

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.

DEFCID

To override the default destination Creator ID specified on the Table Map, specify:

DEFCID *cid*

Where *cid* is the default Creator ID. This Creator ID applies to destination tables that are not explicitly qualified in the Table Map. Only one DEFCID parameter may be specified for a Restore Process.

RESTORE_SEL

To add new selection criteria, change, or delete existing selection criteria, specify:

RESTORE_SEL [*cid.*] *table column* [*selcriteria*]

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.

column
      The column name must be specified.

selcriteria
      The selection criteria for the column must conform to the format required in the Specify Selection Criteria for AD panel (see the *Common Elements Manual*). The maximum length is 53 characters. Omit this operand to delete existing selection criteria for a column.

RESTORE_SQL

To add an SQL clause, change, or delete an existing SQL clause, specify:

RESTORE_SQL [*cid.*] *table* AND | OR [*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.

AND   Select data that matches selection criteria and SQL WHERE clause for table. Default.

OR   Select data that matches selection criteria or SQL WHERE clause for table.

where   The WHERE clause must conform to the requirements specified for the Specify SQL WHERE Clause panel. The keyword WHERE is not required as part of the clause. The override is limited to a maximum of 425 lines. To delete an existing SQL clause for a table, omit this operand.

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.

RESTORE_START_TABLE

To change the name of the start table for a selective restore, specify:

RESTORE_START_TABLE [*cid.*] *table*

cid.table
> The table name overrides the existing start table. If the Creator ID (*cid*) is omitted, the Creator ID of the existing start table will be used.

SUBSET_DSN

To override the data set name for the subset Archive File, specify:

SUBSET_DSN *data.set.name*

If adding selection criteria or an SQL clause to change a full restore to a selective restore, this override must be present or an error occurs.

UNKNOWN

If any tables referenced in the Table Map do not exist at the time of the Restore Process, specify:

UNKNOWN { FAIL | ALLOW }

FAIL   Terminate the Restore Process if any tables or relationships in the Archive File are unknown. A message in the report identifies the first unknown object. FAIL is the default.

ALLOW
        Bypass any unknown tables and relationships and continue with the Restore Process. A message in the report identifies the unknown object.

UNKNOWN ALLOW is used with the DEFCID override. Changing the default Creator ID may result in destination tables that do not exist. Use UNKNOWN ALLOW to skip these "unknown" tables.

Store Restore Process Overrides

You can store batch parameters in a sequential file or a partitioned data set, rather than enter job control directly into the jobstream. However, the parameters must be the only data in the file.

Save JCL
You can save and modify the JCL and Batch Utility control statements and execute the process without re-invoking Archive. Specify S to the prompt, **If Batch, Review or Save JCL** prompt. The following panel prompts for 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)   |
'-----------------------------------------------------------------------'
```
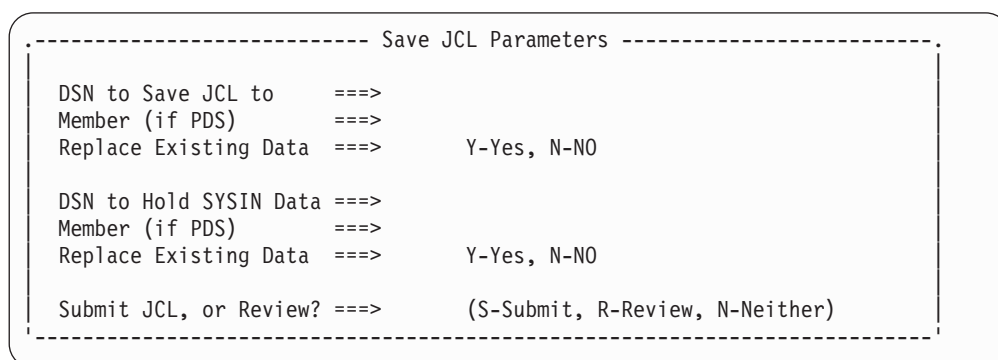
Figure 72. Save JCL Parameters

The following prompts are displayed:

DSN to Save JCL to
        Name of the sequential file or partitioned data set to receive the JCL and Batch Utility control statements. Specify the member name for a partitioned data set at the **Member** prompt.

Member (if PDS)
        Name of the member in the partitioned data set specified at the DSN prompt. A member name for a sequential file causes an error.

Replace Existing Data?
        Indicator for replacing data in the file.

DSN to Hold SYSIN Data
        Name of the sequential file or partitioned data set for SYSIN data. Specify the member name for a partitioned data set at the **Member** prompt.

Member (if PDS)
        Name of the member in the partitioned data set specified at the DSN prompt. A member name for a sequential file causes an error.

Replace Existing Data?
        Indicator for replacing data in the file.

Submit JCL or Review?
        Submit saves the JCL and Batch Utility control statements and submits the job. **Review** allows

you to use ISPF facilities to save or submit the JCL and control statements. Neither, saves the JCL and control statements without submitting or displaying them.

Restore Process Report

When the process is executed online, the RESTORE Process Report is displayed and can be browsed, using standard ISPF scrolling.

In batch, the report is placed in the default output, specified in the JCL. You can display the report as you would any job output.

```
-------------------------- RESTORE Process Report ----------------------------
Command ===>                                               Scroll ===> PAGE
                                                           ROW 0    OF 46
******************************* Top of Data **********************************

                         Restore Process Report

Archive File      : FOPDEMO.ARCHIVE.FILE
Created by        : Job FOPDEMO, using SQLID FOPDEMO on DB2 Subsystem DSNA

Control File      : FOPDEMO.ARCHIVE.CONTROL
Processed by      : Job FOPDEMO, using SQLID FOPDEMO on DB2 Subsystem DSNA
Time Started      : 1999-06-03 09.43.30
Time Finished     : 1999-06-03 09.43.37

Process Options:
  Lock Tables     : No
  Commit Every Nth: 1000
  Discard Limit   : None
  Delete All Rows : N

Totals:
  Number of Restore Tables : 4
  Number of Inserted Rows  : 0
  Number of Updated Rows   : 9
  Number of Failed Rows    : 0

                                Inserted   Updated   Failed    Access
          Restore Tables          Rows      Rows      Rows     Method
   -------------------------- --------- --------- --------- ------
    1  FOPDEMO.ORDERS                  0         1         0   PKEY
    2  FOPDEMO.CUSTOMERS               0         1         0   SCAN
    3  FOPDEMO.DETAILS                 0         5         0   PKEY
    4  FOPDEMO.ITEMS                   0         2         0   SCAN

Selection Criteria Applied (Case Insensitive):
  Begin with rows from Start Table FOPDEMO.CUSTOMERS,

  Select from FOPDEMO.CUSTOMERS where

  CITY             like 'A%'

  AND

  Select from FOPDEMO.ORDERS where

  CUST_ID          like '0%'

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

Figure 73. Restore Process Report Format

Report Format

Headings identify information such as: Archive File name, Control File name, the user that created the Archive File, the date and time of the restore, processing options for the restore, counts of tables, successfully inserted rows, updated rows, failed rows, bypassed rows, and selection criteria applied.

Tables are listed in the order found in the Archive File with counts of inserted, updated, failed, and bypassed rows. If Point-and-Shoot was used to select rows, an additional information line, similar to the following example, appears in the report:

```
Row List Criteria Applied to FOPJL.CUSTOMERS using FOPJL.RT.POINT
```

Detailed Report

If you request a detailed process report from the Specify RESTORE Parameters and Execute panel, the report includes the following:

Any Archive Actions specified for the Restore Process. The report displays the name of each table associated with an Archive Action.

```
        Table                 Action Name and SQL Statement
----------------------- --------------------------------------------------------
FOPDEMO.CUSTOMERS       Before Restore of the First Row To a Table:
                          INSERT INTO FOPRJS.ACTLOG (TYPE, CHAR1, CHAR2)
                          VALUES ('R1', :PST_USER_ID, :PST_CURRENT_DATETIME);
```

Any Column Maps specified for the Restore Process. If the Column Map is named 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
```

Any selection criteria specified in the Restore Request. The report displays each table where selection criteria was specified.

```
Selection Criteria Applied (Case Insensitive):
  Begin with rows from Start Table FOPDEMO.ORDERS

  Select from FOPDEMO.CUSTOMERS where

  STATE            = 'PA'

  AND
```

```
Select from FOPDEMO.ITEMS where

 RATING = 'R' AND UNIT_PRICE > 10.00
```

Print Report

Use the OUTPUT command to direct the contents of the report to an output file or to the printer. A panel prompts for the necessary information.

Delete Archive Process

Use the Delete Archive Process to delete archived data from the production database, when deletion is deferred.

Archive deletes data from a table if you specify Y in **DAA** on the **Specify Tables/Views** panel. The data is deleted during the Archive Process or you can defer deletion in order to review the Archive File before deleting data or to execute the Delete Process offline. To defer deletion, specify Y at the **Defer Delete After Archive** prompt on the Specify ARCHIVE Parameters and Execute panel.

When you defer the deletion, Archive offers two general methods of Delete Archive Processing. You can:

*   Delete data directly from the database, online or in batch.
*   Execute the Delete Archive Process in conjunction with standard DB2 utilities such as, UNLOAD or REORG, with LOAD. This offline process allows you to avoid the overhead of DB2 logging, an important consideration when deleting large quantities of data from your database.

Direct Delete Archive Process

After reviewing the Archive File, select Option 3 DELETE on the **Archive and Restore** menu to delete archived data from the selected tables.

Archive displays the following panel.

```
 --------------------- Delete Rows From Archive Process -----------------------
 OPTION ===>                                               SCROLL ===> PAGE


 Specify Data Set Names for Archive and Control Files
   Archive File DSN  ===> 'FOPDEMO.ARCHIVE.FILE'
   Control File DSN  ===> 'FOPDEMO.CONTROL.FILE'

 Process Options:
   Lock Tables During Delete      ===> Y        (Y-Yes, N-No)
   Commit Frequency Rate          ===>          (1-1000, Blank/SL)
   Limit Number of Discarded Rows ===>          (1-4294967295, Blank/NL)
   Compare Row Contents           ===> Y        (Y-Yes, N-No)
   Review Archive Delete List     ===> 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   ===> S        (N-No, R-Review, S-Save)
```

Figure 74. Delete Rows from Archive Process

Delete Rows from Archive Process Panel

The available prompts are:

Archive File DSN
> Indicates the name of the Archive File for which the delete operation is deferred.

The Archive File name can be specified explicitly by enclosing it in quotes; otherwise, the default prefix, as specified on the User Options panel, is automatically prefixed to the name.

Note: Entering the name of an Archive File that exists only on a external storage device (e.g., a Centera or Tivoli server), automatically recalls the Archive File to disk. The Allocate Dataset panel is displayed if the Archive File is to be recalled to a new location.

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

Lock Tables During Delete
Indicates whether the entire table is locked during the delete operation. Locking the table ensures that other database activity does not interfere with the Process. Locking, however, prevents other users from accessing the table.

A commit relinquishes the table lock. If you specify YES, a commit is performed only when Archive has completed processing a table.

Commit Frequency Rate
Indicates the frequency of commits. The commit points determine the starting point in case of a RESTART. Frequent commits keep page locks to a minimum. Specify:

1 to site maximum
Number of rows processed to trigger a commit.

blank Your site limit.

This option has no effect if the prompt for **Lock Tables During Delete** is YES. If so, the commit is performed when the processing for a table is completed.

The site-defined limit is displayed and indicates the maximum value you may enter.

Limit Number of Discarded Rows
Indicates the maximum number of rows that can be marked as discarded. If that limit is met, the process is terminated. You can use RESTART to begin the process at the termination point. Specify:

1 to site maximum
Number of discarded rows to terminate the process.

blank No limit.

To terminate the process if any rows are discarded, specify 1.

Compare Row Contents
Indicator for comparing rows prior to deletion. (Site management may set this value, and prevent modification.)

Y Rows are deleted from the database only if they exactly match rows in the Archive File. Rows that do not exactly match are discarded and noted in the Control File.

N Row comparison is not performed.

Note:
- If a table does not have a DB2 primary key or an Optim primary key with a unique index, the Delete Process always compares row contents prior to deletion.
- Specifying N may improve performance significantly, but you risk losing any updates to the data in the database since the Archive was performed.

Review Archive Delete List

Review the list of rows from tables specified in the Access Definition to be deleted after archive. This option is displayed only when the Site Option, **Review Delete After Archive** is set to Yes.

Y   Review the archive delete list. A pop-up list of the tables in the Archive File and the original Delete After Archive settings for each table are displayed. Specify N on the pop-up menu to skip the deletion of data from one or more tables. Use the DAA N primary command to change all settings on the delete list.

You cannot delete data from a table during the Delete Process, if the table was not marked for deletion during the Archive Process.

N   Do not review the delete after archive list. Default.

Review ACM and Key Lookup Limit

Review the access method (scan or lookup) used to access tables for delete processing. Also, if Key Lookup is the method used, you can specify the maximum number of key lookups done at one time.

Y   Review the access method and key lookup limit for each table in the Archive File. The Choose Access Method/Key Lookup Limit pop-up window is displayed before the Delete Process begins.

Note: You can access the Choose Access Method/Key Lookup Limit pop-up window using the ACM command. For more information see "ACM Command" on page 109.

N   Do not review the access method and key lookup limit. Default.

Run Process in Batch or Online

Indicates whether the Delete Process is executed in batch or online. Specify:

B   Batch

O   Online

If site management has established a maximum number of rows for online processing and this request exceeds that limit, this option is forced to Batch and cannot be changed. Consult site management for guidelines.

If Batch, Review or Save JCL

For batch execution, indicate whether the JCL and Batch Utility control statements should be submitted, reviewed prior to job submission, or saved for later 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 for the JCL and control statements.

Resubmitting a Batch Delete

If a processing failure occurs during the Delete Process, you can restart the process by adding the RESTART operand to PARM on the batch EXEC statement and resubmitting the job with no other changes. Separate the RESTART operand from the previous operand in PARM with a blank. (This is an alternative to returning to the online system to initiate restart of the process.)

Commands

The available primary commands include:

- CANCEL
- END

- OPTIONS
- SHOW INDEXES

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**.

```
+--- Choose Access Method/Key Lookup Limit  --+
|                                     1 of 4 |
| Access Method Values:                      |
|   K - Key Lookup                           |
|   S - Table Scan                           |
|   blank - Software Chooses                 |
|                                     Key    |
|                           Access  Lookup  |
| Table Names In Archive File  Method  Limit |
| --------------------------  ------  ------ |
| ***************** TOP ******************* |
| FOPDEMO.CUSTOMERS                          |
| FOPDEMO.DETAILS                            |
| FOPDEMO.ORDERS                             |
| FOPDEMO.ITEMS                              |
| *************** BOTTOM ****************** |
+--------------------------------------------+
```

This window 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 value is specified, the default value is used. The default value is specified via a User Option called "Key Lookup Limit Default." See the *Common Elements Manual* for more information on that user option.

For detailed information on the Choose Access Method / Key Lookup Limit panel, see the *Common Elements Manual*.

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 destination tables of the Delete Process with the status of the supporting indexes. If the status of an index is Partial or None, creation of the missing index may enhance processing performance. For details about the Index Analysis pop-up window, see the "SHOW INDEXES Command" on page 96.

Delete Rows from Archive Process Status

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.

```
-------------------- Delete Rows From Archive Process ----------------------
OPTION ===>                                              SCROLL ===> PAGE


    +------------------------DELETE Process Status----------------------+
    |                                                                    |
    |                     DELETE Process in Progress                     |
    |                                                                    |
    |              Number of Rows Processed: 19 of 53                    |
    |                                                                    |
    |  Completed Table: FOPDEMO.ORDERS                                   |
    |      Deleted Rows: 19                                              |
    |   Rows Not Found: 0                                                |
    |      Failed Rows: 0                                                |
    +--------------------------------------------------------------------+
```

Figure 75. Delete Rows from Archive 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 being processed, 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 Archive will delete rows in the proper order. These discarded rows are noted in the Control File.

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 Archive 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 Archive File row marked OK. If no destination rows match the Archive 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, Archive warns you that descendant rows may be deleted regardless of whether those tables were selected for deleting. Archive displays a pop-up to confirm the cascade delete.

If Row Updated

Archive checks an entire row to ensure that it matches the row in the Archive File exactly. If another user has updated the row between the time the Archive Process was performed and the time the Delete Process is performed, that row is not deleted.

DB2 RI Rules

Archive normally deletes rows from the child table before attempting to delete rows in the parent table. However, for cascading deletes, Archive deletes the parent table first and DB2 deletes the child rows. If

deleted child rows are included in the Archive File, Archive 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.

Batch Execution

If you specify batch execution, Archive 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 for Changes Before Job Submission** prompt 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 Batch Utility control statements required to perform the Delete Process.

Review

If you enter Review at the **If Batch, Review or Save JCL** prompt on the Delete Rows From Archive Process panel, the complete jobstream is displayed in the ISPF editor. You can edit and save the JCL and control statements. (See the *Batch Utilities Guide* for the DEFERRED_DELETE statement keywords and values.)

END is used to return from the ISPF editor to Archive; however, your response to the prompt **Submit Jobs with END** on the User Options panel determines whether the job is automatically submitted. If you enter NO at 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 when END is used. You can use CANCEL to return to the Delete Rows From Archive Process panel without submitting the job. You can modify the specifications or cancel the Delete Process from this panel. (See the *Common Elements Manual* for information on the "Submit Jobs with END" option that establishes whether jobs are automatically submitted when END is used.)

Save

If you 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 Batch Utility 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.

Batch Overrides

If you save a generated batch job to a data set, you can submit the job directly from the ISPF editor rather than from within an online session. Submitting the job directly is especially useful when performing several Archive Processes that vary only by Creator ID for the tables or by selection criteria.

When you submit a batch job directly, you can provide overrides to defer the execution of delete after archive specifications or replace the default Creator ID, selection criteria, and SQL WHERE clause in the Access Definition. Use the PSDFOVRD DD statement to provide 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 or provide batch overrides, if available. If batch overrides are not

available for your purpose, 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 remain valid.)

ARCHIVE_DSN

To specify a new data set name for the Archive File, specify:

ARCHIVE_DSN *data.set.name*

This override allows you to use one set of saved JCL to create Archive Files with different names.

DEFCID

To override the default Creator ID in the Access Definition, specify:

DEFCID *cid*

cid   The default Creator ID. This Creator ID applies only to tables that are not explicitly qualified in the Access Definition.

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 archive is performed.

Only one DEFCID parameter may be specified for a Delete Archive Process.

COMMIT_COUNT

To override the commit count for deletes 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 deletes 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.

DELETE Process Report

A DELETE Process Report is generated as part of the process. This report contains general information and statistics about the process.

The contents of the DELETE Process Report can be browsed. When the process is executed online, the DELETE 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.

```
 ------------------------- DELETE Process Report ----------------------------
 Command ===>                                               Scroll ===> PAGE
                                                            ROW 0    OF 32
 ****************************** Top of Data ********************************

                          DELETE Process Report

 Archive File     : FOPDEMO.ARCHIVE.FILE
 Created by       : Job FOPDEMO, using SQLID FOPDEMO, on DB2 Subsystem DSNA

 Control File     : FOPDEMO.CONTROL.FILE
 Processed by     : Job FOPDEMO, using SQLID FOPDEMO, on DB2 Subsystem DSNA
 Time Started     : 1999-09-01 13.05.29
 Time Finished    : 1999-09-01 13.05.42

 Process Options:
   Lock Tables     : No
   Commit Every Nth: 1000
   Discard Limit   : None
   Delete Limit    : 90000

 Totals:
   Number of Delete Tables  : 2
   Number of Deleted Rows    : 53
   Number of Failed Rows     : 0      Use 'Browse Control File' for Details
   Number of Rows Not Found : 0


                               Deleted    Failed      Not    Access   PK
         Delete Tables          Rows       Rows      Found   Method   Limit
   -------------------------  ---------  ---------  --------- ------ ------
   1  FOPDEMO.ORDERS                19          0          0  PKEY     100
   2  FOPDEMO.ITEMS                 34          0          0  SCAN

                        ****** End of Report ******

 **************************** Bottom of Data ******************************
```

Figure 76. DELETE Process Report

Report Format

The information presented and the format of this report is similar to that of the ARCHIVE Process Report. Statistics about **Deleted Rows**, **Failed Rows**, and **Not Found Rows** are provided. You can browse the Control File in Report Mode to determine why rows failed and use Retry/Restart to complete the process, after correcting any problems. For additional information, see the *Common Elements Manual*. For more information on the ARCHIVE Process Report, see "Archive Process Report" on page 76 in this manual.

Print Report

Use the OUTPUT command to direct the contents of the report to an output file or to the printer. A panel prompts for the necessary information.

Offline Delete Archive Process

A batch Delete Archive Process allows you to avoid the overhead of DB2 logging, an important consideration when deleting large quantities of data from your database.

This offline Delete Archive Process has the same effect as deleting "delete after archive" data directly from the database.

In the offline Delete Archive Process, Archive compares Archive File data with data in one or more DB2 UNLOAD-compatible files to create a new file that excludes the archived data marked "delete after archive." Archive uses matching keys as the basis of comparison for the two files. The new file, minus the deleted data, can then be loaded into the database.

The offline Delete Archive Process requires the following steps:

1. Use an online or batch Archive Process to create an Archive File containing one or more tables designated for a deferred delete after archive.
2. Unload data from the database using DSNTIAUL, REORG, REORG UNLOAD, or an unload program. Each unload file must contain all columns of the table.

Note: Do not unload multiple tables in one process, using DSNTIAUL.

1. Run the offline delete utility with one or more Archive Files and the unloaded data as input. Because an unload file typically contains data from a single tablespace, which is often limited to data from a single table, multiple unload files can be used as input to this offline process. The output is in two parts:

   Note:
   • The Discard File contains only unloaded data that matches data in the Archive Files that is designated for delete after archive.
   • The Delta File contains all other unloaded data.
   The format of these output files is the same as the format of the unloaded data.
2. Load the Delta File to the database using DB2 LOAD or LOADPLUS. You must include the LOAD utility REPLACE option to delete all rows in the tablespace before copying the Delta rows into the database. If it becomes necessary, the Discard File can also be reloaded to the database.

The following diagram illustrates the offline Delete Archive Process:
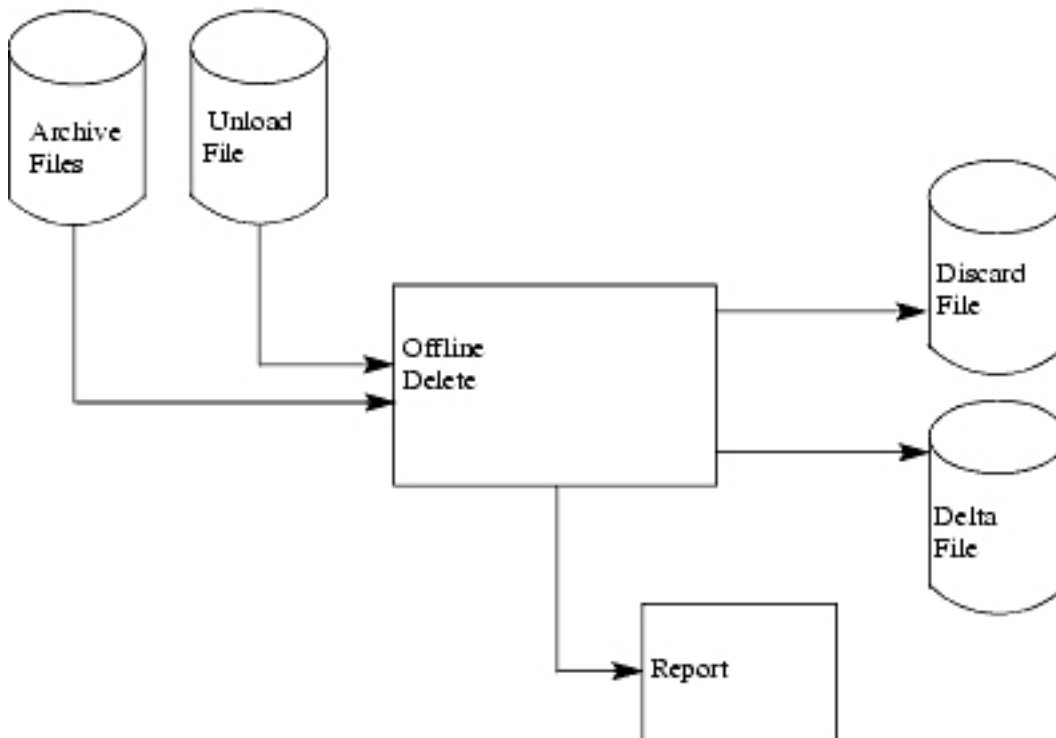
The JCL needed to execute the offline delete utility is:

```
//         EXEC PGM=FOPMAIN,REGION=0M,
//         PARM='CON UTILITY subsys planname sqlid userid'
//*
//PSDFDFLT  DD DSN=your.loadlib(FOPMDFLT)  DEFAULT SITE OPTIONS
//            DISP=SHR
//SYSPRINT  DD SYSOUT=*                    INTERNAL ERRORS / MESSAGES
//SYSTERM   DD SYSOUT=*                    INTERNAL ERRORS / MESSAGES
//PSTRACE   DD SYSOUT=*                    TRACE OUTPUT
//PSDFASUM  DD SYSOUT=*                    UTILITY SUMMARY LISTING FILE
//PSDFADIR  DD SYSOUT=*                    DIRECTORY LISTING FILE
//PSDFAREP  DD SYSOUT=*                    REPORT OUTPUT
//PSDFRPRT  DD SYSOUT=*                    DELETE REPORT OUTPUT
//SYSRECnn  DD DSN=input.file.name         INPUT UNLOAD-COMPATIBLE FILES
//            DISP=SHR
//SYSNEWnn  DD DSN=output.file.name        OUTPUT FILES
//            DISP=OLD
//SYSDSCnn  DD DSN=discard.file.name       DISCARD FILES
//            DISP=OLD
//SYSIN     DD *
            control statements
//*
```

A sample of this JCL is provided in the sample library as member FOPJOBUT. Unique data set names are required for SYSRECnn, SYSNEWnn, and SYSDSCnn; the offline delete utility will not overwrite the input file.

Control Statements

Insert the OFFLINE_DELETE control statement after the SYSIN DD * statement. (The OFFLINE_DELETE statement keywords and parameters are described in "OFFLINE_DELETE Statement.") Additional control statements include the PAGESIZE, ERROR, and OUTDD statements. The *Batch Utilities Guide* describes these additional control statements.

OFFLINE_DELETE Statement

Use the OFFLINE_DELETE statement to compare data in one or more Archive Files with data in one or more DB2 UNLOAD-compatible files. This creates new UNLOAD-compatible files that exclude the archived data marked "delete after archive." The new files, minus the deleted data, can then be loaded into the database.

Executing the OFFLINE_DELETE statement also generates a report of the Delete Process in the Delete Report listing file. Information in the report includes the input data set name, Discard File name, and names of any tables not processed.

```
OFFLINE_DELETE
NAME ( arc.file.name1 [, arc.file.name2, ... ] )
UNLD ( [ cid. ] tblname1, unld-ddn, discard-ddn, outunld-ddn,
     format, scan [, VIEWDELETE ] )
[ UNLD ( [ cid. ] tblname2, unld-ddn, discard-ddn, outunld-ddn,
     format, scan [, VIEWDELETE ] ) ]
```

Note: ARCHIVE_DELETE is a synonym for the OFFLINE_DELETE statement.

The keywords and operands in the OFFLINE_DELETE statement are:

NAME

The name of one or more Archive Files with data to be deleted. Multiple values can be specified in any order, but must be enclosed in parentheses and separated by commas. (Note that if you specify a single value, parentheses are optional.) This keyword and its operand must be included in the OFFLINE_DELETE statement.

arc.file.name
> Specify the fully qualified name of a valid Archive File data set as an explicit value or a pattern, using DB2 LIKE syntax. An Archive entry for the file is not required.

UNLD
> Processing for tables in the Archive File. This keyword and the following operands are required for each table. The operands are positional and must be specified in the following order:

cid.tblname
> Specify the name of a table marked for DAA in the designated Archive File and prefix with Creator ID, if different from the default Creator ID for the Archive File. An error condition occurs if the table is not designated for DAA.

unld-ddn
> DDNAME for the corresponding UNLOAD-compatible file used as input to the offline Delete Archive Process.

discard-ddn
> DDNAME for the output Discard File.

outunld-ddn
> DDNAME for the output Delta File.

format Format of the UNLOAD-compatible input, Delta, and Discard files. Specify the format of the input file:

> **BMC**   UNLOAD PLUS format.

> **DSNTIAUL**
> > DSNTIAUL format, including Auto-Unload, Auto-Online Unload, and IBM High Performance Unload.

> **UNLOADONLY**
> > IBM REORG UNLOAD ONLY

> **UNLOADEXT**
> > IBM REORG UNLOAD EXTERNAL

> **UNLOAD**
> > IBM REORG UNLOAD CONTINUE or UNLOAD PAUSE format.

scan   The method used to scan the Unload and Archives Files for key matches. Specify one of the following:

> **MATCHSCAN**
> > If a key match exists, scan the remainder of the row to verify that no values have changed. If a change has occurred, the row is retained.

> **MATCHCRC**
> > If a key match exists, compare a generated CRC value instead of the remainder of the row. If a change has occurred, the row is retained.

> **MATCHNONE**
> > The user must verify that no changes occurred since the Archive Process. If a key match exists, the row is written to the Discard File. Duplicate keys are not supported and will result in a duplicate key error.

VIEWDELETE
> If processing a view, use this keyword to match only the columns that are present. If you omit this keyword when processing a view or if the view applies to more than one table, an error condition occurs.

> **Note:** The entire row is not matched; values in columns other not represented in the view may have been changed.

Example

The following is an example of OFFLINE_DELETE statement usage:

The DETAILS and ORDERS tables, in the input UNLOAD-compatible files associated with the
DDNAMES SYSREC00 and SYSREC01, are designated DAA in the Archive File
FOPDEMO.ARCHIVE.FILE. The DDNAMES SYSDSC00 and SYSDSC01 designate the Discard Files, and
the DDNAMES SYSNEW00 and SYSNEW01 designate the Delta Files. A matchscan is performed. To
purge the designated data, specify:

```
OFFLINE_DELETE
   NAME FOPDEMO.ARCHIVE.FILE
   UNLD (DETAILS, SYSREC00, SYSDSC00, SYSNEW00,
      UNLOAD, MATCHSCAN)
   UNLD (ORDERS, SYSREC01, SYSDSC01, SYSNEW01,
      UNLOAD, MATCHSCAN)
```

List Archive Directory

The List Archive Directory option is used to select Archive Files to search or browse.

Archive lists, online or in batch, Directory entries for Archive Files according to descriptive criteria you
supply. Using the list, you can:

- Search or browse Archive Files online.
- Request a batch search of data archived on tape or disk, according to selection criteria specified online
  or created from earlier batch searches.
- Restore archived data from selected Archive Files.
- Delete Archive Files or Directory entries.
- Review Directory information for selected Archive Files.

Specify List Criteria

When you select Option 4 LIST on the Archive and Restore menu, the Archive Directory Selection
Criteria panel is displayed.

Use the Archive Directory Selection Criteria panel to provide criteria for the Archive File directory entries
that are listed.

```
-------------------- Archive Directory Selection Criteria ---------------------
Command ===>                                              Scroll ===> PAGE

The Archive Directory can be displayed based on the Archive Criteria
specified, or the results of a previous Batch Search process.

Display Directory based on ===> A    (A-Archive Criteria, B-Batch Search)

If Searching, specify one or more criteria (DB2 Like syntax permitted)
   Archive File DSN     ===> FOP%
   Archived By          ===>
   Archive Group        ===>
   Archive Description  ===>
   Archive Date Range (YYYY-MM-DD)
      Beginning Date    ===>                    Ending Date ===>

   Archive Table Name   ===>                                      >>
   Archive Column Name  ===>

If using Batch Search results, specify
   Batch Search Results DSN ===> FOPDEMO.BATCH
```

Figure 77. Archive Directory Selection Criteria

Archive Directory Selection Criteria Panel

The panel includes the following prompts:

Display Directory based on

Source of criteria for the list of Directory entries.

A   List entries that match criteria specified on the Archive Directory Selection Criteria panel. If no criteria are provided, Archive lists all Archive File entries in the Directory.

B   List entries for Archive Files selected in a batch search of the files. If you specify B, any criteria on the panel are ignored. However, you must provide the name of the data set containing the results of the previous batch search.

If Searching, Specify One or More Criteria

Criteria determine the Directory entries that are listed. You can restrict the list to a specific file, to files generated by a specific user or in a specific group, or files archived within a range of dates. Limiting the list is especially useful if there are many Archive Files. Criteria can be entered at any of the following prompts and are combined with a logical AND to select entries for listing. After providing criteria for the list, press ENTER to display the appropriate list of Archive File Directory entries.

Archive File DSN

The Archive File data set name. You can enter a name to list the entries for specific Archive Files, leave the prompt blank to list entries regardless of name, or use DB2 LIKE syntax to specify a pattern. Use single quotes for a case-sensitive search.

Archived By

The User ID for listed Archive Files. Enter the full User ID to list the entries for Archive Files created by a specific user, leave blank to list entries regardless of user, or use DB2 LIKE syntax to specify a pattern.

Archive Group

The user-specified group ID. Enter the full group designation to list the entries for Archive Files in a specific group, leave blank to list entries regardless of group, or use DB2 LIKE syntax to specify a pattern.

Archive Description

The user-specified description. Enter the full description to list the entries for Archive Files with a specific description, leave blank to list entries regardless of description, or use DB2 LIKE syntax to specify a pattern.

Archive Date Range

The date range in which the desired Archive Files were created. (The displayed date format is the DB2 default for your system.)

Beginning Date

The beginning date of the range, in ISO, USA, or European format. (Archive converts the date to your DB2 default format.)

Use **Beginning Date** alone to specify all Archive Files created on or after that date. Specify both **Beginning Date** and **Ending Date** for a range.

Ending Date

The ending date of the range, in ISO, USA, or European format. (Archive converts the date to your DB2 default format.)

Use **Ending Date** alone to specify all Archive Files created on or before that date. Specify both **Beginning Date** and **Ending Date** for a range.

Archive Table Name

The archived table name. Enter the full name, prefixed with Creator ID (if needed to identify the table), to list entries for Archive Files that include the table, leave blank to list entries regardless of tables, or use DB2 LIKE syntax to specify a pattern.

Archive Column Name

The archived column name. Enter the full name, prefixed with Table Name (if needed to identify the column), to list entries for Archive Files that include the column, leave blank to list entries regardless of columns, or use DB2 LIKE syntax to specify a pattern.

If using Batch Search results, specify

If using the results of a previous batch search, specify the following.

Batch Search Results DSN

The name of the file containing the results of a batch search. This value is ignored in an online search.

Available Commands

The available primary commands include:

- CANCEL
- END
- EXPAND
- OPTIONS

Specification Complete

When you complete specifications, press ENTER to display the Archive Files list.

List Archive Files

The Archive Files panel lists the files that satisfy the criteria specifications from the Archive Directory Selection Criteria panel.

Initially, the Archive Files are listed according to options specified on the Archive Options panel. The options allow you to arrange the list entries by date, user, name, group, or description in ascending or descending order. (See the *Common Elements Manual* for more information.)

Use the Archive Files panel to search for archived data or to browse or restore data in an Archive File. In the following figure, entries for Archive Files with names beginning with the characters FOP are listed by date.

```
------------------------------ Archive Files ---------------------------------
Command ===>                                            Scroll ===> PAGE

    Primary: SEARCH, HIDE/REFRESH                           1 OF 45
       Line: S-Search, I-Info, B-Browse, REP-Report, R-Restore
             D-Del, T-Tag, CLR-Clear, AD-Access Definition
             CPY-Copy To Centera or Tivoli, RCL-Recall From Centera or Tivoli

Cmd Stat    Date    File Name                                Group    Unit
--- ----  ---------- ------------------------------------- -------- ----
    ***************************** TOP ************************************
___       1999-06-02 FOPDEMO.ARCHIVE.FILE                   ARC1998  TAPE
___       1999-06-01 FOPDEMO.ARCHIVE.FILE2                  ARC1998  DISK
___       1999-05-30 FOPDEMO.ARCHIVE.FILE1                  ARC1998  DISK
___       1999-05-30 FOPDEMO.ARCHIVE.SALES02                ARC1998  DISK
___       1999-05-30 FOPDEMO.ARCHIVE.PARTS02                ARC1998  TAPE
___       1999-05-30 FOPDEMO.ARCHIVE.ACCTS02                ARC1998  DISK
___       1999-05-29 FOPDEMO.ARCHIVE.SALES01                ARC1998  DISK
___       1999-05-29 FOPDEMO.ARCHIVE.PARTS01                ARC1998  DISK
___       1999-05-29 FOPDEMO.ARCHIVE.ACCTS01                ARC1998  CENT
___       1999-05-29 FOPDEMO.ARCHIVE.SALES                  ARC1998  TIV
___       1999-05-28 FOPDEMO.ARCHIVE.PARTS                  ARC1998  DISK
```

Figure 78. Archive Files

Archive Files Panel

The panel includes:

Cmd Area for line commands. The available line commands are:

> **AD** Display details of the Access Definition used to create the Archive File. For more information, see "Access Definition Display Parameters" on page 122.
>
> **AT** Display or edit attributes of an Archive File. The displayed attributes include group, description, and security status. For more information, see "Archive Attributes" on page 122.
>
> **B** Browse an Archive File on disk. For information about browsing an Archive File, see "Browse an Archive File" on page 195.
>
> **CPY** Copy an Archive File to a Centera or Tivoli Server. The Specify Storage Options panel is displayed, prompting for information about the external storage device. For more information, see "Specify Storage Options" on page 61.
>
> While the file is copied to external storage, either the Centera or Tivoli Process Status or pop-up is displayed. For more information, see "External Storage Process Status" on page 76.
>
> **CLR** Clear the **Stat** indicator.
>
> **D** Delete an Archive File Directory entry, Archive File, or both. DD is the block form of the command; D*n* is the numeric. For more information, see "Delete Archive Options" on page 123.
>
> **Note:**
>
> - You cannot delete an Archive File or Directory entry until after any assigned retention date has been reached. For details about assigning a retention date, see "Perform the Archive Process" on page 50 in this manual, or see the *Customization Guide*.

- If you attempt to delete the Directory entry for an Archive File on Centera or Tivoli, Archive first attempts to delete the file on the external storage. If that fails, depending on the **Allow Orphaned Files** option, the Directory entry and the Archive File may not be deleted.

I   Display information about an Archive File, including the number of rows archived from each table and any high and low value indexes for columns. For details, see "Extended Archive Directory Information" on page 124.

R   Restore data from an Archive File. For information about restoring archived data, see "Restore Archived Data" on page 81.

RCL   Recall an Archive File copied to a Centera or Tivoli Server to disk.

    Note: The file is recalled to the location specified in Storage Site Options from the Site Options panel. You can access this Archive File as needed. (The original Archive File copied to the external storage remains intact.)

REP   Create a report on the data in the file. See "Generate Report" on page 126 for details.

S   Search one or more Archive Files. SS is the block form of the command; S*n* is the numeric. See "Search Archive Files" on page 128 for details.

T   Tag the entry for a global search of the Archive File. TT is the block form of the command. See "Search Archive Files" on page 128 for details.

Note: Using the AD, B, REP, or S line commands on an Archive File that exists only on external storage, automatically recalls the Archive File to disk. The Allocate Dataset panel is displayed if the Archive File is to be recalled to a new location.

Stat   The status of the Archive File. Possible values are:

BAT   Batch search has been initiated on the Archive Search Criteria – Tables panel.

DEL   The Directory entry for the file has been deleted.

FND   File data matches search criteria or the criteria are within sparse index parameters.

NF   File data does not match the search criteria.

TAG   Entry is tagged for a global search.

UNK   Sparse or temporary index searched and potential match found.

Date   Date the file was created in the format defined to DB2.

File Name
    Fully qualified name of the file.

Group   Group designation for the file.

Unit   Type of storage for the Archive File, as one of the following:

CENT   Archive File is on a Centera Server, and may be recalled to disk if accessed.

DISK   Archive File is in accessible disk storage.

MIGR   Archive File has been migrated externally using a Hierarchical Storage Management (HSM) or similar system.

TAPE   Archive File is on tape.

TIV   Archive File is on a Tivoli Server, and may be recalled to disk if accessed.

UNK   Archive Entry is present but the Archive File is not. This condition can occur when an Archive File is deleted from disk and the Archive Entry remains in the Optim Directory.

Use the DETAIL primary command to display the following:

User   User ID of the person who created the file.

Description
Description of the file.

Security
Access privileges for the file as:

- PUBLIC

  Any user can access or edit the file.

- READONLY

  Any user can access the file, but only the Archive Administrator or the user that created the file can edit it.

- PRIVATE

  Only the Archive Administrator or the user that created the file can access or edit the file.

Access Definition Display Parameters

Use the AD line command to display the Access Definition used to create the Archive File. A pop-up window allows you to specify criteria for displaying the Access Definition.

```
----------------------------- Archive Files ---------------------------------
Command ===>                                             Scroll ===> PAGE

    Primary: SEARCH, HIDE/REFRESH                           1 OF 45

       +--------------Access Definition Display Parameters-------------+
       |                                                              |
Cmd S  | Select Column options to be used:                     |   Unit
--- -  |    Display Selection Criteria    ===> Y       (Y-Yes, N-No) | -  ----
    *  |    Display Archive Criteria      ===> Y       (Y-Yes, N-No) | ******
AD_    |    Display SQL Criteria          ===> Y       (Y-Yes, N-No) |  TAPE
___    |    Display Archive Actions       ===> Y       (Y-Yes, N-No) |  DISK
___    |    Display All Column Attributes ===> Y       (Y-Yes, N-No) |  DISK
___    +--------------------------------------------------------------+  DISK
```

Figure 79. Archive File Access Definition Display Parameters

The prompts allow you to review selection criteria, archive criteria, SQL WHERE clauses, archive actions, or all column attributes. Enter Y to display the information indicated by a prompt, or N to exclude the information from the display.

Archive Attributes

Use the AT line command to change **Group**, **Description**, or **Security Status** specifications for an Archive File. When you press ENTER, Archive displays the pop-up window shown in the following figure.

```
----------------------------- Archive Files --------------------------------
Command ===>                                           Scroll ===> PAGE

     Primary: SEARCH, HIDE/REFRESH                          1 OF 45


        +----------------------Archive Attributes---------------------+
        |                                                             |
Cmd S   | Archive Name:  FOPDEMO.ARCHIVE.FILE                         |   Unit
--- -   |                                                             | - ----
    *   | Modify the attributes as needed.                            |   ******
AT_     |                                                             |   TAPE
___     | Group           ===>                                        |   DISK
        |                                                             |   DISK
___     | Description     ===>                                        |   DISK
___     |                                                             |   TAPE
___     | Security Status ===> PUBLIC     (PUBLIC, PRIVATE, READONLY) |   DISK
___     |                                                             |   DISK
___     | Use END command to accept any changes and return.           |   DISK
___     | Use CANCEL command to ignore any changes and return.        |   DISK
___     |                                                             |   DISK
___     +-------------------------------------------------------------+   DISK
```

Figure 80. Archive Attributes

Type values for prompts you want to change and use END to return to the Archive Files panel. The file for which you used the AT line command is scrolled to the beginning of the display.

Delete Archive Options

Use the D line command to delete an Archive File, an Archive File Directory entry, or both. The Delete Archive Options pop-up window is displayed for each Archive File to be deleted.

```
----------------------------- Archive Files --------------------------------
Command ===>                                           Scroll ===> PAGE

     Primary: SEARCH, HIDE/REFRESH                          1 OF 45


        +----------------------Delete Archive Options-----------------+
        |                                                             |
Cmd     | Archive File DSN:  FOPDEMO.ARCHIVE.PARTS                    |   Unit
---     |                                                             |   ----
        | Processing Options:                                         |   ****
D__     |                                                             |   TAPE
___     |    Delete Archive Directory Entry ===> Y    (Y-Yes, N-No)   |   DISK
___     |    Delete Archive File            ===> Y    (Y-Yes, N-No)   |   DISK
___     |    Confirm On Delete              ===> Y    (Y-Yes, N-No)   |   DISK
___     |                                                             |   TAPE
___     | To skip the delete operation entirely, enter the CANCEL command |   DISK
___     |                                                             |   DISK
___     +-------------------------------------------------------------+   DISK
```

Figure 81. Delete Archive Options

The name of the Archive File is displayed in **Archive File DSN**.

Specify Y or N to indicate whether to delete the Archive File Directory entry or the Archive File. If you are deleting the Archive File, you must also delete the Directory entry. However, you can delete the Directory entry without deleting the Archive File (for example, if you are migrating an Archive File to another Directory).

Specify Y or N for **Confirm on Delete** to determine whether the Delete Archive Options pop-up window is displayed for each Archive File to be deleted.

Extended Archive Directory Information

You can display additional information about an Archive File on the Extended Archive Directory Information panel via the I line command. That panel lists the Archive File DSN, retention date, group name, description, creator, create time, security status, and unit type. It also indicates the number of rows archived and the names of indexed columns, with high and low values for each column that has a sparse index. If the file is a member of any collections, the names of those collections are also included in the display.

An example of the Extended Archive Directory Information panel, with information about the Archive File FOPDEMO.ARCHIVE.FILE follows.

```
------------------- Extended Archive Directory Information --------------------
 Command ===>                                              Scroll ===> PAGE
                                                           ROW 0    OF 42
****************************** Top of Data *********************************
Archive File DSN : FOPDEMO.ARCHIVE.FILE
Dense Index DSN  : FOPDEMO.INDEX.FILE
Archived By      : SQLID FOPDEMO on DB2 subsystem DSNA
Retention Date   : None
Group Name       : ARC1998
Description      : FEBRUARY
File Created On  : 1999-08-12 14.05
Created By       : FOPDEMO
Security Status  : Not In Use
Unit Type        : DISK
Access Definition: GRP.PSTDEMO.ARCHIVE
Expiration Date  : None
Archive ID       : 2037570250
Collections      : FOPJES.COLL1

Table FOPDEMO.CUSTOMERS has 19 rows archived.

Index Information for Table FOPDEMO.CUSTOMERS
      Dense Index for Column CUST_ID

Table FOPDEMO.DETAILS has 222 rows archived.

Index Information for Table FOPDEMO.DETAILS
      Dense Index for Column ITEM_ID

Table FOPDEMO.ITEMS has 33 rows archived.

Index Information for Table FOPDEMO.ITEMS
      No Indexes Specified

Table FOPDEMO.ORDERS has 19 rows archived.

Index Information for Table FOPDEMO.ORDERS
      Dense Index for Column CUST_ID

      Sparse Index for Column ORDER_ID
         Low Value  :    205
         High Value :   3398

****************************** Bottom of Data *******************************
```

Figure 82. Extended Archive Directory Information

Review information on this panel to determine candidate Archive Files to search or browse.

Centera Attributes

If you obtain information about an Archive File that has been copied to a Centera Server, additional Centera Attributes are also displayed.

```
Security Status  : Not In Use
Unit Type        : CENT
Access Definition: FOPUSER.CENTERA.ARCHIVE
Expiration Date  : None
Centera Attributes:
  Pool Name       : FOPBOX
  File On Disk?   : YES
  Clip ID         : 7MM63B974HSOTe475UMCHC9DUK3
  FileName        : FOPUSER.CENT.ARCHIVE
  Retention       : Centera Default
  Created-By      : FOPUSER
  Group           : TESTING2
  Product         : Archive for DB2
  Vendor          : IBM
  Version         : 5.2Y
  Volser          : FOP002
  Blocksize       : 8906
  Blocks          : 17
  SqlID           : FOPUSER
  ADName          : FOPUSER.CENTERA.ARCHIVE
```

Figure 83. Extended Archive Directory Information, Centera Attributes

Tivoli Attributes

If you obtain information about an Archive File that has been copied to a Tivoli Server, additional Tivoli Attributes are also displayed.

```
Archive File DSN  : FOPUSER.TIVOLI.ARCHIVE
Archived By       : SQLID FOPUSER on DB2 subsystem DSXX
Retention Date    : None
Group Name        :
Description       :
File Created On   : 2005-03-15 16.57
Created By        : FOPUSER
Security Status   : Not In Use
Unit Type         : TIV
Access Definition : FOPUSER.TIVOLI.AD1
Expiration Date   : None
Archive ID        : 5627555013
Tivoli Attributes:
  Node Name       : TIVOLI1
  File On Disk?   : YES
  Filespace Prefix: TIV1
  Management Class: FOP
  Object ID       : 0
```

Figure 84. Extended Archive Directory Information, Tivoli Attributes

Available Commands

The following commands are available when the Archive Files panel is displayed:

- BOTTOM
- FIND
- REPORT
- SHOW

- CANCEL
- HIDE
- RESET
- SORT
- DETAIL
- OPTIONS
- RFIND
- TOP
- DOWN
- REFRESH
- SEARCH
- UP
- END

Generate Report

Archive allows you to generate a read-only report on the data in one or more Archive Files listed on the Archive Files panel.

The report can be created online or in batch and can be reviewed online or printed. See "Control Files" on page 201 for a description of the report.

Use the REPORT primary command for successive reports of data in all listed Archive Files or the REP line command for a report on a selected Archive File. Either command invokes the Specify Report Options panel, shown in the following figure:

```
------------------------- Specify Report Options ---------------------------
Command ===>                                               Scroll ===> PAGE

Archive File DSN:  FOPDEMO.ARCHIVE.FILE

Report Type                    ===>            (A-All, D-Del Only, C-AD, S-Sum)

Process All or Named Table     ===>            (A-All, N-Named Table Only)
  If Named Table               ===>                       >>

Output Type            ===>                    (D-Dataset, S-SYSOUT)
  If output to Dataset, specify:               (Blank for temporary DSN)
    DSN              ===>
  If output to SYSOUT, specify:
    SYSOUT Class     ===>                       (A - Z,0 - 9, *)
    Destination      ===>
    Hold             ===>                       (Y-Yes, N-No)

If Display Length Exceeds File Width ===> C     (C-Change File, W-Wrap Data)

Run Report in Batch or Online   ===>            (B-Batch, O-Online)
  Browse Online Dataset         ===> Y          (Y-Yes, N-No)
  If Batch, Review or Save JCL  ===>            (N-No, R-Review, S-Save)
```

Figure 85. Specify Report Options

Specify Report Options Panel

This panel includes:

Archive File DSN

   Data set name of the Archive File. This value is inserted by Archive.

Report Type

The type of report. Specify:

A   Report includes all archived data in the Archive File or Named Table.

D   Report includes only data from tables marked Delete after Archive. (If a table in the Archive File or the Named Table is not marked Delete after Archive, an error condition occurs.)

C   Report includes only information about the Access Definition used to select data for the Archive File. Before generating the report, Archive prompts you to indicate the type of column information that is included.

S   Report is a summarized listing of the tables in the Archive File and the row counts for each table (data rows are omitted from the report).

Process All or Named Table

Scope of report. Specify:

A   Report includes data from all tables in an Archive File.

N   Report includes data from a selected table in an Archive File. You must provide the table name in **If Named Table**.

These values have no effect if **Report Type** is C.

If Named Table

Name of table for report. A value is required if **Process All or Named Table** is N. This value has no effect if the **Report Type** is C.

Output Type

Specify D if output is to a data set or S if output is to SYSOUT.

If output to dataset, specify:

If the **Output Type** is D, specify the name of the data set. If the data set does not exist, Archive prompts for allocation information and allocates the file before generating the report. This value has no effect if **Output Type** is S.

If output to SYSOUT, specify:

Specify SYSOUT parameters if the Output Type is S. The parameters are:

SYSOUT Class

Valid characters are A-Z, 0-9 and *.

Destination

Enter file name.

Hold   Place result in print queue. Specify **Yes** or **No**.

If Display Length Exceeds File Width

The action taken if the display length of the data exceeds the width of the file. This parameter is used only if the report is output to a file. 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, the line length will be changed.

W   Do not change the file characteristics. The data will be wrapped onto multiple lines.

Run Report in Batch or Online

Specify B to run the report in batch or O to run it online.

Browse Online Dataset

Specify Y to browse the data set online. Otherwise, specify N.

If Batch, Review or Save JCL

Indicates whether you want to review or save the report parameters. Specify:

N   Do not review prompts.

R   Review prompts.

S   Save JCL and Batch Utility control statements.

Access Definition Report

You can limit the Access Definition information that is included when the Report Type is C. Before displaying an Access Definition report, Archive prompts for display parameters using the Access Definition Display Parameters panel, shown in the following figure:

```
-------------------------- Specify Report Options --------------------------
Command ===>                                           Scroll ===> PAGE

Archive File DSN:  FOPDEMO.ARCHIVE.FILE

Repor +--------------Access Definition Display Parameters------------+  S-Sum)
      |                                                              |
Proce | Select Column options to be used:                           |
  If  |    Display Selection Criteria    ===> Y         (Y-Yes N-No) |
      |    Display Archive Criteria      ===> Y         (Y-Yes N-No) |
Outpu |    Display SQL Criteria          ===> Y         (Y-Yes N-No) |
  If  |    Display Archive Actions       ===> Y         (Y-Yes N-NO) |
      |    Display All Column Attributes ===> Y         (Y-Yes N-No) |
  If  +--------------------------------------------------------------+
```

Figure 86. Access Definition Display Parameters

The prompts allow you to review selection criteria, archive criteria, SQL WHERE clauses or all column attributes. Enter Y to include the information indicated by a prompt or N to omit the information from the report.

Available Commands

The following commands are available when the Specify Report Options panel is displayed:
- CANCEL
- END
- EXPAND
- OPTIONS

Use END to cancel, or press ENTER to run, the report for a file. If you generate the report online, Archive displays the report, described in "Control Files" on page 201.

Search Archive Files

Archive provides several methods to search for specific data within the Archive Files.

You can:
- Review or search sparse index entries in the Directory to determine the files most likely to contain the desired data before searching the files themselves.
- Visually search Archive Files on disk, using the Browse features described in "Browse an Archive File" on page 195.
- Use Archive to search dense indexes or Archive Files for specific data according to criteria you provide. You can also limit a search to indexes only. This allows you to avoid mounting tapes for a file search if the index is unexpectedly inadequate (i.e., you are searching on values in an unindexed column).

Often, a search is sufficient to answer a question or resolve a conflict. However, if necessary, you can use criteria specified in the Search Process to restore the data to the same database or create a temporary 'cloned' database. (See "Restore Archived Data" on page 81 for more information.)

You can search files or indexes individually, specifying unique criteria for each file, or search a group of files or indexes, specifying criteria for all at one time. Use the S line command to select and search one or more files or indexes sequentially, specifying criteria for each file. Use the SEARCH primary command to initiate a global search, specifying criteria to search all files or indexes at one time.

Archive Search Criteria – Tables

The SEARCH commands invoke the Archive Search Criteria – Tables panel. Use this panel to select the tables for search criteria.

- If you use the line command, tables in a selected file are listed.
- If you use the SEARCH primary command, all tables in the tagged files are listed. (You must use the T line command to "tag" Archive Files before the SEARCH primary command is executed.)
- If you use the SEARCH ALL primary command, all tables in all files shown on the Archive Files panel are listed.

If the SEARCH or SEARCH ALL primary commands are used to initiate a search, each table name listed on the Archive Search Criteria – Tables panel is unique. Thus, if the same table occurs in several Archive Files in a global search, the name is listed only once. Any search criteria specified for the table apply to all the files.

```
--------------------- Archive Search Criteria - Tables ----------------------
Command ===>                                               Scroll ===> PAGE

                                                            1 of 4
Line : SEL,SQL,CLR
Archive File DSN: FOPDEMO.ARCHIVE.FILE                        Unit: DISK

Use Case Sensitive Search      ===> N    (Y-Yes, N-No (Bypass Dense Index))
Resolve Search Using           ===> I    (I-Index, C-Accessible Data, A-All)
Run Search in Batch or Online  ===> O    (B-Batch, O-Online)
  If Batch, Review or Save JCL? ===> N   (N-No, R-Review, S-Save)
  Print Matching Rows?         ===> N    (N-No, Y-Yes)
  Batch Search Results DSN ===> FOPDEMO.BATCH
Cmd  Status    FND   CreatorID.Table/View Name
--- --------- --- -----------------------------------------------------------
******************************** TOP *************************************
___              FOPDEMO.CUSTOMERS
___              FOPDEMO.DETAILS
___              FOPDEMO.ITEMS
___              FOPDEMO.ORDERS
****************************** BOTTOM ************************************
```

Figure 87. Archive Search Criteria - Tables

This panel includes:

Archive File DSN
Name of the Archive File on disk or tape. If searching more than one file, "Global Search" is displayed. This value cannot be modified on this panel.

Unit Storage media for the Archive File, as one of the following:

CENT Archive File is found only on a Centera Server, and may be recalled to disk if accessed.

DISK Archive File is in accessible disk storage.

MIGR Archive File has been migrated externally using an Hierarchical Storage Management System (HSM).

TAPE Archive File is on tape.

TIV Archive File is found only on a Tivoli Server, and may be recalled to disk if accessed.

UNK If searching multiple Archive Files, files are on different media. If searching a single Archive File, the Archive Entry is present but the Archive File is not.

Use Case Sensitive Search
Indicator for case-sensitive search. Specify:

Y Search matching the case of criteria, exactly as specified. You must use a case-sensitive search to search a dense index.

N Search without regard to the case of criteria.

If searching multiple files or indexes, this setting remains in effect until changed and is profiled for subsequent searches.

Resolve Search Using
Specify the method for resolving the search.

I Search indexes only. If the search cannot be resolved using indexes, do not search Archive Files. (Use this setting to locate a file on tape without having to mount tape files.)

C Search disk and migrated indexes and, if the search cannot be resolved using indexes, search disk and migrated Archive Files, also.

A Search all indexes and, if necessary, all Archive Files, regardless of storage media.

Run Search in Batch or Online
Indicator for performing the search in batch or online. Specify:

B Batch. The specified Archive Files are searched in batch and a report is written to a data set. The report includes:
- Job Name
- File Name
- Tables and columns searched
- Criteria
- Results indicator

O Online. The search is performed online and the results for any tables with search criteria are displayed in **Status**.

The search must be performed in batch if you use the SEARCH command to initiate a global search, or the Archive File is on tape, or **Resolve Search Using** is A.

If Batch, Review or Save JCL?
For batch execution, indicate whether the JCL and Batch Utility control statements should be submitted, reviewed prior to job submission, or saved for later 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.

Note: See the *Batch Utilities Guide* for the SEARCH statement keywords and values.

Print Matching Rows?
Indicator for printing archived rows that match the criteria. Specify:

Y Automatically include the PRINT YES statement in the JCL for a batch search. The report is written to PSDFRPRT.

Note: To print matching rows, the search must be done in batch and you must specify A for Resolve Search Using.

N Do not print matching rows (default).

Batch Search Results DSN
Specify the name of the data set for the batch search results. (This value is ignored for an online search.)

Cmd Area for line commands used to select the tables for criteria or to clear criteria for a table. Specify:

B or BRO
Browse data in the selected table.

CLR Clear any criteria for the selected table.

SEL Display the Archive Search Criteria – Columns panel for each selected table.

SQL Display the SQL WHERE Clause panel for each selected table.

Status Identifies the search criteria for the table.

blank No search criteria are specified.

SEL Selection criteria are specified.

SQL SQL WHERE clause is specified.

FND Identifies the search status for the table.

blank No search criteria are defined for the table.

YES Search criteria satisfied. Data matches the criteria, if searching the Archive File or dense index.

NO Criteria not satisfied, no matches found.

PND Batch search is pending.

UNK Search criteria potentially satisfied by searching a sparse or temporary index.

CreatorID.Table/View Name
Name of the table or view, prefixed with the Creator ID. This value cannot be modified.

Available Commands

The following commands are available when the **Archive Search Criteria – Tables** panel is displayed.
- BOTTOM
- DOWN
- EXPAND
- TOP
- CANCEL
- END
- OPTIONS
- UP

Archive Search Criteria – Columns

Use the Select line command, SEL, to display the Archive Search Criteria – Columns panel, used to specify criteria for the data. The following figure lists the columns in the ORDERS table.

```
--------------------- Archive Search Criteria - Columns -----------------------
Command ===>                                                  Scroll ===> PAGE

Use INF Line Command to Display Index Range, END where Complete
                                                        1 of 8
Archive File DSN : FOPDEMO.ARCHIVE.FILE
Table Name       : FOPDEMO.ORDERS                                        >>
Combine All Column Criteria by  ===> O (A-AND, O-OR)


Cmd Column            Idx  Search Criteria
--- ---------------->> --- -----------------------------------------------------
******************************** TOP ***********************************
___   ORDER_ID           D
___   CUST_ID            S
___   ORDER_DATE
___   ORDER_TIME
___   FREIGHT_CHARGES
___   ORDER_SALESMAN     T
___   ORDER_POSTED_DATE
___   ORDER_SHIP_DATE
******************************* BOTTOM *********************************
```

Figure 88. Archive Search Criteria - Columns

This panel includes:

Archive File DSN
> Name of the Archive File. If searching more than one file, "Global Search" is displayed. This value cannot be modified on this panel.

Table Name
> Name of the selected table or view. This value cannot be modified on this panel.

Combine All Column Criteria by
> Operator used to combine criteria for multiple columns. Specify:
>
> **A**   Select data that matches criteria for all columns.
>
> **O**   Select data that matches criteria for any column.

Cmd   Area for line commands. Specify:
> **CLR**   Clear criteria for the column.
>
> **INF**   Display index and other information about the column.

Column
> Name of the column. This value cannot be modified on this panel.

Idx   Index indicator. Possible values are:
> **blank**   Archive index for this column does not exist.
>
> **T**   Temporary sparse index for this column exists.
>
> **D**   A dense index for this column exists.
>
> **S**   A sparse index for this column exists.

Search Criteria
> Search criteria for each column. Valid expressions are:

> EQ *substring = substring*
> NE *substring ¬= substring*
> GT *substring* > *substring*
> LT *substring* &lt *substring*
> LE *substring <= substring*
> GE *substring >= substring*
> IN (*list,of,values*)
> NOT IN (*list,of,values*)
> IS NULL
> IS NOT NULL
> LIKE *pattern*
> NOT LIKE *pattern*
> BETWEEN *x* AND *y*
> NOT BETWEEN *x* AND *y*

> Specify search criteria by supplying an operator and a corresponding value or list of values. For example, enter = `'00168'` in **Search Criteria** for the CUST_ID column to search for orders involving customer 00168, or specify `LIKE SC%` for the ORDER_SALESMAN column to search for all archived orders written any salesperson whose identifier begins with SC.

> If you specify criteria for a column that is not indexed, Archive creates a temporary, sparse index for that column, which will remain in effect until you use the END command on the Archive Files panel.

If the Archive option, **Share Search in List** is Y, criteria remain in effect and are displayed each time you invoke the Archive Search Criteria – Columns panel with a Search, Browse, or Restore line command from the Archive Files panel. (See the *Common Elements Manual*.) Thus, you can specify criteria to search an Archive File or index and use the same criteria to restore or browse the data. Using END from the Archive Files panel clears the criteria.

Available Commands

The following commands are available when the Archive Search Criteria – Columns panel is displayed:
- BOTTOM
- DOWN
- EXPAND
- TOP
- CANCEL
- END
- OPTIONS
- UP

Display Index

Use the INF line command to display index information about a specific column on the Archive Search Criteria – Columns panel, as shown in the following example.

```
-------------------- Archive Search Criteria - Columns ----------------------
Command ===>                                               Scroll ===> PAGE

Use INF Line Command to Display Index Range, END where Complete

  +-------------------------------------------------------------------------+
  |                                                                         |
  | Archive File DSN :  FOPDEMO.ARCHIVE.FILE                                 |
  | Table Name       :  FOPDEMO.ORDERS                                      |
  | Column Name      :  ORDER_ID                                            |
  | Column Lo Value  :    205                                               |
  | Column Hi Value  :    3398                                              | --
  +-------------------------------------------------------------------------+ **

  ___  ORDER_DATE
  ___  ORDER_TIME
  ___  FREIGHT_CHARGES
  ___  ORDER_SALESMAN
  ___  ORDER_POSTED_DATE
  ___  ORDER_SHIP_DATE
******************************* BOTTOM **************************************
```

Figure 89. Column Index Information

If the selected column is permanently or temporarily indexed, complete information is displayed. If the column is not indexed, only the first three values are displayed. The index display is useful to determine if the desired data falls within the range indicated for the index.

This panel includes:

Archive File DSN
> Fully qualified name of the Archive File.

Table Name
> Fully qualified name of the table or view.

Column Name
> Name of the selected column.

Column Lo Value
> Lowest value in the selected column.

Column Hi Value
> Highest value in the selected column.

Use END to return to the Archive Search Criteria - Columns panel.

Perform Search

After completing specifications on the Archive Search Criteria – Columns panel, use END to re-display the Archive Search Criteria – Tables panel.

The SEL or SQL **Status** is indicated for the tables with search criteria.

If performing a batch search, use END to display the Job Card and Print Options pop-up window, discussed in the *Common Elements Manual*. After providing the data set name and job name, press ENTER to submit the job. Use END twice to display the Archive Files panel. Submitted batch jobs are indicated by the BAT status.

If performing an online search, press ENTER on the Archive Search Criteria – Tables panel to begin the search. Searching a Directory index is much faster than searching an Archive File, and a match between a dense index and criteria ensures the data is in the associated Archive File. However, a match between a

sparse index and criteria does not guarantee that a row in the table matches the criteria. Searching a sparse index can be used to quickly determine that an Archive File does not contain a value. A temporary sparse index is created when a dense or sparse index is not present for the searched column. The status of the search for each table is indicated in **FND**. After completing an online search, use END to display the Archive Search Criteria – Tables panel for the next selected file or, if no other files are selected, to redisplay the Archive Files panel.

ARCHIVE Global Search Report

Archive generates a report during a global search that you can print or browse, using an ISPF browse facility. The report provides statistics about the search.

```
   .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
  Display  Filter  View  Print  Options  Help
 -------------------------------------------------------------------------------
 SDSF OUTPUT DISPLAY FOPDEMO  JOB02384  DSID    106 LINE 0      COLUMNS 02 - 81
 COMMAND INPUT ===>                                        SCROLL ===> PAGE
 ******************************** TOP OF DATA *********************************
 Relational Tools for DB2 - ARCHIVE Global Search Report

 Created by         : Job FOPDEMO, using SQLID FOPDEMO on DB2 Subsystem DSNA
 Time Started       : Wed Sep  1 14:41:23 1999
 Time Finished      : Wed Sep  1 14:41:30 1999

 Batch Search Results DSN :  FOPDEMO.BATCH

 Total Number of Archive Files Searched     : 2
 Total Number Found                         : 1
 Total Number Not Found                     : 1
 Total Number Skipped                       : 0
 Total Number Not Processed                 : 0


 Selection Criteria
     Table           : FOPDEMO.ORDERS
      Criteria        : ORDER_ID           EQ  '3000'

     Table           : FOPDEMO.ORDERS
      Criteria        : ORDER_ID           EQ  '3000'



     Search Status     Archive File DSN
     -------------     -------------------------------------------------
     Found             FOPDEMO.ARCHIVE.FILE
     Not Found         FOPDEMO.ARCHIVE.FILE02


                   ****** End of Report ******
 ****************************** BOTTOM OF DATA ******************************
```

Figure 90. ARCHIVE Global Search Report

Report Format

The report includes general information about the job, followed by the statistics about the files searched and the results of the search. Selection criteria used are also included in the report.

Statistics

The report includes the following statistics:

Total Number of Archive Files Searched
Number of Archive Files selected for the search. If you use the SEARCH command to initiate the global search, this is the number of Directory entries listed on the Archive Files panel that are tagged. If you use the SEARCH ALL command, it is the number of entries listed.

Total Number Found
Number of selected Archive Files with data that matches the search criteria.

Total Number Not Found
Number of selected Archive Files with no matching data.

Total Number Skipped
Number of selected Archive Files not searched because they do not include a table or column for which criteria are specified.

Total Number Not Processed
Number of Directory entries for which there are no files. A Directory entry can be listed on the Archive Files panel, although the corresponding file no longer exists at the location indicated in the Directory entry. This situation may occur if a file is deleted but the Directory entry is not.

Search Status

The report includes a search status for each selected Archive File. Possible statuses for a file are:

File not Found
The file is not at the location indicated in the Directory entry.

Found Data in Archive File matches the search criteria.

Not Found
Data in Archive File does not match the search criteria.

Skipped
Archive File not searched because it does not include a table or column for which criteria are specified.

Manage the Archive Files List

A full list of Archive File Directory entries may become unwieldy and difficult to manage and the overhead for searches may increase as the number of entries and files increases. For this reason, Archive provides various techniques and tools that allow you to narrow the focus when searching or browsing Archive Files for specific data.

This section discusses several techniques that you may find useful when confronted with large numbers of Archive Files and Directory entries.

Archive allows you to limit the list of Archive Files and Directory entries to search or browse. However, the usefulness of this focusing ability is directly related to user developed archiving strategies and practices. By developing a strategy for archiving data and adopting and using thoughtful conventions for naming Archive Files and specifying Archive Groups and Descriptions, you can simplify searches for archived data and make it relatively easy to specify criteria to qualify the initial Archive Files list before ever opening a file.

For example, it might make sense to archive sales, accounts payable, and inventory data in separate Archive Files, adopting different naming conventions for files in each category. Sales archives might be divided into several Groups defined by geographic area or product, with accounts payable and inventory archives divided into Groups according to corporate division or subsidiary. Archive Files within a Group might be further identified by notations in Description regarding the time span of data in the file, combined with the ID of the salesperson, department, or product group, as appropriate. Categorizing Archive Files in this manner makes it relatively easy to limit the Directory entries listed on the Archive

Files panel to the categories and periods of interest by specifying criteria on the Archive Directory Selection Criteria panel. (The use of this panel is discussed further in "Specify List Criteria" on page 117.)

After you specify criteria and press ENTER, the Archive Files panel, listing Directory entries for Archive Files that match the criteria, is displayed. This panel is the starting point for reviewing information about Archive Files and for browsing, searching, and restoring the files and the data in them. Thus, Archive provides primary and line commands that can be used on this panel to further define and manipulate the list. (See the *Command Reference Manual* for additional information on the primary commands referenced in this discussion.)

Available Commands

Available commands are:

- BOTTOM
- END
- REFRESH
- TOP
- CANCEL
- FIND
- RFIND
- UP
- DETAIL
- HIDE
- SHOW
- DOWN
- OPTIONS
- SHOW ALL

General List Commands

There are two levels of detail available to you when viewing the Archive Files panel.

One level displays information about the contents of a selected Archive File, as in Figure 82 on page 124. It is often useful to browse this information to determine if a file is likely to contain the data you are seeking. Use the I line command to display this file-level information. The other level of detail is available through the DETAIL primary command, which allows you to switch the **Archive Files** list to display either one or two lines of information for each listed Directory entry.

When viewing the list, you may use the SORT command to sort entries in the list, in ascending or descending order, by any of the detailed view headings, such as **User** or **Stat**, even if the heading is not displayed at the time you use the command.

The FIND and RFIND commands allow you to locate and scroll to occurrences of a specific string in the list. For example, use FIND DEMO to locate an occurrence of 'DEMO' in the list.

With the SHOW command, you can limit the list to entries that include a specified string. For example, you might use the SHOW SALES primary command to focus on Directory entries with the string 'SALES' somewhere in the listed information. REFRESH or SHOW ALL restores the list to the display as it was before you issued the SHOW command.

You may wish, at some point, to remove deleted or previously searched files from the list. Use the HIDE command to remove entries from the list that have the BAT, DEL, or NF status, as shown in the following figure. Files that are eliminated from the list in this way do not participate in a primary command global search and, except for deleted files, can be reinstated in the list with the REFRESH or

SHOW ALL primary commands.

```
------------------------------ Archive Files --------------------------------
Command ===> HIDE                                          Scroll ===> PAGE

    Primary: SEARCH, HIDE/REFRESH                             1 OF 21
       Line: S-Search, I-Info, B-Browse, REP-Report, R-Restore
             D-Del, T-Tag, CLR-Clear, AD-Access Definition
             CPY-Copy To Centera or Tivoli, RCL-Recall From Centera or Tivoli

Cmd Stat   Date    File Name                                   Group    Unit
--- ----  ----------  ---------------------------------------  --------  ----
___  NF   1999-06-14 FOPDEMO.ARCHIVE.ACCNTS06                  ARC1999  DISK
___  FND  1999-06-14 FOPDEMO.ARCHIVE.SALES06                   ARC1999  DISK
___       1999-06-14 FOPDEMO.ARCHIVE.PARTS                     ARC1999  DISK
___  BAT  1999-06-14 FOPDEMO.ARCHIVE.TAPE                      ARC1999  TAPE
___       1999-06-12 FOPDEMO.ARCHIVE.ACCNTS05                  ARC1999  DISK
___       1999-06-12 FOPDEMO.ARCHIVE.SALES05                   ARC1999  DISK
___       1999-06-12 FOPDEMO.ARCHIVE.ACCNTS04                  ARC1999  DISK
___       1999-06-11 FOPDEMO.ARCHIVE.SALES04                   ARC1999  DISK
___       1999-06-11 FOPDEMO.ARCHIVE.ACCNTS03                  ARC1999  DISK
___  DEL  1999-06-11 FOPDEMO.CONTROL.DSN                       ARC1999  DISK
___       1999-06-11 FOPDEMO.ARCHIVE.FILE1                     ARC1999  TAPE
___       1999-06-09 FOPDEMO.ARCHIVE.SALES03                   ARC1999  DISK
___       1999-06-09 FOPDEMO.ARCHIVE.ACCNTS02                  ARC1999  DISK
___  FND  1999-06-09 FOPDEMO.ARCHIVE.SALES02                   ARC1999  DISK
```

Figure 91. HIDE/REFRESH

Import Archive File and Populate Directory

Archive can create Archive File Directory entries for files created on a different system. This function allows a facility to archive data at a central location and transfer or copy Archive Files to other locations, which must have Directory entries to browse, search, or restore the files.

Select Option 5 IMPORT on the Archive and Restore menu to display the following panel.

```
------------------------------ Import Archive --------------------------------
Command ===>                                               Scroll ===> PAGE

Enter the Archive File to be added to the Directory

Archive File DSN      ===> 'FOPDEMO.ARCHIVE.FILE'

Archive Group         ===>

Archive Description   ===>

Security Status       ===> PUBLIC              (PUBLIC, READONLY, PRIVATE)

Create Index          ===> N                   (Y-Yes, N-No)

To use existing dense index,
  specify name of index file  ===>
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 92. Import Archive

This panel includes:

Archive File DSN

Specify the fully qualified name of a cataloged Archive File data set for which a Directory entry is created.

Archive Group

Specify the Group designation for the Archive File. You may use a Group designation regardless of whether the file is created with one.

Archive Description

Specify a 1- to 40-character description for the Archive File. You may use a description even if the file was created without one.

Note: Group and Description can be used to provide information about the Archive File that is valuable when searching or browsing files.

Security Status

Access privileges for the Archive File. This prompt is displayed only if Archive security is activated for the site. When it is activated, you can specify PUBLIC, READONLY, or PRIVATE.

- PUBLIC

   Any user can access or edit the file.

- READONLY

   Any user can access the file, but only the Archive Administrator or the user that created the file can edit it.

- PRIVATE

   Only Archive Administrator or the user who created the file can access or edit the file.

Create Index

Indicates whether the Directory entry includes indexes for tables in the Archive File. Specify:

Y   Create indexes for tables in the Archive File.

N   Do not include indexes.

To use existing dense index, specify name of index file

If a dense index exists for the Archive File, indicates whether that index is included as part of the import. Specify the fully qualified dataset name of the dense index file to include it. If you do not specify a dataset name, a dense index file (if any) will not be imported.

Run Import in Batch or Online

Indicates whether the Import Process is run in batch or online. Specify:

B   Batch

O   Online

Note that all imports of Directory entries for Archive Files on tape must be performed in batch.

If Batch, Review or Save JCL

Indicates whether the JCL and Batch Utility 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. (See the *Batch Utilities Guide* for the ARCHIVE_IMPORT statement keywords and values.) Specify:

N   Submit job, do not display or save the JCL and control statements.

R   Display the JCL and control statements for review.

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.

After completing the parameters on the Import Archive panel, press ENTER to proceed with the Import Process.

Table Selection for Indexing

If you specify Y at the **Create Index** prompt, Archive displays the following pop-up selection list to allow you to select tables in the Archive File for indexing.

```
----------------------------- Import Archive --------------------------------
Command ===>                                              Scroll ===> PAGE

Enter the Arc
             +------------- Table Selection for Indexing ------------+
Arch +------- |                                                      |
     |        |     Specify Y to create index for a table.           |
Arch | Archiv |     Enter END command when done.                     |
     |        |                                          1 of 4      |
Arch | An arc |                                                      |
     |        |           CreatorID.Table Name              Index    |
Secu | Indica |     ------------------------------------- -----      |
     | of the |     ******************** TOP ********************     |
Crea |        |     FOPDEMO.ORDERS                           Y        |
     |    Rep |     FOPDEMO.CUSTOMERS                        Y        |
To u |        |     FOPDEMO.DETAILS                          N        |
  sp |        |     FOPDEMO.ITEMS                            N        |
Run  |        |     ***************** BOTTOM ******************      |
  If +------- +------------------------------------------------------+
```

Figure 93. Table Selection for Indexing

Select the tables you want to index by typing Y in **Index**. Use END to display a list of columns in each selected table, as shown in the following example.

```
----------------------------- Import Archive --------------------------------
Command ===>                                              Scroll ===> PAGE

Enter the Arc
             +----------- Table FOPDEMO.ORDERS -----------+
Arch +------- |                                           | ---------+
     |        |     Specify S to create sparse index.     |          |
Arch | Archiv |     Specify D to create dense index.      |          |
     |        |     Enter END command when done.          |          |
Arch | An arc |                               1 of 8       |          |
     |        |                                           |          |
Secu | Indica |     Column Name             Index         | creation |
     | of the |     ----------------------------- -----   |          |
Crea |        |     ************** TOP ***************     |          |
     |    Rep |     ORDER_ID                   N          |          |
To u |        |     CUST_ID                    N          |          |
  sp |        |     ORDER_DATE                 N          |          |
Run  |        |     ORDER_TIME                 N          | No)      |
  If +------- |     FREIGHT_CHARGES            N          | ---------+
             |     ORDER_SALESMAN             N          |
             |     ORDER_POSTED_DATE          N          |
             |     ORDER_SHIP_DATE            N          |
             |     ************ BOTTOM ***************    |
             +-------------------------------------------+
```

Figure 94. Index Columns

This panel includes:

Column Name
     Read-only names of the columns in the archived table.

Index   Indicates the Index Processing for the table. Specify:

     N   Do not index the column.

     D   Index all values in the column.

     S   Include an index that consists of ranges of values in the column.

Initially, the value in **Index** is N for all columns. Select columns for indexing by typing D in **Index** for a dense index or S for a sparse index. Columns designated N in **Index** are not indexed. Use the IDX command to designate N, D, or S for all columns in a table. No more than 16 columns in a table may have a dense index. Each value in a dense index can be no more than 254 bytes. Use END to display the column list for any remaining tables selected for indexing, or to begin processing if columns for all selected tables have been displayed.

Once processing is complete, the Import Archive panel is displayed with a message indicating that the import was successful. You can specify another Archive File name or use END to return to the Archive and Restore menu.

Specify Index File Name

If you specified D for **Index** in the list of columns for any table, the Specify Index File Name panel is displayed prior to processing when you use END after column names for all selected tables have been displayed.

```
------------------------------ Import Archive -------------------------------
Command ===>                                             Scroll ===> PAGE


  +------------------------Specify Index File Name-----------------------+
  |                                                                      |
  |                                                                      |
  |  Name of Index File ===>                                             |
  |                                                                      |
  |                                                                      |
  |  Press ENTER key to continue processing.                            |
  |  Enter END or CANCEL command to return to prior panel.              |
  |                                                                      |
  |                                                                      |
  +----------------------------------------------------------------------+
```

The Specify Index File Name panel prompts you to provide the name of the Archive Index file, which is a VSAM file that must be SMS-managed. The Archive Index file name can be specified explicitly by enclosing it in quotes; otherwise, the default prefix, as specified on the User Options panel, is prefixed to the name. Specify the Archive Index file name and press ENTER to proceed with processing, or use END or CANCEL to return to the Import Archive panel. If the named data set does not exist, Archive prompts for the information needed to allocate the file.

Update Archive File Indexes

At times search requirements may change and you will want to update, delete, or add indexes for an Archive File. A business development, such as a product recall, might make it important to index tables or columns to enable searches that were unlikely at the time data was archived. In other instances, everyday requests for archived data might accentuate a need for indexing that was not apparent at the time the data was archived.

Select Option 6 UPDATE on the Archive and Restore menu to display the following panel, used to begin the Update Process.

```
-------------------------- Update Archive Index ----------------------------
Command ===>                                               Scroll ===> PAGE


Enter the Archive File for which the index is to be updated

Archive File DSN ===> 'FOPDEMO.ARCHIVE.FILE'

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

Figure 95. Update Archive Index

This panel includes:

Archive File DSN
> Specify the fully qualified name of a cataloged Archive File data set for which the index is updated.
>
> **Note:** Specifying an Archive File that exists only on a Centera or Tivoli Server, automatically recalls the Archive File to disk. The Allocate Dataset panel is displayed if the Archive File is to be recalled to a new location.

Run Update in Batch or Online
> Indicates whether the Update Process is run in batch or online. Specify:
>
> **B** Batch
>
> **O** Online

If Batch, Review or Save JCL
> Indicates whether the JCL and Batch Utility 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. (See the *Batch Utilities Guide* for the ARCHIVE_UPDATE statement keywords and values.) Specify:
>
> **N** Submit job, do not display or save the JCL and control statements.
>
> **R** Display the JCL and control statements for review.
>
> **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.

Table Selection for Indexing

After completing the Update Archive Index panel, press ENTER to proceed with the Update Process. Archive displays the Table Selection for Indexing pop-up window, as shown in the following figure.

```
  ------------------------- Update Archive Index ----------------------------
Command ===>                                              Scroll ===> PAGE

Enter the Arc
            +------------- Table Selection for Indexing ------------+
Archive File |                                                      |
             |   Specify index requirements by entering             |
Run Update in |  one of the listed values.  All tables              |
  If Batch, R |  with existing indexes contain a Y.                 |
             |   Enter END command when done.                       |
             |                                                      |
             |   Y-Specify index or display column list             |
             |   N-Bypass processing                                |
             |   D-Delete the index information                     |
             |                                          1 of 4      |
             |                                                      |
             |                                                      |
             |       CreatorID.Table Name              Index        |
             |   ------------------------------------- -----        |
             |   ******************* TOP *********************       |
             |   FOPDEMO.ORDERS                          Y          |
             |   FOPDEMO.CUSTOMERS                        Y          |
             |   FOPDEMO.DETAILS                          N          |
             |   FOPDEMO.ITEMS                            N          |
             +------------------------------------------------------+
```

Figure 96. Table Selection for Indexing

This panel includes:

CreatorID.TableName
> Read-only name of the rows in the archived table.

Index Indicates the Index Processing for the table. Specify:

> **Y**   Display list to select columns for indexing.

> **N**   Do not process the table; any indexing remains.

> **D**   Delete any indexes for the table.

Initially, the value in **Index** for indexed tables is Y. Do not change this value if you want to add or delete column indexes for a previously indexed table, specify N to leave the index as it is, or D to delete all column indexes. After specifying your preference for each table, use END to continue processing. Archive deletes any indexes designated for deletion and displays the column list, shown in the following figure, for each listed table with Y in **Index**.

```
------------------------- Update Archive Index ----------------------------
Command ===>                                              Scroll ===> PAGE

Enter the Arc
            +------------- Table FOPDEMO.ORDERS ----------+
Archive File |                                            |
            |       Specify S to create sparse index.     |
            |       Specify D to create dense index.      |
Run Update in |     Enter END command when done.          | line)
  If Batch, R |                              1 of 8        | w, S-Save)
            |                                            |
            |                                            |
            |       Column Name               Index      |
            |       --------------------------- -----    |
            |       *************** TOP ***************   |
            |       ORDER_ID                    D        |
            |       CUST_ID                     D        |
            |       ORDER_DATE                  S        |
            |       ORDER_TIME                  N        |
            |       FREIGHT_CHARGES             N        |
            |       ORDER_SALESMAN              N        |
            |       ORDER_POSTED_DATE           N        |
            |       ORDER_SHIP_DATE             S        |
            |       ************* BOTTOM ***************  |
            +--------------------------------------------+
```

Figure 97. Update Table List

This panel includes:

Column Name
> Read-only name of archived column.

Index Indicates the Index Processing for the table. Specify:

> **N**   Do not index the column.
>
> **D**   Index all values in the column.
>
> **S**   Include an index that consists of ranges of values in the column.

Previously indexed columns are indicated by a D or S value in **Index**. Do not change this value if you want to retain indexes for a previously indexed column, or specify N to eliminate an index for a column. Select the column names for indexing by typing D in **Index** for a dense index or S for a sparse index. Use the IDX command to designate N, D, or S for all columns. Use END to display the column list for any remaining tables selected for indexing, or to begin processing if columns for all indexed tables have been displayed.

Once processing is complete, the Update Archive Index panel is displayed with a message indicating that the update was successful. You can specify another Archive File name or use END to return to the Archive and Restore menu.

Specify Index File Name

If you specified D for **Index** in the list of columns for any table, the Specify Index File Name pop-up window is displayed prior to processing when you use END after column names for all indexed tables have been displayed.

```
-------------------------- Update Archive Index ----------------------------
Command ===>                                         Scroll ===> PAGE

  +------------------------Specify Index File Name------------------------+
  |                                                                       |
  | Name of Index File ===>                                               |
  |                                                                       |
  | Press ENTER key to continue processing.                              |
  | Enter END or CANCEL command to return to prior panel.                |
  |                                                                       |
  +-----------------------------------------------------------------------+
```
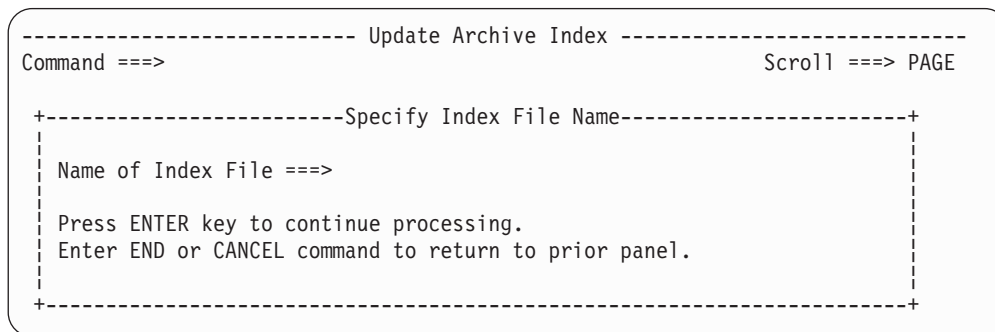
Figure 98. Specify Index File Name

The Specify Index File Name pop-up window prompts you to provide the name of the Archive Index file, which is a VSAM file that must be SMS-managed. The Archive Index file name can be specified explicitly by enclosing it in quotes; otherwise, the default prefix, as specified on the User Options panel, is prefixed to the name. Specify the Archive Index file name and press ENTER to proceed with processing, or use END or CANCEL to return to the Update Archive Index panel. If the named data set does not exist, Archive prompts for the information needed to allocate the file.

Load Process

Use the Load Process to transform the contents of an Archive File to Load utility format and execute a Load utility.

You can use a load utility from IBM or from another software vendor. If using LOADPLUS, you are presented with panels specific to LOADPLUS. (The LOADPLUS panels are discussed in "Perform LOADPLUS Utility" on page 151.)

Note: Loading IMS Legacy Tables is not supported.

Using the Load utility instead of the Archive Restore Process may provide benefits under certain conditions:
- The number of rows to restore is so large that the speed of the Load utility offsets the advantages of using the Restore Process.
- Referential Integrity (RI) cycles make it impossible for the Restore Process to restore all data successfully.
- The number of rows in the Archive File exceeds the site-defined **Maximum Insert Rows** limit.
- You want to restore data without logging. The Load Process prompts you to specify whether the logging is performed.

Both the Load utility and the LOAD phase of LOADPLUS must be in exclusive control of the database to function. During the Archive Restore Process, however, the database remains available to all users. Many of the Restore Process facilities 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. A Load utility is a batch utility that inserts rows in the destination database. It cannot be used to replace data.

Sort

Generally, rows in the Archive File are loaded into the database in the order processed. However, if a cluster index has been defined for the table, the rows can be sorted on the basis of that index before they are loaded. LOADPLUS provides sort options that you can select when defining parameters for the load.

LOAD Menu

When you select Option 7 on the **Archive and Restore** menu, the following menu is displayed. This panel reflects whether the DB2 Load Utility or LOADPLUS utility is used. The default load utility is specified as a site option. You can override the site default by specifying a different utility as a user option, as described in the *Common Elements Manual*. The DB2 Load utility is the default in Archive, as distributed. Thus, the LOAD menu is shown 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 Names for Archive File and Control File:
  Archive File DSN ===> 'FOPDEMO.ARCHIVE.FILE'
  Control File DSN ===> 'FOPDEMO.CONTROL.FILE'
```

Figure 99. LOAD Process Menu

Panel Options

The available options are:

1 TABLE MAP
> Specify the destination tables for each source table in the Load Process.
>
> You may also specify Column Maps for selected destination tables. Use a Column Map to specify, on a column-by-column basis, the archived data for each destination column.
>
> For more information about Table and Column Maps, see the *Common Elements Manual*. Note that only table names are valid in a Table Map for a Load Process. DB2 does not allow you to LOAD a view, synonym, or alias.

2 PERFORM
> Specify parameters for the Load Process and execute it.

In addition to selecting an option, specify:

Archive File DSN
> This file must exist and can be an Archive File or an Extract File created with MOVE. By default, the name of the File created in the most recent Process is supplied. Use single quotes to delimit the desired name; otherwise, the default prefix specified on the User Options panel is added to the name.
>
> **Note:** Entering the name of an Archive File that exists only on a Centera or Tivoli Server automatically recalls the Archive File to disk. The Allocate Dataset panel is displayed if the Archive File is to be recalled to a new location.

Control File DSN
> Name of a sequential file for information and statistics about the transformation of the Archive or Extract File to Load format. Use single quotes to delimit the desired name; otherwise, the default prefix, specified on the User Options panel, is added to the specified name.
>
> If the named file exists, the Load Process overlays the contents. If the named file does not exist, Archive prompts for allocation information and creates the file. (See the *Common Elements Manual* for details on allocating the file.)

The **Archive File DSN** and **Control File DSN** values are profiled.

Selection List

You can obtain a selection list for the Archive File or the Control File by specifying a wildcard character, *
or %, as the last character in the name. When the list is displayed, use the S line command to select an
entry. A sample of the selection list displayed for Archive File or Control File data set names is provided
in Figure 45 on page 56.

Perform Load Process

Select Option 2 PERFORM to specify the parameters and perform the process. Archive displays a panel
appropriate to the load utility, LOAD or LOADPLUS, that is used.

Perform LOAD Utility

When you select Option 2 from the LOAD Process menu and you use the DB2 LOAD utility, the Specify
LOAD Parameters and Execute panel displays to specify the parameters used to perform the process.

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

Archive File DSN : PSTDEMO.ARCHIVE.FILE
Control File DSN : PSTDEMO.ARCHIVE.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)
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 Propagation Key Sets                ===>    (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)
Force all LOB data to External PDSE        ===> N (Y-Yes, N-No)
Load DSN Prefix                 ===>
```

Figure 100. Specify LOAD Parameters and Execute

Prompts

The prompts on the panel are provided to supply various parameters for the archive-generated LOAD
DATA statement. All values you specify are profiled.

Delete All Rows in Tablespace
> Indicate whether you want all rows in the tablespace deleted. Type:

> **Y** Delete all rows in tablespace.

N Do not delete all rows and include the RESUME YES or RESUME NO clause in the LOAD DATA statement, based on your response to the next prompt.

If NO, Can Tablespace have Rows

Specify whether the tablespace must be empty for the process to perform. This parameter is relevant only if the **Delete All Rows in Tablespace** prompt is No. Type:

Y

The tablespace can have data rows and include the RESUME YES clause in the LOAD DATA statement.

N The tablespace must be empty and include the RESUME NO clause in the LOAD DATA statement.

If YES, ReUse Dictionary

Indicate whether you want the DB2 Compression Dictionary reused while performing the Load. Type:

Y Reuse the DB2 Compression Dictionary during the Load and include the KEEP DICTIONARY clause in the LOAD DATA statement. Y is valid only if a Compression Dictionary exists and the tablespace has the COMPRESS YES attribute.

N Do not reuse the DB2 Compression Dictionary during the Load.

For additional information, see your IBM Utility Guide.

Perform Logging During Load

Indicate whether you want logging performed during the Load. Type:

Y Perform logging during the Load and include the LOG YES clause in the LOAD DATA statement.

N Do not perform logging during the Load and include the LOG NO clause in the LOAD DATA statement. If you specify No, the tablespace is placed in COPY PENDING status. Consider specifying Yes for the **Reset Copy Pending** prompt or the **Create Full Image Copy** prompt.

If NO, Reset Copy Pending

Indicate whether you want the COPY PENDING flag reset after the Load is done. Type:

Y Reset the COPY PENDING flag. This setting resets the COPY PENDING flag without establishing a recoverable set of data. To establish a recoverable set of data and reset the COPY PENDING flag while performing the Load, specify Yes for the **Create Full Image Copy** prompt.

N Do not reset the COPY PENDING flag.

Enforce RI Constraints During Load

Indicate whether you want Referential Integrity (RI) constraints enforced during the Load. Type:

Y Discard any invalid row encountered during the Load and include the ENFORCE YES clause in the LOAD DATA statement.

N Do not check Referential Integrity for each row and include the ENFORCE NO clause in the LOAD DATA statement. Instead, suspend RI checks and leave the table in Check Pending status. For more information, see "Check Pending Status" on page 158

ENFORCE NO may be desirable when RI cycles would otherwise prevent inserting all data.

Create Full Image Copy

Indicate whether you want a full image copy created. Type:

Y Create a full image copy and reset the COPY PENDING status. If you specify Yes here

and Yes for **Delete All Rows in Tablespace**, the COPY utility runs during the Load. If you specify Yes here and No for **Delete All Rows in Tablespace**, the COPY utility runs as a separate step after the Load.

N Do not create a full image copy. Specifying No places the tablespace in COPY PENDING status. Consider specifying Yes for the **Reset Copy Pending** prompt.

If Yes, Number of Local Copies
Specify the number of local copies you want created. Type:

0 Create no local copies

1 Create one primary local copy.

2 Create two copies: a primary and a backup local copy.

This parameter is ignored if **Create Full Image Copy** is No.

Number of Remote Copies
Specify the number of remote copies you want created. Type:

0 Create no remote copies.

1 Create one primary remote copy.

2 Create two copies: a primary and a backup remote copy.

Invoke RUNSTATS
Indicate whether you want RUNSTATS invoked. Type:

Y Invoke RUNSTATS. RUNSTATS is invoked at the tablespace level and includes all tables and indexes in the tablespace.

N Do not invoke RUNSTATS.

If Yes, Select RUNSTATS method
Specify the method of collecting statistical information during the Load process. Type:

I Collect statistical information during the Load process.

S Collect statistical information as a separate step.

If Yes, Produce statistics report
Indicate whether you want additional report information provided. Type:

Y Provide additional report information.

N Do not provide additional report information.

Age Date Values
Indicate whether you want to age date values as part of the process. Type:

Y Age date values. The Specify Aging Parameters panel will display to specify the appropriate aging values. These values supplement the specifications for columns mapped with the AGE function. These values 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.

Sort rows on Cluster Index (if it exists)
Indicate whether you want data sorted by the cluster index if one exists. Type:

Y Sort data.

N Do not sort data.

Allow Restart on (Keep Work Datasets)
Indicate whether you want work files retained to enable restart on a specified level. Type:

W Retain work files if warnings or errors are encountered. (The return code is 4 or greater.)

E Retain work files if errors are encountered. (The return code is 8 or greater.)

N Delete work files when the step completes.

Note: Each tablespace is processed in a separate job step and generates a set of work files. This setting applies to each job step. 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
Indicate whether you want a panel displayed to assign template names to Load files. When you supply a template name, the Load program uses parameters from that template to dynamically allocate the file, instead of a DD statement. Type:

Y Display a list of template names assigned to the Load files. You can change the assignments as needed. Any changes are profiled and remain in effect for future executions. The templates must exist in the template library defined at installation or you will receive an error message at execution time.

N Do not display the template panel (the default value). Template names assigned in earlier Load operations remain in effect for this execution.

Sort Work File Unit
Specify a unit if you want the Load program to dynamically allocate the work files required by the sort program. When you supply a value for this keyword, the SORTDEVT keyword is included in the Load statement. If you do not supply a value, DD statements are generated in the job stream for the files required for the sort.

Number of Sort Work Files
Specify the number of work files for the sort program. Type any number from **1** through **99** or leave this parameter **blank** to use the default value. When you supply a value for this keyword, the SORTNUM keyword is included in the Load statement.

Stop if there are 'N' Discards
Identify the maximum number of discarded rows before the Load process terminates. Type a number from **1** through **2147483547**. Type **1** to terminate the Load process if any rows are discarded. The Load terminates when the specified limit is reached.

Review Propagation Key Sets
Indicate whether you want the Propagating Key Set(s) panel displayed before the Load process is performed. This option is displayed only when the PROP function is specified in one or more column maps used by the Load process. Type:

A Display the panel before performing the process.

E Display the panel if the PROP specifications are in error (the default value).

For more information, see Figure 70 on page 98.

Review or Save JCL Before Job Submission
Indicate whether you want to review the JCL and control statements before job submission. Type:

N Submit the job without displaying or saving the JCL and control statements.

R Display and review the JCL and control statements before job submission. The JCL and control statements are displayed in the ISPF editor, where you can modify them for the current request and save them to submit later.

S Save the JCL and control statements. Prompts are provided to specify the file in which to store the JCL and control statements.

Process Report Type

Indicate the information you want included in the Load Process Report. Type:

D Display a detailed report that includes column map information.

S Display summary information in the report.

Force all LOB data to External PDSE

Indicate whether you want Large Object (LOB) data from the archive or extract file stored in a Partitioned Data Set - Extended (PDS/E) data set. When LOB data is stored in a PDS/E data set, the Load utility input file (SYSREC) will not contain LOB data. Instead, the input file will contain reference pointers that point to the PDS/E data set and member name in which each instance of LOB data is stored. Storing LOB data in a PDS/E data set reduces the length of table rows in the input file. It also allows the Load utility to load table rows that would otherwise be too long to load. Type:

Y always store LOB data from the archive or extract file in a PDS/E data set that is separate from the Load utility input file.

N Store LOB data from the archive or extract file in a PDS/E data set only when the input file would otherwise contain table rows greater than 32 KB. N is the default value.

Load DSN Prefix

If appropriate, type the data set name prefix for all Loader and Field Specification files. The specified prefix can consist of up to 35 characters and must follow standard data set naming conventions. This parameter allows the Optim solution to create the required Field Specification files dynamically during Load preparation step execution, instead of statically during JCL generation. When you specify this parameter, the Field Specification statements for all loaded tables and their associated data are stored in dynamically allocated data sets, named as follows:

dsnprefix.**L***seq*
Loader files

dsnprefix.**X***seq*
Field Specification files

where ***dsnprefix*** is the DSN prefix specified using this parameter, and ***seq*** is a unique sequential number assigned by the Optim solution.

Available Commands

The following primary commands are also available:
- CANCEL
- END
- OPTIONS

Perform LOADPLUS Utility

When you select Option 2 from the LOAD Process menu and you use the LOADPLUS utility, the Specify LOADPLUS Parameters and Execute panel displays to specify the parameters needed to perform the process.

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

Archive File DSN : FOPDEMO.ARCHIVE.FILE
Control File DSN : FOPDEMO.CONTROL.FILE

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)
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-Always, E-Errors)
Review or Save JCL Before Job Submission  ===> S (N-No, R-Review, S-Save)
Process Report Type                       ===> S (Detailed, S-Summary)
Force all LOB data to External PDSE       ===> N (Y-Yes, N-No)
Load DSN Prefix                ===>
```

Figure 101. Specify LOADPLUS Parameters and Execute

Prompts

The prompts on the panel are provided to supply various parameters to determine the tasks performed by LOADPLUS.

Delete All Rows in Tablespace
>   Indicate whether you want all rows in the tablespace deleted. Type:

>   **Y**   Delete all rows and include the REPLACE clause in the LOAD DATA statement.

>   **N**   Do not delete all rows and include the RESUME YES or RESUME NO clause in the LOAD DATA statement, based on your response to the next prompt.

If NO, Can Tablespace have Rows
>   Indicate whether the tablespace must be empty for the process to perform. This parameter is relevant only if the **Delete All Rows in Tablespace** prompt is No. Type:

>   **Y**   The tablespace can include data rows and include the RESUME YES clause in the LOAD DATA statement.

>   **N**   The tablespace must be empty and include the RESUME NO clause in the LOAD DATA statement.

If YES, ReUse Dictionary
>   Indicate whether you want the DB2 Compression Dictionary reused during the Load. Type:

>   **Y**   Reuse the DB2 Compression Dictionary during the Load and include the KEEP DICTIONARY clause in the LOAD DATA statement. Y is valid only if a Compression Dictionary exists and the tablespace has the COMPRESS YES attribute.

>   **N**   Do not reuse DB2 Compression Dictionary during the Load.

>   For additional information, see the appropriate BMC documentation.

If YES, Reallocate Datasets

Indicate whether you want the table and index spaces deleted and redefined when **Delete All Rows in Tablespace** is Yes. Type:

Y   Redefine table and index spaces and include the REDEFINE YES clause with REPLACE in the LOAD DATA statement.

N   Do not redefine table and index spaces and include the REDEFINE NO clause with REPLACE in the LOAD DATA statement.

Reset Copy Pending

Indicate whether you want the COPY PENDING flag reset after the Load process is done. Type:

Y   Reset the COPY PENDING flag. This setting resets the COPY PENDING flag without establishing a recoverable set of data. To establish a recoverable data set and reset the COPY PENDING flag, you must also specify Yes for **Create Full Image Copy**.

N   Do not reset the COPY PENDING flag.

Create Full Image Copy

Indicate whether you want a full image copy created. Type:

Y   Create a full image copy and reset the COPY PENDING flag. If you specify Yes here and Yes for **Delete All Rows in Tablespace**, the COPY utility runs during the Load. If you specify Yes here and No for **Delete All Rows in Tablespace**, the COPY utility runs after the Load as a separate step.

N   Do not create a full image copy. Specifying No places the tablespace in COPY PENDING status. Consider specifying Yes for the **Reset Copy Pending** prompt.

If YES, Number of Local Copies

Specify the number of local copies you want created. Type:

1   Create one primary local copy.

2   Create two copies: a primary and a backup local copy.

If **Create Full Image Copy** is No, this entry is ignored.

Number of Remote Copies

Specify the number of remote copies you want created. Type:

0   Create no remote copies.

1   Create one primary remote copy.

2   Create two copies: a primary and a backup remote copy.

If **Create Full Image Copy** is No, this entry is ignored.

Invoke RUNSTATS

Indicate whether you want RUNSTATS invoked to ensure that statistical data is accurately updated. Type:

B   Gather statistics during the Load and include the BMC UPDATEDB2STATS YES clause in the LOAD DATA statement.

I   Execute the RUNSTATS utility after the Load. RUNSTATS is invoked at the tablespace level and includes all tables and indexes in the tablespace.

N   Do not execute RUNSTATS.

Sort Rows on Cluster Index (if it exists)

Indicate whether you want data sorted by the cluster index if one exists. Type:

Y   Sort data.

N   Do not sort data.

Check Data for Duplicate Rows

Indicate whether you want data checked for duplicate rows. Type:

Y   Check all rows and include the UNIQUECHECK CLUSTER clause in the LOAD DATA statement.

N   Do not check rows.

Ignore Discarded Rows

Indicate which discarded rows, if any, you want ignored. Type:

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 you specify A, D, or V, the LOAD DATA statement will include the DISCARDS IGNORE clause with an appropriate operand.

Stop if there are 'N' Discards

Identify the maximum acceptable number of discarded rows before the Load process terminates. Type a number from **1** through **2147478347**. Type **1** to terminate the Load if any rows are discarded. The Load terminates when the specified limit is reached. A discarded row is included in the count based on the **Ignore Discarded Rows** prompt.

Review Propagation Key Sets

Indicate whether you want the Propagating Key Set(s) panel displayed before the Load process is performed. This option is displayed only when the PROP function is specified in one or more column maps used by the process. Type:

A   Always display the panel before performing the process.

E   Display the panel only when the PROP specifications contain errors (the default value).

For more information see Figure 70 on page 98.

Review or Save JCL Before Job Submission

Indicate whether you want to review the JCL and control statements before 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. Type:

N   Submit the job without displaying or saving the JCL and control statements.

R   Display the JCL and control statements for review before job submission.

S   save the JCL and control statements. Prompts are provided for you to specify the file in which to store the JCL and control statements.

Process Report Type

Indicate the information you want included in the Load Process Report. Type:

D   Display a detailed report that includes column map information.

S   Display summary information in the report.

Force all LOB data to External PDSE

Indicate whether you want Large Object (LOB) data from the archive or extract file stored in a Partitioned Data Set - Extended (PDS/E) data set. When LOB data is stored in a PDS/E data set, the Load utility input file (SYSREC) will not contain LOB data. Instead, the input file will contain reference pointers that point to the PDS/E data set and member name in which each instance of LOB data is stored. Storing LOB data in a PDS/E data set reduces the length of table rows in the input file. It also allows the Load utility to load table rows that would otherwise be too long to load. Type:

Y	Always store LOB data from the archive or extract file in a PDS/E data set that is separate from the Load utility input file.
N	Store LOB data from the archive or extract file in a PDS/E data set only when the input file would otherwise contain table rows greater than 32 KB. N is the default value.

Load DSN Prefix

If appropriate, type the data set name prefix for all Loader and Field Specification files. The specified prefix can consist of up to 35 characters and must follow standard data set naming conventions. This parameter allows the Optim solution to create the required Field Specification files dynamically during Load preparation step execution, instead of statically during JCL generation. When you specify this parameter, the Field Specification statements for all loaded tables and their associated data are stored in dynamically allocated data sets, named as follows:

dsnprefix.**L***seq*
    Loader files

dsnprefix.**X***seq*
    Field Specification files

where ***dsnprefix*** is the DSN prefix specified using this parameter, and ***seq*** is a unique sequential number assigned by the Optim solution.

Job Processing

After you complete the entries on the Load Parameters or LOADPLUS Parameters panel, the job can be submitted.

The JCL and utility control statements are generated from the specifications on the Job Card and Print Options panel and the Parameters panel. Additional job steps 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, according to 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

If the **Review Job Card** prompt on the User Options panel is YES, the job card information is displayed for your review. You may modify the Job Card information, specifying whether any changes apply for the current job only or are saved for subsequent jobs.

Use END or press ENTER to proceed.

JCL Review

Specify Review for the **Review or Save JCL Before JOB Submission** prompt on the current Parameters panel to display the Archive-generated JCL and control statements in the ISPF editor. You can edit and save the displayed JCL and control statements. (See the *Batch Utilities Guide* for the LOAD statement keywords and values.)

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 Parameters Panel

You can save the JCL and control statements, modify them, and execute the process without re-invoking Archive. Specify S for the **Review or Save JCL** prompt. The following panel will prompt you 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 102. Save JCL Parameters

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 at the **Member** prompt.

Member (if PDS)
> Name of the member in the partitioned data set specified at 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 at the **Member** prompt.

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 and submitted, displayed for review, or neither.
>
> 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.

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.)
>
> 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

Use END to return to Archive from the ISPF editor. However, your **Submit Jobs with END** specification on the User Options panel determines whether the job is automatically submitted. If **Submit Jobs with END** is NO, you must explicitly submit the job 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.

It may be especially useful to schedule job submissions. You can prepare a job for later execution. For example, to minimize contention you can prepare the LOAD job during the day and execute it overnight.

Note that LOADPLUS users can take advantage of the PRELOAD phase, which does not prevent other users from accessing the database. PRELOAD identifies discarded rows according to the IGNORE and UNIQUE CHECK parameters. You can then decide whether to execute the LOAD phase on the basis of the return code set in the PRELOAD phase.

Job Steps

The job steps are performed as follows. Note that while Step 1 is executed only once, Step 2 may be executed several times. Steps 3, 4, and 5 are optional and, if used, are executed once.

Step 1 Transform the Archive or 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, Archive determines the number and selects the table spaces that 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 this step is performed is equal to the number of table spaces involved in the Load.

If the load is successful, as determined by the return code from the Load Job Step, a job step to delete the interim data sets is performed.

LOADPLUS executes the load step in two phases--PRELOAD and LOAD--for each table space. 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.

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 Create Full Image Copy YES
- If you specified Delete All Rows in Tablespace NO

Step 5 Execute, if requested, the RUNSTATS utility as a single job step for all table spaces.

If the number of job steps exceeds 256, Archive 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 Archive. To handle this, review the JCL and control statements and specify TYPERUN=HOLD to hold the job. Then submit the jobs manually, in the correct order.

Check Pending Status

A tablespace may be placed in Check Pending status when one or more of the following conditions occur:

- **Enforce RI Constraints** is set to NO. This parameter indicates that data can be loaded into dependent tables without DB2 verification of RI constraints. Before the database can be used, DB2 must verify that the load has not violated RI rules. For example, proper parents must exist for all rows inserted into a child table.

- **Delete All Rows in Table Space** is set to YES. There are two possible scenarios:
  1. 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 are initially orphans and the load process may or may not replace all of the parent rows.
  2. 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 the table space for any child table is not involved in the load, Archive will not generate a check data job for the dependent table space. To alert you to this potential problem, Archive compares the number of tables to be loaded into the table space and the number of tables in the table space. If these numbers are different, Archive displays a warning. At this point, you can terminate the load or proceed. If you proceed, all rows of parent tables that are not involved in the load are deleted and any child table rows 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 rows discarded when transforming the Archive or Extract File to DB2 load format. The Load utility produces a report that shows errors encountered while loading the data.

Create Subset of Archive File

Use the SUBSET Option to copy all or a selected subset of data from an Archive File to another file.

The Subset File is an Archive File that contains a set of related rows from the source Archive File and the objects needed to recreate the database tables. You can restore, subset, or browse data as if it were generated directly from the database. Also, you can enable searches using the Archive Import option to establish an Archive Directory entry and Index File for the Subset File. (See "Import Archive File and Populate Directory" on page 138.)

Selection criteria allow you to define the subset. A table in the Archive File cannot be excluded from the Subset Process. You can create the Subset File in batch or online. One advantage of the batch facility is that it allows you to create a Subset File on disk from an Archive File on tape. You can then browse or restore the data in the Subset File online.

The process used to create a Subset File is similar to a Restore Process in which selection criteria are used to restore a segment of the data in the Archive File; however, the Restore Process allows you to use a Table Map.

Create Archive Subset File

When you select Option 8 SUBSET on the Archive and Restore menu, the Create Archive Subset File menu is displayed.

```
------------------------ Create Archive Subset File -------------------------
Command ===>                                            Scroll ===> PAGE

  1  PATHS              - Specify Traversal Paths via Relationship List
  2  SELECTION CRITERIA - Specify Selection Criteria for the Subset
  3  PERFORM SUBSET     - Create the Subset

  B  BROWSE ARCHIVE FILE — Browse contents of Archive File

Archive File DSN  ===> 'FOPDEMO.ARCHIVE.FILE'
Subset File DSN   ===> 'FOPDEMO.SUBSET'

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

Figure 103. Create Archive Subset File

Menu Options

Select an option:

1 PATHS

Display and modify the relationship list. This option invokes the Specify Relationship Usage panel, used to select the relationships traversed to select the subset of data. Only relationships in the Archive File are available. For additional information about this panel, see the *Common Elements Manual*.

2 SELECTION CRITERIA

Specify criteria needed to select the data for the Subset File. This option invokes the Archive Selection Criteria – Tables panel. You can use this panel to define criteria for multiple columns in multiple tables and combine criteria with AND or OR operators.

3 PERFORM SUBSET

Specify the parameters to create the Subset File and perform the procedure.

B BROWSE ARCHIVE FILE

Browse an Archive, Subset, or Control File. For detailed information about the Browse facility, see "Browse an Archive File" on page 195.

Prompts

In addition to selecting an option, specify:

Archive File DSN

Name of the file containing the data to copy to the Subset File. By default, the name of the Archive File created in the most recent Archive Process is supplied. Use single quotes to delimit the desired name; otherwise, the default prefix specified on the User Options panel is added to the name.

Note: Specifying an Archive File that exists only on a Centera or Tivoli Server, automatically recalls the Archive File to disk. The Allocate Dataset panel is displayed if the Archive File is to be recalled to a new location.

Subset File DSN

Name of a sequential file to contain the subset of data that is copied to the Subset File. This file is a valid Archive File that can be searched, browsed, subset, or restored.

If the named file exists, Archive overlays the contents. If the named file does not exist, Archive prompts for allocation information and creates the file. (See the *Common Elements Manual* for more information.)

Run Subset in Batch or Online

Indicates whether the process is run in batch or online. Specify:

B   Batch

O   Online

If site management has established a maximum number of rows for online processing and this request exceeds that limit, this option is set to Batch and cannot be modified.

If Batch, Review or Save JCL

Indicates whether the JCL and control statements are reviewed prior to job submission. This specification is 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.

S   Save the JCL and control statements. (Archive prompts for the name of a file in which to store the JCL and control statements.)

The **Archive File DSN** and **Subset File DSN** values are profiled.

Selection List

You can obtain a selection list for the Archive File or the Subset File by specifying a wild card, * 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 Archive File or Subset File data set names is provided in Figure 45 on page 56.

Available Commands

The following primary commands are available:
- CANCEL
- END
- OPTIONS

Archive Selection Criteria – Tables Panel

When you select Option 2 from the Create Archive Subset File panel, the Archive Selection Criteria – Tables panel is displayed.

Use this panel to specify the criteria that describe the desired set of related data in the Archive File. You must provide selection criteria to create a Subset File. Archive displays an error message if no criteria are specified and you select the PERFORM SUBSET option.

```
-------------------- Archive Selection Criteria - Tables ----------------------
Command ===>                                            Scroll ===> PAGE

Use POINT Primary Command to Specify a Point and Shoot list, END when Complete
Primary: POINT                                                  1 of 4
  Line : SEL,SQL,CLR
Archive File DSN : FOPDEMO.ARCHIVE.FILE                         Unit: DISK

Use Case Sensitive Search       ===> N    (Y-Yes, N-No (Bypass Dense Index))
Resolve Search Using            ===> C    (I-Index, C-Accessible Data, A-All)
Default Creator ID              ===> FOPDEMO                            >>
Start Table                     ===> CUSTOMERS                          >>


Cmd  Status   FND   CreatorID.Table/View Name
---  -------- ---   -------------------------------------------------------------
******************************** TOP *************************************
___             FOPDEMO.CUSTOMERS
___             FOPDEMO.DETAILS
___             FOPDEMO.ITEMS
___             FOPDEMO.ORDERS
******************************* BOTTOM ***********************************
```

Figure 104. Archive Selection Criteria – Tables

Prompts

This panel includes:

Archive File DSN
> The name of the Archive File from which you are creating a Subset File.

Unit   Storage media for the Archive File as one of the following:

> **CENT**   Archive File is found only on a Centera Server, and may be recalled to disk if accessed.

> **DISK**   Archive File is in accessible disk storage.

> **MIGR**   Archive File has been migrated externally using a Hierarchical Storage Management (HSM) or similar system.

> **TAPE**   Archive File is on tape.

> **TIV**   Archive File is found only on a Tivoli Server, and may be recalled to disk if accessed.

> **UNK**   The Archive Entry is present but the Archive File is not.

Use Case Sensitive Search
> Indicator for case-sensitive search. Specify:

> **Y**   Select data, matching the case of criteria exactly as specified. You must use a case-sensitive search to search a dense index.

> **N**   Select data without regard to the case of criteria.

Resolve Search Using
> Specify the method for resolving the search.

> **I**   Search indexes only. If the search cannot be resolved using indexes, do not search Archive Files. (Use this method to locate a file on tape without mounting tape files.)

> **C**   Search disk and migrated indexes and, if the search cannot be resolved using indexes, search disk and migrated Archive Files, also.

> **A**   Search all indexes and, if necessary, all Archive Files, regardless of storage media.

Default Creator ID

The default Creator ID for tables copied to the Subset File.

Start Table

The Start Table for defining the subset of data.

Cmd   Area for line commands. Line commands are used to select the tables for criteria or to clear criteria for a table. Specify:

> **B or BRO**
>
> > Browse data in the selected table.
>
> **CLR**   Clear the criteria for the selected table.
>
> **SEL**   Display the Archive Selection Criteria – Columns panel for each selected table.
>
> **SQL**   Display the Enter an SQL WHERE Clause for a Table or View panel for each selected table. See the *Common Elements Manual* for further information.

Status Indicator for search criteria for the table, as one of the following:

> **blank** No search criteria are specified.
>
> **SEL**   Selection criteria are specified.
>
> **SQL**   SQL WHERE clause is specified.

FND   Search status indicator for the table, as one of the following:

> **blank** No search criteria are defined for the table.
>
> **YES**   Search criteria satisfied. Data matches the criteria, if searching the Archive File or dense index.
>
> **NO**   Criteria not satisfied, no matches found.
>
> **UNK**   A sparse or temporary index was searched and search criteria are potentially satisfied.

CreatorID.Table/View Name

Name of the table or view, prefixed with the Creator ID. This value cannot be modified.

Available Commands

The following commands are available when the Archive Selection Criteria – Tables panel is displayed.

- BOTTOM
- DOWN
- OPTIONS
- TOP
- CANCEL
- END
- POINT
- UP

Use the SEL line command to select a table for criteria. Archive displays the panel as shown in Figure 66 on page 91. This panel is explained in detail in "Specify Selective Restore Criteria" on page 89. After you specify criteria for the data, use END twice to return to the Create Archive Subset File panel.

Perform Subset

Select Option 3 on the Create Archive Subset File panel to create the Subset File.

Online Execution

If the Subset File is created online, a panel is displayed noting the progress of the process.

```
------------------------ Create Archive Subset File -------------------------
Command ===>                                            Scroll ===> PAGE

  1  PATHS                - Specify Traversal Paths via Relationship List

  +-------------------------Subset Process Status------------------------+
  |                                                                      |
  |                    Subset File Creation in Progress                  |
  |                                                                      |
  |                 Total Number of Selected Rows:   77                  |
  |                                                                      |
  |  Completed Table:  FOPDEMO.CUSTOMERS           Total Rows:    2      |
  +----------------------------------------------------------------------+
```

Figure 105. Subset Process Status

The number of rows selected, and the number of rows remaining, is displayed. Also, the name of the currently processing table and number of rows in the table that are restored are displayed. The panel is refreshed:

- 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, Archive builds the necessary JCL and Batch Utility control statements. The JOB statement information is taken from the JCL specified on the Job Card and Print Options panel.

If you indicate YES to the **Prompt for Changes Before Job Submission** prompt on the Job Card and Print Options panel, the default Job statement, as specified on that panel, is displayed prior to job submission. You may edit the Job card and print options and indicate whether your changes apply to the current job only or are permanent. (See the *Common Elements Manual* for further information.)

The information on the Job Card and Print Options panel is used to build the JCL and Batch Utility control statements that are required to create the Subset File. If you specify R at the **If Batch, Review or Save JCL** prompt on the Create Archive Subset File panel, the complete 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 SUBSET statement keywords and values.)

If you specify Save at the **If Batch, Review or Save JCL** prompt, you are prompted to provide the name of a file in which to save the JCL and control statements and to indicate whether the job is submitted after saving. (Details are discussed later in this section.)

Use END to return from the ISPF editor to Archive. However, your specification for the **Submit Jobs with END** prompt on the User Options panel determines whether the job is automatically submitted. If you specify NO to the prompt, you must explicitly submit the job from the ISPF editor, using the SUBMIT command.

If you specify YES, the job is automatically submitted. Use the CANCEL command to return to the Specify RESTORE Parameters and Execute panel without submitting the job. You can modify the specifications or cancel the restore request from this panel.

See the *Common Elements Manual* for information on the "Submit Jobs with END" option that establishes whether jobs are automatically submitted when END is used.

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 job.

Save JCL

You can save the JCL and Batch Utility control statements, modify them, and execute the process without re-invoking Archive. Specify S at the **If Batch, Review or Save JCL** prompt. The panel in the following figure prompts for the information needed 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 106. Save JCL Parameters

Prompts

The following prompts are displayed:

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 at the **Member** prompt.

Member (if PDS)
> Name of the member in the partitioned data set specified at 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 at the **Member** prompt.

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 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.

Subset Process Report

When the Subset File is complete, Archive generates a report documenting the process.

When the process is executed online, the Subset Process Report is automatically displayed and can be browsed, using standard ISPF scrolling functions. 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 Subset Process Report is formatted as shown in the following figure.

```
-------------------------- Subset Process Report ------------------------------
Command ===>                                                 Scroll ===> PAGE
                                                             ROW 0    OF 34
******************************* Top of Data ********************************

                        Subset Process Report

Archive File         : FOPDEMO.ARCHIVE.FILE
Subset File          : FOPDEMO.SUBSET
Access Definition    : GRP.FOPDEMO.ARCHIVE
Created by           : Job FOPDEMO, using SQLID FOPDEMO on DB2 Subsystem DSNA
Time Started         : 1999-10-06 08.58.01
Time Finished        : 1999-10-06 08.58.13


Total Number of Archive Tables           : 4
Total Number of Archived Rows            : 77
Total Number of First Pass Start Table Rows : 16


     Archived Object Types    Number
     ---------------------    ------
1    Table-List Tables          4

                             Archived
          Archive Tables       Rows
     -------------------------  ---------
1    FOPDEMO.ORDERS                   16
2    FOPDEMO.DETAILS                  34
3    FOPDEMO.ITEMS                    25
4    FOPDEMO.CUSTOMERS                 2

Selection Criteria Applied:

   Select from FOPDEMO.ORDERS where
         CUST_ID             >  '88000'

                 Relationship Usage Report
                                                   Access Type   PK Limit
                                          Relation ------------ ------------
   Parent Table              Child Table     Name   Parent Child Parent Child
-------------------------- -------------------------- -------- ------ ----- ------ -----
FOPDEMO.CUSTOMERS          FOPDEMO.ORDERS             RCO       **    SCAN
FOPDEMO.ORDERS            FOPDEMO.DETAILS            ROD       **    PKEY         100
FOPDEMO.ITEMS             FOPDEMO.DETAILS            RID       SCAN  **

** This path was not traversed during this run.

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

Figure 107. Subset Process Report Format

Report Format

The report is formatted with headings to identify the information. This information includes: Archive File name, Subset File name, Access Definition name, the user that created the Subset File, the date and time the Subset File was created, and counts of tables in the Subset File, and successfully copied rows, first pass Start Table rows, and object types.

The tables are listed in the order found in the Subset File. Counts of copied rows are provided on a table-by-table basis.

Print Report

While browsing, you can use the OUTPUT command to direct the contents of the report to an output file or to the printer. A panel is displayed prompting for the necessary information based on the specified output destination. (See the *Command Reference Manual* for details.)

Create Process

Use the Create Process to recreate a DB2 database or selected database objects using archived object definitions in an Archive File.

The Create facility allows a user with the appropriate authorizations to create database tables and other objects and to grant access privileges for those created objects. Users for whom the appropriate privileges are granted can then restore archived data into the new tables or views using Archive Restore or DB2 Load.

A user with necessary authorizations can use Archive Restore or DB2 Load to create tables and all subordinate objects (Primary Keys, Relationships, Indexes, Views, Aliases, Synonyms, Column Field Procedure Names, Triggers, User Defined Types and Functions, and Stored Procedures) that have been archived. Neither the Archive Restore Process or the DB2 Load Process creates subordinate objects for a table that already exists, however. Use the Create facility to create subordinate objects for existing tables.

CREATE Process Menu

When you select Option 9 from the Archive and Restore 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

Archive File DSN ===> 'Z13600MP.FOPND.AFILE'
```

Figure 108. 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 destination tables for each table in the Archive File. You must select this option to specify the Destination Creator ID. By default, Archive assumes the base destination table names are the same as the names defined in the Archive 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 Archive 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.

Archive File DSN

Specify the name of the Archive File containing the source object definitions.

Note: Entering the name of an Archive File that exists only on a Centera or Tivoli Server, automatically recalls the Archive File to disk. The Allocate Dataset panel is displayed if the Archive File is to be recalled to a new location.

You must be appropriately authorized to create any object definitions and to grant authority.

Available Commands

The following primary commands are also available:

- CANCEL
- END
- OPTIONS

Note that for Option 2 PERFORM, the **Always Display Create** setting on the User Options panel determines when the Create Object List panel appears. See the *Common Elements Manual* for details.

CREATE Process Defaults

Archive allows you to provide default values and parameters needed to create tables, tablespaces, views, aliases, and indexes. These default values are used to populate panels and determine behavior in the Create Process or the Create portion of a Restore or Load Process.

Before using Archive to create objects, you may want to establish several default values. These defaults will then be used each time an object is created using the Create Process, the Restore Process, or the DB2 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
```
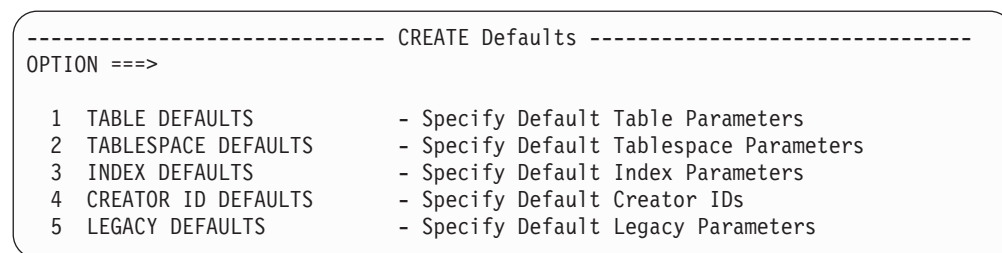
Figure 109. CREATE Defaults Menu

Panel Options

The options on this panel include:

1 TABLE DEFAULTS
> Provide default values for 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
> This option is displayed only if Move or Compare for IMS, VSAM, and Sequential File Data is also installed. For more information about this option, see the *Move User Manual* or the *Compare for IMS, VSAM and Sequential File Data* manual.

Table Defaults

Use Option 1 TABLE DEFAULTS on the **CREATE Defaults** menu to provide defaults for several parameters used when creating tables.

You can specify a value for any prompt on the following panel, but all are optional. If the **Database Name** default is omitted, Archive prompts for a database name when a table is created. If you leave other prompts blank, Archive uses the DB2 default when generating the SQL.

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 110. Table Defaults

This panel includes:

Database Name
> Default name for the database in which a table is created, as displayed on the **Create Object List** panel. Specify a literal, use one or more keywords, or combine literals 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. Note that you can directly modify a default database name displayed on the **Create Object List**. 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 of the user, 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 Objects List panel. Note that you can directly modify a default tablespace name displayed on the Create Object List.

Specify a literal, use one or more keywords, or combine literals and keywords to generate a default tablespace name that follows naming conventions for your site. Leave blank if a default tablespace name is not 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.

<TBL>
>   Table name.

For example, for a default tablespace name that begins with ARC, followed by the Creator ID of the table, specify ARC<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 activities to audit. Specify:

None No default auditing is performed.

Changes
>   By default, audit restore and delete after archive operations.

All   By default, audit all table access.

*   The assignment specified for the source table, if any, determines if the table activity is audited by default.

OBID Specify the OBID used for the table.

Data Capture

Indicates if additional information is logged for SQL INSERT, UPDATE and DELETE operations. Specify:

None   Data capture is not performed.

Changes

Write additional data about SQL updates to the log.

*   The assignment specified 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 tablespace definitions are archived, you may need to create a tablespace for restored data.

You can provide values for any prompts on the following panel, but all are optional. If you leave any prompt blank, Archive uses the DB2 default values when generating the SQL.

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      ===>              (1-4096)
Max Rows      ===>              (1-255)
Member Cluster ===> N           (Y-Yes, N-No)
```

Figure 111. Tablespace Defaults

This panel includes:

Using Stogroup

The 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 or 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:

> **Yes** Erase

> **No** 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**, but 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 on.

If the tablespace is segmented, the number of free pages must be less than the **Segsize** value.

Pctfree

Percentage of each page remaining as 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. If DB2 version 6.1 is installed, BP0-49, BP8K0-9, BP16K0-9, BP32K, and BP32K1-9 are valid.

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.

Compress

Indicate whether to perform data compression. Specify:

Yes Data is compressed when the LOAD or REORG utility is run on the table in the tablespace.

No 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.

Numparts
Specify the number of partitions. Allowable values are 1 – 4096.

Max Rows
Specify the maximum number of rows per page.

Member Cluster
Clustering of inserted data. Specify:

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 prompt 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 112. Index Defaults

This panel includes:

Index Creator ID

Creator ID 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 at 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 data sets in the tablespace are erased when deleted. Specify:

Yes Erase.

No 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 can specify a value for **Using Stogroup** or for **or VCAT**, but 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. 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 remaining as free space when the tablespace is loaded or reorganized. Specify:

0-99   An integer in this range. Default is 5 percent.

*   The value assigned to the source index is used.

Bufferpool

Specify the 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   Indicate whether to close the data sets 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   Indicate whether the index is built during the CREATE INDEX statement. Specify:

Y   Index is not built.

N   Index is built.

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 and UDTs 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 113. Creator ID Defaults

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 is supplied.

Alias Creator ID
> Creator ID used for the name of the alias. Specify:
>
> ***TABLE**
> > Creator ID from the base table or view name.
>
> ***SOURCE**
> > Creator ID from the source alias.
>
> **blank** SQLID of the current user.
>
> **Other** An explicit Creator ID 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.

UDF & Stored Proc 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.

CREATE Process Table Map

A Table Map is used to specify the names of the tables to be created at the destination. By default, Archive assumes the base names of the tables in the Archive File are to be used.

A Table Map is required in order to execute the Create Process, grant privileges, specify synonyms and other objects or use the Output option. You must specify a **Destination Creator ID**.

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 the Archive 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: OPTIM                                         >>

   Archive Tables       Destination Table Name    Type
-------------------- ------------------------->> -------
************************** TOP **************************
CUSTOMERS            CUSTOMERS                    TABLE
DETAILS              DETAILS                      TABLE
ORDERS               ORDERS                       TABLE
*********************** BOTTOM *************************
```

Figure 114. Create Process Table Map

This panel includes:

Src CID
The default Creator ID for the source tables as specified in the Archive File. This value cannot be modified.

Dest CID
The default Creator ID for the destination. Initially, the prompt is blank. A valid value must be specified.

Archive Tables
Names of the tables included in the Archive 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, Archive supplies the source table names for the destination tables.

You can specify other destination table names by overtyping the name, by requesting a selection list from which to choose, or by using the APPLY command. If you leave the prompt blank, the corresponding object definitions in the Archive File are ignored for the current Create Process and the objects are not created.

Type   The destination type supplied by Archive and indicated as:

TABLE
>A table

S-MQT
>A system-maintained Materialized Query Table

U-MQT
>A user-maintained Materialized Query 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

Available Commands

The following commands are available on this panel:
- APPLY
- DOWN
- LIST
- TOP
- BOTTOM
- END
- OPTIONS
- UP
- CANCEL
- EXPAND

Selection List

The 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, 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. Archive automatically places the name in Destination Table Name on which 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, Archive 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

Archive 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

See the *Common Elements Manual* for additional information about defining Table Maps.

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 with all related object definitions in the Archive File. You can select the objects to be created and modify the name 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 115 are involved. 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        OPTIM.ORDERS               DOPTIM   SSOFTCH1
___  SELECT        INDEX      FOPDEMO.XORDERPK
___  SELECT        PK(DB2)
___  SELECT        FK(DB2)    RCO
___  SELECT        FK(OPT)    TRCO
___  SELECT      TABLE        OPTIM.CUSTOMERS            DOPTIM   SSOFTCH1
___  SELECT        INDEX      FOPDEMO.XCUSTPK
___  SELECT        PK(DB2)
___  SELECT        FK(DB2)    RSC
___  SELECT        VIEW       OPTIM.V_CUST_ORDS
___  SELECT        TRIG(BU)   FOPDEMO.CUSTORDS
___  SELECT        TRIG(AI)   FOPDEMO.VER_DATE
___  SELECT        STRPROC    CUSORDSP

Review SQL before Create ===> Y  (Y-Yes, N-No)
```

Figure 115. CREATE Object List

This panel includes:

Cmd The line command area. The following 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 Archive 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
VIEW
PK(*type*)
FK(*type*)
S-MQT

U-MQT

ALIAS

TEMPTABLE

AUX

TRIG(*xx*)

STRPROC

INDEX

REL

SYNONYM

UDF

UDT

LEGACY

DATASET

The source of existing or 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 (delete), 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 left-justified. 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. When the name is changed, the status is automatically amended. (The name of a table can be changed only on the Table Map panel.)

Database

If the table exists, the name of the database to which the table belongs 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. Archive prompts for a name if none is provided.

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 186.)

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 **Tablespace** 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 187.)

If you initiate a CREATE for the table and the **Tablespace** is blank, DB2 automatically generates a tablespace name based on the table name.

Review SQL Before Create

Indicate whether the SQL generated by Archive to create the objects is to be displayed in the ISPF editor prior to execution. Specify:

Yes   SQL is displayed prior to execution. You can edit and save the SQL.

No   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 a 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 Archive 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, Archive 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 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, Archive 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, Archive 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 plus all of its related SELECTed objects.

CHANGED Status
The CHANGED status is assigned to an existing destination table definition if it is altered. This status applies to a table object and only appears if you have selected Yes for the **Check Create Table Chg** option at the User Options panel. If that option is No, the altered table status becomes EXISTS.

Modifying the List
You can modify the name of any object other than a table by overtyping. If you modify a listed name, Archive 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 objects with CREATED status.

PENDING Status
The PENDING status is assigned to a joined view or a relationship when an object on which one of these dependent object definitions 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, Archive can detect these potential pending situations and create the dependent objects after the requisite tables.

If the CR or CRA command is executed, Archive 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 167 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 or CREATED 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
> Drop

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)
> Optim (OPT) foreign keys

DROP PK(OPT)
> Optim (OPT) primary keys

DROP FK(DB2)
>   DB2 foreign keys

DROP PK(DB2)
>   DB2 primary keys

DB2 or OPT (Optim)

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 Optim 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 Optim key, and for an Optim relationship that is not based on a primary key/foreign key pairing.

Optim to DB2
>   The SQL for a DB2 foreign key generated from an Optim relationship always includes the DELETE RESTRICT rule. Assume the foreign key RTCO, where OPTIM.CUSTOMERS is the parent to OPTIM.ORDERS and the key column is CUST_ID, is switched to DB2.

The following SQL would be generated.

```
ALTER TABLE OPTIM.ORDERS
      FOREIGN KEY RTCO (CUST_ID) REFERENCES
OPTIM.CUSTOMERS
      ON DELETE RESTRICT;
```

Optim Relationship and DB2 to Optim
>   The SQL to generate an Optim relationship from either an Optim relationship or from a DB2 foreign key lists the corresponding columns. Assume the column CUST_ID in OPTIM.CUSTOMERS is not the primary key. The following sample SQL would be generated to create an Optim relationship named RTCO where the column CUST_ID in OPTIM.CUSTOMERS is related to the column CUST_ID in OPTIM.ORDERS.

```
FOP ALTER TABLE OPTIM.ORDERS
      RELATIONSHIP RTCO
           (CUST_ID = CUST_ID)
      REFERENCES OPTIM.CUSTOMERS;
```

Although only one column is listed in these examples, multiple columns can be involved. Also, Optim relationships can include expressions such as substrings of columns, concatenated columns, literals and constants. (For more information about Optim relationships, see the *Common Elements Manual*.)

As documented later in this section, the SQL can be modified prior to being submitted, therefore you can re-specify the destination directly.

Special Objects

You also use the Create process to migrate definitions of special objects:

- Column Field Procedure Name
- Triggers
- User Defined Types
- User Defined Functions
- Stored Procedures
- Large Objects (LOBs)

For these special objects, the same process as described in "CREATE Process Table Map" on page 176 is used. If the archived data being restored contains definitions for each type of object in the preceding list, the new objects are listed as in Figure 115 on page 178, 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 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 115 on page 178:

```
--------------------------- 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       OPTIM.ORDERS
___  SELECT       INDEX     FOPDEMO.XORDERPK
___  SELECT     TABLE       OPTIM.CUSTOMERS
___  SELECT       INDEX     FOPDEMO.XCUSTPK
___  SELECT     TABLE       OPTIM.DETAILS
___  SELECT       INDEX     FOPDEMO.XORDETPK
*** ***************************** BOTTOM ******************************

Review SQL Before Create ===> Y   (Y-Yes, N-No)
```

Figure 116. 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 Archive 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 115 on page 178, 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 OPTIM.ORDERS
     FOREIGN KEY RTCO (CUST_ID) REFERENCES OPTIM.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 117. DB2 Output from CREATE

Available Commands

The primary commands available on the CREATE Object List panel include:
- BOTTOM
- DROP ALL
- SHOW
- CANCEL
- END
- TOP
- CREATE ALL
- EXPAND
- UNSELECT ALL
- DEFAULTS
- OPTIONS
- UP
- DOWN
- SELECT ALL

Create Database

If you specify the name of a database that does not exist on the CREATE Object List, Archive prompts you for 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 118. Create Database

This panel includes:

Database Name
>   Name of the new database. This value is inserted by Archive and cannot be edited.

Bufferpool
>   Name of the buffer pool used as the default for tablespaces. 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
>   Specify Yes to display the SQL generated by Archive to create the database. 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.

Create Tablespace

If you specify the name of a tablespace that does not exist on the CREATE Object List, Archive prompts you for 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 : PSTTEST
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      ===>             (1-4096)
Max Rows      ===>             (1-255)
Member Cluster ===> N          (Y-Yes, N-No)

Review SQL before Create ===> Y  (Y-Yes, N-No)
```

Figure 119. Create Tablespace

This panel includes:

Database Name
    Name of the database. This value is inserted by Archive and cannot be edited.

Tablespace Name
    Name of the new tablespace. This value is inserted by Archive and cannot be edited.

Using Stogroup
    Name of the storage group. A value indicates that DB2 defines and manages the data sets for the tablespace. You may also provide values 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 or 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:

    Yes Erase

    No 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, etc.

If the tablespace is segmented, the number of pages remaining free must be less than the Segsize value.

Pctfree

Percentage of each page remaining as 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. 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.

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:

Yes   Data is compressed when the LOAD or REORG utility is run on the table in the tablespace.

No   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
             System value is used.

CCSID

Table is EBCDIC or ASCII data.

Large   Default established as Large or not.

Numparts

Number of partitions.

Max Rows
Maximum number of rows per page.

Member Cluster
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 Archive 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 as a separate step at a later time, you can grant privileges to any existing tables or views specified in 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 120. Grant Privileges

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 of the individual authorizations listed are then ignored. The following authorizations are granted by ALL or can be granted separately:

ALTER INDEX REFERENCES TRIGGER DELETE INSERT SELECT UPDATE

For each of these specify:

Y   Privilege is included.

N   Privilege is not included.

TO   Indicates the users to whom the authorizations for this request are granted. For the prompt PUBLIC, specify:

Y   Privileges are granted to all users.

N   Privileges are to be granted to specific users as listed.

An area consisting of 16 8-character prompts is provided on which to specify the AUTHIDs for up to 16 users. To specify AUTHIDs for more than 16 users, you must re-execute the grant request.

ON   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. For tables, the selection list 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 Archive File that have been created or that exist. (The default Creator ID for views can be defined on the panel shown in Figure 113 on page 175.)

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.

Available Commands

The following primary commands are also available:

- CANCEL
- END
- OPTIONS

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 117 on page 186.)

Synonyms

This option allows you to specify additional synonyms by providing a list of the synonyms for the tables in the Archive File. Select Option 4 SYNONYMS on the CREATE Process menu to display the CREATE Additional Synonyms panel.

Assume the specified Archive File 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 121. CREATE Additional Synonyms

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   The line command area. Valid line commands are:

> **S**   Select the synonym to be created.

> **U**   Unselect this synonym. Do not create it.

Status   Indicates if the synonym exists, and, if not, whether it is to be created. Possible values are:

> **CONFLICT**
> > Synonym exists but is 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
The name to be used as a synonym. This prompt is initially populated with the synonyms extracted with the base tables from the source. It 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
Indicate 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
- DOWN
- EXPAND
- TOP
- CANCEL
- END
- OPTIONS
- UP
- CREATE ALL

Specifications Complete
When you are satisfied with your selections, use CREATE ALL.

If 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 117 on page 186.)

Output SQL

This option allows 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 panel 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 ===> N    (Y-Yes, N-No)
```

Figure 122. Output SQL

This panel includes:

Output Dataset
>The name of the data set for the generated SQL statements. You may specify a partitioned or a sequential data set defined with 80-character fixed length records.

>If the named data set does not exist, Archive prompts for the information required to allocate the data set and allocates it for you. If the data set does exist, Archive 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)
>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 for SQL (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 for SQL** prompts. The SQL incorporates the defaults that you have established on the various defaults panels (see "CREATE Process Defaults" on page 167.)

Available Commands
The following primary commands are also available:
- CANCEL
- END
- OPTIONS

Browse an Archive File

Archive provides a full browse facility for online review of Archive Files or Control Files stored on disk. This feature allows you to research archived data to answer an inquiry or as a preliminary step in restoring data to the database.

The browse facility works in four modes.

- In Report Mode, you can generate, browse, write to disk, and print a report on the contents of an Archive File or Control File. This read-only report includes all data in the file or all data in a selected table.
- In contrast, Table Mode provides a dynamically formatted display of related archive data. 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 Archive File. You may also specify selection criteria or an SQL WHERE clause for the display before and during a Table Mode browse session. After you have located a set of related data in which you are interested, 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*.)
- Summary Mode provides a summarized listing showing only the tables in the Archive 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 Archive File.

Note: While you cannot browse an Archive File on tape, you can restore it to a "staging" database. You can then browse the restored data using Access or by using the POINT command from the Access Definition editor (the Access Definition must reference one or more tables in the staging database).

Select Option B BROWSE on the Archive and Restore menu, or Option B Browse Archive File on the ARCHIVE Process or Archive RESTORE Process panels, to invoke the browse facility. Selecting any of these options displays the Extract, Archive or Control File Browse Parameters panel, shown in the following figure. You can also use the Browse line command, B, on the Archive Files panel, to invoke the browse facility.

```
------------- Extract, Archive or Control File Browse Parameters --------------
Command ===>                                              Scroll ===>PAGE

Provide Extract, Archive or Control File Data Set Name:
 DSN             ===> 'PSTDEMO.ARCHIVE.FILE'

Browse Mode        ===> T                      (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 ===> C     (C-Change File, W-Wrap Data)
```

Figure 123. 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 tools are currently installed at your site.

This panel includes:

Data Set Name

Specify the name of a valid Archive or Control File data set by typing the full name or using SQL LIKE syntax to select from a list. (Note that you can also browse Extract Files with the Archive Browse function.) Archive prefixes a name that is not enclosed in single quotes with the default **Dataset Prefix** value, specified on the User Options panel.

If both an Archive 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 203 for a list of possible row status values.)

If you have invoked the browse facility with the B line command on the Archive Files panel, the **Archive File DSN** is inserted by Archive and cannot be edited.

Note: If you specify an Archive File that exists only on a Centera or Tivoli Server, this automatically recalls the Archive File to disk. The Allocate Dataset panel is displayed if the Archive File is to be recalled to a new location.

Browse Mode

Type of browse. Specify:

T   Browse contents of the Archive File dynamically, by selecting and displaying related data.

R   Browse contents of the Archive or Control File in static, report format.

S   Browse a summarized listing showing only the names of tables in the Archive File and the row counts for each (i.e., data rows are omitted).

A   Browse the Access Definition used to create the Archive File.

Note: When you supply a Control File DSN, Browse Mode is ignored and the browse is processed in Report mode (i.e., all data rows are included).

If Table Mode, specify

Table Name

Specify the name of the first table 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 Archive File. This value is ignored if **Browse Mode** is R, S or A.

Use the LIST TABLES command to obtain a selection list of tables in the Archive 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   Display the Archive Selection Criteria – Columns panel to specify selection criteria for the browsed data. (For Archive Files only.)

Note that you can also use the SELECTION CRITERIA primary command to specify selection criteria for a table in the Archive File while browsing.

Q   Display a panel to specify an SQL WHERE clause for the browsed data. (For Archive Files only.)

If begin with S or Q

Case Sensitive

If you specified S or Q for **Begin with**, indicate whether the specified selection criteria or SQL is case sensitive by entering a Y or N here. Specify:

Y   Select data, matching the case of criteria exactly as specified. You must use a case-sensitive search to search a dense index.

N   Select data without regard to the case of criteria.

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 Archive 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 set does not exist, Archive prompts for allocation information (see the *Common Elements Manual*). 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 SQL errors with the SQL error code and the constraint or column name, if any. For more information about SQL errors documented in the Control File, see "SQL Error Codes" on page 204.

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 "Row Status" on page 203.

Filter Data

Indicator for including all rows in the Archive File or only rows that have been discarded. This value 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

Indicates the action taken if the display length of the data exceeds the width of the file. This value is used only if the Browse 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
- EXPAND
- LIST TABLES
- OPTIONS
- END

Table Mode

Table Mode allows you to browse an Archive File online, using various techniques to focus on the data of interest. Specifying criteria to select the archived data you want to view is the principal method used to focus your browse session.

You may define selection criteria or an SQL WHERE clause before beginning a browse and add or refine criteria while browsing. This and other techniques for qualifying the data display are discussed in "Qualify the Data Display."

Unless you indicate a table name to begin a session or indicate that selection criteria or an SQL WHERE clause are used, all rows in the archived Start Table are displayed on the Archive Browse panel, as shown in the following example. (The layout and functions of this panel mirror those of the Access editor.)

```
-------------------- Archive Browse: FOPDEMO.ARCHIVE.FILE --------------------
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
```

Figure 124. Archive Browse – Initial Display of Data

See the *Common Elements Manual* for a description of the screen elements on the Archive Browse panel, the join facility, techniques for managing the browse display, and creating a report about the contents of the display. Information is also provided on the commands available on the Archive Browse panel in the *Command Reference Manual*.

Qualify the Data Display

You can focus the display of data on the Archive Browse panel in several ways. At the most basic level, you qualify the display of data when specifying the Archive File for browsing, either by entering the name on the Extract, Archive or Control File Browse Parameters panel or by using the B line command on the **Archive Files** list. After selecting an Archive File to browse, you can further narrow the scope of the data displayed on the Archive Browse panel by defining selection criteria or an SQL WHERE clause.

Unless you specify a different table in **Table Name**, a Table Mode browse begins with a display of data from the Start Table. If you do not specify criteria for the table, all rows are displayed. Otherwise, only rows that match the selection or SQL criteria are displayed in the Archive Browse panel.

Note: If no matching rows are displayed, use END or CANCEL to return to the Extract, Archive or Control File Browse Parameters panel, where you can specify a different Archive File to browse or CANCEL the Browse Process.

Use Selection Criteria

If you specify S in **Begin Browse with** on the Extract, Archive or Control File Browse Parameters panel or use the SEL CRIT primary command while browsing, Archive displays the Archive Selection Criteria – Columns panel, where you can provide criteria for the table you are browsing. (See "Specify Selective Restore Criteria" on page 89 for additional information about this panel and about specifying selection criteria.)

In the following figure, criteria are defined for the ITEMS table as the first step in locating customers that purchased ITEM CH006 during the period covered by the archived orders.

```
-------------------- Archive Selection Criteria - Columns ---------------------
Command ===>                                              Scroll ===> PAGE

Use INF Line Command to Display Index Range, END where Complete
                                                          1 of 6
Archive File DSN : FOPDEMO.ARCHIVE.FILE
Table Name       : FOPDEMO.ITEMS
Combine All Column Criteria by  ===> O (A-AND, O-OR)

Cmd Column              Idx  Search Criteria
--- ------------------ --- --------------------------------------------------
******************************** TOP ************************************
___ ITEM_ID            D  = 'CH006'
___ ITEM_DESCRIPTION   S
___ CATEGORY           S
___ RATING
___ UNIT_PRICE
___ ON_HAND_INVENTORY
****************************** BOTTOM ***********************************
```

Figure 125. Browse Selection Criteria

After you specify criteria for the data you want to browse, use END to fetch any rows that match the criteria and display the Archive Browse panel, as in the following figure.

```
-------------------- Archive Browse: FOPDEMO.ARCHIVE.FILE --------------------
Command ===>                                              Scroll ===> PAGE

Cmd F == Table: FOPDEMO.ITEMS(T1) =========================== 1 OF 1 === MORE>>
     ITEM_ID   ITEM_DESCRIPTION    CATEGORY    RATING UNIT_PRICE
     ------- ==================== -------------- ------ ----------
*** ******************************** TOP ********************************
___     CH006  Willie Wonka & the C Children      G       14.00
*** ****************************** BOTTOM *******************************
```

Figure 126. Archive Browse with Selection Criteria

You can use the SELECTION CRITERIA command to display the Archive Selection Criteria – Columns panel at any time during a Table Mode browse and add or change criteria for any table in the Archive File.

Use an SQL WHERE Clause

When criteria cannot be specified adequately on the Archive Selection Criteria – Columns panel, you can use an SQL WHERE clause. Specify Q in **Begin Browse with** on the Extract, Archive or Control File Browse Parameters panel or use the SQL primary command while browsing to display the SQL WHERE Clause panel, where you can enter an SQL WHERE clause for the table you are browsing. (See the *Common Elements Manual* for additional information.)

In the following figure, an SQL WHERE clause is defined for the ORDERS table.

```
--------------- Enter an SQL WHERE Clause for a Table or View -----------------
Command ===>                                              Scroll ===> PAGE

      SELECT ... FROM FOPDEMO.ORDERS
Cmd      Correlation Name ===>                  WHERE          1 of 8
--- ----------------------------------------------------------------------
*** ****************************** TOP ********************************
___ ORDER_SHIP_DATE - ORDER_DATE > 30
___
___
___
___
___
___
___
Line Commands: (I)nsert, (D)elete, (R)epeat, (M)ove, (C)opy
Use the LIST COLUMNS command to add column names, if needed
Use the SQLEdit command to invoke the ISPF editor with all of its facilities
An optional correlation name can be entered to refer to the base table
```

Figure 127. Specify SQL WHERE Clause

After you specify the SQL WHERE clause, use END to fetch any rows that match the criteria and display the Archive Browse panel.

You can use the SQL command to display the SQL WHERE Clause panel at any time during a Table Mode browse and add or change the SQL WHERE clause for any table in the Archive File.

Report Mode

Report Mode allows you to create a permanent or temporary data set of the contents of an Archive 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. Archive 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 Archive File or Control File can be printed. For additional information, see the REPORT statement in the *Batch Utilities Guide*.

Specify Contents of Report

To generate a report, you must provide the name of a valid Archive 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.ARCHIVE.FILE'

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 ===> C       (C-Change File, W-Wrap Data)
```

Figure 128. Browse Parameters for Report Mode

Note: The title of the Browse Parameters panel and the Data Set Name prompt may vary depending on which tools 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 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 this blank, Archive 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 a Delete After Archive or Restore 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.FOPDEMO.R0130827   Line 00000000 Col 001 080
  Command ===> _____ Scroll ===> PAGE

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

             Optim - Archive/Control File Print Report

Archive File     : FOPDEMO.SAMPLE.ARCHIVE1
File Created By  : Job FOPDEMO using SQLID FOPDEMO
File Created On  : April 02, 2004 at 10:35 AM from DB2 Subsystem DSNC
Report Printed On: April 02, 2004 at 10:43 AM from DB2 SubSystem DSNC


Control File     : FOPDEMO.SAMPLE.CONTROL
Processing Status: Restore Process Complete
Processed by     : Job FOPDEMO using SQLID FOPDEMO
Processed on     : April 02 2004 at 10:36 AM to DB2 Subsystem DSNC



Total Number of Tables in the Archive File    : 2
Total Number of Delete After Archive Tables   : 0
Number of Tables Processed in Report          : 2
Number of Delete After Archive Tables Processed: 0
```

Figure 129. Browse Control File - Statistics

This panel includes the following information:

Archive File
> Name of the Archive 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., Restore Process, Delete After Archive).

Processed by
> Job name and SQL ID used to process the file.

Processed on
> Date, time, and system on which the report was processed.

Total Number of Tables in the Archive File
> Number of tables in the Archive File.

Total Number of Delete After Archive Tables
> Number of tables in the Archive File designated for Delete After Archive.

Number of Tables Processed in Report
> Number of tables processed in the report.

Number of Delete After Archive Tables Processed
> Number of tables processed in the Delete After Archive.

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 after a Restore Process. The **Status** of each row is also listed. (**Status** is provided only when browsing a Control File.)

```
 BROWSE     SYS94031.T141746.RA000.FOPDEMO.R000004    Line 00000019 COL 001 080
 Command ===> _____      Scroll ===> PAGE

 Status      Ins CUST_ID CUSTNAME             ADDRESS
 ----------- --- ------- -------------------- ----------------------------------
 OK:     2       30048   Shutterbug           1625 Indian Trail
 OK:     2       30034   Main Street Video    Gateway Shopping Center
 OK:     2       23621   Popcorn Videos       Aramingo Place
 OK:     2       22659   Showcase             1150 Indian Terrace
 OK:     2       22232   Movie Mania          572 Front St
 OK:     2       22231   Movie Mania          97432 Second Ave
 OK:     2       22230   Movie Mania          572 Front St
 DB2: -803   I   20732   Talkies              3315 U.S. Highway 1
 OK:     2       20710   Prime Time Video     64 Newberg Avenue
 OK:     2       20142   Popcorn              15 Crystal Park
 OK:     2       20055   The Movie Idol       4545 Old Stage Road
 DB2: -803   I   20052   Talkies              3315 U.S. Highway 1
 OK:     2       20042   The Movie Shop       2001 Rte 1
 OK:     2       17776   Showplace            1 Ocean Parkway
 OK:     2       15646   Main Street Video    Gateway Shopping Center
```

Figure 130. 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 204.)

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. The process was terminated, however, 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 Archive File format to the database format. This can occur when the Archive File column contains NULL and the DB2 column is defined as NOT NULL or when the Archive File column value and the DB2 column data types are not compatible. This row cannot be restarted or retried.

NOT FOUND

The row could not be found for a Delete Process.

MISMATCH

One or more columns on the Archive File did not match the column in DB2 for a Delete Process.

MISM PEND

One or more columns on the Archive File did not match the column in DB2 for a Delete Process, but this row may be successfully processed later in the process. However, the process was terminated before this row could be reprocessed. This occurs when deleting from tables with non-unique primary keys.

DUP PK

The row was discarded because of duplicate primary key values in the Archive File. If the destination table is defined to DB2 with a unique primary key but the Archive File contains multiple source rows with the same key value, only the first row in the Archive 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 the **Show Row Status** prompt, pertinent error messages are included. The SQL error codes and the accompanying messages are:

-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 a right-arrow, >, indicates the data in error. The right-arrow highlights the location of the error and can be used on the FIND command to locate these errors.

Archive Files

Browsing an Archive File in Report Mode is helpful to review the contents of a file. You can include all data from all tables in the file, or all data from a single table. Data is formatted as follows.

```
 BROWSE    SYS00300.T145430.RA000.FOPDEMO.R0131211    Line 00000000 COL 001 080
 Command ===> _____ Scroll ===> PAGE

                Optim - Archive File Print Report

Archive File    : FOPDEMO.ARCHIVE.FILE
File Created By  : Job FOPDEMO using SQLID FOPDEMO
File Created On  : October 05 2000 at 08:40 AM from DB2 Subsystem DSNA
Report Printed On: October 26 2000 at 02:54 PM from DB2 SubSystem DSNA


Total Number of Tables in the Archive File     : 4
Total Number of Delete After Archive Tables    : 0
Number of Tables Processed in Report           : 4
Number of Delete After Archive Tables Processed: 0



Table: FOPDEMO.ORDERS

ORDER_ID CUST_ID ORDER_DATE ORDER_TIME FREIGHT_CHARGES ORDER_SALESMAN ORDER_POST
-------- ------- ---------- ---------- --------------- -------------- ----------
     217 00110   1997-02-24 12.12.51             48.52 SE012          1997-02-25
...
...
    3398 00289   1997-02-24 12.12.51             48.52 NW012          1997-02-25
-----------------------------------------------------------------------------
Display of Table FOPDEMO.ORDERS Complete -- 19 Rows were Printed
```

Figure 131. Browse Archive File - Report Mode

The panel includes:

Archive File
> Name of the Archive File.

File Created By
> Job name and SQL ID used to create the file.

File Created On
> Date, time, and system the file is created on.

Report Printed On
> Date, time, and system the report is printed on.

Total Number of Tables in the Archive File
> Number of tables in the Archive File.

Total Number of Delete After Archive Tables
> Number of tables in the Archive File designated for Delete After Archive.

Number of Tables Processed in Report
> Number of tables processed in the report.

Number of Delete After Archive Tables Processed
> Number of tables processed in the Delete After Archive.

Table Statistics
Fully qualified table name.

Data Headings
DB2 column names are used as headings for the rows from each table.

Status Row
Indicator that the display for the table is complete and the number of rows from the table that are displayed.

Bottom of Data
A Bottom of Data Indicator is included after the last row in the report.

Summary Mode

Use Summary Mode to review general information about the contents of an Archive File.

Provide the name of a valid Archive 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 - Archive File Print Report

Archive File    : FOPDEMO.ARCHIVE.FILE
File Created By  : Job FOPDEMO using SQLID FOPDEMO
File Created On  : May 09 2001 at 01:02 PM from DB2 Subsystem DSNA
Report Printed On: May 09 2001 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 132. Summary Mode Display

The panel includes:

Archive File
Name of the Archive File.

Created By
Job name and SQL ID used to create the file.

Created On
Date, time, and system the file is created on.

Printed On
Date, time, and system the report is printed on.

Next, the names of the tables contained in the Archive File are listed with the number of rows archived from each table shown. 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

When browsing in Access Definition mode, provide the Archive File DSN and indicate A as the **Browse Mode**.

Before displaying the Access Definition, Archive prompts you to indicate the column options to display.

```
 ------------- Extract, Archive or Control File Browse Parameters --------------
 Command ===>                                              Scroll ===>PAGE

 Provide Extract, Archive or Control File Data Set Name:
  DSN
       +--------------Access Definition Display Parameters-------------+
 Brows ¦                                                               ¦
       ¦ Select Column options to be used:                             ¦ Def)
 If Ta ¦   Display Selection Criteria    ===> N        (Y-Yes, N-No)   ¦
  Tab  ¦   Display Archive Criteria      ===> N        (Y-Yes, N-No)   ¦ e)
  Beg  ¦   Display SQL Criteria          ===> N        (Y-Yes, N-No)   ¦ Q-SQL)
  If   ¦   Display Archive Actions       ===> N        (Y-Yes, N-No)   ¦
   C   ¦   Display All Column Attributes ===> N        (Y-Yes, N-No)   ¦ any
       +---------------------------------------------------------------+ ipped)
```

Figure 133. Access Definition Display Parameters

Use the prompts to customize the display:

Display Selection Criteria

> **Yes**   Display 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 column attributes.
>
> **No**   Do not display column attributes.

The following example shows an Access Definition report resulting when all column options are selected. (Note that the display has been modified slightly for inclusion here.)

```
 BROWSE     SYS01129.T133759.RA000.FOPKDS.R0104680    Line 00000000 COL 001 080
 Command ===> _____ Scroll ===> PAGE

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

             Optim - Archive File Print Report
Archive File    : FOPDEMO.ARCHIVE.FILE
File Created By  : Job FOPDEMO using SQLID FOPDEMO
File Created On  : May 09 2001 at 01:02 PM from DB2 Subsystem DSNA
Report Printed On: May 09 2001 at 01:38 PM from DB2 SubSystem DSNA

ACCESS DEFINITION : FOPDEMO.ARCHIVE.AD1
Modified By      : FOPDEMO
Last Modified    : 2000-05-09
Security Status   : PRIVATE
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   : No
  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--       Access
(CreatorID).Table/View Name    Status    Ref DAA EveryNth RowLimit Type  Rights
--------------------------- -------------- --- --- -------- -------- ----- ------
CUSTOMERS                   SEL           N   N                     TABLE DELETE
DETAILS                                   N   N                     TABLE DELETE
ITEMS                       ACT           N   N                     TABLE DELETE
ORDERS                                    N   N                     TABLE DELETE

RELATIONSHIPS
           Child
  Status Q1 Q2 Limit  Parent Table                Child Table                  Name    Type
  ------ -- -- ----- -------------------------- -------------------------- ------- ----
  SELECT Y  N        FOPDEMO.CUSTOMERS          FOPDEMO.ORDERS             RCO     DB2
  SELECT Y  N        FOPDEMO.ITEMS              FOPDEMO.DETAILS            RID     DB2
  SELECT Y  N        FOPDEMO.ORDERS             FOPDEMO.DETAILS            ROD     DB2

TABLE NAME: FOPDEMO.CUSTOMERS
  List of Columns With Selection Criteria
  Column Name       Data Type       Selection Criteria
  ----------------- --------------- ------------------------------------------
  STATE             CHAR(2)         = :STATE_VAR

TABLE NAME: FOPDEMO.ITEMS
  Archive Actions
    Action Type : Before Extract of the First Row From a Table
    Share Status: Not Shared
    SQL Clause
      select * from items where rating <> 'X'
                     ****** End of Report ******
****************************** Bottom of Data ******************************
```

Figure 134. Access Definition Mode Display

The Access Definition report includes the following information:

Archive File

Name of the Archive or Control File.

File Created By

Job name and SQL ID used to create the file.

File Created On

Date, time, and system the file is created on.

Report Printed On

Date, time, and system the report is printed on.

Access Definition

Name of the Access Definition used to create the Archive File.

Description

A 40-character-maximum 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

An 8-character area to specify the Security Status of the Access Definition (PUBLIC, PRIVATE or READ ONLY).

Default Creator ID

ID of the Access Definition creator.

Start Table

Start table used in the Access Definition.

Dynamically Add New Tables

If Yes, allows the user to add new tables that are not included in the Access Definition and can be accessed via a JOIN command. This specification applies when defining an Access Definition and a Browse session is invoked, or for Access only when a browse or edit session is invoked from a menu option.

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 Archive Process.

Apply Crit in Self Reference

Indicate whether selection criteria is applied when a table is self-referenced. This setting applies only when browsing or editing data, using Access.

Expiration Value

Expiration parameters for Archive Files generated in Archive Processes that use the Access Definition. (Archive only) Values are:

none   No expiration date.

YYYY-MM-DD

An explicit date, after which the data in the Archive File is considered to be expired. An error occurs if an Archive Process uses the Archive File created with this Access Definition after the specified date.

DDDDD

The number of days until expiration.

Use END or CANCEL to return to the Extract, Archive or Control File Browse Parameters panel.

Available Commands

The following primary commands are also available:

- CANCEL
- EXPAND
- LEFT
- RFIND
- DOWN
- FIND
- RIGHT
- UP
- END

Browse Archive Log

Archive provides a log facility that allows you to browse a list of Archive Processes and review information about the selected process.

For example, you can monitor the frequency of LOAD Processes initiated by a specific user or the number of times a specific user browses Archive Files online. Selection criteria may be used to list processes involving particular Archive Files, initiated by a particular user, or performed in a particular mode. All Archive Log entries are stored in the Optim Directory.

When you select Option L LOG on the Archive and Restore menu, the following panel is displayed.

```
----------------- Archive Log Display Selection Criteria ----------------------
Command ===>                                                Scroll ===> PAGE

The Archive Log can be displayed based on the criteria specified

Specify one or more functions         Y-Yes, N-No
   Archive          ===> N            Subset          ===> N
   Search           ===> N            Load            ===> N
   Restore          ===> N            Convert         ===> N
   Browse           ===> N            Import          ===> N
   Delete           ===> N            Update          ===> N

   Specify one or more criteria (DB2 Like syntax permitted)
      Process Mode        ===>    O-Online, B-Batch, Blank for Either
      Archive File DSN    ===>
      Processed By        ===>
      Archive Group       ===>
      Archive Description ===>
      Archive Date Range (YYYY-MM-DD)
         Beginning Date   ===>              Ending Date    ===>
```

Figure 135. Archive Log Display Selection Criteria Panel

Panel   The panel includes:

Specify one or more functions

Select one or more process types by typing Y for Yes or N for No for the following:

Archive

List Archive Process log entries.

Search

List Search Process log entries.

Restore

List Restore Process log entries.

Browse

List Browse Process log entries.

Delete   List Delete Process log entries.

Subset

List Subset Process log entries.

Load   List Load Process log entries.

Convert

List Convert Process log entries.

Import

List Import Process log entries.

Update

List Update Process log entries.

Specify one or more criteria (DB2 Like syntax permitted)

The following are used to specify criteria for the list of log entries.

Process Mode

The mode in which processes were executed. Specify O for online, B for batch, or leave blank for both processes.

Archive File DSN

> The data set name for Archive Files involved in the processes. Enter a fully qualified name to list entries for a specific Archive File, leave blank to list entries regardless of file name, or use DB2 LIKE syntax to specify a pattern.

Processed By

> Specify the creator ID of the user who initiated the processes. Enter a creator ID, leave blank to list entries regardless of ID, or use DB2 LIKE syntax to specify a pattern.

Archive Group

> The user-specified group ID. Enter the full group designation to list entries for processes involving Archive Files with a specific group designation, leave blank to list entries regardless of group, or use DB2 LIKE syntax to specify a pattern.

Archive Description

> A 1- to 40-character description for Archive Files involved in the process. Enter the full description, leave blank to list entries regardless of the description, or use DB2 LIKE syntax to specify a pattern.

Archive Date Range

> The date range in which Archive Files involved in the processes were created. (The displayed date format is the DB2 default for your system.)

Beginning Date and Ending Date

> The beginning and/or ending dates in ISO, USA, or European format. (Archive will convert the specified dates into your DB2 default format.)
>
> • Use **Beginning Date** alone to specify all Archive Files created on or after that date.
>
> • Use **Ending Date** alone to specify all Archive Files created on or before that date.
>
> • Enter both a **Beginning Date** and **Ending Date** to specify a date range.

After you have indicated the processes and selection criteria for the Archive Log list, the Archive Log panel is displayed. You can use this list to review information about a process or the Access Definition used to create the Archive File involved in the process.

```
------------------------------ Archive Log ----------------------------------
Command ===>                                              Scroll ===> PAGE

     Line: I-Info, AD-Access Definition               1 OF 5

Cmd Func Date        File Name                                     Group
--- ---- ---------- --------------------------------------------- --------
    ***************************** TOP ********************************
___ REST 2000-12-18 'FOPDEMO.ARC2'
___ SEAR 2000-12-18 FOPDEMO.ARC1
___ IMPO 2000-12-18 FOPDEMO.ARC1
___ UPDA 2000-12-18 FOPDEMO.ARC1
___ BROW 2000-12-18 FOPDEMO.ARC2
    **************************** BOTTOM ******************************
```

Figure 136. Archive Log

The panel includes:

Cmd   The line commands area. Valid commands are:

> **I**   Display information about the process.
>
> **AD**   Display information about the Access Definition used to create the Archive File.

Func   Type of process for which the log entry was created.

ARCH
>   Archive Process

SEAR   Search Process

REST   Restore Process

BROW
>   Browse Process

DELE   Delete Process

SUBS   Subset Process

LOAD
>   Load Process

CONV
>   Convert Process

IMPO   Import Process

UPDA   Update Process

Date   The date the specified process occurred.

File Name
>   The name of Archive File involved in the specified process.

Group   The group designation for the Archive File involved in the process.

Use the DETAIL primary command to display the following:

Description
>   The description of the Archive File involved in the process.

Start Time
>   The time the process started.

End Time
>   The time the process ended.

Use the I line command to invoke the Extended Archive Log Information panel.

```
---------------------- Extended Archive Log Information ----------------------
Command ===>                                              Scroll ===> PAGE
                                                          ROW 0     OF 43
****************************** Top of Data ********************************
Function       : SEARCH
Archive File DSN: FOPDEMO.ARCHIVE.FILE
Archived By     : SQLID FOPDEMO on DB2 subsystem DSNA
Group Name      :
Description     :
Created By      : FOPDEMO
Operation Start : 2000-12-18 14.42.39.790
Operation End   : 2000-12-18 14.43.26.235
Process Mode    : ONLINE
Security Status : PUBLIC
Unit Type       : DISK

Table FOPDEMO.CUSTOMERS has 704 rows archived.

   Index columns for Table FOPDEMO.CUSTOMERS

      Column Name: CUST_ID
         Low Value  : 00001
```

Figure 137. Extended Archive Log Information - I Line Command

This panel contains information about the Archive File involved in a particular Archive Process and the process itself. The same information is provided for each type of process.

Use the AD line command to display information about the Access Definition used in creating the Archive File. The following panel allows you to select AD information to be displayed.

```
------------------------------ Archive Log ----------------------------------
Command ===>                                              Scroll ===> PAGE

      Line: I-Info, AD-Access Definition                 2 OF 5


Cmd F +--------------Access Definition Display Parameters-------------+
--- - ¦                                                              ¦ ---
AD_ S ¦ Select Column options to be used:                            ¦
___ I ¦    Display Selection Criteria    ===> Y        (Y-Yes, N-No) ¦
___ U ¦    Display Archive Criteria      ===> Y        (Y-Yes, N-No) ¦
___ B ¦    Display SQL Criteria          ===> N        (Y-Yes, N-No) ¦
    * ¦    Display Archive Actions       ===> N        (Y-Yes, N-No) ¦ ****
      ¦    Display All Column Attributes ===> N        (Y-Yes, N-No) ¦
      +--------------------------------------------------------------+
```

Figure 138. Archive Log - Access Definition Display Parameters

After you select options for displaying the Access Definition and press END, the following panel is displayed.

```
---------------------- Extended Archive Log Information ----------------------
Command ===>                                               Scroll ===> PAGE
                                                           ROW 0    OF 47
****************************** Top of Data *********************************

ARCHIVE FILE DSN  : FOPDEMO.ARCHIVE.FILE

ACCESS DEFINITION : GRP.FOPDEMO.ARCHIVE

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   : No
```

Figure 139. Extended Archive Log Information - AD line command

This read-only panel displays information about the Access Definition used to create the Archive File involved in the Archive Process.

Terminate List

Use the END command or the CANCEL command to return to the Archive Log panel.

Available Commands

The following primary commands are also available:

- CANCEL
- END
- OPTIONS

Appendix A. Definitions: Archive Collections

This section describes how to create and maintain the Definitions stored in the Optim Directory for Archive Collections.

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

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

Figure 140. 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 and Compare to map source columns to destination columns, or to transform the data for a destination column as part of an Insert, Load, Compare 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 and Compare 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 database 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 database table.

Use Option 6 to create, modify, or delete a Legacy Table. For more information about this option, see the *Move User Manual* or *Compare for IMS, VSAM and Sequential File Data*.

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 the *Move User Manual* or *Compare for IMS, VSAM and Sequential File Data*.

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 the *Move User Manual* or *Compare for IMS, VSAM and Sequential File Data*.

COLLECTIONS

An Archive Collection is an object that references one or more Archive Files. When an ODM connection is made with a collection as the data source, the data in the Archive Files is unioned and presented to the user as though a single Archive File is being accessed.

Use Option 9 to create, modify, or delete an Archive Collection, as described in "Archive Collections" on page 219.

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*.

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.

Archive Collections

An Archive Collection is a list of Archive Files that can be logically unioned together as a single data source for Open Data Manager (ODM) access.

For example, ODM uses an Archive Collection to provide access to data in multiple Archive Files, even if all files do not include a specific table or column or if the attributes of data in a column vary from file to file. For information about using ODM, refer to the *Customization Guide*.

When an ODM connection is made using a collection name, the Archive Files in the collection are unioned and presented to an ODM user as though a single Archive File is 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 include 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 the Archive File Collection Editor to create an Archive Collection. You can manually add Archive Files to a collection using the editor or automatically add files to a collection via the **Archive Collection** entry on the Specify ARCHIVE Parameters and Execute panel. Archive Files in a collection must be registered in the Archive Directory. ODM processes Archive Files in the order they are listed in the collection.

Note: The Archive Process will fail if an invalid Archive File is automatically added to an Archive Collection.

When an Archive Index is added, changed, or dropped for an Archive File, the Archive File Collection is updated to reflect the new index information. When an Archive File is dropped from the Archive Directory, the file is also dropped from the Archive Collection.

Archive validates the Archive Collection when it is saved. The following conditions will cause an error:

- Tables with matching Creator IDs and names have one or more columns with the same name but incompatible attributes. For more information, see "Column Compatibility."

Archive File Collection Processing

ODM processes Archive Collections according to the following rules.

Unioned Tables

Tables with matching Creator IDs and names are unioned. To be processed, a table need not exist in every Archive File. ODM is not case-sensitive.

Matching tables need not have the same columns. The union will include all column names in the matching tables. Rows from a table that do not include a column found in another table will use a default value such as NULL, a default date specified in the Archive File Collection Editor, or an appropriate data type (spaces, zero, etc.).

Column Compatibility

All columns with the same name that are in tables with matching Creator IDs and names must have compatible attributes. If columns have different but compatible attributes, a compatible attribute will be used for those columns. The column compatibility rules for the Compare Process apply to Archive Collections. For information about comparison compatibility rules, refer to the *Common Elements Manual*.

For example, columns COLX DECIMAL(8,2) and COLX DECIMAL(10,0) will become COLX DECIMAL(12,2).

If a compatible attribute cannot be found (e.g., COLX INTEGER and COLX TIMESTAMP), the Archive File Collection Editor will display an error message.

Unioned Indexes

Archive Indexes for unioned tables may also be unioned. The following rules apply to unioned indexes:

- Each Archive File that includes the table must also include the index.
- ODM will use a unioned index until a column with a different name or attribute is found (compatible attributes are not used). The unique column and remaining columns in the index are not processed.

Maintain Archive Collections

To edit or create an Archive Collection, select Option 9 COLLECTIONS on the Choose a Definition Option menu or specify Option 6.9 from the Main Menu.

In either case, the Maintain Archive Collections panel is displayed. Use this panel to create a new collection or to select an existing collection you want to modify or delete.

```
---------------------- Maintain Archive Collections ------------------------
OPTION ===>                                              SCROLL ===> PAGE


Archive Collection:
  Collection ID   ===>
  Collection Name ===>

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

Figure 141. Maintain Archive Collections

The Maintain Archive Collections panel includes:

Archive Collection:
> The **Collection ID** and **Collection Name** for the Archive Collection. You can enter an explicit value, DB2 LIKE syntax, or blanks for these prompts in any combination.

Collection ID
> The Collection ID for the Archive Collection that is being created or modified. Specify 1 to 8 characters.

Collection Name
> The name of the Archive Collection that is being created or modified. Specify 1 to 12 characters.

Use '_' for DB2 LIKE character
> Use of the underscore (_) character. Specify Y to use the underscore as a DB2 LIKE character or N if it is used literally as part of the name.
>
> **Note:** When the '_' character is used in conjunction with the '%' DB2 wildcard character, the '_' is treated as a DB2 LIKE character, and not as a literal.
>
> For example, depending upon the use of the underscore character, A_B is a three-character name containing the characters 'A_B', as entered, or a three-character name that begins with "A" and ends with "B" with any valid character in the middle. The default is N, which means that "_" is not recognized as a DB2 LIKE character.

Explicit Names

If you specify an explicit **Collection ID** and **Collection Name** and the Archive Collection exists, Optim will display that collection on the Archive File Collection Editor panel. Once displayed, you can:

* add Archive Files to the collection using the Insert line command (**Cmd**)
* delete files from the collection using the Delete line **Cmd**, or
* display information about a given Archive File in the collection using the INF line **Cmd**.

If you specify an explicit **Collection ID** and **Collection Name** and the Archive Collection does not exist, Optim will display the Archive File Collection Editor panel so you can create a new collection.

Selection List of Archive Collections

You can display a selection list of existing collections by leaving either the **Collection ID** or **Collection Name** prompt blank, or by using DB2 LIKE syntax to display a selection list of Archive Collections.

* If no Archive Collections match your selection criteria, a message is displayed on the Maintain Archive Collections panel.
* Otherwise, the Archive Collections that match the specified criteria are displayed on the Select Archive Collections panel.

```
------------------------- Select Archive Collections -------------------------
Command ===>                                            Scroll ===> PAGE

    Line Cmds: S-Select, D-Delete, C-Copy, R-Rename, AT-Attr, I-Info 1 of 6

Cmd    Collection Name     Creator     Modified Date
---  --------  -----------  --------  -------------------
     ***************************** TOP ********************************
___  FOPJDD.OVERAF         FOPJDD    2008-08-22-11.54.40
___  FOPOP.OPTIM           FOPOP     2008-08-22-13.59.32
___  FOPWD.SALES_2007      FOPWD     2007-03-03-07.35.36
___  FOPWD.CUSTOMERS_07    FOPWD     2007-04-05-12.16.53
     *************************** BOTTOM ******************************
```

Figure 142. Select Archive Collections

The Archive Collections that match the criteria are listed. The **Collection ID** and **Name** are displayed for each collection, along with the appropriate Creator ID and date and time of last modification. A User Option determines whether the description assigned to each collection is also displayed.

The line **Cmd** column is used to select, delete, copy, or rename a collection, or modify its attributes.

The Select Archive Collections panel includes the following:

Cmd The line command entry area. Valid line commands are:

>   **S** Select an existing Archive Collection and display its Archive Files on the Archive File Collection Editor. You may then add additional files to the collection, delete files from the collection, or display information about a given Archive File within the collection.
>
>   **D** Delete an existing Archive Collection. After the deletion, the message "*DELETED" is displayed.
>
>   **C** Copy an existing Archive Collection under a new **Collection ID** and **Name** to create a new collection with the same Archive Files in it. After copying, the message "*COPIED" is displayed. You may then add additional files to the collection, delete files from the collection, or display information about a given Archive File within the collection.
>
>   **R** Rename an Archive Collection by assigning it a new **Collection ID** and **Name**. After renaming, the message "*RENAMED" is displayed.
>
>   **AT** Modify the attributes of an Archive Collection by changing its description.
>
>   **I** Display information about an Archive Collection, including its Collection ID and Name, Description, and Security Status, as well as its last modified date and the ID of the user who last modified the collection.

Collection Name
>   The **Collection ID** and **Collection Name** assigned to each Archive Collection.

Creator
>   The ID of the collection's creator.

Modified Date
>   The date and time the collection was last modified. A User Option determines whether each collection's description is displayed. See the *Common Elements Manual* for information about Selection List Format options.

Select an Archive Collection
If you want to modify an existing Archive Collection, use the S line command to select the collection you want to modify and display that collection on the Archive File Collection Editor panel.

Copy an Archive Collection
To copy an Archive Collection, type a C in **Cmd** next to the collection you want to copy, and then press ENTER to display the **Copy Archive Collection** panel.

```
+--------Copy Archive Collection-------+
¦                                      ¦
¦ Existing Name: FOPWD.SALES_2007      ¦
¦                                      ¦
¦ New Name:                            ¦
¦                                      ¦
¦    Collection ID ===> FOPWD          ¦
¦    Collection Name ===> SALES_2007   ¦
+--------------------------------------+
```

Figure 143. Copy Archive Collection

The Copy Archive Collection panel displays the name of the original Archive Collection and prompts for a new Collection ID and Collection Name.

Rename an Archive Collection

To rename an Archive Collection, type R in **Cmd** next to the collection you want to rename, and then press ENTER to display the Rename Archive Collection panel.

```
 +-------Rename Archive Collection------+
 |                                      |
 | Existing Name: FOPWD.SALES_2007      |
 |                                      |
 | New Name:                            |
 |                                      |
 |    Collection ID ===> FOPWD          |
 |    Collection Name ===> SALES_2007   |
 +--------------------------------------+
```

Figure 144. Rename Archive Collection

The **Rename Archive Collection** panel displays the current name of the Archive Collection and prompts for a new Collection ID and Collection Name.

Update Object Attributes

To modify the description or security status attributes of an Archive Collection, type AT in **Cmd** next to the appropriate Archive Collection. The description and security status for the Archive Collection are specified on the Object Attributes panel.

```
 +----------------------Object Attributes----------------------+
 |                                                             |
 | Object Name:  FOPWD.SALES_2007                              |
 |                                                             |
 | Modify the attributes as needed.                            |
 |                                                             |
 | Description     ===> 2007 Sales by Month                    |
 |                                                             |
 | 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 145. Archive Collection 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*.

Use the END command to save your changes, or use the CANCEL command to ignore those changes and return to the Select Archive Collection panel.

View Archive Collection Attributes

To view information about a specific Archive Collection, type an I in **Cmd** next to the appropriate collection to display its Collection ID, Name, Description, and Security Status, as well as the date it was last modified and the ID of the user who modified the collection. This information is displayed on the Archive Collection Attributes panel.

```
---------------------- Archive Collection Attributes ------------------------
Command ===>                                                SCROLL ===> PAGE

Collection ID      : FOPWD
Collection Name    : SALES_2007
Description        : 2007 Sales by Month
Security Status    : Not Active

Last Modified By   : FOPWD
Modified On        : 2008-09-03-10.45.57
```

Figure 146. Archive Collection Attributes

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. For details, see the *Command Reference Manual*.

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

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. For example, you could limit the display to all collections that begin with the Collection ID "FOPWD" by specifying the following: SHOW FOPWD.

Archive File Collection Editor

After you identify the Archive Collection and press ENTER, the Archive File Collection Editor is displayed.

```
---------------------- Archive File Collection Editor  -----------------------
Command ===>                                                Scroll ===> PAGE


Primary Command: LIST ARCHIVES                                1 of 4
Line Commands  : (I)Insert, (D)Delete, (INF)Information

Collection ID    : FOPWD
Collection Name  : SALES_2007
Description    ===> 2007 Sales by Month
Default Date   ===> 2007/01/03   (YYYY/MM/DD)


                                              Date      Created
Cmd              Archive File(s)             Created      by
--- ------------------------------------------ ---------- --------
*** ************************** TOP ******************************
___  FOPWD.SALES_01_2007                      2007-02-01  FOPWD
___  FOPWD.SALES_02_2007                      2007-03-02  FOPWD
___  FOPWD.SALES_03_2007                      2007-04-01  FOPWD
___  FOPWD.SALES_04_2007                      2007-05-03  FOPWD
*** ************************** BOTTOM ****************************
```

Figure 147. Archive File Collection Editor

The Archive File Collection Editor includes:

Primary Commands
> Use the LIST ARCHIVES command to display a list of Archive Files from which you can select the Archive Files you want to include in the Archive Collection.

Line Commands
> Three line commands are available for working with Archive Files: insert (I), delete (D), and information (INF). These commands are described under **Cmd**.

Collection ID
> The Creator ID assigned to the Archive Collection when it was created. This value cannot be modified.

Collection Name
> The name assigned to the Archive Collection when it was created. This value cannot be modified.

Description
> The description assigned to the Archive Collection. Specify 1 to 40 characters.

Default Date
> The collection's default date, entered in YYYY/MM/DD format. The date specified is used for rows in a table without a date column that is unioned with a table that includes a date column. The default date is the current date.

Cmd   The available line commands are:

> **I**   Insert a line to add an Archive File to the collection.

> **D**   Delete the specified Archive File.

> **INF**   Display additional information about the Archive File on the Extended Archive Directory Information panel.

Archive File(s)
> The fully qualified names for the Archive Files included in the collection. To add files to the collection, specify the fully qualified name for each Archive File, or use the LIST ARCHIVES command to display a selection list from which you can select the appropriate file(s).

Date Created
> The date the Archive File was created.

Created by
>The Creator ID of the person who created the Archive File.

Extended Information

Use the INF line command to display additional information about a given Archive File on the Extended Archive Directory Information panel, such as the file's DSN, retention date, group name, description, creator, security status, unit type, access definition, and expiration date.

```
 ------------------ Extended Archive Directory Information --------------------
  Command ===>                                              Scroll ===> PAGE

Archive File DSN  : KEVGSKI.CF68416.ARCHIVE
Archived By       : SQLID KEVGSKI on DB2 subsystem DD8F
Retention Date    : None
Group Name        :
Description       : Kev-080529
File Created On   : 2008-05-29-11.14.34
Created By        : KEVGSKI
Security Status   : Not In Use
Unit Type         : DISK
Access Definition : TEMP.$$.EXTRACT
Expiration Date   : None
```

Figure 148. Extended Archive Directory Information

Adding Archive Files to an Archive Collection

There are two ways to add an Archive File to an Archive Collection on the Archive File Collection Editor. You can add an Archive File manually or use the LIST ARCHIVES command to select the file(s) you want to add from a selection list.

Manually Add an Archive File

To manually add an Archive File to a collection, type an I for insert in **Cmd** and press ENTER to add a blank line to the Archive File(s) list, then type the fully qualified name of the file you want to add and press ENTER. If the specified file exists, its **Date Created** and **Created by** information is displayed. If the file does not exist, an error message is displayed. Here is an example of how to manually add an Archive File to a collection.

Type an I for insert in **Cmd** and press ENTER to add a blank line to the Archive File(s) list. In the example, a blank line has been added to the last line of the Archive File(s) list.

```
                                                 Date      Created
Cmd               Archive File(s)                Created     by
--- --------------------------------------- ---------- --------
*** ************************* TOP *****************************
___   FOPWD.SALES_01_2007                     2007-02-01  FOPWD
___   FOPWD.SALES_02_2007                     2007-03-02  FOPWD
_I_ FOPWD.SALES_03_2007                       2007-04-01  FOPWD
___
*** ************************* BOTTOM **************************
```

Type the fully qualified name of the file you want to add under **Archive File(s)**. In the example, the name of the file is FOPWD.SALES.05.2007.

```
                                              Date     Created
Cmd              Archive File(s)             Created    by
--- ------------------------------------- ---------- --------
*** ************************** TOP *****************************
___  FOPWD.SALES_01_2007                    2007-02-01  FOPWD
___  FOPWD.SALES_02_2007                    2007-03-02  FOPWD
___  FOPWD.SALES_03_2007                    2007-04-01  FOPWD
___  FOPWD.SALES_04_2007
*** ************************** BOTTOM **************************
```

Press ENTER to display the **Date Created** and **Created by** entries for the specified Archive File (assuming the file exists).

```
                                              Date     Created
Cmd              Archive File(s)             Created    by
--- ------------------------------------- ---------- --------
*** ************************** TOP *****************************
___  FOPWD.SALES_01_2007                    2007-02-01  FOPWD
___  FOPWD.SALES_02_2007                    2007-03-02  FOPWD
___  FOPWD.SALES_03_2007                    2007-04-01  FOPWD
___  FOPWD.SALES_04_2007                    2007-05-03  FOPWD
*** ************************** BOTTOM **************************
```

Use LIST ARCHIVES to Add Archive Files

To add one or more Archive Files to a collection from a selection list, use the LIST ARCHIVES (LIST ARC) command. If you type LIST ARCHIVES or LIST ARC without a delimiter, all available Archive Files will appear in the Select Archive Files selection list. (Any Archive Files already included in the collection will not be included in the selection list.)

You can limit the list to a range of names using DB2 LIKE syntax, along with a valid Creator ID. For example, if you want to limit the selection list to all Archives Files associated with a specific Creator ID, specify that Creator ID and the % symbol, along with the LIST ARCHIVES command. For example, to display a list of Archive Files that include the Creator ID "FOPWD," type one of the following on the Command line and press ENTER:

LIST ARCHIVES FOPWD.%

or

LIST ARC FOPWD.%

When the selection list displays, type an S in **Cmd** next to each Archive File you want to add to the collection. If you want to select a series of consecutive files, use the SS block **Cmd** to identify the first and last files in the sequence, as shown in the following example.

```
--------------------- Archive File Collection Editor  -----------------------
Command ===>                                              Scroll ===> PAGE

Primary Command: LIST ARCHIVES                              1 of 4
Line Commands  : (I)Insert, (D)Delete, (INF)Information


+---------------------------Select Archive Files---------------------------+
¦ Cmd        Archive File Name                  Creator     Archive Date    ¦
¦ ---  ------------------------------------------------------------------   ¦
¦ ****************************** TOP ******************************          ¦
¦ ___   FOPWD.SALES_01_2008                     FOPWD       2008-02-03      ¦
¦ ___   FOPWD.SALES_02_2008                     FOPWD       2008-03-04      ¦
¦ ___   FOPWD.SALES_03_2008                     FOPWD       2008-04-02      ¦
¦ ___   FOPWD.SALES_04_2008                     FOPWD       2008-05-06      ¦
¦ S__   FOPWD.SALES_05_2007                     FOPWD       2007-06-03      ¦
¦ ___   FOPWD.SALES_05_2008                     FOPWD       2008-08-10      ¦
¦ SS_   FOPWD.SALES_06_2007                     FOPWD       2007-08-26      ¦
¦ ___   FOPWD.SALES_07_2007                     FOPWD       2007-08-26      ¦
¦ ___   FOPWD.SALES_08_2007                     FOPWD       2007-04-23      ¦
¦ ___   FOPWD.SALES_09_2007                     FOPWD       2007-04-23      ¦
¦ ___   FOPWD.SALES_10_2007                     FOPWD       2007-08-15      ¦
¦ ___   FOPWD.SALES_11_2007                     FOPWD       2007-08-14      ¦
¦ SS_   FOPWD.SALES_12_2007                     FOPWD       2007-08-14      ¦
¦ ****************************** BOTTOM ******************************       ¦
+--------------------------------------------------------------------------+
```

Figure 149. Select Archive Files

In the preceding example, the Archive File FOPWD.SALES_05_2007 was selected by typing an S in **Cmd** next to that file name. The user also typed an SS in **Cmd** next to two files to select a block of seven consecutive files (i.e., FOPWD.SALES_06_2007 through FOPWD.SALES_12_2007).

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. For details, see the *Command Reference Manual*.

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

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. For example, you could limit the display to all collections that begin with the Collection ID "FOPWD" by specifying the following: SHOW FOPWD.

Save the Archive Collection

After editing an Archive Collection, use the END command to exit the editor and automatically save any modifications to the collection. Use the CANCEL command to abandon any changes and return to the previous panel.

Appendix B. Archive Application Programming Interface

Using this API, your application can pass information needed to identify multiple Archive Files and tables in the file, using a separate API call for each Archive File and each table.

Your application may then retrieve one or more archived rows in the designated table with an SQL WHERE predicate. The API can be used by an application to retrieve archived data in order to create a report or for other reasons.

Syntax

Each call uses the following syntax:

```
CALL FOP9API USING parmlistname SQLCA SQLDA sqltext
```

Parameter List

This section described the API parameter list.

The parameter list includes the following:

```
apivvvll function archive.file.name table creatorid subsys plan sqlid userid
```

Structure ID

This 8-character value, in the form api*vvvll*, identifies the version and level of the API for which the parameter list is created. For release 5.5, you must specify `api00200`. Any other value causes an error return code of 24.

Functions

In standard mode, a minimum of eight calls is required to retrieve data from an Archive File. A call is executed for each function in the API. Provide the function parameter as an integer, using one of the following Function Codes:

Function Code	Function	Description and Comments
1	CONNECT	Connect to the API.
2	INITIALIZE	Initialize the environment. Any SQL WHERE predicate is evaluated with this call.
		This is functionally equivalent to using both the ACTIVATE_ARCHIVE and ACTIVATE_TABLE functions.
		Use the INITIALIZE command to archive rows from a single table in a single process. If you use the INITIALIZE command, you must use the END command to terminate SQL processing.
7	ACTIVATE_ ARCHIVE	Initialize the Archive File from which you want to fetch data.
8	ACTIVATE_ TABLE	Initialize the table in the Archive File. Any SQL WHERE predicate is evaluated with this call.

Function Code	Function	Description and Comments
		Use the ACTIVATE_ARCHIVE and ACTIVATE_TABLE commands to retrieve rows from multiple Archive Files. If you use these commands, you must use the DEACTIVATE_TABLE and DEACTIVATE_ARCHIVE commands to terminate SQL processing.
3	EXECUTE	Execute the SQL WHERE predicate.
4	FETCH	Retrieve data from a row that matches the SQL WHERE predicate and place in SQLDA. You can repeat this function by re-issuing the call. However, only rows from a single table can be processed at a time. An end-of-data condition or no data returns an SQLCODE of "100". Status information is placed in SQLCA.
9	FETCH_LOB	Optional call to retrieve LOB data from a row that matches the SQL WHERE predicate and place it in SQLDA. You must set the LOBCOLNAME parameter to the name of the desired LOB column. **Note:** Data is returned in a data buffer, one segment at a time. See the description of the LOB parameter fields, for more information.
5	END	Terminate processing the SQL Clause verified by the initialize function. After calling the END function, the application can process data in another Archive File without a DISCONNECT.
10	DEACTIVATE_TABLE	Terminate processing of the table the SQL predicate verified by the ACTIVATE_TABLE function. After calling the DEACTIVATE_TABLE function, the application can process data in another table in the Archive File.
11	DEACTIVATE_ARCHIVE	Terminate processing of the Archive File using the SQL predicate verified by the ACTIVATE_ARCHIVE function. After calling the DEACTIVATE_ARCHIVE function, the application can process data in another Archive File.
6	DISCONNECT	Terminate the connection to the API and free the ARCHIVE and C-runtime environment.

Note: You cannot include both the compatibility mode functions (Initialize and End) and the new functions (Activate_Archive, Activate_Table, Fetch_Lob, Deactivate_Table, and Deactivate_Archive) in the same Archive API program.

Other Parameters

Although all parameters are not used for all functions, it is advisable to complete the parameter list before the connect call. The application can reference the same parameter list for succeeding calls after editing it appropriately (e.g., changing the value in function).

Note: The following parameters, unless otherwise stated, are input parameters that must be set by the application calling the API.

archive.file.name
        Fully qualified name of the Archive File. (44 characters)

table   Name of the table from which a row is retrieved. (128 characters)

creatorID
        Creator ID for *table*. (128 characters)

subsys
        DB2 subsystem in which Archive is installed. (4 characters)

plan   Name of the DB2 plan for Archive. (8 characters)

sqlid   SQLID used to connect to DB2. (128 characters)

userid TSO User ID used if SQLID is blank. (8 characters)

lobcolname
        Name of the LOB column for which data is requested. (30 characters)

loboffset
        Offset of first byte of LOB data that is requested. Should be initialized to 1 to start processing each LOB column. (integer, 4-bytes)

length After a FETCH, the length of the data row. After a FETCH_LOB, the length of the LOB Window. (integer, 4-bytes)

lobcoldata
        Address of window for LOB data. (integer, 4-bytes)

lobtotsize
        Length of data in the LOB column. (integer, 4-bytes)

lobnextoffset
        Offset of next byte in the LOB column past the current window. Usually moved to LOBOFFSET prior to the next call to FETCH_LOB (integer, 4-bytes)

Reserved
        Reserved space. (182 characters must be supplied.)

Sample Parameter Lists

This section includes sample parameter lists.

Cobol

```
01 PARMLIST.
   05  PDP-STRUCTID   PIC X(8)   VALUE 'API00200'.
   05  PDP-FUNC   PIC S9(8)   USAGE COMP.
   05  PDP-ARCHIVE   PIC X(44)   VALUE SPACES.
   05  PDP-TABLE   PIC X(128)   VALUE SPACES.
   05  PDP-CREATOR   PIC X(128)   VALUE SPACES.
   05  PDP-SUBSYS   PIC X(4)   VALUE SPACES.
   05  PDP-PLAN   PIC X(8)   VALUE SPACES.
   05  PDP-SQLID   PIC X(128)   VALUE SPACES.
   05  PDP-USERID   PIC X(8)   VALUE SPACES.
   05  PDP-LENGTH   PIC S9(8)   USAGE COMP.
   05  PDP-LOBCOLNAME   PIC X(30)   VALUE SPACES.
   05  PDP-LOBCOLDATA   POINTER.
   05  PDP-LOBOFFSET   PIC S9(8)   USAGE COMP.
   05  PDP-LOBTOTSIZE   PIC S9(8)   USAGE COMP.
   05  PDP-LOBNEXTOFFSET   PIC S9(8)   USAGE COMP.
   05  PDP-RESERVED   PIC X(182)   VALUE LOW-  VALUES.
01  FUNC-CODES.
```

```
       05  FUNC-CONNECT    PIC S9(4) COMP    VALUE 1.
       05  FUNC-INIT    PIC S9(4) COMP    VALUE 2.
       05  FUNC-EXECUTE    PIC S9(4) COMP    VALUE 3.
       05  FUNC-FETCH    PIC S9(4) COMP    VALUE 4.
       05  FUNC-END    PIC S9(4) COMP    VALUE 5.
       05  FUNC-DISCONNECT    PIC S9(4) COMP    VALUE 6.
       05  FUNC-ACTARCHIVE    PIC S9(4) COMP    VALUE 7.
       05  FUNC-ACTTABLE    PIC S9(4) COMP    VALUE 8.
       05  FUNC-FETCHLOB    PIC S9(4) COMP    VALUE 9.
       05  FUNC-DEACTTABLE    PIC S9(4) COMP    VALUE 10.
       05  FUNC-DEACTARCHIVE    PIC S9(4) COMP    VALUE 11.
```

Assembly Language dsect

```
APIPARMS DSECT
*    User-accessible data areas
STRUCTID    DS    CL8    API00200
FUNCTION    DS    F    1 - 11
ARCHIVE    DS    CL44    Archive       DS Name
TABLE    DS    CL128    Table Name
CREATOR    DS    CL128    Table Creator
SUBSYS    DS    CL4    DB2 Subsystem
PLAN    DS    CL8    DB2 Plan Name
SQLID    DS    CL128    DB2 SQL ID
USERID    DS    CL8    TSO User ID
ROWLENG    DS    XL4    Length of Row (If FETCH)
LOBCOLNM    DS    CL30    Column for LOB retrieval
LOBDATAA    DS    AL4    Address of LOB data
LOBWNDOF    DS    XL4    LOB window offset
LOBTOTSZ    DS    XL4    Total size of LOB
LOBNXTOF    DS    XL4    Offset of next segment or 0
*   Reserved for expansion and internal use
RESERVE    DS    CL182    RESERVED (INTERNAL USE)
```

C struct

```
typedef struct sApiParms {
//    User-accessible data areas
   UCHAR    StructID[8]; /* API00200 */
   long    function;
   UCHAR    ArchiveName[44];
   UCHAR    Table[128];
   UCHAR    Creator[128];
   UCHAR    SubSys[4];
   UCHAR    Plan[8];
   UCHAR    SQLID[128];
   UCHAR    USERID[8];
   long    RowLeng;
   UCHAR    LobColName[30];
   UCHAR    *pLobData;
   long    LobWindowOffset;
   long    LobTotSize;
   long    LobNextOffset;
//    Room for expansion - must supplied
   UCHAR    Reserved[182];
//    System-use data areas
} APIPARMS;
```

SQLDA and SQLCA

This section describes the use of SQLDA and SQLCA in the API.

SQLDA

Data is returned to the application in the SQL Descriptor Area, or SQLDA. A FETCH call returns one row in the SQLDA. The application will typically move the data from the SQLDA to working storage, retrieving each column as though processing an array (e.g., varying from 1 by 1, until all columns are retrieved). The SQLDA supplies a count of table columns in field SQLN. The application can use this value to determine the number of columns to process. Other information about each column, such as column name, datatype, and column size, is also included in the SQLDA.

SQLCA

Status information for a fetch is provided in the SQLCA.

Define SQLCA and SQLDA

The SQLCA and SQLDA are described in the appropriate DB2 documentation from IBM. The application can use INCLUDE SQLCA and INCLUDE SQLDA statements to define these areas to the application, or the areas can be coded into the application. If INCLUDE statements are used, an SQL precompile is required.

SQL Predicate

This section describes the SQL WHERE predicate.

The SQL WHERE predicate used to select a row returned to application, in the form *colname operator operand*. The predicate can be a maximum of 32100 characters. Delimit the predicate with binary zeros ("X'00'").

Return Codes

The following is a list of the codes that are returned when an error occurs while the Archive API is connected to the Optim Directory.

Your program must be written to display these codes in a log file or SYSOUT when they are returned from the Archive API.

rc	sqlcode	sqlerrd	Description
0	100		Rows were fetched successfully
4	-204	1	Archive file is not defined in Optim directory
4	-204	2	Archive dataset is not found
4	-204	3	Archive dataset currently in use
4	-204	4	Archive dataset is invalid
4	-204	5	Archive dataset is not found on volume
4	-204	6	Archive File could not be opened
4	-204	7	Requested table not found in Archive File
4	-204	8	ApiTblCB not found or ArcIdx not found
4	-204	9	Unexpected rc from XFM/Arc Get
4	-204	10	LOB column [name of column] not found
4	-204	11	column [name of column] is not a LOB column

rc	sqlcode	sqlerrd	Description
4	-204	12	No LOB columns in this table
16			Internal Archive error – further information will be written to the SYSTERM DD statement
24			StructID is invalid

Sample Calls

Sample applications with calls to the API are included with Archive.

The samples illustrate how to use the API and are distributed on the Archive installation tape.

FOP9API2
> A COBOL application that uses the API with selection criteria to retrieve a set of archived rows from the sample CUSTOMERS table. For each CUSTOMER row, the related rows from its child table, ORDERS are fetched.

FOP9API3
> A COBOL application that uses the sample LOB tables distributed with DB2. Each of the LOB columns (PSEG_PHOTO, BMP_PHOTO, and RESUME) are displayed and a summary report is written.

For more details on the sample applications, consult the program source.

Appendix C. SQL Grammar for Search and Restore

When you use selection criteria or SQL statements to find specific data in an Archive File, 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 Archive:
- No DISTINCT after SELECT
- No arithmetic expressions (only columns (eventually qualified), literals or parameters)
- No GraphicLiteral
- No TextLiteral
- 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** *dbalias.creatorid.tablename* **WHERE**:

WHERE

> Create a WHERE clause in the lines that follow 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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