ASG Software Solutions

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Contents

Preface iii
About this Publication iii
Publication Conventions iv
Notation For Statement Formats v

1 Introduction to User Formatted Output 1
Introduction 1
Output Structures and Format Line Numbers 4
Variable Specification 6
Notes 7
Production of Output 8
Introduction 8
Basic Principles 8
Structure and Output of Lists 13
Output to Visual Display Units and Line Printers 18
Controlling the Printing of Report Output Page Headers 18

2 Command Syntax 19
Extended Format-selection Clause 19
Extended Format-selection Clause Format 19
Extended Format-selection Clause Remarks 19
Extended Format-selection Clause Examples 20
Title Command 20
Title Command Format 20
Title Command Remarks 20

3 Definition Syntax 21
FORMAT member type 21
Format 21
Remarks 25

4 Output Categories: Data-view, Userview, and Entity Reports 33
Parameter Numbers Defined 35
Variable Parameter Availability 42

5 Output Category: Logical-Schema Report 45
Logical-Schema Report: Parameter Numbers Defined 49
Logical-Schema Report: Variable Parameter Availability 62

6 Output Category: Intersecting-Data-Element Report 67
Intersecting-Data-Element Report: Parameter Numbers Defined 69
Intersecting-Data-Element Report: Variable Parameter Availability 72

7 Output Category: Design Audit 75
Design Audit: Parameter Numbers Defined 82
Design Audit: Parameter Availability by Format Line 105

8 Output Category: Logical-Schema Cluster 113
Logical Schema Cluster: Parameter Numbers Defined 115
Logical-schema Cluster: Parameter Availability by Format Line 119

9 Output Category: Data-Element-Usage- Analysis Report 123
Data-Element-Usage-Analysis Report: Parameter Numbers Defined 126
Data-Element-Usage-Analysis Report: Variable Parameter Availability 137

10 Output Category: Network Cluster 141
Network Cluster: Parameter Numbers Defined 146
Network Cluster: Variable Parameter Availability 160

11 Output Category: Load-Factor-Analysis Report 165
Load-Factor-Analysis Report: Parameters Defined 167
Load-Factor-Analysis: Parameter Availability 169

12 Output Category: PRODUCE SQL 171
Produce SQL: Parameters Defined 173
Produce SQL: Parameter Availability 176

13 Output Category: PRODUCE DB2 179
Produce DB2: Parameters Defined 181
Produce DB2: Parameter Availability 184

Index 187

Preface

This *ASG-DesignManager User Formatted Output* describes the ASG-DesignManager (herein called DesignManager) User Formatted Output facility (selectable unit DSR-UD30). It is intended for all DesignManager users concerned with producing output which describes data in the workbench design area. DesignManager is an information modeling and logical database design system.

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About this Publication

This publication consists of these chapters:

- Chapter 1, "Introduction to User Formatted Output," introduces the User Formatted Output facility and describes the general principles on which the facility works.
- Chapter 2, "Command Syntax," describes the additional commands and extensions to existing DesignManager nucleus commands that are provided by the User Formatted Output facility.
- Chapter 3, "Definition Syntax," defines the syntax of the modeling dictionary member type provided by the User Formatted Output facility.
- Chapter 4, "Output Categories: Data-view, Userview, and Entity Reports," describes the structure of, and variables in the output category for the data-view, userview, and entity reports.
- Chapter 5, "Output Category: Logical-Schema Report," describes the structure and variables in the output category for the logical-schema report.
- Chapter 6, "Output Category: Intersecting-Data-Element Report," describes the structure and variables in the output category for the intersecting-data-element report.
- Chapter 7, "Output Category: Design Audit," describes the structure and variables in the output category for the design audit.
- Chapter 8, "Output Category: Logical-Schema Cluster," describes the structure and variables in the output category for the logical schema cluster.

- Chapter 9, "Output Category: Data-Element-Usage- Analysis Report," describes the structure and variables in the output category for the data-element-usage-analysis report.
- Chapter 10, "Output Category: Network Cluster," describes the structure and variables in the output category for the network cluster.
- Chapter 11, "Output Category: Load-Factor-Analysis Report," describes the structure and variables in the output category for the load-factor-analysis report.
- Chapter 12, "Output Category: PRODUCE SQL," describes the structure and variables in the output category for PRODUCE SQL.
- Chapter 13, "Output Category: PRODUCE DB2," describes the structure and variables in the output category for PRODUCE DB2.

Publication Conventions

Allen Systems Group, Inc. uses these conventions in technical publications:

Convention	Represents
ALL CAPITALS	Directory, path, file, dataset, member, database, program, command, and parameter names.
Initial Capitals on Each Word	Window, field, field group, check box, button, panel (or screen), option names, and names of keys. A plus sign (+) is inserted for key combinations (e.g., Alt+Tab).
`lowercase italic monospace`	Information that you provide according to your particular situation. For example, you would replace *`filename`* with the actual name of the file.
`Monospace`	Characters you must type exactly as they are shown. Code, JCL, file listings, or command/statement syntax. Also used for denoting brief examples in a paragraph.
Vertical Separator Bar (|) with underline	Options available with the default value underlined (e.g., Y|N).

Notation For Statement Formats

In all publications relating to DesignManager, the following notation is used in the specification of statement formats (for commands and data definition statements):

- All words printed in capitals are statement identifiers or keywords that must be present in full or truncated form in the circumstances stated in the statement specification. The extent beyond which a word must not be truncated is indicated by under-lining of the characters that must be retained.
- All words printed in lower case are variables for which the user must substitute a value consistent with the specification.
- Material enclosed in square brackets [ ] is an option which may be included or omitted as required.
- Braces { } indicate that a choice must be made of one of the options enclosed within them.
- Three full stops . . . indicate that the material they immediately follow may be repeated. Where . . . immediately follows a closing square bracket or brace, the material that can be repeated is bounded by that square bracket or brace and the corresponding opening square bracket or brace. If material can be repeated onlya limited number of times, the repetition premitted is stated in the specification.
- Other punctuation marks and symbols must be coded as shown, subject to the implications of any square brackets or braces enclosing them; except that where a single quote ' , is shown, a double quote, " , can alternatively be used, provided that the opening and closing quotes of any pairs of quotes are the same character (single quote or double quote).

1 Introduction to User Formatted Output

Introduction

DesignManager User Formatted Output facility enables users to specify the layout and content of the output of these design mode commands:

- The DESIGN command of the DesignManager nucleus
- The REPORT command of the DesignManager nucleus
- The PLOT command of the User Printer Graphics optional additional facility (but not when the command is used to generate a Consolidated Plot)
- The PRODUCE command of the SQL/DS and DB2 Source Language Generation optional additional facilities

The User Formatted Output facility is supplied to DesignManager users as a single selectable unit (DSR-UD30). However a user's installation must include other DesignManager selectable units if the output generated by some of the commands listed above is to be formatted. These commands, and the particular selectable unit needed in each case (in addition to DSR-UD30) are listed in this table.

Selectable Units required for formatting DesignManager Design Mode Output (in addition to DSR-UD30)

Command	Selectable Units required
REPORT DATA-VIEWS....	None
REPORT USERVIEWS....	None
REPORT ENTITIES....	DSR-EMl0
REPORT LOGICAL-SCHEMA....	None
REPORT DATA-ELEMENTS....	None
REPORT INTERSECTING-DATA-ELEMENTS....	None
REPORT LOAD-FACTORS....	DSR-PHl0
DESIGN....	None
PLOT LOGICAL-SCHEMA....	DSR-UD31
PLOT RELATIONAL-SCHEMA....	DSR-UD3l

Selectable Units required for formatting DesignManager Design Mode Output (in addition to DSR-UD30)

Command	Selectable Units required
PLOT NETWORK-SCHEMA....	DSWUD31
PRODUCE SQL....	DSR-PH01
PRODUCE DB2....	DSR-PH02

The facility also enables users to include in the output of the above commands additional data not given when the SUMMARY or DETAILS keywords are used.

A user's specifications for the format and content of formattable output are stored in FORMAT members in the modeling dictionary (see Chapter 3, "Definition Syntax," on page 21). Each FORMAT member contains a specification of the command and command selection for which it is intended (the output category), and the format of the corresponding output. More than one FORMAT member can be set up for each output category, so that a library of FORMATS can be built up, each designed for a different purpose.

The output specifications that can be held in FORMAT members include these:

- Where in the output a user-supplied variable character string (such as a title) should be positioned
- Where fixed text strings should be positioned and what that text should be
- Which parts of the possible output are to be included in the formatted output
- For which variables values are to be output
- Whether the values for a variable should be right or left-justified or centered in a specified field
- Where new lines and new pages of output appear
- The position of output on output lines
- Whether the header lines at the top of each page of output are to be printed or not
- Where appropriate, what information held in the modeling dictionary should be included in the output, and where it should be positioned

To produce formatted output, the FORMAT member containing the desired specifications is named in the extended format-selection clause of the appropriate REPORT, DESIGN, PLOT, or PRODUCE command (see Chapter 2, "Command Syntax," on page 19).

The TITLE command is provided to allow the setting of a character string that can be included in the formatted output of a REPORT, DESIGN, PLOT, or PRODUCE command.

Supplied with the User Formatted Output facility are FORMAT members which, when specified in the format-selection clause, produce the same output as when format-selection is DETAILS or SUMMARY. These members can be used as a basis for other FORMAT members for different purposes. These members are supplied as source on the installation tape and have the names:

FMTAD	for DESIGN [WITH] AUDIT DETAILS
FMTAS	for DESIGN [WITH] AUDIT SUMMARY
FMTLD	for REPORT LOGICAL-SCHEMA....DETAILS
FMTLS	for REPORT LOGICAL-SCHEMA....SUMMARY
FMTID	for REPORT INTERSECTING-DATA-ELEMENTS DETAILS
FMTIS	for REPORT INTERSECTING-DATA-ELEMENTS SUMMARY
FMTUD	for REPORT USERVIEWS....DETAILS
FMTUS	for REPORT USERVIEWS....SUMMARY
FMTDD	for REPORT DATA-ELEMENTS....DETAILS
FMTDS	for REPORT DATA-ELEMENTS....SUMMARY
FMTVD	for REPORT DATA-VIEWS....DETAILS
FMTVS	for REPORT DATA-VIEWS....SUMMARY
FMTED	for REPORT ENTITIES....DETAILS
FMTES	for REPORT ENTITIES....SUMMARY
FMTFD	for REPORT LOAD-FACTORS....DETAILS
FMTFS	for REPORT LOAD-FACTORS....SUMMARY
FMTPD	for PLOT LOGICAL-SCHEMA DETAILS
FMTPS	for PLOT LOGICAL-SCHEMA SUMMARY
FMTND	for PLOT NETWORK DETAILS
FMTNS	for PLOT NETWORK SUMMARY
FMTQ	for PRODUCE SQL
FMTB	for PRODUCE DB2

The remainder of this chapter describes the general principles relating to the use of the User Formatted Output facility.

Output Structures and Format Line Numbers

The output of all DesignManager commands is structured. These output structures may be considered as being composed of several main parts. Each main part may be made up of sub-parts, and each sub-part of further sub-parts. A part that cannot be further divided will be called a *basic part*.

For example, the structure of the output from the REPORT DATA-VIEWS....DETAILS command could be viewed as having these main parts:

- A heading
- Details of data-views in the workbench design area
- A summary of changes made during normalization
- An end

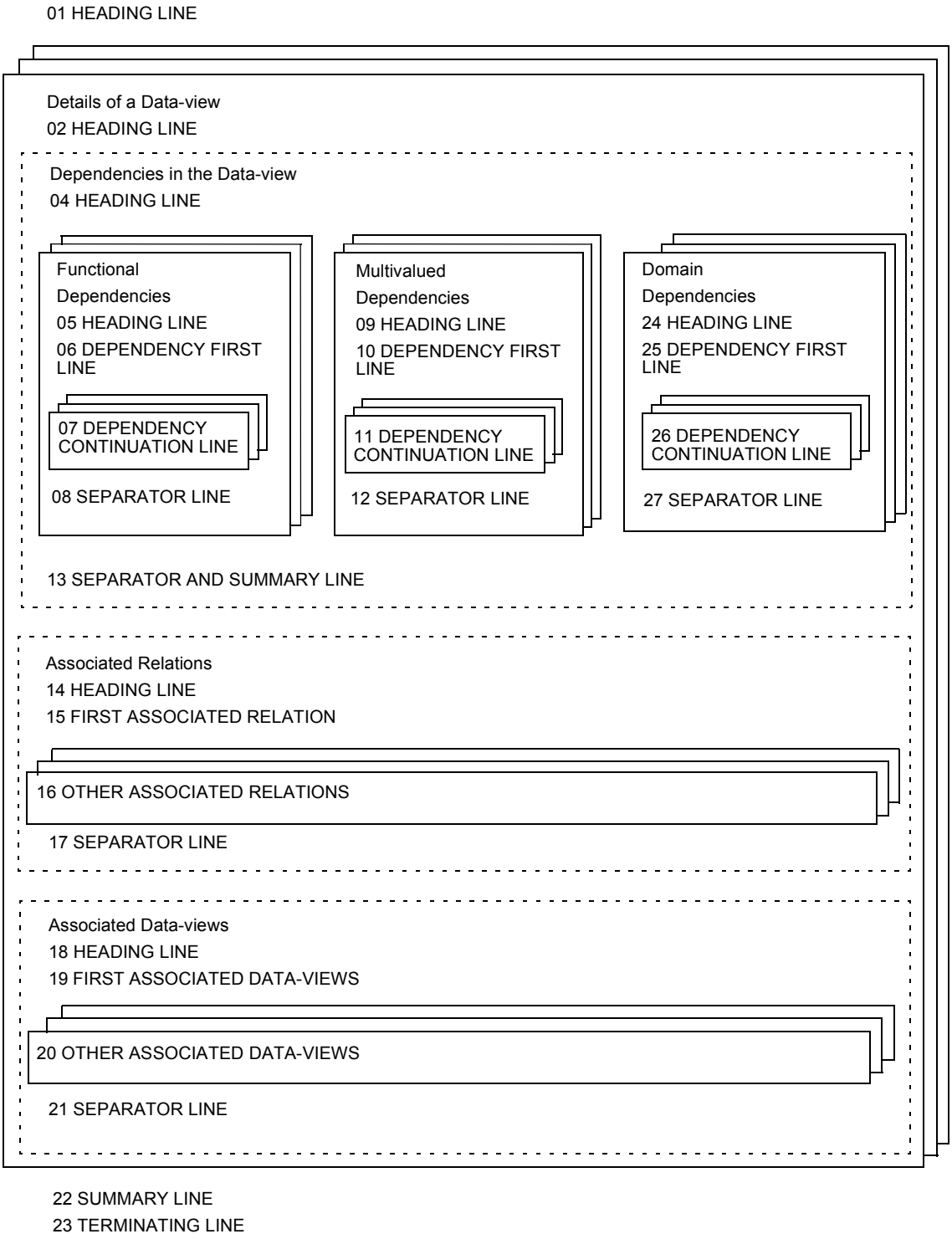
The heading, summary, and end cannot be divided into further parts (that is, they are basic parts), but the data-view details can. These can be viewed as having parts all of which are repeated for each data-view present in the workbench design area:

- A heading
- Details of the dependencies in a data-view
- Details of the relations representing the dependencies
- Details of other data-views in the workbench design area that have dependencies in common with the data-view being reported
- An end

Again, the heading and end cannot be further subdivided (and so can be considered as basic parts), but the other parts can.

Therefore each output category structure can be considered a sequence of basic parts, with these basic parts always being output in a predefined order. When the User Formatted Output facility is installed, this predefined order is always the same for each output category. The control over the formatting of output that the User Formatted Output facility gives is limited to the selection of which basic parts of an output structure are to be produced and how these parts are to be presented.

Figure 1. Example of an Output Category Structure



Each basic part of a formattable output category structure is identified by a particular number (format line number). Format line numbers are unique within each output category. Thus the user specifies that a particular part of an output category is to be produced by including the appropriate format line number in the definition of the relevant FORMAT member of the modeling dictionary.

As an example, Figure 1 on page 5 shows the part structure of the data-view report output category, giving the order and format line number for each basic part. Each chapter of this publication that describes an individual output category contains one such diagram. These diagrams show:

- The logical divisions of the output structure. These divisions are delimited by dashed-line (or dotted-line) boxes, and each division has a description annotation in upper and lower case letters.
- The basic parts of the output category, in order of output. Each part is given an identifying format number and a descriptive annotation in upper case letters.
- Any format lines (or groups of format lines) that may be repeated on output. These lines are shown surrounded by staggered solid-line boxes.

Variable Specification

The purpose of the DesignManager design mode output is to describe the information in the workbench design area. Each design mode command that produces output selects relevant parts of the available information. Similarly, a user's specification for a particular type of formatted output must include specifications as to which of the information is to be output.

The information present in the workbench design area is of many types. Each type of information is represented in a user's output specification as a variable identified by a parameter number. When output is produced using a FORMAT member the appropriate values of the variable are substituted in the output.

When the structure of an output category has been broken down into its basic parts (identified by format line numbers), it can be seen that only certain variables are specifically meaningful to an individual basic part. In the chapters of this publication that describe the structure of each output category (Chapter 4, "Output Categories: Data-view, Userview, and Entity Reports," on page 33 through Chapter 13, "Output Category: PRODUCE DB2," on page 179), tables are given specifying the parameter numbers (if any) that are defined (that is, are specifically meaningful) for each format line number.

Note:

An individual parameter number may identify many variables. In the context of the output category and format line number with which it is used, however, a parameter number uniquely identifies a single variable.

Some variables, although specifically meaningful to and defined for one basic part of an output, also have meaning in other basic parts of the same output category. For example, a userview name is significant not only for the format lines in which the overall userview information is output, but also for those lines in which the information about the individual dependencies of that userview are output. The parameter numbers representing such variables are then not only unique for the format line number for which they are defined, but also for the other format line numbers for which they have meaning. Tables showing the availability of such parameter numbers are also given in the chapters of this publication describing the structure of each output category. This extended use of parameter numbers is discussed further in "Parameter Availability within Lists" on page 17.

Another type of variable is meaningful in the context of any format line number within any output category. These variables are global variables; they reference general values, such as the date, time, and output line number. Each global variable is represented by a global parameter number in the range 1 through 10. The meaning of these parameter numbers is shown in this table:

Global Parameters: Number and Description

Parameter	Description	Notes
P1	Date in the form: *dd mmm yy*	1
P2	Date in the form: *day dd mmm yy*	1
P3	Time in the form: *hh.mm.ss*	1
P4	Dictionary authority	
P5	Modeling dictionary name	
P6	Modeling dictionary status name	2
P7	Modeling dictionary status condition	2
P8	Page number of the output	
P9	Output line number (absolute)	
Pl0	Title	3

Notes

1. Where:

dd	=01, 02, ... 31
mmm	=JAN, FEB,...DEC
day	=MON, TUE, ...SUN
yy	=00, 01, ... 99
hh	=00, 01, ... 23
mm	=00, 01, ... 59
ss	=00, 01, ... 59

2. This parameter number is meaningful only in an Integrated Manager Products Installation.

3. Values are assigned to Pl0 by the TITLE command (see Chapter 2, "Command Syntax," on page 19).

Production of Output

Introduction

This section describes how the specification of a format line produces formatted output. Before any individual output line based on a format line specification is produced, the entire output line is set to blanks. The examples used in this section are general and are from no available output category. The exact syntax for the FORMAT data definition is given in Chapter 3, "Definition Syntax," on page 21.

Basic Principles

As can be seen from the FORMAT data definition specification in Chapter 3, "Definition Syntax," on page 21, a user's desired output is specified as a set of format lines within the CONTENTS clause of a FORMAT member. Each format line consists of a format line identifier (which includes the format line number), and an output line specification. The format line identifier identifies which part of the output category structure is to be output. The output line specification specifies for which variables values are to be output, how that part of the output should be formatted, and what fixed text should be included.

For example, if 02 were a valid format line number identifying part of the output structure that outputs values of a particular variable, and parameter number 57 were a parameter defined for that line and representing that variable, then the format line in its simplest form could be represented in a FORMAT member as:

```
FM02:    P57
```

Users can also use parameter numbers that are prefixed by the letter *A*, instead of *P*. In this case, the above format line is written as:

```
FM02:    A57
```

Parameters prefixed by `A` instead of `P` are provided for use in FORMAT members that specify the layout of PRODUCE command output (instead of REPORT, DESIGN, or PLOT command output.) Both types of parameter are combined with other specifiers within format lines in the same way. The difference between the two types is that `A` parameters are subjected to more detailed runtime validation than `P` parameters. (This is described in Chapter 12, "Output Category: PRODUCE SQL," on page 171 and Chapter 13, "Output Category: PRODUCE DB2," on page 179.)

The examples in the rest of this section only use P parameters, but they would be equally valid if A parameters were used instead.

If there were only one value for the variable represented by parameter 57, this format line would produce an output line which contained only that value. Generally though, it will be useful to include text to describe parameter values. Thus, the above format line could be specified as:

```
FM02: 'fixed text ',P57
```

and would produce this output:

```
fixed text value-of-P57
```

If P57 had five values (for example, A, B, C, D, and E), the output specifications in the format line would be output five times, once for each value of the variable, thus:

```
fixed text A
fixed text B
fixed text C
fixed text D
fixed text E
```

The number of times that the output specifications in a format line must be output is calculated internally, and depends on the part of the structure that the format line represents, and on the purpose of that part. In the above example, format line 02 identified the part of the structure that output the values of P57. The format line's output specifications were therefore, output as many times as there were values of P57. Similarly, format line 02 may form part of a group of format lines, where each format line contains parameters with several values. As format line 02 is repeated in the output as part of this group, each one of the values of P57 is output. It should be noted that the presence or absence of P57 in the output specifications has no effect on the number of times the specifications are output: repetition of output depends on the purpose of the format line. For example, if the above format line were specified as:

```
FM02: 'fixed text'
```

and there were five values for the variable referenced by P57, the output would appear as:

```
fixed text
fixed text
fixed text
fixed text
fixed text
```

If there is no purpose for a format line, then no output is produced from the output specifications in the line. In format line 02 above, for example, if there were no values for P57, then no output would be produced.

To format the output differently, the column position in which the fixed text and variables should be positioned can be specified. For example, the format line:

```
FM02:C10,'fixed text',C35,P57
```

would position the *f* of `fixed text` in the tenth column of output and the first character of the first value of the variable referenced by P57 in the thirty-fifth column of output. If there were more than one value for the variable, the further lines of output would be similarly formatted.

In the above example, including a suitable number of spaces at the end of the string `fixed text` would have produced the same output, but if the line were specified as:

```
FM02:P57,'fixed text'
```

and the values for P57 were not all the same length, the output would not be lined up. For example, if the values for D, P57 were *AAA*, *B*, *CCCCC*, and *DD*, the output would appear as:

```
AAA      fixed text
B        fixed text
CCCCC    fixed text
DD       fixed text
```

Another way to line up output is to use the field width facility. For any parameter number a field width, and for character string parameters, right or left justification or centering of the value within the field on output can be specified. For example, if the values to be output for P57 were JOHN, MICHAEL, PAUL, and SIMON, the format line:

```
FM02:'NAME IS',C9,P57.7.R
```

would produce this output:

```
NAME IS      JOHN
NAME IS  MICHAEL
NAME IS     SIMON
NAME IS      PAUL
```

In the format line above, `.7` specifies that the value of the preceding parameter is to be positioned within a field of width 7 characters, and `.R` specifies that value is to be right-justified within the field. When a field is specified for a variable, the values of the variable are left-justified unless right justification is specified.

If the value of the variable is longer than the field width specified, the value is truncated from the right or left depending on whether left or right justification has been specified. For example, if the field width in the above example were 4, the output would appear as:

```
NAME IS JOHN
NAME IS HAEL
NAME IS IMON
NAME IS PAUL
```

Parameter numbers with integer values can also be output within a field, but are always right-justified within that field, whether or not right justification (.R) has been specified. If an integer value to be output in a field exceeds the field width, the field is filled with asterisks (*) to denote overflow. Integer values are not truncated.

Column positioning can also be used to *overprint* within an output line. For example, the format line:

```
FM02:'**************',C5,P57
```

where parameter number 57 has values as stated above, would produce this output:

```
****JOHN******
****MICHAEL***
****SIMON*****
****PAUL******
```

Another specifier which is useful for positioning fixed text and parameter values in an output line is the X specifier. It denotes a skip of one character position on the output line. Thus, the format line:

```
FM02;'fixed text',X,'*',X,X,P57,X,X,'*'
```

would produce output of the form:

```
fixed text * value-of-P57 *
```

Note that X causes a character position to be skipped only; that is, a space character is not inserted. The X specifier can therefore be useful when overprinting is required. Thus the format line:

```
FM02:  '**************' ,C1,X,X,X,X,P57
```

will produce the same output as the format line:

```
FM02:  '**************' ,C5,P57
```

as given in an example above. In this case, using the column specifier is preferable to using the X specifier, because the format line can be written more concisely. However, the X specifier is useful in a format line such as:

```
FM02:  '********************' ,C4,P57,X,X,X,P58
```

to produce output of this form:

```
***JOHN***SNOW******
***MICHAEL***JONES**
***SIMON***CLARK****
***PAUL***JEFFRIES**
```

where P57 has values as listed above, and P58 has values SNOW, JONES, CLARK and JEFFRIES. This format line can be written more concisely as:

```
FM02:20'*',C4,P57,3X,P58
```

In an output line specification, any specifier may be immediately preceded by an integer which is a repeat count for the specifier which it qualifies (although a repeat count for a column specifier would be meaningless). A repeat count may also precede a parameter number. Parentheses can also be used to group together a series of specifiers which, when preceded by a repeat count integer, will be treated as one specifier. Parentheses may be nested, to a maximum level of four. For example, using just the first of the values given above for parameters P57 and P58, the format line:

```
FM02:50'*',C4,2(2'  ',P57,X,3('  ',*) ,P58,2'  ',3x)
```

will produce this output:

```
***   JOHN* * * *SNOW **** JOHN* * * *SNOW  ******
```

As shown, the output specifications of one format line can produce more than one line of physical output (if there is more than one value to be output by the line). Format lines can also produce more than one line of output when certain output specifications are made.

The syntax of the FORMAT member definition statement allows the user to specify where, in the output of a format member, new lines of output should be produced and before which format lines new pages should occur.

For example, the slashes (/) in this format line produce new lines in the output:

```
FM23:'fixed text' ,C20,P45,2/,'next text',/,'end' ,2/
```

The output appears as:

```
fixed text           value-of-P45

next text
end
```

Note that if there is more than one value for P45, the output of the entire line is repeated for each value; for example, if the values of P45 were PERSONNEL, ACCOUNTS, and ADMIMSTRATION, and fixed text, next text, and end were DEPARTMENT NAME: , DATE 20 APRIL, and YEAR 1982 respectively, the above format line would produce this output:

```
DEPARTMENT NAME:     PERSONNEL

DATE 20 APRIL
YEAR 1982

DEPARTMENT NAME:     ACCOUNTS

DATE 20 APRIL
YEAR 1982

DEPARTMENT NAME:     ADMINISTRATION

DATE 20 APRIL
YEAR 1982
```

New pages of output are specified in the format line identification (see Chapter 3, "Definition Syntax," on page 21). When a format line is specified as starting a new page, each time the output specifications on that format line are output, that output starts on a new page.

Structure and Output of Lists

Introduction

Much of the output that can be formatted with the User Formatted Output facility consists of lists of information, and lists of information within other lists.

Lists are structured in one of two ways depending on their position within the overall structure of an output category.

Lists which contain one or more other lists within their structure are referred to as compound lists. Lists which contain no other list within their structure are called basic lists. For example, in the data-view report output structure, the logical division *details of a data-view* has a compound list structure, because it contains other lists the logical divisions *dependencies in the data-view*, *associated relations*, and *associated data-views* each have a basic list structure because they contain no other lists.

Each list is composed of either three or four basic parts (format lines), depending on whether the list is respectively compound or basic. The first format line of each list is always a heading line. Heading lines are used to specify the output of fixed text to be a heading for the list. In addition, most heading lines have defined for them a parameter number representing a variable whose value is the number of items in the list.

The last format line in each list is a separator line. Separator lines are generally used to specify the output of some fixed text that will separate the list from following parts of the output.

The output specifications on a heading line for a list will always be output once, since the purpose of the line is to output a heading, and in most cases, the number of items in the list. Separator lines are only output if there is at least one item in the list to be output.

Compound Lists

Compound lists are composed of three basic parts: the heading line, the format line which contains the specifications for the output of the items in the list, and the separator line. The format line which contains the specifications for the output of the items in the list produces output as described in "Basic Principles" on page 8; that is, the output specifications contained in it are output once for each item present in the list, whether or not the parameter representing the values is present in those specifications.

The general structure of a compound list is:

mm HEADING LINE

nn ITEM IN LIST

oo SEPARATOR LINE

Within the structure of a compound list there are one or more further lists (*sublists*) that may be compound or basic. Each sublist is output in respect of each item in the compound list. If the sub-list is viewed as a logical division, the structure of the compound list can be shown as:

mm HEADING LINE

nn ITEM IN LIST

Compound or Basic Sublist

oo SEPARATOR LINE

The output specifications within the sublist structure are output for each item in the compound list, whether or not the parameter specifying the items has been specified in the format line for the items in the list (see "Basic Principles" on page 8), and whether or not that format line has been defined in the FORMAT member.

For example, if the list shown in "Basic Principles" on page 8 had a sublist relating to details of the person named in the list and all relevant format lines were specified in the FORMAT member, then the output of the list of names and sublist of personal details would have this general form:

```
HEADING FOR NAMES
NAME IS JOHN
        sub-list of details of John
NAME IS MICHAEL
        sub-list of details of Michael
NAME IS SIMON
        sub-list of details of Simon
NAME IS PAUL
        sub-list of details of Paul
```

If any or all of the format lines for the list are omitted from the FORMAT member but there are items in that list, then the sublist is output as if those format lines had been included and the items output.

For example, if the heading line, format line for items in the list, and separator line were omitted from the FORMAT member but the items John, Michael, Simon, and Paul were available for output, the above output would appear as:

```
Sublist of details of John
Sublist of details of Michael
Sublist of details of Simon
Sublist of details of Paul
```

Basic Lists

Basic lists work in the same way as compound lists but are broken down into a further basic part. They have a heading line, two format lines to output the items in the list, and a separator line.

The two format lines for outputting the items in the list enable the first item in the list to be output in a different way to the other items in the list. For example, the format line for outputting the first item in the list could contain in its output specifications a statement of what the list is; the format line for outputting the other items in the list could be a specification for a simple list. This capability enables output such as the list of names shown in "Basic Principles" on page 8 to be arranged as this:

```
NAMES ARE:      JOHN
              MICHAEL
                SIMON
                 PAUL
```

The structure of a basic list is thus:

mm HEADING LINE

nn FIRST ITEM IN LIST

oo OTHER ITEMS IN LIST

pp SEPARATOR LINE

Unless there are no items in the list, the output specifications in the format line for the first item in the list are output once, because the purpose of the list is to output the first item, which is always a single value, whether or not the parameter number representing that value is included in the output specifications. The output specifications in the format line for other items in the list are output for each item other than the first in the list, whether or not the appropriate parameter number is included in the output specification and whether or not the format line for the first item in the list is included in the FORMAT member.

Dependencies

Parts of output structures related to the output of dependencies are structured in a similar fashion to basic lists, but are composed of two lists: one for left-hand side data elements, the other for right-hand side data elements in the dependency. As with basic lists, the output structure of a dependency is composed of four format lines. The first and last format lines are heading and separator lines, respectively. The two other format lines are for the first items in the two lists, and the other items in the two lists; these are referred to as *dependency first line* and *dependency continuation line* respectively. The output structure for a dependency is thus:

mm HEADING LINE

nn DEPENDENCY FIRST LINE

oo DEPENDENCY CONTINUATION LINE

pp SEPARATOR LINE

This arrangement for dependencies enables the type of dependency to be shown in the first line but not in subsequent lines. For example, this output is possible:

```
data-element-1 ---MVD-->> data-element-2
data-element-3             data-element-4
                           data-element-5
```

In the format lines containing the output specifications for dependencies, separate parameter numbers are provided for left-hand side data elements; and right-hand side data elements.

The output specifications in the format line representing the first line of the dependency are always output once, because the purpose of the line is to output the first item in each list, which is always a unique pair of values. The output specifications in the dependency continuation line are output as many times as is necessary to include all the left-hand side and all the right-hand side data elements; that is, as many times as there are items in the longer of the two lists.

It should be noted that functional dependencies in the workbench design area only ever have one right-hand side data element (see the MERGE command specifications in *ASG-DesignManager User's Guide*).

In most cases in output structures where dependency details are output, the dependency could be of either type. This situation is catered for by providing sets of alternative format lines: one set for the output specifications of a functional dependency, another set for multivalued dependencies, and a third set for domain dependencies. In the output structure diagrams, these alternative format lines are shown as:

Dependencies					
mm	HEADING LINE				
Functional Dependencies		Multivalued Dependencies		Domain Dependencies	
nn	HEADING LINE	rr	HEADING LINE	ww	HEADING LINE
oo	DEPENDENCY FIRST LINE	ss	DEPENDENCY FIRST LINE	xx	DEPENDENCY FIRST LINE
pp	DEPENDENCY CONTINUATION LINE	tt	DEPENDENCY CONTINUATION LINE	yy	DEPENDENCY CONTINUATION LINE
qq	SEPARATOR LINE	uu	SEPARATOR LINE	zz	SEPARATOR LINE
ww	SEPARATOR LINE				

In cases where alternative format lines are provided within the structure of the output category, the set of format lines used to format the output is determined internally, and depends on the type of dependency to be output. Whichever set is used in any one instance, the production of the output follows the general principles outlined in "Basic Lists" on page 15.

Parameter Availability within Lists

As stated in "Variable Specification" on page 6, some parameter numbers defined for a specific format line and representing a unique variable can also be validly specified in other format lines within the same output category and reference the same variable. This extended availability is based on the list structures within the output. There are two general rules for this extended parameter availability:

- Parameter numbers defined for or valid for heading lines of lists may be specified on all format lines within that list, including all format lines of any contained list.
- In the case of a compound list, parameter numbers defined for or valid for the format line for the items in the list may be specified on all format lines of the contained list, and format lines of lists contained by those lists.

Output to Visual Display Units and Line Printers

Where the output of a command will be used as screen-based and paper-based documentation, it is suggested that two FORMAT members having the same content but different formats are defined in the modeling dictionary, so as to take maximum advantage of the available line width.

Controlling the Printing of Report Output Page Headers

Users can control the printing of the headers that are positioned at the top of each page of the output that is generated when the REPORT command is used with the User Formatted Output facility. Each time that user formatted REPORT output is generated, the user may specify one of these conditions:

- That all page headers are to be printed
- That no page headers at all are to be printed

This is done by including a SET HEADER clause in the definition of the FORMAT member that specifies the layout of that particular REPORT command's output (as described in Chapter 3, "Definition Syntax," on page 21). If no SET HEADER clause is included, then DesignManager includes all the page headers in the output.

The ability to generate formatted output that does not include any page headers enables users to generate output that can be re-input for subsequent processing by other Manager Products or non-ASG software. For example, a user could format the layout of a Logical Schema Report so that only the generated syntax was output. If this output did not include any page headers, then it could be immediately used as input to set up definitions of the Userviews corresponding to the relations of the logical schema.

2 Command Syntax

Extended Format-selection Clause

The extended format-selection clause permits the formatting of output from the REPORT, DESIGN, PLOT, and PRODUCE commands according to the specifications defined in a FORMAT member of the modeling dictionary.

Extended Format-selection Clause Format

```
format-selection is:

{DETAILS                    }
{SUMMARY                    }
{USING FORMAT format-name   }
```

where *format-name* is the name of a FORMAT member of the modeling dictionary.

Extended Format-selection Clause Remarks

1. The DETAILS and SUMMARY options are provided by the DesignManager nucleus and are described in the *ASG-DesignManager User's Guide*.

   The User Formatted Output facility extends the format-selection clause of the design mode REPORT, DESIGN, PLOT and PRODUCE commands so that the USING FORMAT format-name selection can be made. Thus all the remarks given in the *ASG-DesignManager User's Guide* apply if the selection is DETAILS or SUMMARY; these remarks only concern the selection USING FORMAT format-name.

2. In some cases, the use of the extended format-selection clause with some of the commands listed above requires that the user's installation includes a particular DesignManager selectable unit (apart from selectable unit DSR-UD30). The units required in each of these cases are listed in the first table in Chapter 1, "Introduction to User Formatted Output," on page 1.

3. If no FORMAT member is named in the USING clause, or the FORMAT member named in the USING clause is not present in encoded form in the modeling dictionary open when the command was issued then a diagnostic message is issued, the command rejects, and processing continues with the next command.

4. Before execution of a command containing a USING clause, DesignManager checks that the named FORMAT member has a valid CONTENTS clause. This checking is described in the FORMAT data definition in Chapter 3, "Definition Syntax," on page 21.

5. If the workbench design area contains none of the information for the output specified by the command (for example, a REPORT RELATIONS command when the workbench design area contains unnormalized data), then a diagnostic message issues, the command rejects, and processing continues with the next command.

Extended Format-selection Clause Examples

This command generates a report of all entities in the workbench design area, in alphabetical order. The reported data for each entity is laid out as specified in the FORMAT member called ENFORM:

```
REPORT ENTITIES ALL ALPHA USING FORMAT ENFORM;
```

This command generates a report of all load factor data for those userviews most recently added to the workbench design area. The load factor data for each reported userview is laid out as specified by the FORMAT member called MYLOAD:

```
REPORT LOAD-FACTORS RECENT USING FORMAT MYLOAD;
```

This command generates a logical schema cluster plot for the contents of the workbench design area. The plot for each cluster is arranged as specified by the FORMAT member called SCHEME-FORM:

```
PLOT LOGICAL-SCHEMA USING FORMAT SCHEME-FORM;
```

Title Command

The TITLE command assigns a string of user-supplied text (a comment or a title) to global parameter number 10 (P10) which can be included in design mode user-formatted output.

Title Command Format

```
TITLE 'title-string' { ; }
                     { . }
```

where *title-string* is a string of printable characters; a space (hexadecimal 40) is considered to be a printable character.

Title Command Remarks

1. The TITLE command is a design mode command, and is only accepted when DesignManager is in design mode.

2. A TITLE command overwrites any existing value for parameter Pl0 with `'title-string'`.

3. `'title-string'` is printed as part of user-formatted output whenever Pl0 is included in a FORMAT member which is used to specify the layout of that output.

3 Definition Syntax

FORMAT member type

Use FORMAT member type to define in the modeling dictionary, by a set of format lines, the content and format of the output generated by the DesignManager design mode REPORT, DESIGN, PLOT, and PRODUCE commands.

Format

```
FORMAT

[common-clauses]

CONTENTS

output-category

[header-control-clause]

[extract-clause]...

{format-line     }...
{comment-line    }

{ ; }
{ . }
```

where:

common-clauses are any of these clauses, as defined in the *ASG-DesignManager User's Guide*, in any order:

ACCESS-AUTHORITY	FREQUENCY
ADMINISTRATIVE -DATA	NOTE
ALIAS	OBSOLETE-DATE
CATALOGUE	QUERY

```
COMMENT                    SECURITY-CLASSIFICATION
DESCRIPTION                SEE
EFFECTIVE-DATE
```

output-category is the category of output for which the FORMAT member is intended, that is one of these clauses:

```
DATA-VIEW REPORT
USERVIEW REPORT
ENTITY REPORT
LOGICAL-SCHEMA REPORT
INTERSECTING-DATA-ELEMENT REPORT
DESIGN AUDIT
LOGICAL-SCHEMA CLUSTER
NETWORK CLUSTER
DATA-ELEMENT-USAGE-ANALYSIS REPORT
LOAD-FACTOR-ANALYSIS REPORT
PRODUCE SQL
PRODUCE DB2
```

Note:

LOGICAL-SCHEMA CLUSTER and NETWORK CLUSTER are only available if the User Printer Graphics facility (selectable unit DSR- UD3l) is installed. LOAD-FACTOR-ANALYSIS REPORT is only available if the Load Factor Calculation facility (selectable unit DSR-PH10) is installed. ENTITY REPORT is only available if the Enterprise Modeling facility (selectable unit DSR-EM10) is installed. PRODUCE SQL is only available if the SQL/DS Source Language Generation facility (selectable unit DSR-PH01) is installed and PRODUCE DB2 is only available if the DB2 Source Language Generation facility (selectable unit DSR-PH02) is installed.

header-control-clause is:

```
SET HEADER { ON  }
           { OFF }
```

extract-clause is:

```
EXTRACT n { DATA-VIEWS     } 'extract' [[FROM][COLUMN]cc]
          { USERVIEWS      }
          { ENTITIES       }
          { DATA-ELEMENTS  }
          { ALL            }
```

where:

n is an integer in the range one through three.

extract is:

```
{ ALIASES        [ { alias-type } ]
                   { number     }

  ACCESS-AUTHORITY
  CATALOGUES
  CATALOGS
  EFFECTIVE-DATE
  OBSOLETE-DATE
  SECURITY-CLASSIFICATION
  SEE

  { ADMINISTRATIVE-DATA }
  { COMMENT             }
  { DESCRIPTION         }  [LINE m]
  { NOTES               }
  { QUERY               }
}
```

where:

alias-type is a keyword from the specific alias-type keyword list of the dictionary.

number is an unsigned integer identifying the required general aliases. The integer must be in the range 1 to *g*, where *g* is the number of ALIASn keywords of the DALIAS macro that have been implemented with empty values (see the *ASG-Manager Products Installation in OS Environments* or *ASG-Manager Products Installation in DOS Environments*). The maximum possible value of *g* is 16.

m is an integer in the range 1-32,676.

cc is an integer in the range 1-80.

format-line is:

format-line-identifier [*output-line-specification*]

where *format-line-identifier* is:

```
F { M } nn:
  { S }
```

where:

F specifies that the line is a format line.

M specifies that the output specified by the format line is to be positioned on the next line of output.

S specifies that the output specified by the format line is to be positioned at the top of a new page of output.

nn is a two-digit unsigned integer, identifying a valid format line for the output-category specified.

output-line-specification is:

```
[q] { specifier                    }
    { (specifier[,specifier]...)   }

[,[q] { specifier                    } ]...
      { (specifier[,specifier]...)   }
```

where:

q is an unsigned integer, being a repeat count for the specifier or group of specifiers which it immediately precedes.

specifier is:

```
{ /                                  }
{ X                                  }
{ Cn                                 }
{ 'string'                           }
{ { Pm } [.field-width[ { .R } ]]    }
{ { Am }                { .C }       }
```

where:

/ denotes the end of a physical output line, and causes a carriage return/line feed sequence on the output device.

X denotes a skip of one character position on the output line.

Cn specifies that the following output is to start at column number *n*, where *n* is an unsigned integer.

string denotes any string of printable characters (but see Remark 26 regarding the inclusion of printable (') characters within the string). A space (hexadecimal 40) is considered a printable character.

Pm identifies a parameter number, where *m* is an unsigned integer. *P* parameters may be used in FORMAT members of all output categories except PRODUCE SQL and PRODUCE DB2. However the global parameters (P1 through Pl0) may be used in any FORMAT member.

Am identifies a parameter number, where *m* is an unsigned integer. *A* parameters may only be used in FORMAT members of the PRODUCE SQL and PRODUCE DB2 output categories. They are subject to more validation than P parameters (see Chapter 12, "Output Category: PRODUCE SQL," on page 171 and Chapter 13, "Output Category: PRODUCE DB2," on page 179).

field-width is an unsigned integer defining the width of the field in which the immediately preceding parameter is to be positioned. Parameters which have character values always left-justified within a field unless right justification or centering is specified; parameters that have integer are always right-justified within the specified field.

.R specifies that the immediately preceding parameter is to be right-justified within the specified field.

.C specifies that the immediately preceding parameter is to be centered within the specified field.

comment-line is:

```
* [string]
```

where:

string is a string of printable characters, being the user's comments; a space (hexadecimal 40) is considered a printable character.

Remarks

1. Common clauses, listed under the FORMAT member definition syntax above, can be present in any type of data definition statement; they are therefore defined separately in the *ASG-DesignManager User's Guide*. Not more than one of each of these clauses can be declared for any one FORMAT member. If a common clause has a subordinate clause or keyword, the subordinate clause identifier or subordinate keyword must not be truncated to an extent where it becomes ambiguous with any other clause identifier or other keyword available in the data definition syntax for this member type.

2. When producing output using a FORMAT member, DesignManager checks that the output category specified in the FORMAT member matches the command to help ensure that a meaningful report is produced. The correspondence between output-categories and commands is this:

Output-category	**Command**
DATA-VIEW REPORT	REPORT DATA-VIEWS....
USERVIEW REPORT	REPORT USERVIEWS....
ENTITY REPORT	REPORT ENTITIES....
LOGICAL-SCHEMA REPORT	REPORT LOGICAL-SCHEMA....
INTERSECTING-DATA-ELEMENT REPORT	REPORT INTERSECTING-DATA-ELEMENTS....
DESIGN AUDIT	DESIGN [UNCONDITIONALLY] [WITH] AUDIT....
LOGICAL-SCHEMA CLUSTER	PLOT LOGICAL-SCHEMA....
NETWORK CLUSTER	PLOT NETWORK....
DATA-ELEMENT-USAGE-ANALYSIS REPORT	REPORT DATA-ELEMENTS....
LOAD-FACTOR-ANALYSIS REPORT	REPORT LOAD-FACTORS....
PRODUCE SQL	PRODUCE SQL....
PRODUCE DB2	PRODUCE DB2....

If a FORMAT member is used in a command other than the one which matches its output category, then this is reported, no output is generated, and processing continues with the next command.

3. The purpose of an extract-clause is to define an extract variable, the value of which is common clause information held in members of the modeling dictionary. These variables are identified by the appropriate parameter numbers; their values are included in the output defined by the FORMAT member in the same way as other variables (see "Variable Specification" on page 6).

   The common clause information that is required to be an extract variable is identified by one of the keywords in the extract clause. The values that the defined extract variable will then represent will be taken from the first line or first 132 characters (whichever is less) of the specified common clause of the appropriate members when the FORMAT member definition is processed. If FROM COLUMNS cc is specified, then the extract value will be taken from the specified line, starting at column cc (otherwise column one).

   If ALIAS is specified, column one is the start of the alias name not the start of the alias member type. If ALIAS is not followed by an alias-type or an alias number, then the definition for ALIAS16 (in macro DALIAS) will be used; if ALIAS16 is not defined in DALIAS, then the highest numbered alias which is defined would be used, for example, ALIASl5. The default definition for ALIAS16 is COBOL.

   When ADMINISTRATIVE-DATA, COMMENT, DESCRIPTION, NOTES or QUERY are specified, lines other than the first may be defined for the extract variable by use of the LINE keyword and associated integer; the maximum size of an extract variable is always one line or 132 characters, whichever is less. If the LINE keyword and its associated integer are not included in an extract-clause, then the *extract* keyword need not be contained in quotes.

   Note:

   The line and column numbers needed to include in extract clauses to specify common clause parts are determined by the layout of the relevant common clauses in the source datasets of the modeling dictionary. The lines and/or columns occupied by a particular part of a common clause within the clause as a whole can be ascertained by executing a GLOSSARY command for the relevant clause.

   Within each FORMAT member definition, the user may define up to three extract variables for each of the member types userview, entity and data element, by use of extract-clauses. Each of the extract variables that applies to members of the same type is separately identified by setting n= 1, 2, or 3 in its defining extract-clause.

   The second keyword in each extract-clause defines the member type to which the extract-variable applies. The keywords DATA-VIEWS, USERVIEWS, ENTITIES, and DATA-ELEMENTS are used to define extract variables that apply to data-views, userviews, entities, and data elements respectively. The keyword ALL is used to define extract variables applying to all relevant member types.

   Where two or more extract variables identified by the same integer are defined for userviews or data elements, all except the last are ignored.

   Each extract-clause must start in the first character position of an input line.

4. Extract variables appear in output as specified in the parameter number tables in Chapter 4, "Output Categories: Data-view, Userview, and Entity Reports," on page 33 through Chapter 13, "Output Category: PRODUCE DB2," on page 179. Their positions are specified by the EXTRACT n ... clauses in these tables. The value output for such a clause is the nth extract clause defined for the member type keyword given in the clause, operating on the parameter specified in the extract clause. (This member type must be the same as the parameter's type.)

5. As the result of setting up an extract-clause in a FORMAT member, blanks will be output instead of the specified common clause information in any of these circumstances:

   - If the dictionary member does not contain the common clause indicated as the extract variable in the extract-clause.
   - If an assumed data element is being processed (assumed data elements do not have a corresponding member defined in the modeling dictionary).
   - If either the IDENTIFIER clause or the ONE-ATTRIBUTE clause is omitted from an ENTITY member from which common clause information is to be extracted. (If either the IDENTIFIER clause or the ONE-ATTRIBUTE clause is omitted then a default identifier or a default one-attribute will be automatically generated by DesignManager for the FD in the workbench design area, as appropriate. See the *ASG-DesignManager Enterprise Modeling* (DSR-ENT)).
   - If ALIAS is specified, and it is followed by an alias-type or alias number which is undefined.
   - If the start column specified in the extract-clause is greater than the length of the common clause information.
   - If ADMINISTRATIVE-DATA, COMMENT, DESCRIPTION, NOTES, or QUERY are specified as the common clause and, additionally, a start line is specified which is greater than the total number of lines in the common clause.

6. Valid format lines and parameter numbers for each output-category are given in the relevant chapter for that output category.

7. Format lines must start in the first character position of an input line.

8. Format lines can continue over more than one input line but each continuation line must commence with four space characters and a hyphen (-) to denote the continuation. Optionally, the hyphen may be followed by one or more spaces.

9. All elements in the output-line-specification (with the exceptions stated in remark 11 and remark 12) may be preceded or followed by spaces to enhance the readability of the format member. Such spaces are ignored when the position of the output on the output device is calculated.

10. If a parameter for which there is no value in the workbench design area is specified, then the field corresponding to the parameter is filled with question marks in the output. If no field width is specified, then only one question mark is output.

11. If a field-width is specified for a parameter, there must be no spaces between the field-width, its preceding stop (period), and the Pm or Am identifying the parameter number.

12. Similarly, if right justification or centering of the parameter is required, then the .R or .C specification must immediately follow the field width specification; there must be no intervening spaces.

13. These rules apply to the output of parameter values (with length N characters) within a field-width of W characters:

    For parameters whose values are character strings:

    If right justification is not specified:

If W > N	The parameter is left-justified in the specified field with trailing spaces to fill the field.
If W = N	The parameter fills the specified field exactly.
If W < N	The parameter is truncated from the right to fill the field exactly.

    If right justification is specified:

If W > N	The parameter is right justified within the specified field with leading spaces to fill the field.
If W = N	The parameter fills the field exactly.
If W < N	The parameter is truncated from the left to fill the field.

    For parameters that have integer values:

    Right justification is assumed (if specified, .R is accepted but is superfluous):

If W > N	The parameter is right justified within the field with leading spaces.
If W = N	The parameter fills the field exactly.
If W < N	The field is filled with asterisks (*) to denote overflow.

14. The maximum length of an output line which can be specified by a format line is 132 characters. If an output line specified by a format line is greater than 132 characters, DesignManager truncates the output line to 132 characters.

15. Parentheses in the output-line-specification can be used to group together a series of specifiers to be treated as one specifier for the purpose of preceding that group with a repeat count integer. Parentheses may be nested to a maximum level of four.

16. A repeat count integer q immediately preceding a specifier or group of specifiers will cause the output produced by that specifier or group of specifiers to be repeated consecutively q times. A repeat count preceding a column specifier is accepted but ignored.

17. A repeat count of zero is treated as a repeat count of 255. This facility is useful, for example, for filling an output line with asterisks or dashes.

18. The output specified by any output line specification following a slash (/) is positioned on the next line of output.

19. Syntax checking of the CONTENTS clause of a FORMAT member is not performed when the member is encoded, but whenever a command which uses the FORMAT member is about to be executed. At this stage, DesignManager checks these conditions and takes the specified action:

    - That output-category matches the command using the FORMAT member; if there is no match, an error message is output, no output produces, and processing continues with the next command.
    - If one or both of these conditions is not met for any format line or continuation of a format line in the FORMAT member, the invalid lines are reported, no output is produced and processing continues with the next command:
        - Each format line has a valid format line identifier starting in the first character position of the input line.
        - Each continuation of a format line is preceded by four spaces and a hyphen (-) starting in the first character position of the input line.
    - That there are no errors in any output-line-specification of any format line within the FORMAT member. If an error is detected, DesignManager processes the line up to the point of the error, and ignores the remaining specifications on that format line.

20. The format lines within any single FORMAT member definition may be given in any order. Their order has no affect on the order in which the corresponding lines of the format are output, which is specified by the relevant structure figure in Chapter 4, "Output Categories: Data-view, Userview, and Entity Reports," on page 33 through Chapter 13, "Output Category: PRODUCE DB2," on page 179.

21. Only one occurrence of a particular format line is permissible in a FORMAT member. Where two or more occurrences of a format line occur, all except the last are ignored.

22. Comment lines enable users to include documentation within the CONTENTS clause of the FORMAT member, but are not included in the output of a command using the FORMAT member. Each comment line must be contained in one input line. There is no restriction, however, on the number of consecutive comment lines.

23. The initial asterisk (*) of a comment line must be positioned in the first character position of its input line.

24. In a comment line, the string representing the user comment need not be contained in quotes, and may or may not be separated from the initial asterisks by one or more spaces.

25. A record containing a FORMAT member's data definition statement is inserted into the modeling dictionary's source dataset and an encoded record generated and inserted into the data entries dataset, by the use of the ADD command (see the *ASG-DesignManager User's Guide*). If, when the encoded record is generated, any member whose name appears in the SEE clause of a FORMAT member's data definition statement has no data entries record, then DesignManager creates a dummy data entries record for that member. The dummy record is created as a dummy FORMAT member.

26. The header-control-clause only has an effect if it is included in a FORMAT member that is used to format the output layout of any of the forms of the REPORT command (see Remark 2 above for the relevant output categories). The header-control-clause enables users to print or to suppress printing of page header lines in user-formatted report output. If a relevant FORMAT member contains the header-control-clause:

    ```
    SET HEADER ON
    ```

    then all the page headers in output whose layout is specified by this FORMAT member are printed. If a FORMAT member contains the header-control clause:

    ```
    SET HEADER OFF
    ```

    then none of the page headers will print.

    If a FORMAT member does not contain a header-control-clause, then DesignManager assumes a default setting of ON for report output. If a header-control-clause is included in a FORMAT member that is used to format the layout of output from commands other than REPORT, then the clause has no effect.

27. An apostrophe (`'`) character can be included within a character string in user formatted output by placing a pair of these characters at the appropriate position in the corresponding format line. For example, the character string:

    ```
    AB'CD'E
    ```

    would be generated in user formatted output by including the character string:

    ```
    'A' 'CD' 'E'
    ```

    within the appropriate format line.

4 Output Categories: Data-view, Userview, and Entity Reports

FORMAT members of the data-view, userview, and entity output categories are used to specify the format and contents of the output from the commands:

```
REPORT DATA-VIEWS....USING FORMAT format-name

REPORT USERVIEWS....USING FORMAT format-name

REPORT ENTITIES....USING FORMAT format-name
```

The output formats corresponding to these three output categories are described together for convenience because they are identical.

Throughout this chapter the term *data-view,* has been used for convenience whenever data-view, userview, or entity might occur. If the output for a Userview Report or Entity Report is being considered, then the user should respectively substitute the term *userview* or *entity* for data-view throughout this chapter.

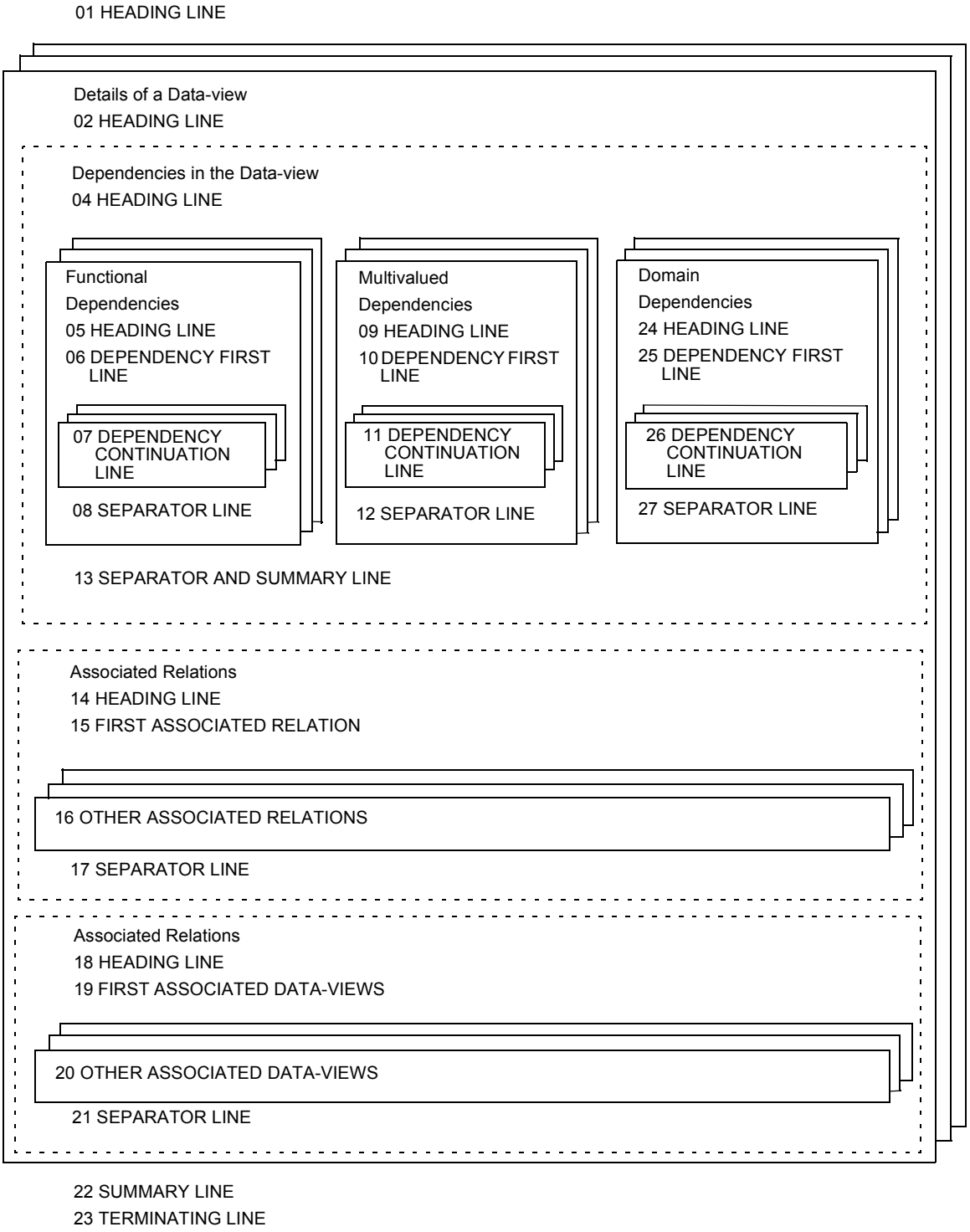
The structure of this output is shown in Figure 2 on page 34. The parameter numbers defined for each format line are shown in "Parameter Numbers Defined" on page 35; the extended availability of parameter numbers is shown in "Variable Parameter Availability" on page 42.

In the output structure shown in Figure 2 on page 34, associated relations are those that represent the dependencies in the data-view for which output is generated. If the workbench design area contains unnormalized data, then no output is produced in respect of this division of the output structure.

Associated data-views are those data-views which have one or more functional or multivalued dependencies in common with the data-view for which output is generated.

Non left-hand side data elements are those that appear only on the right-hand side of the dependencies in the data-view.

Figure 2. Data-view Report Structure



Parameter Numbers Defined

This table shows the parameter numbers defined for each format line for the Data-view, Userview, and Entity Report output categories, arranged by the order of processing:

Format Line Number	Parameter Number	Parameter Type	Parameter Description
01	Heading line for the Data-view Report including a summary of the data in the workbench design area.		
	21	integer	Number of data-views
	22	integer	Number of dependencies
	23	integer	Number of functional dependencies
	24	integer	Number of multivalued dependencies
	25	integer	Number of data elements
	26	integer	Number of left-hand side data elements
	27	integer	Number of non-left-hand side data elements
	28	integer	Number of reported data-views
	29	integer	Number of reported userviews
	30	integer	Number of reported entities
	31	integer	Number of domain dependencies
02	Heading line for details of a data-view in the workbench design area.		
	41	string	Data-view name
	42	string	EXTRACT 1 DATA-VIEWS (P41)
	43	string	EXTRACT 2 DATA-VIEWS (P41)
	44	string	EXTRACT 3 DATA-VIEWS (P41)
	45	integer	Number of dependencies in the data-view.
	46	integer	Number of functional dependencies in the data-view.
	47	integer	Number of multivalued dependencies in the data-view.
	48	integer	Number of data elements in the data-view.
	49	integer	Number of left-hand side data elements in the data-view.
	50	integer	Number of non-left-hand side data elements in the data-view.

Format Line Number	Parameter Number	Parameter Type	Parameter Description
02 (continued)	51	integer	Relative frequency of the data-view.
	52	integer	Response time of the data-view.
	53	string	Data-view type (USERVIEW or ENTITY).
	54	integer	Number of domain dependencies in the data-view.
04	Heading line for details of the dependencies in the data-view.		
	No parameters		
05	Heading line for a functional dependency in the data-view.		
	81	integer	Number of left-hand side data elements in the dependency.
06	The first left-hand side data-view and right-hand side data elements in the functional dependency in the data-view.		
	101	string	Name of the first data element on the left-hand side of the functional dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	105	string	Extraneous data element markers the value of which can be blank or the string `* **EXTRANEOUS***`, as appropriate.
	106	string	Redundant dependency marker the value of which can be blank or the string `>>INDIRECT<<`, as appropriate.
	107	integer	Number of the dependency in the data-view (relative dependency number).
	108	integer	Number of the dependency in the workbench design area (absolute dependency number).
	111	string	Name of the data element on the right-hand side of the functional dependency.
	112	string	EXTRACT 1 DATA-ELEMENTS (P111)
	113	string	EXTRACT 2 DATA-ELEMENTS (P111)
	114	string	EXTRACT 3 DATA-ELEMENTS (P111)

Format Line Number	Parameter Number	Parameter Type	Parameter Description
07	The remaining data elements on the left-hand side of the functional dependency.		
	101	string	Name of a data element other than the first on the left-hand side of the functional dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	105	string	Extraneous data element marker, the value of which can be blank or the string `***EXTRANEOUS***`, as appropriate.
	106	string	Redundant dependency marker, the value of which can be blank or the string `>>INDIRECT<<`, as appropriate.
	107	integer	Number of the dependency in the data-view (relative dependency number).
	108	integer	Number of the dependency in the workbench design area (absolute dependency number).
08	A separator line which can be used to separate the details of the functional dependency from following output.		
	No parameters		
09	Heading line for a multivalued dependency in the data-view.		
	81	integer	Number of left-hand side data elements.
	82	integer	Number of right-hand side data elements.
10	The first left-hand side and right-hand side data elements of the multivalued dependency in the data-view.		
	101	string	Name of the first data element on the left-hand side of the multivalued dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	106	string	Removed dependency marker, the value of which can be blank or the string `>>REMOVED<<`, as appropriate.

Format Line Number	Parameter Number	Parameter Type	Parameter Description
10 (continued)	107	integer	Number of the dependency in the data-view (relative dependency number).
	108	integer	Number of the dependency in the workbench design area (absolute dependency number).
	109	integer	Multiplicity of the multivalued dependency.
	111	string	Name of the first data element on the right-hand side of the multivalued dependency.
	112	string	EXTRACT 1 DATA-ELEMENTS (P111)
	113	string	EXTRACT 2 DATA-ELEMENTS (P111)
	114	string	EXTRACT 3 DATA-ELEMENTS (P111)
11	The remaining data elements on the left-hand side and right-hand side of the multivalued dependency.		
	101	string	Name of a data element other than the first on the left-hand side of the multivalued dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	106	string	Removed dependency marker, the value of which can be blank or the string `>>REMOVED<<`, as appropriate.
	107	integer	Number of the dependency in the data-view (relative dependency number).
	108	integer	Number of the dependency in the workbench design area (absolute dependency number).
	109	integer	Multiplicity of the multivalued dependency.
	111	string	Name of a data element other than the first on the right-hand side of the multivalued dependency.
	112	string	EXTRACT 1 DATA-ELEMENTS (P111)
	113	string	EXTRACT 2 DATA-ELEMENTS (P111)
	114	string	EXTRACT 3 DATA-ELEMENTS (P111)

Format Line Number	Parameter Number	Parameter Type	Parameter Description
12	A separator line that can be used to separate each multivalued dependency output.		
	No parameters		
24	Heading line for a domain dependency in the data-view.		
	81	integer	Number of left-hand side data elements.
	82	integer	Number of right-hand side data elements.
25	The first left-hand and right-hand side data elements of the domain dependency in the data-view.		
	41	string	Data-view name
	101	string	Name of the first data element on the left-hand side of the domain dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	107	integer	Number of the dependency in the data-view (relative dependency number).
	108	integer	Number of the dependency in the workbench design area (absolute dependency number).
	111	string	Name of the first data element on the right-hand side of the domain dependency.
	112	string	EXTRACT 1 DATA-ELEMENTS (P111)
	113	string	EXTRACT 2 DATA-ELEMENTS (P111)
	114	string	EXTRACT 3 DATA-ELEMENTS (P111)
26	The remaining data elements on the left-hand side and right-hand sides of the domain dependency		
	101	string	Name of a data element other than the first on the left-hand side of the domain dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (Pl01)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	107	integer	Number of the dependency in the data-view (relative dependency number).

Format Line Number	Parameter Number	Parameter Type	Parameter Description
26 (continued)	108	integer	Number of the dependency in the workbench design area (absolute dependency number).
	111	string	Name of a data element other than the first on the right-hand side of the domain dependency.
	112	string	EXTRACT 1 DATA-ELEMENTS (P111)
	113	string	EXTRACT 2 DATA-ELEMENTS (P111)
	114	string	EXTRACT 3 DATA-ELEMENTS (P111)

27 A separator line that can be used to separate each domain dependency output.

No parameters

13 Separator line which can be used to separate details of the dependencies in the data-view from following parts of the output, and can include a summary of those dependencies.

81	integer	Total number of redundant functional dependencies.
82	integer	Total number of inconsistent multivalued dependencies.
83	integer	Total number of extraneous data elements in the dependencies.

14 Heading line for details of the relations reflecting dependencies in the data-view that have not been changed by the normalization procedures

61	integer	Total number of relations reflecting unchanged dependencies in the data-view.

15 Details of the first relation reflecting unchanged dependencies in the data-view.

81	integer	Number of the first relation reflecting unchanged dependencies in the data-view.
82	string	Name of the first relation reflecting unchanged dependencies in the data-view.

16 Details of a relation other than the first reflecting unchanged dependencies within the data-view.

81	integer	Number of a relation other than the first reflecting unchanged dependencies in the data-view.

Format Line Number	Parameter Number	Parameter Type	Parameter Description
16 (continued)	82	string	Name of a relation other than the first reflecting unchanged dependencies in the data-view.
17	A separator line which can be used to denote the end of the details of the associated relations.		
	No parameters		
18	Heading line for details of other data-views which have dependencies in common with the data-view being reported.		
	61	integer	Number of other data-views which have dependencies in common with the dependency being reported.
19	Details of the first data-view with one or more dependencies in common with the data-view being reported.		
	81	string	Name of the first data-view with one or more common dependencies.
	82	string	EXTRACT 1 DATA-VIEW (P81)
	83	string	EXTRACT 2 DATA-VIEW (P81)
	84	string	EXTRACT 3 DATA-VIEW (P81)
	85	integer	Number of common dependencies.
	86	string	Data-view type (USERVIEW or ENTITY)
20	Details of a data-view other than the first which has one or more dependency is in common with the userview being reported.		
	81	string	Name of data-view other than the first with one or more common dependencies.
	82	string	EXTRACT 1 DATA-VIEWS (P81)
	83	string	EXTRACT 2 DATA-VIEWS (P81)
	84	string	EXTRACT 3 DATA-VIEWS (P81)
	85	integer	Number of common dependencies.
	86	string	Data-view type (USERVIEW or ENTITY)
21	A separator line which can be used to denote the end of the details of the data-views with common dependencies.		
	No parameters		

Format Line Number	Parameter Number	Parameter Type	Parameter Description
22	A summary of the changes made to all the dependencies in the workbench design area by the design procedure		
	41	integer	Number of functional dependencies changed by the removal of extraneous data elements.
	42	integer	Number of redundant functional dependencies removed.
	43	integer	Number of multivalued dependencies removed due to inconsistency.
23	The terminating line of the Data-view Report.		
	No parameters		

Variable Parameter Availability

This table shows the variable parameter availability by format line for the Data-view, Userview, and Entity Report output categories:

Format Line	Available Parameter Numbers					
01	Global (1-10)	FM-01 defined (21-31)				
02	..	..	FM-02 defined (41-54)			
04	..	..	..	FM-04 defined (none)		
05	..	..	..	..	FM-05 defined (81)	
06	..	..	..	..	..	FM-06 defined (101-108, 111-114)
07	..	..	..	..	..	FM-07 defined (101-108)

Format Line	Available Parameter Numbers					
08	Global (1-10)	FM-01 defined (21-31)	FM-02 defined (41-54)	FM-04 defined (none)	FM-05 defined (81)	FM-08 defined (none)
09	..	..	..	..	FM-09 defined (81-82)	
10	..	..	..	..	..	FM-10 defined (101-104, 106-109, 111-114)
11	..	..	..	..	..	FM-11 defined (101-104, 106-109, 111-114)
12	..	..	..	..	..	FM-12 defined (none)
24	..	..	..	..	FM-24 defined (81-82)	
25	..	..	..	..	..	FM-25 defined (41, 101-104, 107-108, 111-114)
26	..	..	..	..	..	FM-26 defined (101-104, 107-108, 111-114)
27	..	..	..	..	..	FM-27 defined (none)
13	..	..	..	..	FM-13 defined (81-83)	
14	..	..	..	..	FM-14 defined (61)	
15	..	..	..	..	FM-15 defined (81-82)	

Format Line	Available Parameter Numbers				
16	Global (1-10)	FM-01 defined (21-31)	FM-02 defined (41-54)	FM-04 defined (none)	FM-16 defined (81-82)
17	..	..	..	..	FM-17 defined (none)
18	..	..	..	FM-18 defined (61)	
19	..	..	..	..	FM-19 defined (81-86)
20	..	..	..	..	FM-20 defined (81-86)
21	..	..	..	..	FM-21 defined (none)
22	..	..	FM-22 defined (41-43)		
23	..	..	FM-23 defined (none)		

5 Output Category: Logical-Schema Report

Format members of the output category LOGICAL-SCHEMA REPORT are used to format the layout of the output from the command:

```
REPORT LOGICAL SCHEMA....USING FORMAT format-name
```

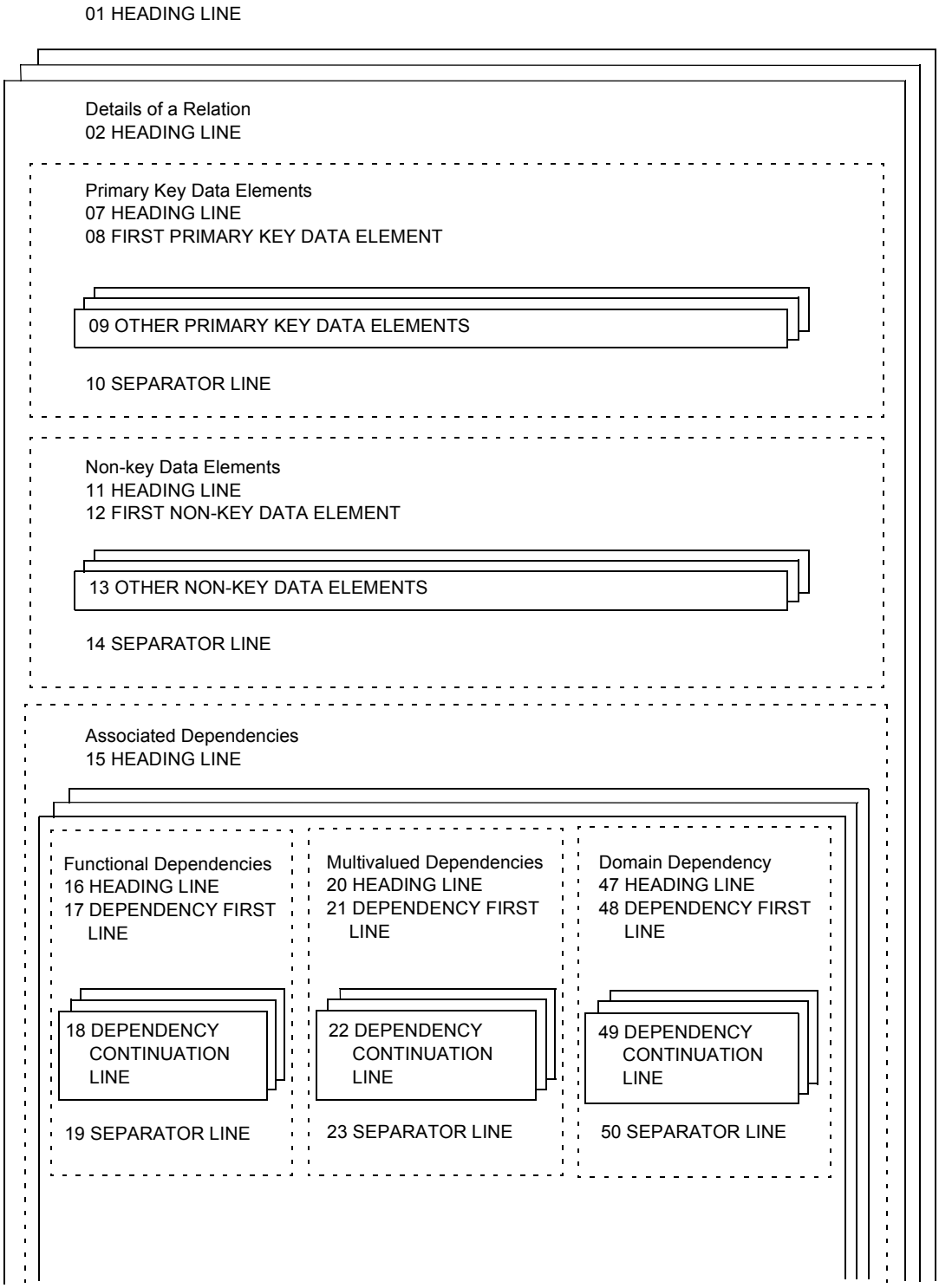
The structure of the Logical-Schema Report output category is shown in Figure 3 on page 46. The parameter numbers defined for each format line are shown in "Logical-Schema Report: Parameter Numbers Defined" on page 49; the extended availability of parameter numbers is shown in "Logical-Schema Report: Variable Parameter Availability" on page 62.

In the output structure shown in Figure 3 on page 46 associated dependencies are dependencies represented by the relation for which the output is generated. The dependency origin division of the output gives the origin of each dependency represented by the relation. Dependencies can originate from one or more data-views, or be implied.

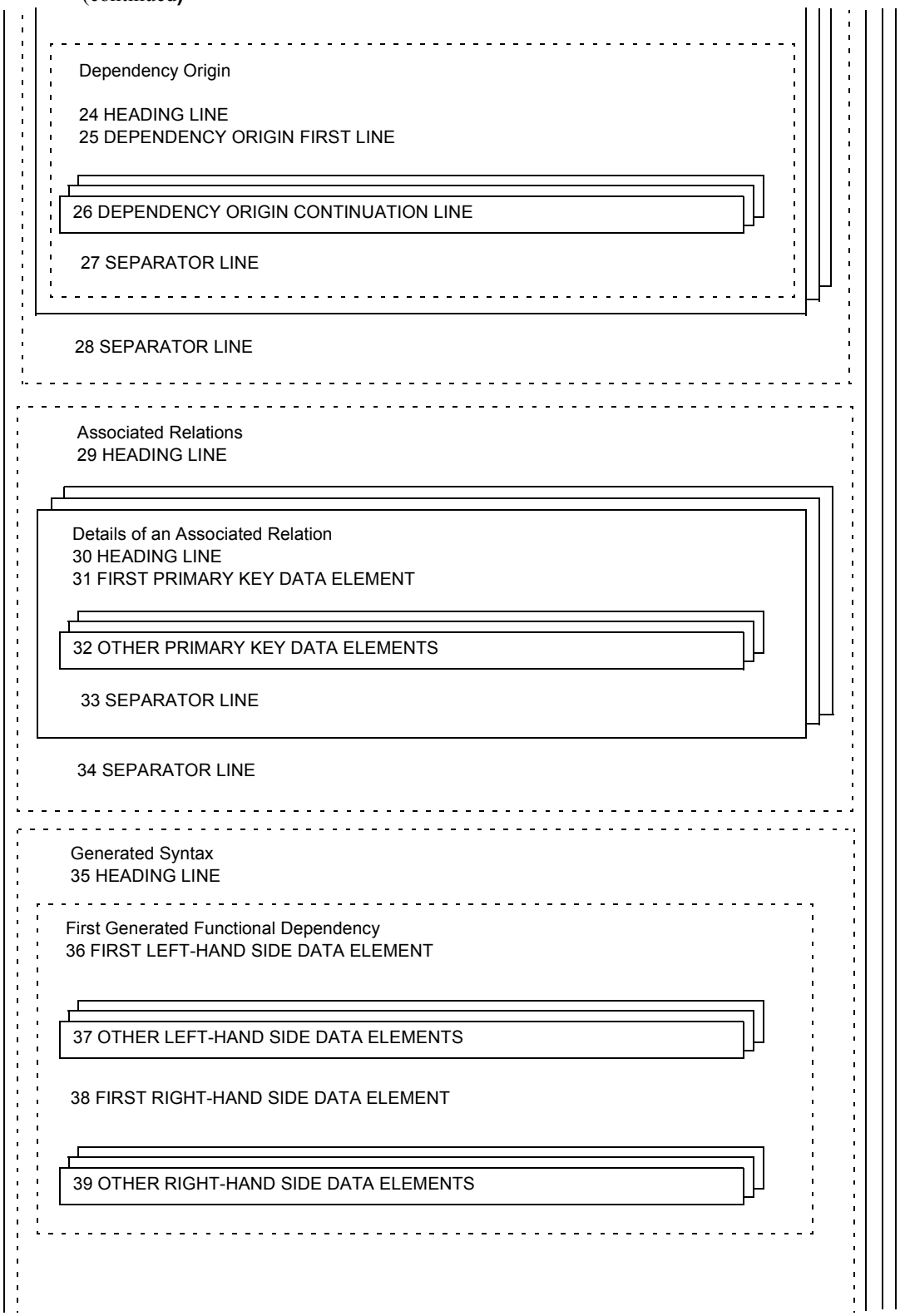
The associated relation division describes the other relations in the workbench design area which are directly associated with the relation being output.

The generated syntax division outputs the data elements of the relation being output in a form that can assist users in storing the relation as a data-view member of the modeling dictionary. (See the *ASG-DesignManager User's Guide*.)

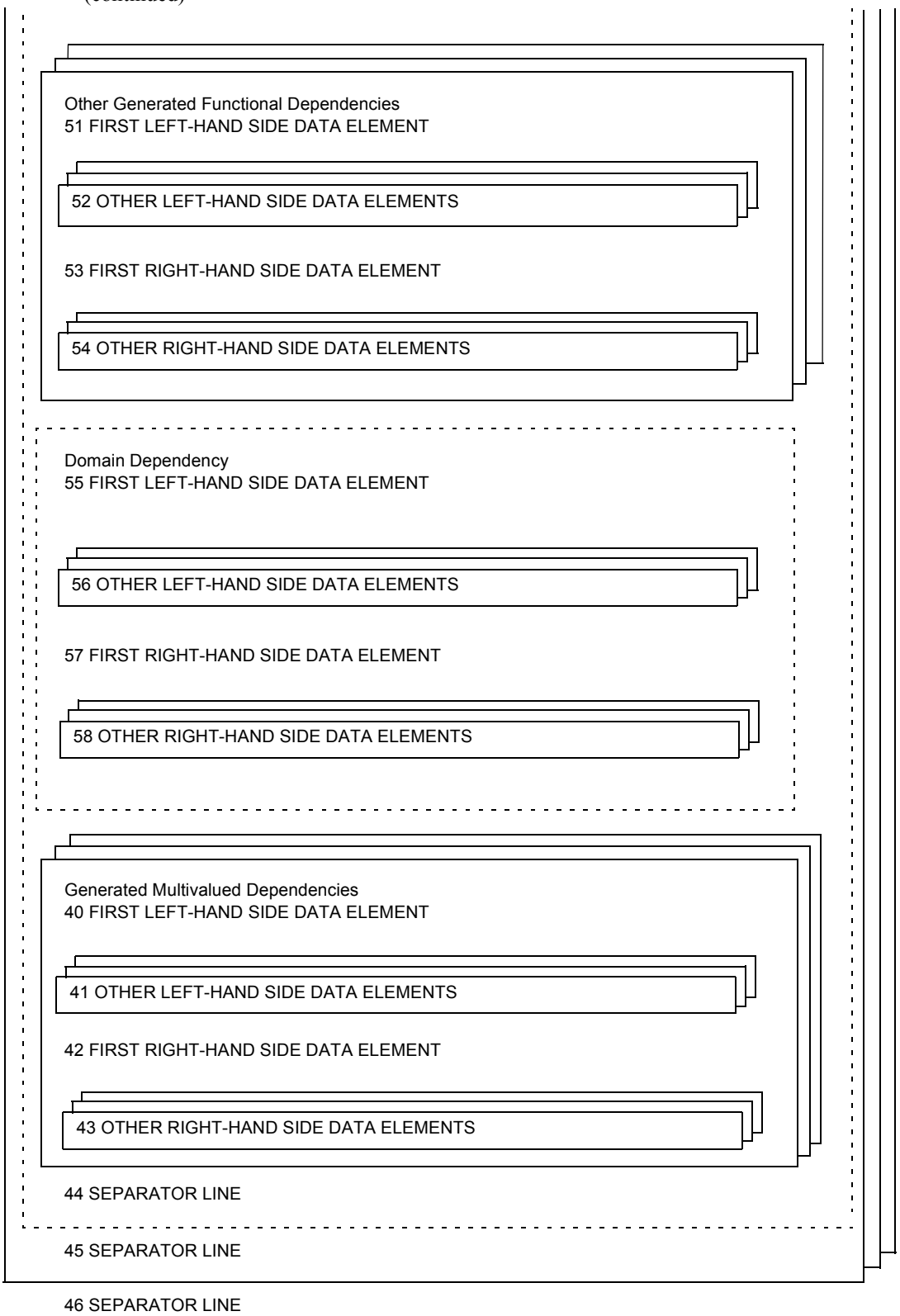
Figure 3. Logical-Schema Report Structure



(continued)


Dependency Origin
24 HEADING LINE
25 DEPENDENCY ORIGIN FIRST LINE
26 DEPENDENCY ORIGIN CONTINUATION LINE
27 SEPARATOR LINE
28 SEPARATOR LINE
Associated Relations
29 HEADING LINE
Details of an Associated Relation
30 HEADING LINE
31 FIRST PRIMARY KEY DATA ELEMENT
32 OTHER PRIMARY KEY DATA ELEMENTS
33 SEPARATOR LINE
34 SEPARATOR LINE
Generated Syntax
35 HEADING LINE
First Generated Functional Dependency
36 FIRST LEFT-HAND SIDE DATA ELEMENT
37 OTHER LEFT-HAND SIDE DATA ELEMENTS
38 FIRST RIGHT-HAND SIDE DATA ELEMENT
39 OTHER RIGHT-HAND SIDE DATA ELEMENTS

(continued)


Other Generated Functional Dependencies
51 FIRST LEFT-HAND SIDE DATA ELEMENT
52 OTHER LEFT-HAND SIDE DATA ELEMENTS
53 FIRST RIGHT-HAND SIDE DATA ELEMENT
54 OTHER RIGHT-HAND SIDE DATA ELEMENTS
Domain Dependency
55 FIRST LEFT-HAND SIDE DATA ELEMENT
56 OTHER LEFT-HAND SIDE DATA ELEMENTS
57 FIRST RIGHT-HAND SIDE DATA ELEMENT
58 OTHER RIGHT-HAND SIDE DATA ELEMENTS
Generated Multivalued Dependencies
40 FIRST LEFT-HAND SIDE DATA ELEMENT
41 OTHER LEFT-HAND SIDE DATA ELEMENTS
42 FIRST RIGHT-HAND SIDE DATA ELEMENT
43 OTHER RIGHT-HAND SIDE DATA ELEMENTS
44 SEPARATOR LINE
45 SEPARATOR LINE
46 SEPARATOR LINE

Logical-Schema Report: Parameter Numbers Defined

This table shows the parameter numbers defined for each format line for the Logical-Schema Report output category, arranged by the order of processing:

Format Line Number	Parameter Number	Parameter Type	Parameter Description
01	Heading line for the Logical-Schema Report.		
	21	integer	Number of relations present in the workbench design area.
02	Heading line for an individual relation report.		
	41	string	Name of a relation in the workbench design area.
	42	integer	Number of the relation.
	43	integer	Number of the data elements in the relation.
	44	integer	Number of associated relations.
	45	integer	Number of associated dependencies.
07	Heading line for details of the data elements forming the primary key of the relation.		
	61	integer	Number of data elements forming the primary key of the relation.
08	The first data element of the primary key of the relation.		
	81	string	Name of the first data element of the primary key of the relation.
	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)
09	The remaining data elements of the primary key of the relation.		
	81	string	Name of the data element other than the first of the primary key of the relation.

Format Line Number	Parameter Number	Parameter Type	Parameter Description
09 (continued)	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)

10 A separator line which can be used to separate details of the data elements of the primary key from the details of the non-key data elements in the relation.

No parameters

11 Heading line for details of the non-key data elements of the relation.

61	string	Number of non-key data elements in the relation.

12 The first non-key data element of the relation.

81	string	Name of the first non-key data element of the relation.
82	string	EXTRACT 1 DATA-ELEMENTS (P81)
83	string	EXTRACT 2 DATA-ELEMENTS (P81)
84	string	EXTRACT 3 DATA-ELEMENTS (P81)

13 The remaining non-key data elements of the relation.

81	string	Name of a non-key data element of the relation other than the first.
82	string	EXTRACT 1 DATA-ELEMENTS (P81)
83	string	EXTRACT 2 DATA-ELEMENTS (P81)
84	string	EXTRACT 3 DATA-ELEMENTS (P81)

Format Line Number	Parameter Number	Parameter Type	Parameter Description
14	A separator line which can be used to separate the details of the data elements in the relation from the details of the dependencies associated with the relation.		
	No parameters		
15	A heading line for details of the dependencies associated with the relation.		
	No parameters		
16	Heading line for a functional dependency associated with the relation.		
	81	integer	Number of data elements on the left-hand side of the dependency.
17	The first left-hand side and right-hand side data elements of the functional dependency associated with the relation.		
	101	string	Name of the first data element on the left-hand side of the dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	105	integer	Number of dependency in the workbench design area (absolute dependency number).
	111	string	Name of the data element on the right-hand side of the dependency.
	112	string	EXTRACT 1 DATA-ELEMENTS (P111)
	113	string	EXTRACT 2 DATA-ELEMENTS (P111)
	114	string	EXTRACT 3 DATA-ELEMENTS (P111)

Format Line Number	Parameter Number	Parameter Type	Parameter Description
18	The remaining left-hand side data elements of the functional dependency associated with the relation.		
	101	string	Name of a data element other than the first on the left-side of the dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	105	integer	Number of the dependency in the workbench design area (absolute dependency number).
19	A separator line which can be used to separate the details of a functional dependency from the details of the origin of the dependency.		
	No parameters		
20	Heading line for a multivalued dependency associated with the relation.		
	81	integer	Number of data elements on the left-hand side of the dependency.
	82	integer	Number of data elements on the right-hand side of the dependency.
21	The first left-hand side and right-hand side data elements of a multivalued dependency associated with the relation.		
	101	string	Name of the first data element on the left-hand side of the dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	105	integer	Number of the dependency in the workbench design area (absolute dependency number).

Format Line Number	Parameter Number	Parameter Type	Parameter Description
21 (continued)	111	string	Name of the data element on the right-hand side of the dependency.
	112	string	EXTRACT 1 DATA-ELEMENTS (P111)
	113	string	EXTRACT 2 DATA-ELEMENTS (P111)
	114	string	EXTRACT 3 DATA-ELEMENTS (P111)
22	The remaining left-hand side and right-hand side data elements of a multivalued dependency associated with the relation.		
	101	string	Name of the first data element on the left-hand side of the dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	105	integer	Number of the dependency in the workbench design area (absolute dependency number).
	111	string	Name of the data element other than the first on the right-hand side of the multivalued dependency.
	112	string	EXTRACT 1 DATA-ELEMENTS (P111)
	113	string	EXTRACT 2 DATA-ELEMENTS (P111)
	114	string	EXTRACT 3 DATA-ELEMENTS (P111)
23	A separator line which can be used to separate the details of a multivalued dependency from the details of the origin of that dependency.		
	No parameters		

Format Line Number	Parameter Number	Parameter Type	Parameter Description
47	Heading line for a domain dependency associated with the relation.		
	81	integer	Number of data elements on the left-hand side of the dependency.
	82	integer	Number of data elements on the right-hand side of the dependency.
48	The first left-hand side and right-hand side data elements of a domain dependency associated with the relation.		
	101	string	Name of the first data element on the left-hand side of the dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	105	integer	Number of the dependency in the workbench design area (absolute dependency number).
	111	string	Name of the first data element on the right-hand side of the dependency.
	112	string	EXTRACT 1 DATA-ELEMENTS (P111)
	113	string	EXTRACT 2 DATA-ELEMENTS (P111)
	114	string	EXTRACT 1 DATA-ELEMENTS (P111)
49	The remaining left-hand side and right-hand side data elements of a domain dependency associated with the relation.		
	101	string	Name of a data element other than the first on the left-hand side of the domain dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)

Format Line Number	Parameter Number	Parameter Type	Parameter Description
49 (continued)	105	integer	Number of the dependency in the workbench design area (absolute dependency number).
	111	string	Name of a data element other than the first on the right-hand side of the domain dependency.
	112	string	EXTRACT 1 DATA-ELEMENTS (P111)
	113	string	EXTRACT 2 DATA-ELEMENTS (P111)
	114	string	EXTRACT 3 DATA-ELEMENTS (P111)
50	A separator line which can be used to separate the details of a domain dependency from the details of the origin of that dependency.		
	No parameters		
24	Heading line for the details of the origin of a dependency associated with the relation.		
	81	integer	Number of origins of the dependency.
25	Details of the first data-view containing the dependency or the fact that the dependency is implied.		
	101	string	Name of the first data-view containing the dependency, or the string `IMPLIED`, as appropriate.
	102	string	EXTRACT 1 DATA-VIEWS (P101), if applicable.
	103	string	EXTRACT 2 DATA-VIEWS (P101), if applicable.
	104	string	EXTRACT 3 DATA-VIEWS (P101), if applicable.
	105	string	Number of the dependency in the data-view (relative dependency number) or 0, as appropriate.
	106	string	Data-view type (USERVIEW or ENTITY).

Format Line Number	Parameter Number	Parameter Type	Parameter Description
26	Details of other data-views containing the dependency, if applicable.		
	101	string	Name of a data-view other than the first containing the dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	105	integer	Number of the dependency in the data-view (relative dependency number).
	106	string	Data-view type (USERVIEW or ENTITY).
27	A separator line which can be used to separate the details of one associated dependency with the relation from another associated dependency.		
	No parameters		
28	A separator line which can be used to separate the details of the associated dependencies from the details of the associated relations.		
	No parameters		
29	A heading line for the details of the relations associated with the relation being reported.		
	No parameters		
30	A heading line for details of an associated relation.		
	No parameters		
	81	integer	Number of data elements in the associated relation.
31	Details of the associated relation and first data element of the primary key.		
	101	string	Name of the associated relation.
	102	integer	Number of the associated relation.

Format Line Number	Parameter Number	Parameter Type	Parameter Description
31 (continued)	103	string	Type of association, one of the strings `one` or `many`, as appropriate.
	111	string	Name of the first data element in the primary key of the associated relation.
	112	string	EXTRACT 1 DATA-ELEMENTS (P111)
	113	string	EXTRACT 2 DATA-ELEMENTS (P111)
	114	string	EXTRACT 3 DATA-ELEMENTS (P111)

32 Data elements other than the first in the primary key of the associated relation.

	111	string	Name of a data element other than the first in the primary key of the associated relation.
	112	string	EXTRACT 1 DATA-ELEMENTS (P111)
	113	string	EXTRACT 2 DATA-ELEMENTS (P111)
	114	string	EXTRACT 3 DATA-ELEMENTS (P111)

33 A separator line which can be used to separate the details of each associated relation.

No parameters

34 A separator line which can be used to separate the details of the association relations from following parts of the report.

No parameters

35 Heading line for generated syntax.

No parameters

36 The first data element on the left-hand side of the first functional dependency generated to represent entirely or in part a generated relation.

	81	string	Name of the first left-hand side data element.

Format Line Number	Parameter Number	Parameter Type	Parameter Description
36 (continued)	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)
37	The remaining data elements on the left-hand side of the first functional dependency generated to represent entirely or in part a generated relation.		
	81	string	Name of a data element other than the first on the left-hand side.
	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)
38	The first data element on the right-hand side of the first functional dependency generated to represent entirely or in part a generated relation.		
	81	string	Name of the first right-hand side data element.
	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)
51	The first data element on the left-hand side of the subsequent functional dependency generated to represent entirely or in part a generated relation.		
	81	string	Name of the first left-hand side data element.
	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)

Format Line Number	Parameter Number	Parameter Type	Parameter Description
52	The remaining data elements on the left-hand side of the subsequent functional dependency generated to represent entirely or in part a generated relation.		
	81	string	Name of a data element other than the first on the left-hand side.
	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)
53	The first data element on the right-hand side of the subsequent functional dependency generated to represent entirely or in part a generated relation.		
	81	string	Name of the first right-hand side data element.
	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)
55	The first data element on the left-hand side of the domain dependency generated to represent entirely or in part a generated relation.		
	81	string	Name of the first left-hand side data element.
	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)
56	The remaining data elements on the left-hand side of the domain dependency generated to represent entirely or in part a generated relation.		
	81	string	Name of the first left-hand side data element.

Format Line Number	Parameter Number	Parameter Type	Parameter Description
56 (continued)	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)
57	The first data element on the right-hand side of the domain dependency generated to represent entirely or in part a generated relation.		
	81	string	Name of the first right-hand side data element.
	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)
58	The remaining data elements on the right-hand side of the domain dependency generated to represent entirely or in part a generated relation.		
	81	string	Name of a right-hand side data element other than the first.
	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)
40	The first data element on the left-hand side of a multivalued dependency generated to represent entirely or in part a generated relation.		
	81	string	Name of the first left-hand side data element.
	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)

Format Line Number	Parameter Number	Parameter Type	Parameter Description
41	The remaining data elements on the left-hand side of a multivalued dependency generated to represent entirely or in part a generated relation.		
	81	string	Name of a left-hand side data element other than the first.
	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)
42	The first data element on the right-hand side of a multivalued dependency generated to represent entirely or in part a generated relation.		
	81	string	Name of the first right-hand side data element.
	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)
43	The remaining data elements on the right-hand side of a multivalued dependency generated to represent entirely or in part a generated relation.		
	81	string	Name of a right-hand side data element other than the first.
	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)
44	A separator line which can be used to mark the end of the generated syntax.		
	No parameters		
45	A separator line which can be used to separate the report of each individual relation.		
	No parameters		
46	The terminating line of the logical schema report.		
	No parameters		

Logical-Schema Report: Variable Parameter Availability

This table shows the variable parameter availability by format line for the Logical-Schema Report output category:

Format Line	Available Parameter Numbers				
01	Global (1-10)	FM-01 defined (21)			
02	..	..	FM-02 defined (41-45)		
07	..	..	..	FM-07 defined (61)	
08	..	..	..	..	FM-08 defined (81-81)
09	..	..	..	..	FM-09 defined (81-84)
10	..	..	..	..	FM-10 defined (none)
11	..	..	..	FM-11 defined (61)	
12	..	..	..	..	FM-12 defined (81-84)
13	..	..	..	..	FM-13 defined (81-84)
14	..	..	..	..	FM-14 defined (none)
15	..	..	..	FM-15 defined (none)	
16	..	..	..	..	FM-16 defined (81)

Format Line	Available Parameter Numbers					
17	Global (1-10)	FM-01 defined (21)	FM-02 defined (41-45)	FM-15 defined (none)	FM-16 defined (81)	FM-17 defined (101-105, 111-114)
18	..	..	..	..	..	FM-18 defined (101-105)
19	..	..	..	..	..	FM-19 defined (none)
20	..	..	..	..	FM-20 defined (81-82)	
21	..	..	..	..	..	FM-21 defined (101-105, 111-114)
22	..	..	..	..	..	FM-22 defined (101-105, 111-114)
23	..	..	..	..	..	FM-23 defined (none)
47	..	..	..	..	..	FM-47 defined (81-82)
48	..	..	..	..	..	FM-48 defined (101-105, 111-114)
49	..	..	..	..	..	FM-49 defined (101-105, 111-114)
50	..	..	..	..	..	FM-50 defined (none)
24	..	..	..	..	FM-24 defined (81)	
25	..	..	..	..	..	FM-25 defined (101-106)

Format Line	Available Parameter Numbers					
26	Global (1-10)	FM-01 defined (21)	FM-02 defined (41-45)	FM-15 defined (none)	FM-24 defined (81)	FM-26 defined (101-106)
27	..	..	..	..	..	FM-27 defined (none)
28	..	..	..	..	FM-28 defined (none)	
29	..	..	..	FM-29 defined (none)		
30	..	..	..	..	FM-30 defined (81)	
31	..	..	..	..	..	FM-31 defined (101-103, 111-114)
32	..	..	..	..	..	FM-32 defined (111-114)
33	..	..	..	..	..	FM-33 defined (none)
34	..	..	..	..	..	FM-34 defined (none)
35	..	..	..	FM-35 defined (none)		
36	..	..	..	..	FM-36 defined (81-84)	
37	..	..	..	..	FM-37 defined (81-84)	
38	..	..	..	..	FM-38 defined (81-84)	
39	..	..	..	..	FM-39 defined (81-84)	

Format Line	Available Parameter Numbers				
51	Global (1-10)	FM-01 defined (21)	FM-02 defined (41-45)	FM-35 defined (none)	FM-51 defined (81-84)
52	..	..	..	..	FM-52 defined (81-84)
53	..	..	..	..	FM-53 defined (81-84)
54	..	..	..	..	FM-54 defined (81-84)
55	..	..	..	..	FM-55 defined (81-84)
56	..	..	..	..	FM-56 defined (81-84)
57	..	..	..	..	FM-57 defined (81-84)
58	..	..	..	..	FM-58 defined (81-84)
40	..	..	..	..	FM-40 defined (81-84)
41	..	..	..	..	FM-41 defined (81-84)
42	..	..	..	..	FM-42 defined (81-84)
43	..	..	..	..	FM-43 defined (81-84)

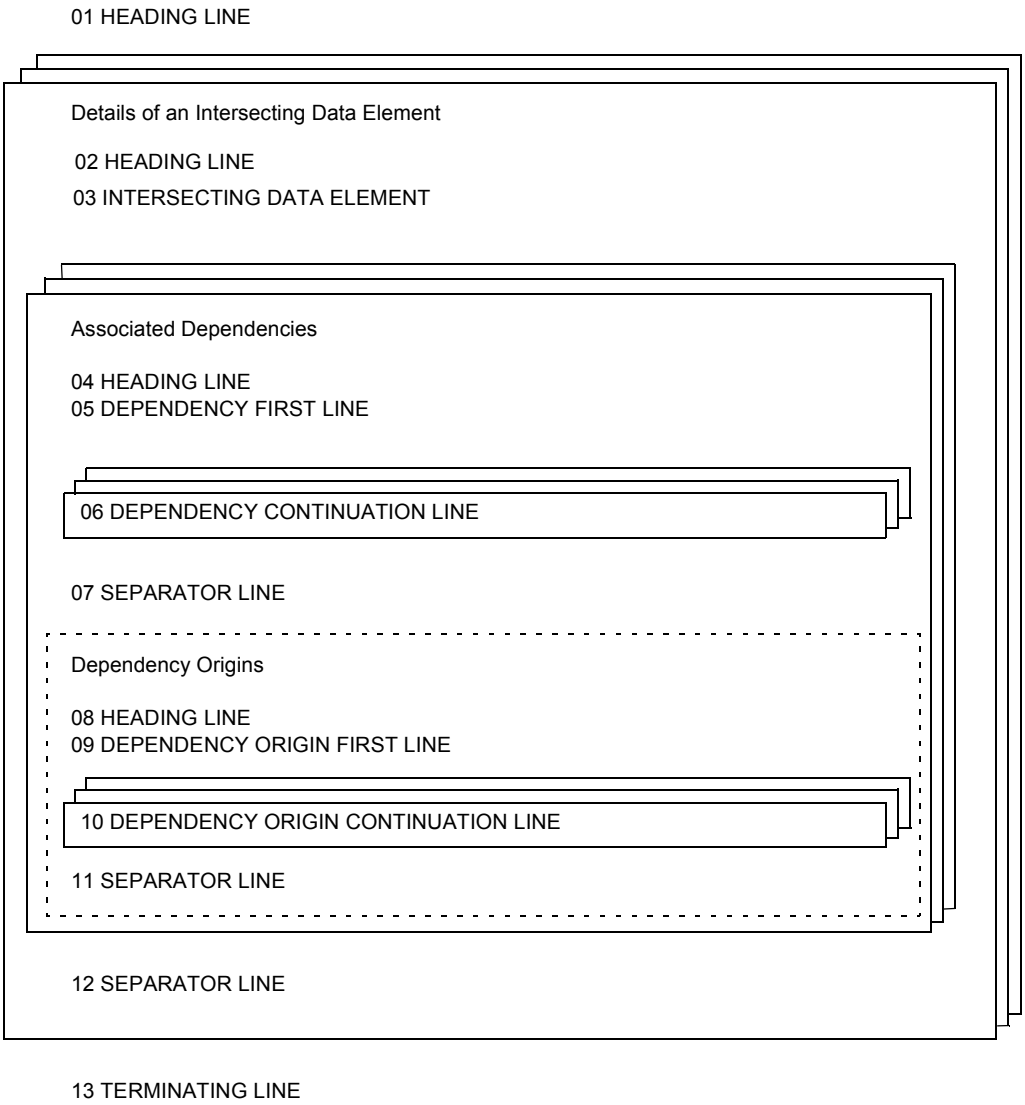
Format Line	Available Parameter Numbers				
44	Global (1-10)	FM-01 defined (21)	FM-02 defined (41-45)	FM-35 defined (none)	FM-44 defined (none)
45	..	..	..	..	FM-45 defined (none)
46	..	..	..	..	FM-46 defined (none)

6 Output Category: Intersecting-Data-Element Report

Format members of the output category Intersecting-Data-Element Report are used to format the output from the command REPORT INTERSECTING-DATA-ELEMENTS ....USING FORMAT format-name. The structure of this output category is shown in Figure 4 on page 68. The parameter numbers defined for each format line are shown in "Intersecting-Data-Element Report: Parameter Numbers Defined" on page 69; the extended availability of parameter numbers is shown in "Intersecting-Data-Element Report: Variable Parameter Availability" on page 72.

In the output structure shown in Figure 4 on page 68, associated dependencies are those for which the intersecting data element is the right-hand side data element. The output structure for these dependencies is arranged as a basic list for left-hand side data elements only, not the double list usually used for dependencies. The dependency origin division of the output gives the origin of each dependency in which the intersecting data element is the right-hand side. Dependencies can originate from one or more data-views, or can be implied.

Figure 4. Intersecting-Data-Element Report Structure



Intersecting-Data-Element Report: Parameter Numbers Defined

This table lists the parameter numbers defined for each format line for the Intersecting-Data-Element Report, arranged by the order of processing:

Format Line Number	Parameter Number	Parameter Type	Parameter Description
01	Heading line for the intersecting data element report.		
	No parameters		
02	Heading line for details of an intersecting data element.		
	No parameters		
03	Details of the intersecting data element.		
	21	string	Name of the intersecting data element.
	22	string	EXTRACT 1 DATA-ELEMENTS (P21)
	23	string	EXTRACT 2 DATA-ELEMENTS (P21)
	24	string	EXTRACT 3 DATA-ELEMENTS (P21)
04	Heading line for details of a dependency in which the data element is intersecting.		
	41	integer	Number of left-hand side data elements in the dependency.
05	The first left-hand side data element of the dependency.		
	61	string	Name of the first data element on the left-hand side of the dependency.
	62	string	EXTRACT 1 DATA-ELEMENTS (P61)
	63	string	EXTRACT 2 DATA-ELEMENTS (P61)
	64	string	EXTRACT 3 DATA-ELEMENTS (P61)
	65	integer	Number of the dependency in the workbench design area (absolute dependency number).

Format Line Number	Parameter Number	Parameter Type	Parameter Description
06	The remaining left-hand side data elements of the dependency.		
	61	string	Name of a data element other than the first on the left-hand side of the dependency.
	62	string	EXTRACT 1 DATA-ELEMENTS (P61)
	63	string	EXTRACT 2 DATA-ELEMENTS (P61)
	64	string	EXTRACT 3 DATA-ELEMENTS (P61)
	65	integer	Number of the dependency in the workbench design area (absolute dependency number).
07	A separator line which can be used to separate the details of the left-hand side data elements of the dependency from the details of the origin of that dependency.		
	No parameters		
08	A heading line for details for the origin of the dependency.		
	41	integer	Number of origins of the dependency.
09	First line of details of the origin of the dependency		
	61	string	Name of the first data-view containing the dependency or the string `IMPLIED`, as appropriate.
	62	string	EXTRACT 1 DATA-VIEWS (P61), if applicable.
	63	string	EXTRACT 2 DATA-VIEWS (P61), if applicable.
	64	string	EXTRACT 3 DATA-VIEWS (P61), if applicable.
	65	integer	Number of the dependency in the data-view (relative dependency number) or zero (0), as appropriate.
	66	string	Data-view type (USERVIEW or ENTITY).

Format Line Number	Parameter Number	Parameter Type	Parameter Description
10 Continuation of details of the origin of the dependency.			
	61	string	Name of a data-view other than the first containing the dependency.
	62	string	EXTRACT 1 DATA-VIEWS (P61)
	63	string	EXTRACT 2 DATA-VIEWS (P61)
	64	string	EXTRACT 3 DATA-VIEWS (P61)
	65	integer	Number of the dependency in the data-view (relative dependency number).
	66	string	Data-view type (USERVIEW or ENTITY).
11 A separator line which can be used to separate details of one dependency in which the data element is intersecting from other such dependencies.			
	No parameters		
12 A separator line which can be used to separate information relating to individual intersecting data elements.			
	No parameters		
13 The terminating line of the intersecting data element type.			
	No parameters		

Intersecting-Data-Element Report: Variable Parameter Availability

This table shows the variable parameter availability by format line for the Intersecting-Data-Element Report output category:

Format Line	Available Parameter Numbers			
01	Global (1-10)	FM-01 defined (none)		
02	..	FM-02 defined (none)		
03	..	FM-03 defined (21-24)		
04	..	..	FM-04 defined (41)	
05	..	..	..	FM-05 defined (61-65)
06	..	..	..	FM-06 defined (61-65)
07	..	..	..	FM-07 defined (none)
08	..	..	FM-08 defined (41)	
09	..	..	..	FM-09 defined (61-66)
10	..	..	..	FM-10 defined (61-66)

Format Line	Available Parameter Numbers			
11	Global (1-10)	FM-01 defined (none)	FM-08 defined (41)	FM-11 defined (none)
12	..	..	FM-12 defined (none)	
13	..	FM-13 defined (none)		

7 Output Category: Design Audit

FORMAT members of the DESIGN AUDIT output category are used to format the layout of the output from the command:

```
DESIGN [UNCONDITIONALLY] [WITH] AUDIT USING FORMAT format-name
```

The structure of the DESIGN AUDIT output category is shown in Figure 5 on page 75 through Figure 8 on page 80. The parameter numbers defined for each format line are shown in "Design Audit: Parameter Numbers Defined" on page 82; the extended availability of parameter numbers is shown in "Design Audit: Parameter Availability by Format Line" on page 105.

The dependency origin division of the output gives the origin of appropriate dependencies. Dependencies can originate from one or more data-views, or can be implied.

The detection and action taken in cases of extraneous data elements, redundant functional dependencies, and inconsistent multivalued dependencies is described in the DESIGN command specification in *ASG-DesignManager User's Guide*.

Figure 5. Design Audit Overall Structure

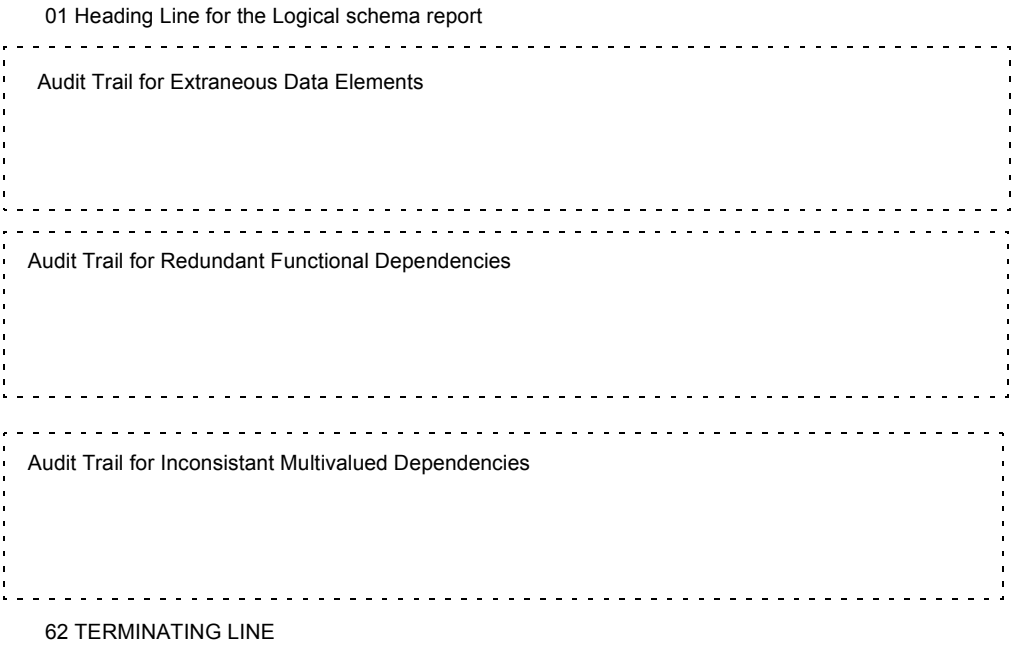
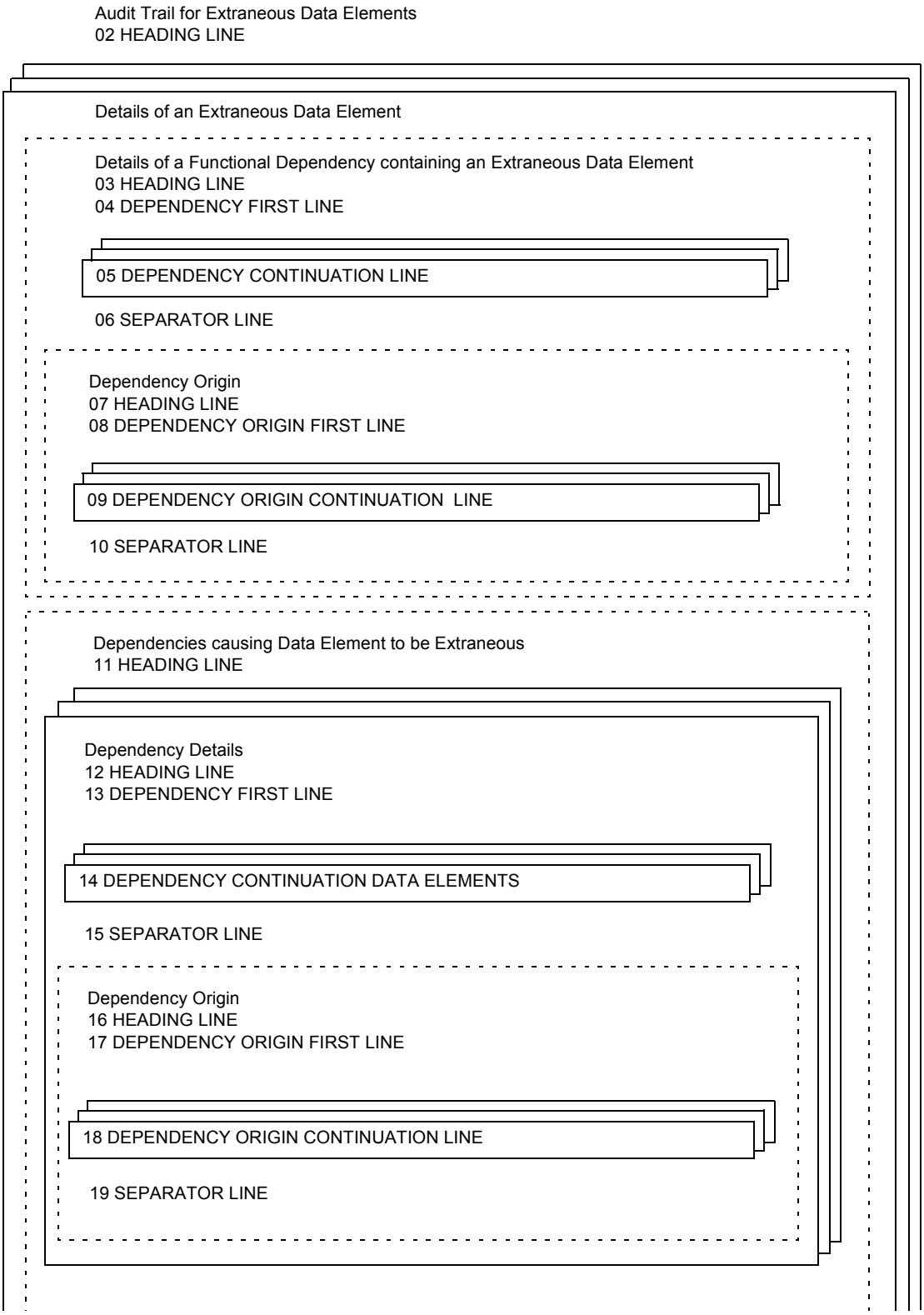


Figure 6. Design Audit Structure: Audit Trail for Extraneous Data Elements



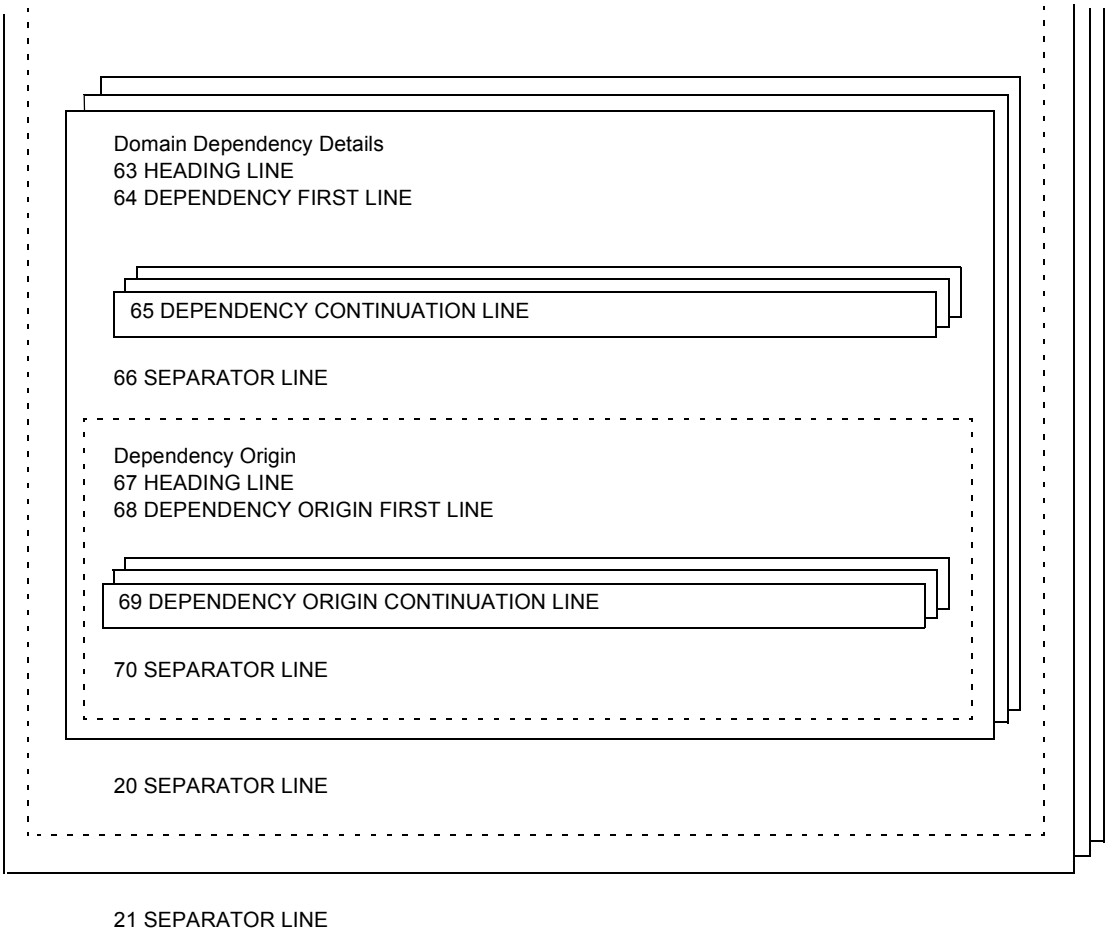
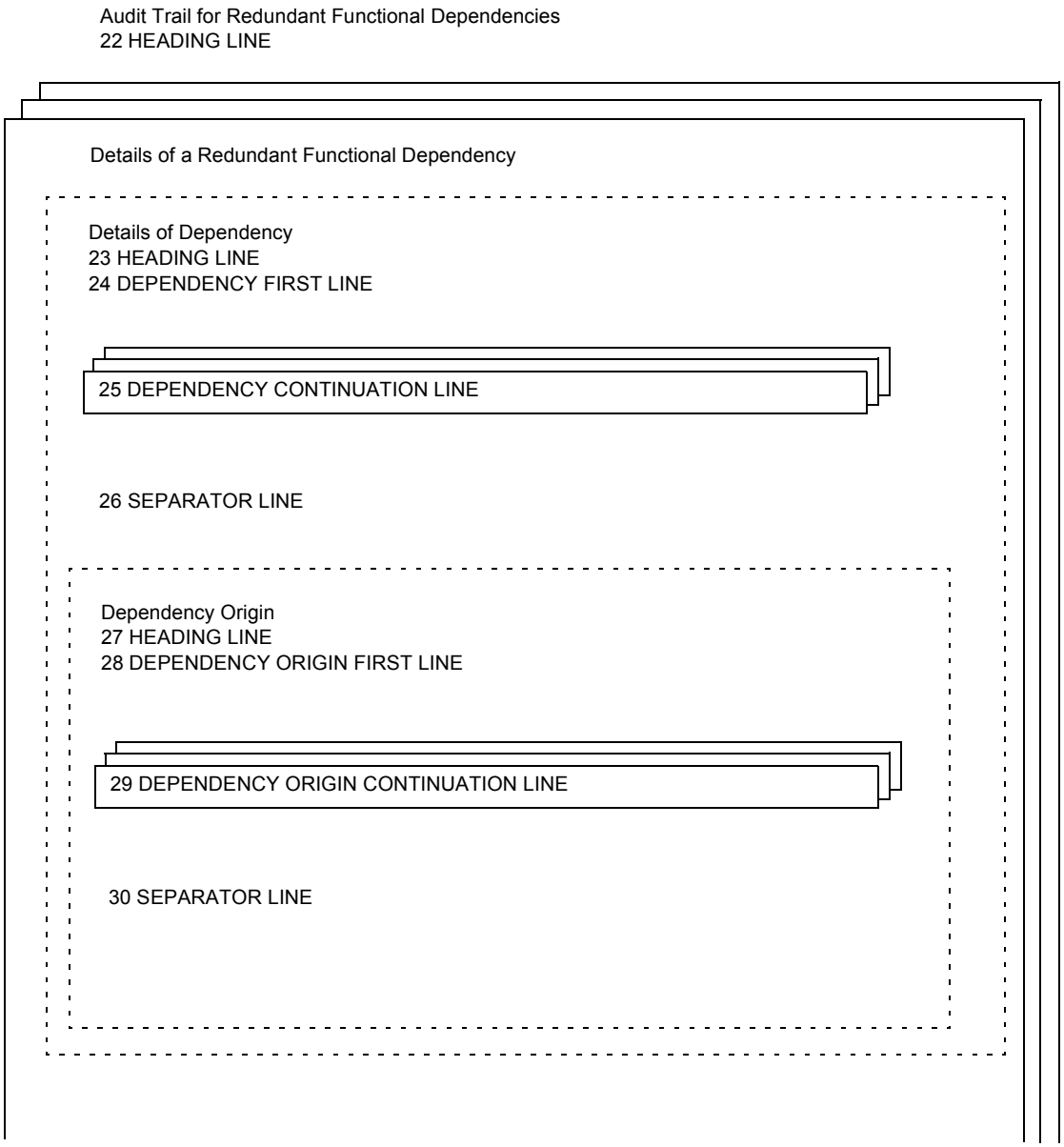

Domain Dependency Details
63 HEADING LINE
64 DEPENDENCY FIRST LINE
65 DEPENDENCY CONTINUATION LINE
66 SEPARATOR LINE
Dependency Origin
67 HEADING LINE
68 DEPENDENCY ORIGIN FIRST LINE
69 DEPENDENCY ORIGIN CONTINUATION LINE
70 SEPARATOR LINE
20 SEPARATOR LINE
21 SEPARATOR LINE

Figure 7. Design Audit Structure: Audit Trail for Inconsistent Multivalued Dependencies



(Continued)

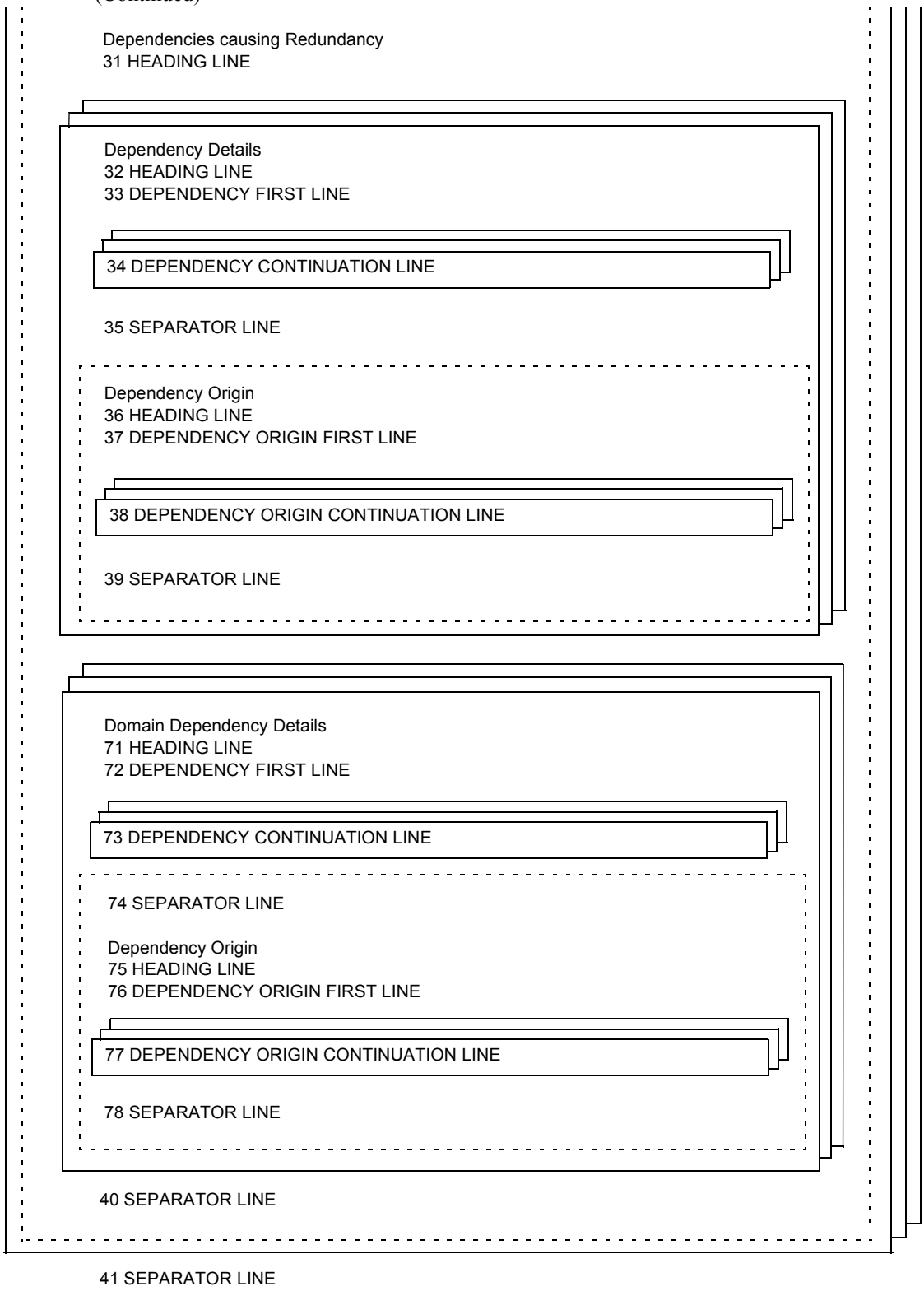
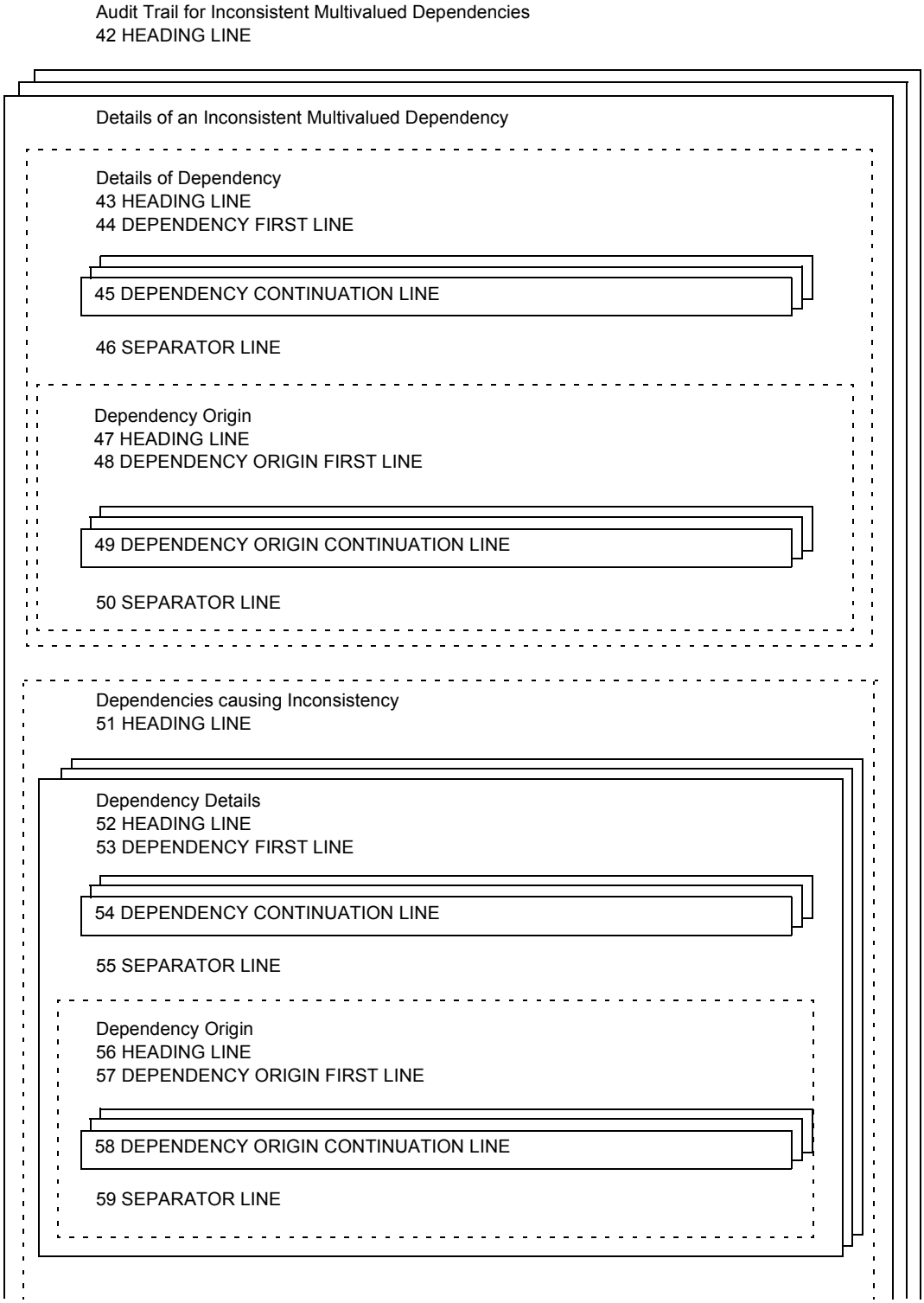
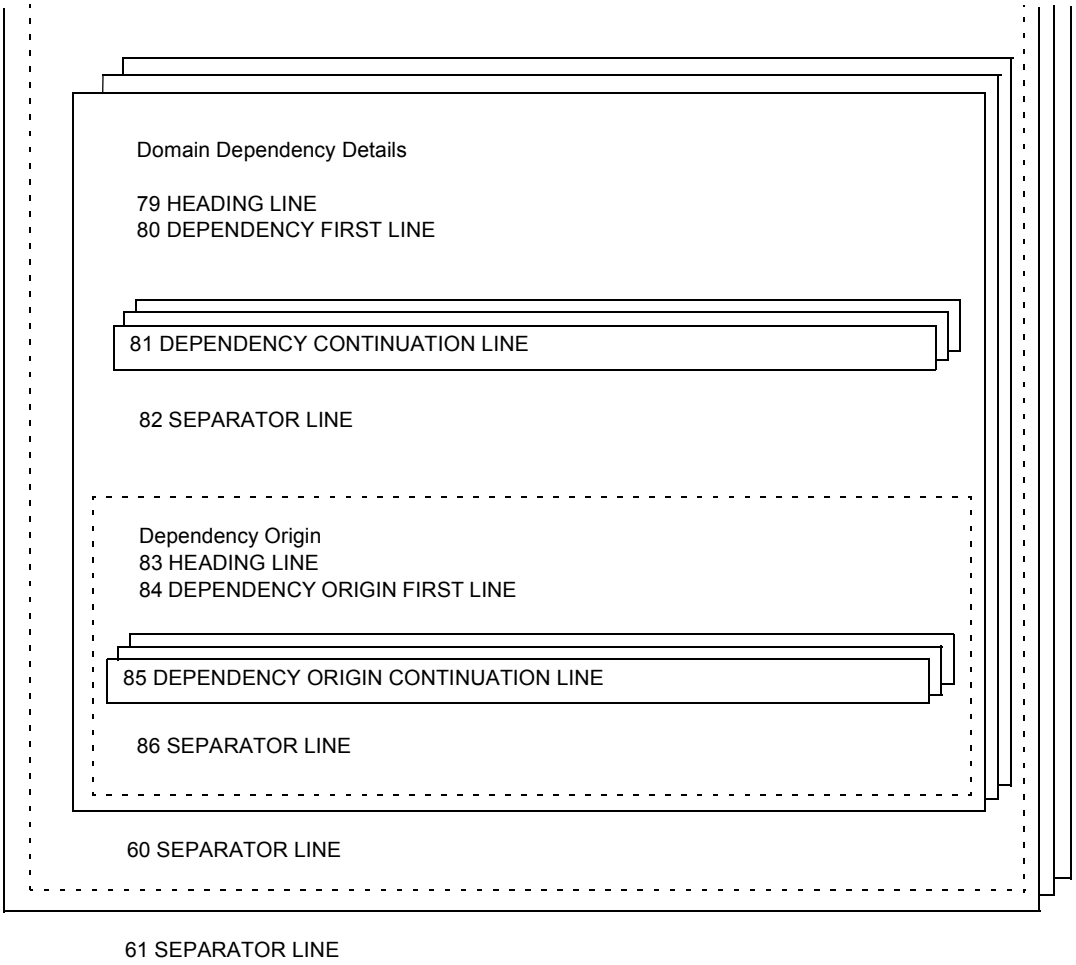

Dependencies causing Redundancy
31 HEADING LINE
Dependency Details
32 HEADING LINE
33 DEPENDENCY FIRST LINE
34 DEPENDENCY CONTINUATION LINE
35 SEPARATOR LINE
Dependency Origin
36 HEADING LINE
37 DEPENDENCY ORIGIN FIRST LINE
38 DEPENDENCY ORIGIN CONTINUATION LINE
39 SEPARATOR LINE
Domain Dependency Details
71 HEADING LINE
72 DEPENDENCY FIRST LINE
73 DEPENDENCY CONTINUATION LINE
74 SEPARATOR LINE
Dependency Origin
75 HEADING LINE
76 DEPENDENCY ORIGIN FIRST LINE
77 DEPENDENCY ORIGIN CONTINUATION LINE
78 SEPARATOR LINE
40 SEPARATOR LINE
41 SEPARATOR LINE

Figure 8. Design Audit Structure: Audit Trail for Inconsistent Multivalued Dependencies




Domain Dependency Details
79 HEADING LINE
80 DEPENDENCY FIRST LINE
81 DEPENDENCY CONTINUATION LINE
82 SEPARATOR LINE
Dependency Origin
83 HEADING LINE
84 DEPENDENCY ORIGIN FIRST LINE
85 DEPENDENCY ORIGIN CONTINUATION LINE
86 SEPARATOR LINE
60 SEPARATOR LINE
61 SEPARATOR LINE

Design Audit: Parameter Numbers Defined

This table shows the parameter numbers defined for each format line of the design audit output category, arranged by the order of processing:

Line Format Number	Parameter Number	Parameter Type	Parameter Description
01	Heading line for the design audit.		
	No parameters		
02	Heading line for audit trail for extraneous data elements.		
	No parameters		
03	Heading line for details of a dependency containing an extraneous data element.		
	21	integer	Number of data elements on the left-hand side of the dependency.
04	The first left-hand side and right-hand side data elements of the dependency containing an extraneous data element.		
	41	string	Name of the first data element on the left-hand side of the dependency.
	42	string	EXTRACT 1 DATA-ELEMENTS (P41)
	43	string	EXTRACT 2 DATA-ELEMENTS (P41)
	44	string	EXTRACT 3 DATA-ELEMENTS (P41)
	45	string	Extraneous data element marker the value of which may be blank or `*`.
	46	integer	Number of the dependency in the workbench design area (absolute dependency number).
	51	string	Name of the data element on the right-hand side of the dependency.
	52	string	EXTRACT 1 DATA-ELEMENTS (P51)
	53	string	EXTRACT 2 DATA-ELEMENTS (P51)
	54	string	EXTRACT 3 DATA-ELEMENTS (P51)

Line Format Number	Parameter Number	Parameter Type	Parameter Description
05	The remaining left-hand side data elements of a dependency containing an extraneous data element.		
	41	string	Name of the first data element on the left-hand side of the dependency.
	42	string	EXTRACT 1 DATA-ELEMENTS (P41)
	43	string	EXTRACT 2 DATA-ELEMENTS (P41)
	44	string	EXTRACT 3 DATA-ELEMENTS (P41)
	45	string	Extraneous data element marker the value of which may be blank or `*`.
	46	integer	Number of the dependency in the workbench design area (absolute dependency number).
06	A separator line which can be used to separate the details of the dependency containing the extraneous data element from details of the origin of that dependency.		
	No parameters		
07	Heading line for details of the origin of the dependency containing the extraneous data element.		
	21	integer	Number of data-views containing the dependency.
08	Details of the first data-view containing the dependency containing the erroneous data element.		
	41	string	Name of the first data-view containing the dependency.
	42	string	EXTRACT 1 DATA-ELEMENTS (P41)
	43	string	EXTRACT 2 DATA-ELEMENTS (P41)
	44	string	EXTRACT 3 DATA-ELEMENTS (P41)
	45	string	Number of the dependency in the data-view (relative dependency number).
	46	string	Data-view type (USERVIEW or ENTITY).

Line Format Number	Parameter Number	Parameter Type	Parameter Description
09	Details of data-views other than the first containing the dependency containing the extraneous data element.		
	41	string	Name of a data element other than the first containing the extraneous data element.
	42	string	EXTRACT 1 DATA-ELEMENTS (P41)
	43	string	EXTRACT 2 DATA-ELEMENTS (P41)
	44	string	EXTRACT 3 DATA-ELEMENTS (P41)
	45	integer	Number of the dependency in the data-view (relative dependency number).
	46	string	Data-view type (USERVIEW or ENTITY).
10	A separator line which can be used to separate the userview information from the information concerning the dependencies causing the removal of the extraneous data element.		
	No parameters		
11	A heading line for details of the set of dependencies causing the data element to be extraneous.		
	No parameters		
12	A heading line for details of a dependency from the set of dependencies causing the data element to be extraneous.		
	21	integer	Number of data elements on the left-hand side of the dependency.
13	The first left-hand side and right-hand side data elements of the dependency from the set of dependencies causing the data element to be extraneous.		
	41	string	Name of the first data element on the left-hand side of the dependency.
	42	string	EXTRACT 1 DATA-ELEMENTS (P41)

Line Format Number	Parameter Number	Parameter Type	Parameter Description
13 (continued)	43	string	EXTRACT 2 DATA-ELEMENTS (P41)
	44	string	EXTRACT 3 DATA-ELEMENTS (P41)
	46	integer	Number of the dependency in the workbench design area (absolute dependency number).
	51	string	Name of the data element on the right-hand side of the dependency.
	52	string	EXTRACT 1 DATA-ELEMENTS (P51)
	53	string	EXTRACT 2 DATA-ELEMENTS (P51)
	54	string	EXTRACT 3 DATA-ELEMENTS (P51)

14 The remaining left-hand side data elements of the dependency from the set of dependencies causing the data element to be extraneous.

41	string	Name of a data element other than the first on the left-hand side of the dependency.
42	string	EXTRACT 1 DATA-ELEMENTS (P41)
43	string	EXTRACT 2 DATA-ELEMENTS (P41)
44	string	EXTRACT 3 DATA-ELEMENTS (P41)
46	integer	Number of the dependency in the workbench design area (absolute dependency number).

15 A separator line which can be used to separate the details of the dependency from the details of the origins of that dependency.

No parameters

16 A heading line for the details of the origin of the dependency.

21	integer	Number of origins of the dependency.

Line Format Number	Parameter Number	Parameter Type	Parameter Description
17	Details of the first data-view containing the dependency or the fact that the dependency is implied.		
	41	string	Name of the first data-view containing the dependency or the string `IMPLIED`, as appropriate.
	42	string	EXTRACT 1 DATA-VIEWS (P41), if applicable.
	43	string	EXTRACT 2 DATA-VIEWS (P41), if applicable.
	44	string	EXTRACT 3 DATA-VIEWS (P41), if applicable.
	45	integer	Number of the dependency in the data-view (relative number dependency) or zero (0), as appropriate.
	46	string	Data-view type (USERVIEW or ENTITY).
18	Details of data-views other than the first containing the dependency, if applicable.		
	41	string	Name of a data-view other the first containing the dependency.
	42	string	EXTRACT 1 DATA-VIEWS (P41)
	43	string	EXTRACT 2 DATA-VIEWS (P41)
	44	string	EXTRACT 3 DATA-VIEWS (P41)
	45	integer	Number of the dependency in the data-view (relative dependency number).
	46	string	Date-view type (USERVIEW or ENTITY).
19	A separator line which can be used to separate the data-view details for one dependency of the set of dependencies causing the data element to be extraneous, from the details of another dependency of the same set.		
	No parameters		

Line Format Number	Parameter Number	Parameter Type	Parameter Description
63	A heading for details of a domain dependency from the set of dependencies causing the data element to be extraneous.		
	21	integer	Number of data elements on the left-hand side of the domain dependency.
64	The first left-hand side and right-hand side data elements of the domain dependency from the set of dependencies causing the data element to be extraneous.		
	41	string	Name of the first data element on the left-hand side of the dependency.
	42	string	EXTRACT 1 DATA-ELEMENTS (P41)
	43	string	EXTRACT 2 DATA-ELEMENTS (P41)
	44	string	EXTRACT 3 DATA-ELEMENTS (P41)
	46	integer	Number of the dependency in the workbench design area (absolute dependency number).
	51	string	Name of the first data element on the right-hand side of the dependency.
	52	string	EXTRACT 1 DATA-ELEMENTS (P51)
	53	string	EXTRACT 2 DATA-ELEMENTS (P51)
	54	string	EXTRACT 3 DATA-ELEMENTS (P51)
65	The remaining left-hand side data elements of the domain dependency from the set of dependencies causing the data element to be extraneous.		
	41	string	Name of a data element, other than the first, on the left-hand side of the dependency.
	42	string	EXTRACT 1 DATA-ELEMENTS (P41)
	43	string	EXTRACT 2 DATA-ELEMENTS (P41)
	44	string	EXTRACT 3 DATA-ELEMENTS (P41)

Line Format Number	Parameter Number	Parameter Type	Parameter Description
65 (continued)	46	integer	Number of the dependency in the workbench design area (absolute dependency number).
	51	string	Name of the data element on the right-hand side of the dependency.
	52	string	EXTRACT 1 DATA-ELEMENTS (P51)
	53	string	EXTRACT 2 DATA-ELEMENTS (P51)
	54	string	EXTRACT 3 DATA-ELEMENTS (P51)

66 A separator line which can be used to separate the details of the domain dependency from the details of the origins of that dependency.

No parameters

67 A heading line for details of the origin of the domain dependency.

21	integer	Number of origins of the dependency.

68 Details of the first data-view containing the domain dependency.

41	string	Name of the first data-view containing the domain dependency.
42	string	EXTRACT 1 DATA-ELEMENTS (P41), if applicable.
43	string	EXTRACT 2 DATA-ELEMENTS (P41), if applicable.
44	string	EXTRACT 3 DATA-ELEMENTS (P41), if applicable.
45	integer	Number of the dependency in the data-view (relative dependency number).
46	string	Data-view type (USERVIEW or ENTITY).

Line Format Number	Parameter Number	Parameter Type	Parameter Description
69	Details of data-views other than the first containing the domain dependency, if applicable.		
	41	string	Name of a data-view other than the first containing the domain dependency.
	42	string	EXTRACT 1 DATA-ELEMENTS (P41)
	43	string	EXTRACT 2 DATA-ELEMENTS (P41)
	44	string	EXTRACT 3 DATA-ELEMENTS (P41)
	45	integer	Number of the dependency in the data-view (relative dependency number).
	46	string	Data-view type (USERVIEW or ENTITY).
70	A separator line which can be used to separate the data-view details for one domain dependency of the set of dependencies that cause the data element to be extraneous, from the details of another dependency of the same set.		
	No parameters		
20	A separator line which can be used to separate the information relating to one extraneous data element from another.		
	No parameters		
21	A separator line which can be used to separate information on extraneous data elements from the following parts of the design audit.		
	No parameters		
22	Heading line for audit trail for redundant functional dependencies.		
	No parameters		
23	Heading line for details of a redundant functional dependency.		
	21	integer	Number of data elements on the left-hand side of the redundant dependency.

Line Format Number	Parameter Number	Parameter Type	Parameter Description
24	The first left-hand side and right-hand side data elements of the redundant functional dependency.		
	41	string	Name of the first data element on the left-hand side of the dependency.
	42	string	EXTRACT 1 DATA-ELEMENTS (P41)
	43	string	EXTRACT 2 DATA-ELEMENTS (P41)
	44	string	EXTRACT 3 DATA-ELEMENTS (P41)
	46	integer	Number of the dependency in the workbench design area (absolute dependency number).
	51	string	Name of the data element on the right-hand side of the dependency.
	52	string	EXTRACT 1 DATA-ELEMENTS (P51)
	53	string	EXTRACT 2 DATA-ELEMENTS (P51)
	54	string	EXTRACT 3 DATA-ELEMENTS (P51)
25	The remaining left-hand side data elements of the redundant functional dependency.		
	41	string	Name of a data element other than the first on the left-hand side of the dependency.
	42	string	EXTRACT 1 DATA-ELEMENTS (P41)
	43	string	EXTRACT 2 DATA-ELEMENTS (P41)
	44	string	EXTRACT 3 DATA-ELEMENTS (P41)
	46	integer	Number of the dependency in the workbench design area (absolute dependency number).
26	A separator line which can be used to separate the details of the redundant functional dependency from the details of the origin of that dependency.		
	No parameters		

Line Format Number	Parameter Number	Parameter Type	Parameter Description
27	A heading line for details of the origin of the redundant functional dependency.		
	21	integer	Number of origins of the dependency.
28	Details of the first data-view containing the redundant functional dependency or the fact that the dependency is implied.		
	41	string	Name of the first data-view containing the redundant dependency or the string IMPLIED, as appropriate.
	42	string	EXTRACT 1 DATA-VIEWS (P41), if applicable.
	43	string	EXTRACT 2 DATA-VIEWS (P41), if applicable.
	44	string	EXTRACT 3 DATA-VIEWS (P41), if applicable.
	45	integer	Number of the dependency in the data-view (relative dependency number) or zero (0), as appropriate.
	46	string	Data-view type (USERVIEW or ENTITY).
29	Details of the data-views other than the first containing the redundant dependency.		
	41	string	Name of a userview other than the first containing the redundant dependency.
	42	string	EXTRACT 1 DATA-VIEWS (P41)
	43	string	EXTRACT 2 DATA-VIEWS (P41)
	44	string	EXTRACT 3 DATA-VIEWS (P41)
	45	integer	Number of the dependency in the data-view (relative dependency number).
	46	string	Data-view type (USERVIEW or ENTITY).
30	A separator line which can be used to separate the details of the origin of the redundant dependency from the information concerning the dependencies which form the alternative access path.		
	No parameters		

Line Format Number	Parameter Number	Parameter Type	Parameter Description
31	A heading line for the information concerning the functional dependencies which form the alternative access path.		
	No parameters		
32	A heading line for details of a dependency which forms part of the alternative access path.		
	21	integer	Number of left-hand side data elements.
33	The first left-hand side and right-hand side data elements of a dependency which forms part of the alternative access path.		
	41	string	Name of the first data element on the left-hand side of the dependency.
	42	string	EXTRACT 1 DATA-ELEMENTS (P41)
	43	string	EXTRACT 2 DATA-ELEMENTS (P41)
	44	string	EXTRACT 3 DATA-ELEMENTS (P41)
	46	integer	Number of the dependency in the workbench design area (absolute dependency number).
	51	string	Name of the data element on the right-hand side of the dependency.
	52	string	EXTRACT 1 DATA-ELEMENTS (P51)
	53	string	EXTRACT 2 DATA-ELEMENTS (P51)
	54	string	EXTRACT 3 DATA-ELEMENTS (P51)
34	The remaining left-hand side data elements of the dependency forming part of the alternative access path.		
	41	string	Name of a data element other than the first on the left-hand side of the dependency.
	42	string	EXTRACT 1 DATA-ELEMENTS (P41)
	43	string	EXTRACT 2 DATA-ELEMENTS (P41)

Line Format Number	Parameter Number	Parameter Type	Parameter Description
34 (continued)	44	string	EXTRACT 3 DATA-ELEMENTS (P41)
	46	integer	Number of the dependency in the workbench design area (absolute dependency number).
35	A separator line which can be used to separate the details of the dependency forming part of the alternative access path from the details of the origin of that dependency.		
	No parameters		
36	A heading line for details of the origin of the dependency forming part of the alternative access path.		
	21	integer	Number of origins of the dependency.
37	Details of the first data-view containing the dependency which is part of the alternative access path, or the fact that the dependency is implied.		
	41	string	Name of the first data-view containing the dependency or the string `IMPLIED`, as appropriate.
	42	string	EXTRACT 1 DATA-VIEWS (P41), if applicable.
	43	string	EXTRACT 2 DATA-VIEWS (P41), if applicable.
	44	string	EXTRACT 3 DATA-VIEWS (P41), if applicable.
	45	integer	Number of the dependency in the data-view (relative dependency number) or zero (0), as appropriate.
	46	string	Data-view type (USERVIEW or ENTITY).
38	Details of data-views other than the first containing the dependency which is part of the alternative access path.		
	41	string	Name of a data-view other than the first containing the dependency.
	42	string	EXTRACT 1 DATA-VIEWS (P41)
	43	string	EXTRACT 2 DATA-VIEWS (P41)
	44	string	EXTRACT 3 DATA-VIEWS (P41)

Line Format Number	Parameter Number	Parameter Type	Parameter Description
38 (continued)	45	integer	Number of the dependency in the data-view (relative dependency number) or zero (0), as appropriate.
	46	string	Data-view type (USERVIEW or ENTITY).
39	A separator line which can be used to separate the details of the origin of one dependency of the alternative access path from details of other dependencies in the path.		
	No parameters		
71	A heading line for details of a domain dependency which forms part of the alternative access path.		
	21	integer	Number of left-hand side data elements.
72	The first left-hand side and right-hand side data elements of a domain dependency which forms part of the alternative access path.		
	41	string	Name of the first data element on the left-hand side of the domain dependency.
	42	string	EXTRACT 1 DATA-ELEMENTS (P41)
	43	string	EXTRACT 2 DATA-ELEMENTS (P41)
	44	string	EXTRACT 3 DATA-ELEMENTS (P41)
	46	integer	Number of the dependency in the workbench design area (absolute dependency number).
	51	string	Name of the data element on the right-hand side of the dependency.
	52	string	EXTRACT 1 DATA-ELEMENTS (P51)
	53	string	EXTRACT 2 DATA-ELEMENTS (P51)
	54	string	EXTRACT 3 DATA-ELEMENTS (P51)

Line Format Number	Parameter Number	Parameter Type	Parameter Description
73	The remaining left-hand side data elements of a domain dependency forming part of the alternative access path.		
	41	string	Name of a data element other than the first on the left-hand side of the dependency.
	42	string	EXTRACT 1 DATA-ELEMENTS (P41)
	43	string	EXTRACT 2 DATA-ELEMENTS (P41)
	44	string	EXTRACT 3 DATA-ELEMENTS (P41)
	46	string	Number of the dependency in the workbench design area (absolute dependency number).
	51	string	Name of the data element on the right-hand side of the dependency.
	52	string	EXTRACT 1 DATA-ELEMENTS (P51)
	53	string	EXTRACT 2 DATA-ELEMENTS (P51)
	54	string	EXTRACT 3 DATA-ELEMENTS (P51)
74	A separator line which can be used to separate the details of the domain dependency forming part of the alternative access path from the details of the origin of that dependency.		
	No parameters		
75	A heading line for details of the origin of the domain dependency forming part of the alternative access path.		
	21	integer	Number of origins of the dependency.
76	Details of the first data-view containing the domain dependency which is part of the alternative access path.		
	41	string	Name of the first data-view containing the domain dependency.
	42	string	EXTRACT 1 DATA-VIEWS (P41), if applicable.

Line Format Number	Parameter Number	Parameter Type	Parameter Description
76 (continued)	43	string	EXTRACT 2 DATA-VIEWS (P41), if applicable.
	44	string	EXTRACT 3 DATA-VIEWS (P41), if applicable.
	45	integer	Number of the dependency in the data-view (relative dependency number).
	46	string	Data-view type (USERVIEW or ENTITY).

77 Details of data-views other than the first containing the domain dependency which is part of the alternative access path.

41	string	Name of a data-view other than the first containing the domain dependency.
42	string	EXTRACT 1 DATA-VIEWS (P41)
43	string	EXTRACT 2 DATA-VIEWS (P41)
44	string	EXTRACT 3 DATA-VIEWS (P41)
45	integer	Number of the dependency in the data-view (relative dependency number).
46	string	Data-view type (USERVIEW or ENTITY).

78 A separator line which can be used to separate the details of the origin of one domain dependency of the alternative access path from the following details of another dependency in the alternative access path.

No parameters

40 A separator line which can be used to separate the details of one functional dependency from the details of another.

No parameters

41 A separator line which can be used to separate the details of redundant functional dependencies from the following parts of the Design Audit report.

No parameters

Line Format Number	Parameter Number	Parameter Type	Parameter Description
42	Heading line for the audit trail for inconsistent multivalued dependencies.		
	No parameters		
43	Heading line for details of an inconsistent multivalued dependency.		
	21	integer	Number of left-hand side data elements.
	22	integer	Number of right-hand side data elements.
44	The first left-hand side and right-hand side data elements of the inconsistent multivalued dependency.		
	41	string	Name of the first data element on the left-hand side of the dependency.
	42	string	EXTRACT 1 DATA-VIEWS (P41)
	43	string	EXTRACT 2 DATA-VIEWS (P41)
	44	string	EXTRACT 3 DATA-VIEWS (P41)
	46	integer	Number of the dependency in the workbench design area (absolute dependency number).
	51	string	Name of the data element on the right-hand side of the dependency.
	52	string	EXTRACT 1 DATA-ELEMENTS (P51)
	53	string	EXTRACT 2 DATA-ELEMENTS (P51)
	54	string	EXTRACT 3 DATA-ELEMENTS (P51)
45	The remaining left-hand side and right-hand side data elements of the inconsistent multivalued dependency.		
	41	string	Name of a data element other than the first on the left-hand side of the dependency.
	42	string	EXTRACT 1 DATA-ELEMENTS (P41)
	43	string	EXTRACT 2 DATA-ELEMENTS (P41)

Line Format Number	Parameter Number	Parameter Type	Parameter Description
45 (continued)	44	string	EXTRACT 3 DATA-ELEMENTS (P41)
	46	string	Number of the dependency in the workbench design area (absolute dependency number).
	51	string	Name of a data element other than the first on the right-hand side of the dependency.
	52	string	EXTRACT 1 DATA-ELEMENTS (P51)
	53	string	EXTRACT 2 DATA-ELEMENTS (P51)
	54	string	EXTRACT 3 DATA-ELEMENTS (P51)

46 A separator line which can be used to separate the details of the inconsistent multivalued dependency from the details of the origin of that dependency.

No parameters

47 Heading line for details of the origin of the inconsistent multivalued dependency.

21	integer	Number of data-views containing the inconsistent multivalued dependency.

48 Details of the first data-view containing the inconsistent multivalued dependency.

41	string	Name of first data-view containing the dependency.
42	string	EXTRACT 1 DATA-VIEWS (P41)
43	string	EXTRACT 2 DATA-VIEWS (P41)
44	string	EXTRACT 3 DATA-VIEWS (P41)
45	integer	Number of the dependency in the data-view (relative dependency number).
46	string	Data-view type (USERVIEW or ENTITY).

Line Format Number	Parameter Number	Parameter Type	Parameter Description
49	Details of the data-views other than the first containing the inconsistent multivalued dependency.		
	41	string	Name of a data-view other than the first containing the dependency.
	42	string	EXTRACT 1 DATA-VIEWS (P41)
	43	string	EXTRACT 2 DATA-VIEWS (P41)
	44	string	EXTRACT 3 DATA-VIEWS (P41)
	45	integer	Number of the dependency in the data-view (relative dependency number).
	46	string	Data-view type (USERVIEW or ENTITY).
50	A separator line which can be used to separate details of the origin of the inconsistent multivalued dependency from the details of the dependencies causing the inconsistency.		
	No parameters		
51	Heading line for information concerning the functional dependencies causing the multivalued dependency to be inconsistent.		
	No parameters		
52	Heading line for a functional dependency from the set of functional dependencies causing the multivalued dependency to be inconsistent		
	21	integer	Number of left-hand side data elements in the dependency.
53	The first left-hand side and right-hand side data elements of the dependency contributing to causing the inconsistency.		
	41	string	Name of a data element other than the first on the left-hand side of the dependency.
	42	string	EXTRACT 1 DATA-ELEMENTS (P41)
	43	string	EXTRACT 2 DATA-ELEMENTS (P41)
	44	string	EXTRACT 3 DATA-ELEMENTS (P41)

Line Format Number	Parameter Number	Parameter Type	Parameter Description
53 (continued)	46	integer	Number of the dependency in the workbench design area (absolute dependency number).
	51	string	Name of the data element on the right-hand side of the dependency.
	52	string	EXTRACT 1 DATA-ELEMENTS (P51)
	53	string	EXTRACT 2 DATA-ELEMENTS (P51)
	54	string	EXTRACT 3 DATA-ELEMENTS (P51)

54 The remaining left-hand side data elements of the dependency contributing to causing the inconsistency.

41	string	Name of a data element other than the first on the left-hand side of the dependency.
42	string	EXTRACT 1 DATA-ELEMENTS (P41)
43	string	EXTRACT 2 DATA-ELEMENTS (P41)
44	string	EXTRACT 3 DATA-ELEMENTS (P41)
46	integer	Number of the dependency in the workbench design area (absolute dependency number).

55 A separator line which can be used to separate the details of the dependency contributing to causing the inconsistency.

No parameters

56 Heading line for details of the origins of the functional dependency contributing to causing the inconsistency.

21	integer	Number of origins of the dependency.

Line Format Number	Parameter Number	Parameter Type	Parameter Description
57	Details of the first data-view containing the dependency contributing to causing the inconsistency, or the fact that the dependency is implied.		
	41	string	Name of a data-view containing the dependency or the string `IMPLIED`, as appropriate.
	42	string	EXTRACT 1 DATA-VIEWS (P41), if applicable.
	43	string	EXTRACT 2 DATA-VIEWS (P41), if applicable.
	44	string	EXTRACT 3 DATA-VIEWS (P41), if applicable.
	45	integer	Number of the dependency in the data-view (relative dependency number) or zero (0), as appropriate.
	46	string	Data-view type (USERVIEW or ENTITY).
58	Details of the data-views other than the first containing the dependency contributing to causing the inconsistency.		
	41	string	Name of a data-view other than the first containing the dependency.
	42	string	EXTRACT 1 DATA-VIEWS (P41)
	43	string	EXTRACT 2 DATA-VIEWS (P41)
	44	string	EXTRACT 3 DATA-VIEWS (P41)
	45	integer	Number of the dependency in the data-view (relative dependency number).
	46	string	Data-view type (USERVIEW or ENTITY).
59	A separator line which can be used to separate the details of the origin of one dependency contributing to the inconsistency from another.		
	No parameters		
79	Heading line for a domain dependency from the set of functional dependencies causing the multivalued dependency to be inconsistent.		
	21	integer	Number of the left-hand side data elements in the domain dependency.

Line Format Number	Parameter Number	Parameter Type	Parameter Description
80	The first left-hand side and right-hand side data elements of the domain dependency contributing to causing the inconsistency.		
	41	string	Name of the first data element on the left-hand side of the domain dependency.
	42	string	EXTRACT 1 DATA-ELEMENTS (P41)
	43	string	EXTRACT 2 DATA-ELEMENTS (P41)
	44	string	EXTRACT 3 DATA-ELEMENTS (P41)
	46	integer	Number of the dependency in the workbench design area (absolute dependency number).
	51	string	Name of the data element on the right-hand side of the domain dependency.
	52	string	EXTRACT 1 DATA-ELEMENTS (P51)
	53	string	EXTRACT 2 DATA-ELEMENTS (P51)
	54	string	EXTRACT 3 DATA-ELEMENTS (P51)
81	The remaining left-hand and right-hand side data elements of the domain dependency contributing to the inconsistency.		
	41	string	Name of data element other than the first on the left-hand side of the domain dependency.
	42	string	EXTRACT 1 DATA-ELEMENTS (P41)
	43	string	EXTRACT 2 DATA-ELEMENTS (P41)
	44	string	EXTRACT 3 DATA-ELEMENTS (P41)
	46	integer	Number of the dependency in the workbench design are (absolute dependency number).

Line Format Number	Parameter Number	Parameter Type	Parameter Description
81 (continued)	51	string	Name of the data element on the right-hand side of the domain dependency.
	52	string	EXTRACT 1 DATA-ELEMENTS (P51)
	53	string	EXTRACT 2 DATA-ELEMENTS (P51)
	54	string	EXTRACT 3 DATA-ELEMENTS (P51)

82 A separator line which can be used to separate the details of the domain dependency contributing to the inconsistency from details of the origin of that dependency.

No parameters

83 Heading line for details of the origin of the domain dependency contributing to the inconsistency.

21	integer	Number of origins of the domain dependency.

84 Details of the first data-view containing the domain dependency contributing to the inconsistency.

41	string	Name of the first data-view containing the domain dependency.
42	string	EXTRACT 1 DATA-VIEWS (P41), if applicable.
43	string	EXTRACT 2 DATA-VIEWS (P41), if applicable.
44	string	EXTRACT 3 DATA-VIEWS (P41), if applicable.
45	integer	Number of the dependency in the data-view (relative dependency number).
46	string	Data-view type (USERVIEW or ENTITY).

Line Format Number	Parameter Number	Parameter Type	Parameter Description
85	Details of the data-views other than the first containing the domain dependency contributing to the inconsistency.		
	41	string	Name of a data-view other than the first containing the domain dependency.
	42	string	EXTRACT 1 DATA-VIEWS (P41)
	43	string	EXTRACT 2 DATA-VIEWS (P41)
	44	string	EXTRACT 3 DATA-VIEWS (P41)
	45	integer	Number of the domain dependency in the data-view (relative dependency number).
	46	string	Data-view type (USERVIEW or ENTITY).
86	A separator line which can be used to separate the details of the origin of one domain dependency contributing to the inconsistency from another.		
	No parameters		
60	A separator line which can be used to separate the details of one inconsistent multivalued dependency from those of another.		
	No parameters		
61	A separator line which can be used to denote the end of the design audit output for inconsistent multivalued dependencies.		
	No parameters		
62	A terminating line which can be used to denote the end of the Design Audit report.		

Design Audit: Parameter Availability by Format Line

This table shows the parameter availability by format line for the design audit output category:

Format Line	Available Parameter Number		
01	Global (1-10)	FM-01 defined (none)	
02	..	FM-02 defined (none)	
03	..	FM-03 defined (21)	
04	..	..	FM-04 defined (41-46, 51-54)
05	..	..	FM-05 defined (41-46)
06	..	..	FM-06 defined (none)
07	..	FM-07 defined (21)	
08	..	..	FM-08 defined (41-46)
09	..	..	FM-09 defined (41-46)
10	..	..	FM-10 defined (none)
11	..	FM-11 defined (none)	
12	..	FM-12 defined (21)	

Format Line	Available Parameter Number		
13	Global (1-10)	FM-12 defined (21)	FM-13 defined (41-44, 46, 51-54)
14	..	..	FM-14 defined (41-44, 46)
15	..	..	FM-15 defined (none)
16	..	FM-16 defined (21)	
17	..	..	FM-17 defined (41-46)
18	..	..	FM-18 defined (41-46)
19	..	..	FM-19 defined (none)
63	..	FM-63 defined (21)	
64	..	..	FM-64 defined (41-44, 46, 51-54)
65	..	..	FM-65 defined (41-44, 46, 51-54)
66	..	..	FM-66 defined (none)
67	..	FM-67 defined (21)	
68	..	..	FM-68 defined (41-46)

Format Line	Available Parameter Number		
69	Global (1-10)	FM-67 defined (21)	FM-69 defined (41-46)
70	..	..	FM-70 defined (none)
20	..	FM-20 defined (none)	
21	..	FM-21 defined (none)	
22	..	FM-22 defined (none)	
23	..	FM-23 defined (21)	
24	..	..	FM-24 defined 41-46, 51-54)
25	..	..	FM-25 defined (41-46)
26	..	..	FM-26 defined (none)
27	..	FM-27 defined (21)	
28	..	..	FM-28 defined (41-46)
29	..	..	FM-29 defined (41-46)
30	..	..	FM-30 defined (none)
31	..	FM-31 defined (none)	

Format Line	Available Parameter Number		
32	Global (1-10)	FM-32 defined (21)	
33	..	..	FM-33 defined (41-44, 46, 51-54)
34	..	..	FM-34 defined (41-44, 46)
35	..	..	FM-35 defined (none)
36	..	FM-36 defined (21)	
37	..	..	FM-37 defined (41-46)
38	..	..	FM-38 defined (41-46)
39	..	..	FM-39 defined (none)
71	..	FM-71 defined (21)	
72	..	..	FM-72 defined (41-44, 46, 51-54)
73	..	..	FM-73 defined (41-44, 46, 51-54)
74	..	..	FM-74 defined (none)
75	..	FM-75 defined (21)	

Format Line	Available Parameter Number		
76	Global (1-10)	FM-75 defined (21)	FM-76 defined (41-46)
77	..	..	FM-77 defined (41-46)
78	..	..	FM-78 defined (none)
40	..	FM-40 defined (none	
41	..	FM-41 defined (none)	
42	..	FM-42 defined (none)	
43	..	FM-43 defined (21-22)	
44	..	..	FM-44 defined (41-44, 46, 51-54)
45	..	..	FM-45 defined (41-44, 46, 51-54)
46	..	..	FM-46 defined (none)
47	..	FM-47 defined (21)	
48	..	..	FM-48 defined (41-46)
49	..	..	FM-49 defined (41-46)

Format Line	Available Parameter Number		
50	Global (1-10)	FM-47 defined (21)	FM-50 defined (none)
51	..	FM-51 defined (none)	
52	..	FM-52 defined (21)	
53	..	..	FM-53 defined (41-44, 46, 51-54)
54	..	..	FM-54 defined (41-44, 46, 51-54)
55	..	..	FM-55 defined (none)
56	..	FM-56 defined (21)	
57	..	..	FM-57 defined (41-46)
58	..	..	FM-58 defined (41-46)
59	..	..	FM-59 defined (none)
79	..	FM-79 defined (21)	
80	..	..	FM-80 defined (41-44, 46, 51-54)
81	..	..	FM-81 defined (41-44, 46, 51-54)

Format Line	Available Parameter Number		
82	Global (1-10)	FM-79 defined (21)	FM-82 defined (none)
83	..	FM-83 defined (21)	
84	..	..	FM-84 defined (41-46)
85	..	..	FM-85 defined (41-46)
86	..	..	FM-86 defined (none)
60	..	FM-60 defined (none)	
61	..	FM-61 defined (none)	
62	..	FM-62 defined (none)	

8 Output Category: Logical-Schema Cluster

FORMAT members of the output category LOGICAL-SCHEMA CLUSTER are used to specify the layout of output from the commands:

```
PLOT LOGICAL-SCHEMA....USING FORMAT format-name
```

and

```
PLOT RELATIONAL-SCHEMA....USING FORMAT format-name,
```

(except when these commands include the CONSOLIDATED keyword).

FORMAT members of this category can only be used when the user's installation includes the User Printer Graphics facility (selectable unit DSR-UD31).

A general description of the output of these commands is given as part of the description of the User Printer Graphics facility in the *ASG-DesignManager User's Guide*.

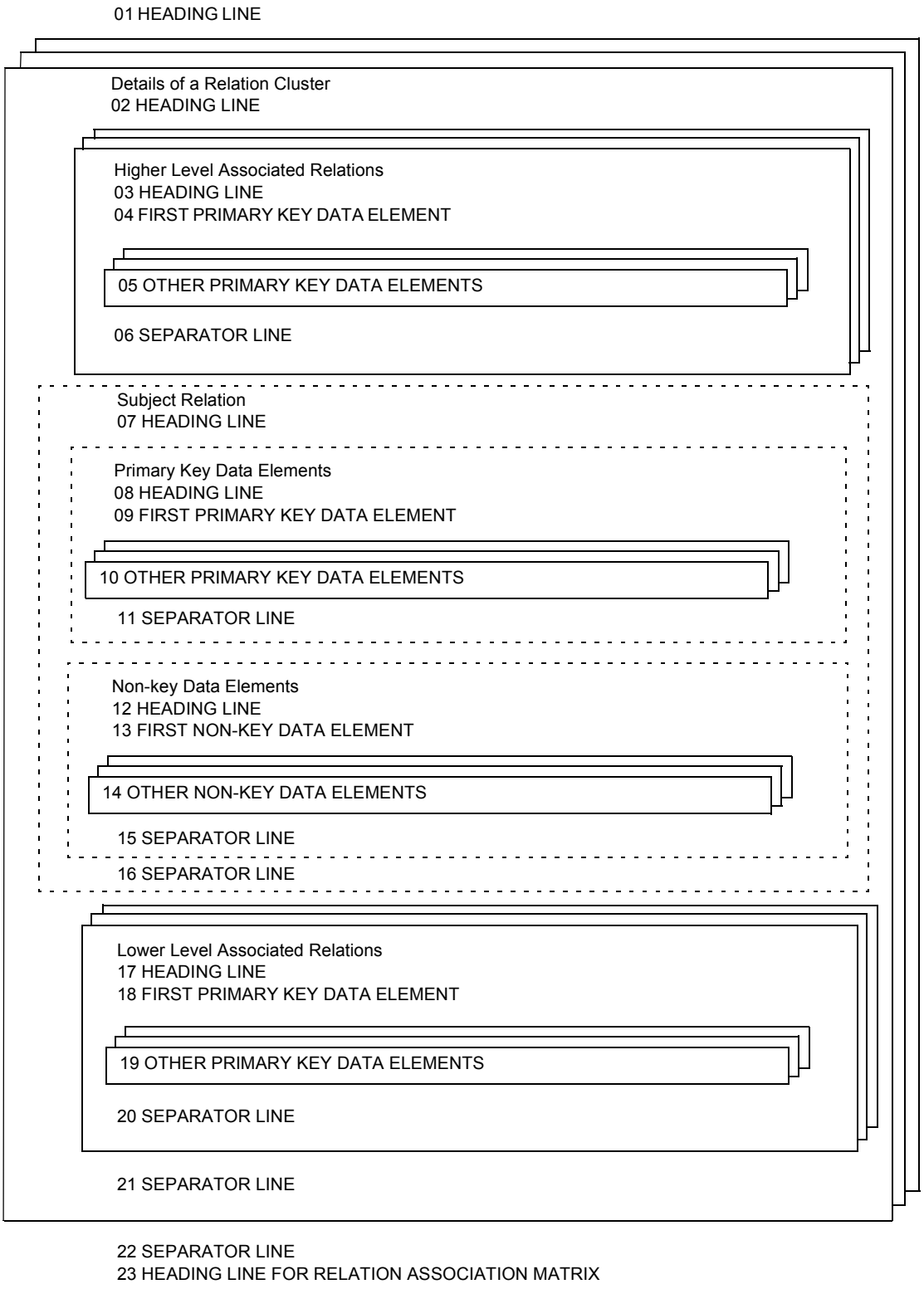
Figure 9 on page 114 shows the structure of this category of output. "Logical Schema Cluster: Parameter Numbers Defined" on page 115 shows the parameters that are defined for each format line of a FORMAT member of the LOGICAL-SCHEMA CLUSTER category. "Logical-schema Cluster: Parameter Availability by Format Line" on page 119 shows the extended availability of each parameter.

The term *subject relation* is used in this chapter with the same meaning as it is used in the description of the User Printer Graphics facility (see the *ASG-DesignManager User's Guide*). That is, the relation for which each individual cluster is plotted is the subject relation of that particular cluster.

Within each cluster, the terms *higher level* and *lower level* are used to refer to those associated relations whose details are respectively shown above and below the details of the cluster's subject relation in the output.

The only part of the relation association matrix that users can format is the heading line. If the format line that corresponds to the matrix heading line is included in a FORMAT member, then the whole of the relation association matrix is included in the output when that FORMAT member is used. If the format line that corresponds to the matrix heading line is not included in a FORMAT member, then the relation association matrix is not output when that FORMAT member is used.

Figure 9. Logical Schema Cluster Structure



Logical Schema Cluster: Parameter Numbers Defined

This table shows the parameter numbers defined for each format line in the logical-schema cluster output category, arranged by the order of processing:

Format Line Number	Parameter Number	Parameter Type	Parameter Description
01	Heading line for the logical schema plot.		
	No parameters		
02	Heading line for details of a cluster of relations.		
	No parameters		
03	Heading line for details of a higher level associated relation.		
	41	string	Name of the higher level associated relation.
	42	integer	Number of the higher level associated relation.
	43	4-character string	Left-hand side of the association arrow, the value of which is `<<--` or `----`.
	44	4-character string	Right-hand side of the association arrow, the value of which is `--->` or `===>`.
04	Details of the first data element in the primary key of the higher level associated relation.		
	61	string	Name of first data element in the primary key of the associated relation.
	62	string	EXTRACT 1 DATA-ELEMENTS (P61)
	63	string	EXTRACT 2 DATA-ELEMENTS (P61)
	64	string	EXTRACT 3 DATA-ELEMENTS (P61)
05	Details of the data elements other than the first in the primary key of the higher level associated relation.		
	61	string	Name of a data element other than the first in the primary key of the relation.

Format Line Number	Parameter Number	Parameter Type	Parameter Description
05 (continued)	62	string	EXTRACT 1 DATA-ELEMENTS (P61)
	63	string	EXTRACT 2 DATA-ELEMENTS (P61)
	64	string	EXTRACT 3 DATA-ELEMENTS (P61)

06 A separator line which can be used to separate the details of each higher level associated relation.

No parameters

07 Heading line for details of the subject relation.

41	string	Name of subject relation.
42	integer	Number of subject relation.

08 Heading line for details of the primary key of the subject relation.

61	integer	Number of data elements in the primary key of the subject relation.

09 Details of the first data element in the primary key of the subject relation.

81	string	Name of the first data element in the primary key of the subject relation.
82	string	EXTRACT 1 DATA-ELEMENTS (P81)
83	string	EXTRACT 2 DATA-ELEMENTS (P81)
84	string	EXTRACT 3 DATA-ELEMENTS (P81)

10 Details of the other data elements in the primary key of the subject relation.

61	string	Name of a data element other than the first in the primary key of the subject relation.
82	string	EXTRACT 1 DATA-ELEMENTS (P81)

Format Line Number	Parameter Number	Parameter Type	Parameter Description
10 (continued)	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)

11 A separator line which can be used to separate the details of the primary key the subject relation from the non-key data elements of that relation.

No parameters

12 Heading line for details of the non-key data elements of the subject relation.

61	integer	Number of non-key data elements in the subject relation.

13 Details of the first non-key data element in the subject relation.

81	string	Name of the first non-key data element in the subject relation.
82	string	EXTRACT 1 DATA-ELEMENTS (P81)
83	string	EXTRACT 2 DATA-ELEMENTS (P81)
84	string	EXTRACT 3 DATA-ELEMENTS (P81)

14 Details of the non-key data elements other than the first in the subject relation.

61	string	Name of a non-key data element other than the first in the subject relation.
82	string	EXTRACT 1 DATA-ELEMENTS (P81)
83	string	EXTRACT 2 DATA-ELEMENTS (P81)
84	string	EXTRACT 3 DATA-ELEMENTS (P81)

15 A separator line which can be used to denote the end of the non-key data elements in the subject relation.

No parameters

Format Line Number	Parameter Number	Parameter Type	Parameter Description
16	A separator line which can be used to separate the details of the subject relation from the details of the lower level associated relations.		
17	Heading line for details of a lower level associated relation.		
	41	string	Name of the lower level associated relation.
	42	string	Number of the lower level associated relation.
	43	4-character string	Left-hand side of the association arrow, the value of which is `<---` or `<===`.
	44	4-character string	Right-hand side of the association arrow, the value of which is `----`, `-->>`, `===>`, or `--->`.
18	Details of the first data element in the primary key of the lower level associated relation.		
	61	string	Name of first data element in the primary key of the associated relation.
	62	string	EXTRACT 1 DATA-ELEMENTS (P61)
	63	string	EXTRACT 2 DATA-ELEMENTS (P61)
	64	string	EXTRACT 3 DATA-ELEMENTS (P61)
19	Details of the data elements other than the first in the primary key of the lower level associated relation.		
	61	string	Name of a data element other than the first in the primary key of the relation.
	62	string	EXTRACT 1 DATA-ELEMENTS (P61)
	63	string	EXTRACT 2 DATA-ELEMENTS (P61)
	64	string	EXTRACT 3 DATA-ELEMENTS (P61)

Format Line Number	Parameter Number	Parameter Type	Parameter Description
20	A separator line which can be used to separate the details of each lower level associated relation.		
	No parameters		
21	A separator line which can be used to separate the details of each relation cluster.		
	No parameters		
22	A separator line which can be used to denote the end of the details of the relational clusters.		
	No parameters		
23	Reading line for the relational association matrix.		
	No parameters		

Logical-schema Cluster: Parameter Availability by Format Line

This table shows the parameter availability by format line for the logical-schema cluster output category:

Format Line	Available Parameter Numbers			
01	Global (1-10)	FM-01 defined (none)		
02	..	FM-02 defined (none)		
03	..	..	FM-03 defined (41-44)	
04	..	..	..	FM-04 defined (61-64)
05	..	..	..	FM-05 defined (61-64)

Format Line	Available Parameter Numbers				
06	Global (1-10)	FM-02 defined (none)	FM-03 defined (41-44)	FM-06 defined (none)	
07	..	..	FM-07 defined (41-42)		
08	..	..	..	FM-08 defined (61)	
09	..	..	..	..	FM-09 defined (81-84)
10	..	..	..	..	FM-10 defined (81-84)
11	..	..	..	..	FM-11 defined (none)
12	..	..	..	FM-12 defined (61)	
13	..	..	..	..	FM-13 defined (81-84)
14	..	..	..	..	FM-14 defined (81-84)
15	..	..	..	..	FM-15 defined (none)
16	..	..	..	FM-16 defined (none)	
17	..	..	FM-17 defined (41-44)		
18	..	..	..	FM-18 defined (61-64)	
19	..	..	..	FM-18 defined (61-64)	

Format Line	Available Parameter Numbers			
20	Global (1-10)	FM-02 defined (none)	FM-17 defined (41-44)	FM-20 defined (none)
21			FM-21 defined (none)	
22	..	FM-22 defined (none)		
23	..	FM-23 defined (none)		

9 Output Category: Data-Element-Usage-Analysis Report

FORMAT members of the DATA-ELEMENT-USAGE-ANALYSIS REPORT output category are used to format the output from the command:

```
REPORT DATA-ELEMENTS....USING format-name
```

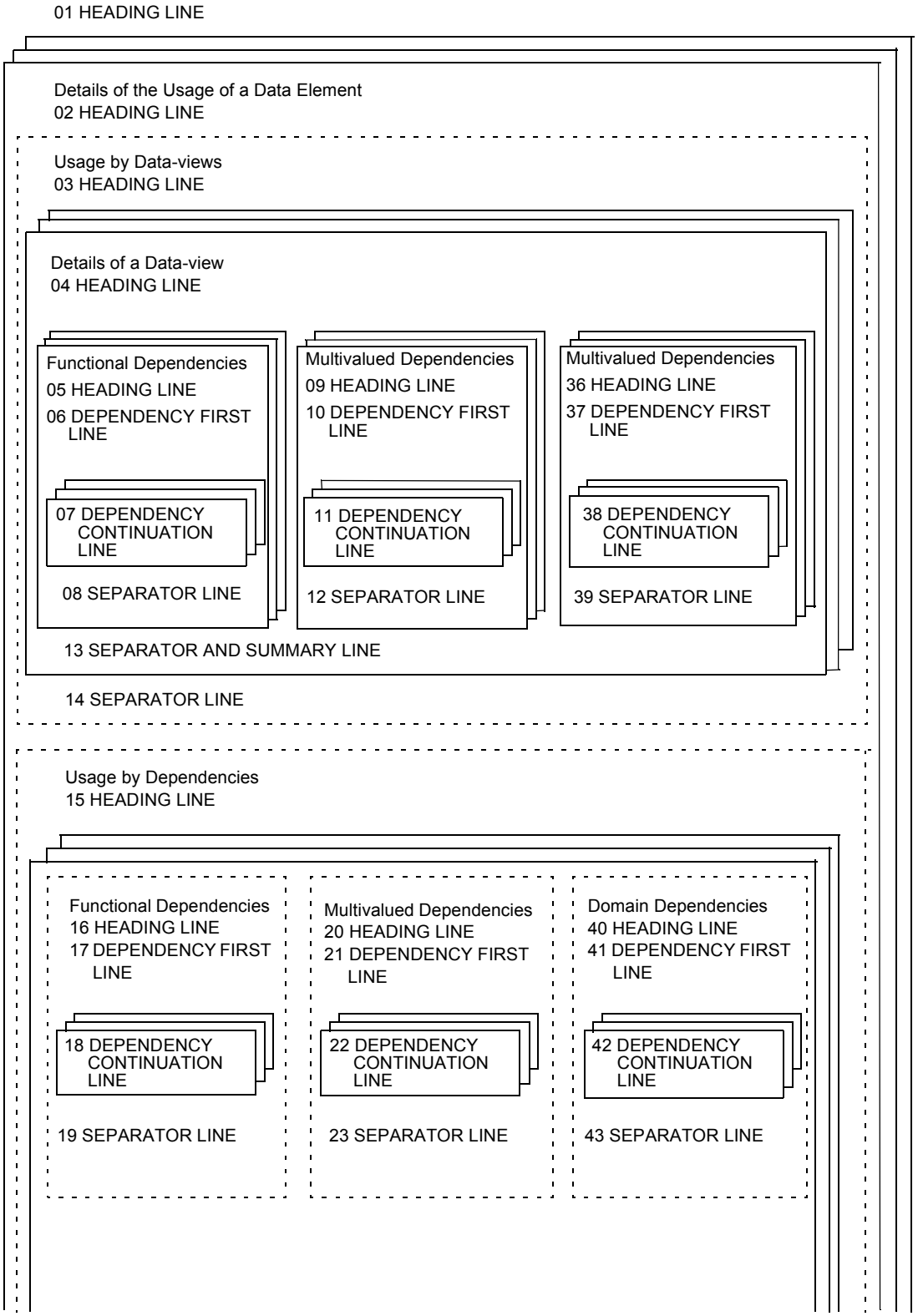
The structure of these reports is shown in Figure 10 on page 124. The parameter members defined for each format line are shown in "Data-Element-Usage-Analysis Report: Parameter Numbers Defined" on page 126, and the availability of parameters numbers is shown in "Data-Element-Usage-Analysis Report: Variable Parameter Availability" on page 137.

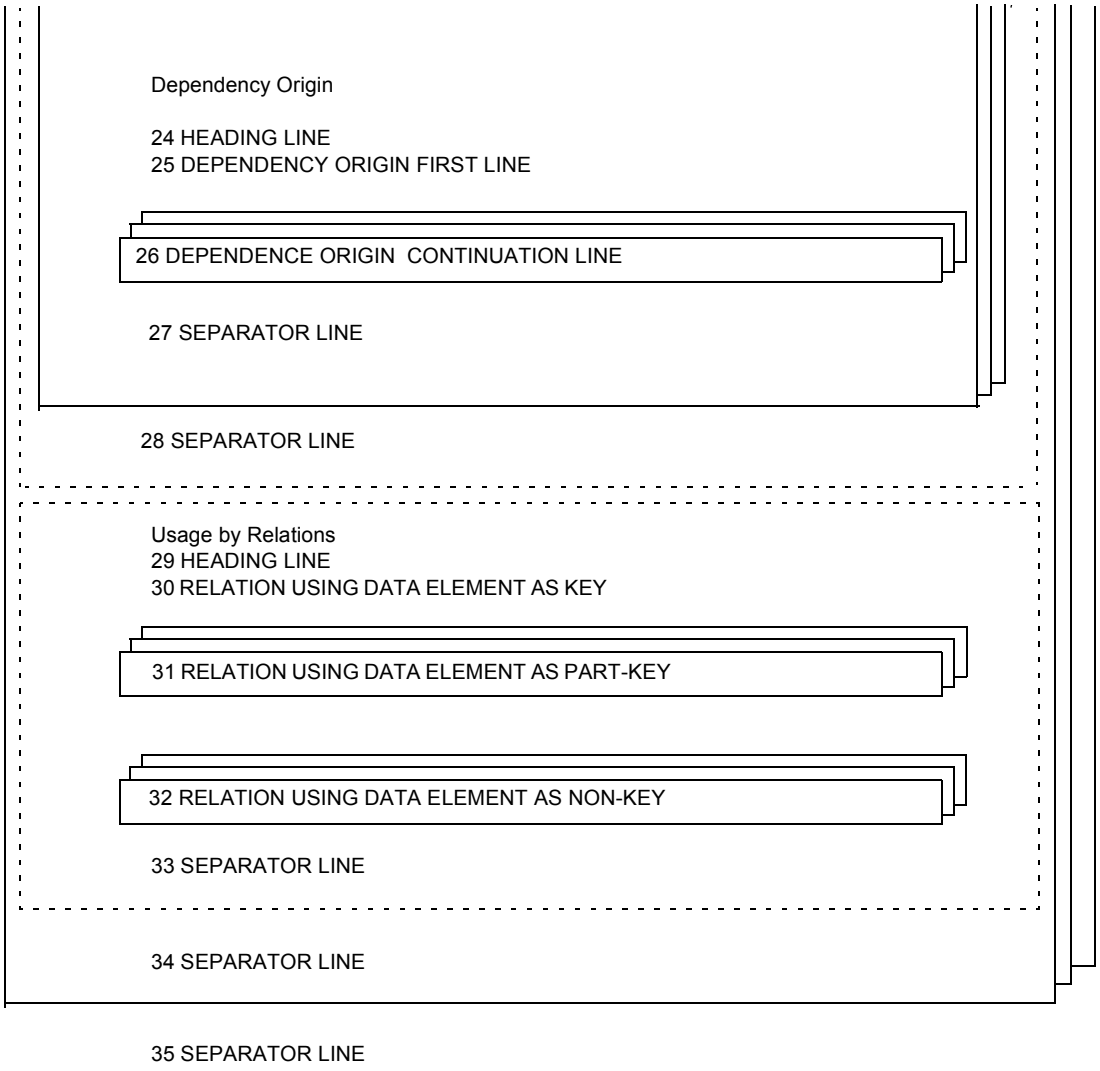
In the report structure shown in Figure 10 on page 124, the Usage by Data-views section gives details of those data-views that contain the data element being reported in the left-hand or right-hand side of one or more of their dependencies.

The Usage by Dependencies section gives details of the dependencies that have the data element being reported as a left or right-hand side data element. The Dependency Origin division of the output gives the origin of each dependency containing the data element. Dependencies can originate from one or more data-views or can be implied.

The Usage by Relations section includes those relations whose set of data-elements contains the data element being reported as the key part of the key, or as a non-key data element. If the workbench design area contains unnormalized data, then no output is produced for this section of the report.

Figure 10. Data Element Usage Analysis Report Structure




Dependency Origin
24 HEADING LINE
25 DEPENDENCY ORIGIN FIRST LINE
26 DEPENDENCE ORIGIN CONTINUATION LINE
27 SEPARATOR LINE
28 SEPARATOR LINE
Usage by Relations
29 HEADING LINE
30 RELATION USING DATA ELEMENT AS KEY
31 RELATION USING DATA ELEMENT AS PART-KEY
32 RELATION USING DATA ELEMENT AS NON-KEY
33 SEPARATOR LINE
34 SEPARATOR LINE
35 SEPARATOR LINE

Data-Element-Usage-Analysis Report: Parameter Numbers Defined

This table shows the parameter numbers defined for each format line of the Data-Element-Usage-Analysis Report, arranged by the order of processing:

Format Line Number	Parameter Number	Parameter Type	Parameter Description
01	Heading line for the data element usage analysis report.		
	21	integer	Number of data elements in the workbench design area.
	22	integer	Number of data elements reported on.
02	Heading line for details of the usage of a data element in the workbench design area.		
	41	string	Data element name.
	42	string	EXTRACT 1 DATA-ELEMENTS (P41)
	43	string	EXTRACT 2 DATA-ELEMENTS (P41)
	44	string	EXTRACT 3 DATA-ELEMENTS (P41)
	45	integer	Data element number
	46	string	Data element member type, the value of which can be blank or the string `GROUP`, depending on whether this data element is an ITEM or GROUP member.
03	Heading line for Usage by Data-views Section.		
	No Parameters		
04	Heading line for a data-view that contains the data element in the left-hand side or right-hand side of one or more of its dependencies		
	81	string	Data-view name.
	82	string	EXTRACT 1 DATA-VIEWS (P81)
	83	string	EXTRACT 2 DATA-VIEWS (P81)
	84	string	EXTRACT 3 DATA-VIEWS (P81)
	85	integer	Data-view number.
	86	string	Data-view type (USERVIEW or ENTITY).

Format Line Number	Parameter Number	Parameter Type	Parameter Description
05	Heading line for a functional dependency in the data-view.		
	101	integer	Number of left-hand side data elements in the dependency.
06	The first left-hand side and right-hand side data elements in the functional dependency in the data-view.		
	121	string	Name of the first data element on the left-hand side of the functional dependency.
	122	string	EXTRACT 1 DATA-ELEMENTS (P121)
	123	string	EXTRACT 2 DATA-ELEMENTS (P121)
	124	string	EXTRACT 3 DATA-ELEMENTS (P121)
	125	string	Extraneous data element marker, the value of which can be blank or the string `***EXTRANEOUS***`, as appropriate.
	126	string	Redundant dependency marker the value of which can be blank or the string `>>INDIRECT<<`, as appropriate.
	127	integer	Number of the dependency in the data-view (relative dependency number).
	128	integer	Number of the dependency in the workbench design area (absolute dependency number).
	131	string	Name of the data element on the right-hand side of the functional dependency.
	132	string	EXTRACT 1 DATA-ELEMENTS (P131)
	133	string	EXTRACT 2 DATA-ELEMENTS (P131)
	134	string	EXTRACT 3 DATA-ELEMENTS (P131)
07	The remaining data elements on the left-hand side of the functional dependency.		
	121	string	Name of a data element other than the first on the left-hand side of the functional dependency.
	122	string	EXTRACT 1 DATA-ELEMENTS (P121)
	123	string	EXTRACT 2 DATA-ELEMENTS (P121)
	124	string	EXTRACT 3 DATA-ELEMENTS (P121)
	125	string	Extraneous data element marker, the value of which can be blank or the string `***EXTRANEOUS***`, as appropriate.

Format Line Number	Parameter Number	Parameter Type	Parameter Description
07 (continued)	126	string	Redundant dependency marker, the value of which can be blank or the string `>>INDIRECT<<`, as appropriate.
	127	integer	Number of the dependency in the data-view (relative dependency number).
	128	integer	Number of the dependency in the workbench design area (absolute dependency number).

08 A separator line which can be used to separate the details of each functional dependency.

No parameters

09 Heading line for a multivalued dependency in the data-view.

101	integer	Number of left-hand side data elements.
102	integer	Number of right-hand side data elements.

10 The first left-hand side and right-hand side data elements of the multivalued dependency in the data-view.

121	string	Name of the first data element on the left-hand side of the multivalued dependency.
122	string	EXTRACT 1 DATA-ELEMENTS (P121)
123	string	EXTRACT 2 DATA-ELEMENTS (P121)
124	string	EXTRACT 3 DATA-ELEMENTS (P121)
126	string	Removed dependency marker the value of which can be blank or the string `>>REMOVED<<`, as appropriate.
127	integer	Number of the dependency in the data-view (relative dependency number).
128	integer	Number of the dependency in the workbench design area (absolute dependency number).
129	integer	Multiplicity of the multivalued dependency.
131	string	Name of the first data element on the right-hand side of the multivalued dependency.
132	string	EXTRACT 1 DATA-ELEMENTS (P131)
133	string	EXTRACT 2 DATA-ELEMENTS (P131)
134	string	EXTRACT 3 DATA-ELEMENTS (P131)

Format Line Number	Parameter Number	Parameter Type	Parameter Description
11	The remaining data elements on the left-hand side and right-hand side of the multivalued dependency.		
	121	string	Name of a data element other than the first on the left-hand side of the multivalued dependency.
	122	string	EXTRACT 1 DATA-ELEMENTS (P121)
	123	string	EXTRACT 2 DATA-ELEMENTS (P121)
	124	string	EXTRACT 3 DATA-ELEMENTS (P121)
	126	string	Removed dependency marker, the value of which can be blank or the string `>>REMOVED<<`, as appropriate.
	127	integer	Number of the dependency in the data-view (relative dependency number).
	128	integer	Number of the dependency in the workbench design area (absolute dependency number).
	129	integer	Multiplicity of the multivalued dependency.
	131	string	Name of a data element other than the first on the right-hand side of the multivalued dependency.
	132	string	EXTRACT 1 DATA-ELEMENTS (P131)
	133	string	EXTRACT 2 DATA-ELEMENTS (P131)
	134	string	EXTRACT 3 DATA-ELEMENTS (P131)
12	A separator line that can be used to separate the details of each multivalued dependency output.		
	No parameters		
36	Heading line for a domain dependency in the data-view.		
	101	integer	Number of left-hand side data elements.
	102	integer	Number of right-hand side data elements.
37	The first left-hand side and right-hand side data elements of the domain dependency in the data-view.		
	121	string	Name of the first data element on the left-hand side of the domain dependency.
	122	string	EXTRACT 1 DATA-ELEMENTS (P121)

Format Line Number	Parameter Number	Parameter Type	Parameter Description
37 (continued)	123	string	EXTRACT 2 DATA-ELEMENTS (P121)
	124	string	EXTRACT 3 DATA-ELEMENTS (P121)
	127	integer	Number of the dependency in the data-view (relative dependency number).
	128	integer	Number of the dependency in the workbench design area (absolute dependency number).
	131	string	Name of the first data element on the right-hand side of the dependency.
	132	string	EXTRACT 1 DATA-ELEMENTS (P131)
	133	string	EXTRACT 2 DATA-ELEMENTS (P131)
	134	string	EXTRACT 3 DATA-ELEMENTS (P131)

38 The remaining data elements on the left-hand side and right-hand side of the domain dependency.

121	string	Name of a data element other than the first on the left-hand side of the dependency.
122	string	EXTRACT 1 DATA-ELEMENTS (P121)
123	string	EXTRACT 2 DATA-ELEMENTS (P121)
124	string	EXTRACT 3 DATA-ELEMENTS (P121)
127	integer	Number of the dependency in the data-view (relative dependency number).
128	integer	Number of the dependency in the workbench design area (absolute dependency number).
131	string	Name of a data element other than the first on the right-hand side of the domain dependency.

39 A separator line that can be used to separate the details of domain dependency output.

No parameters

13 A separator line that can be used to separate details of successive data-views that use this data element.

No parameters

Format Line Number	Parameter Number	Parameter Type	Parameter Description
14	Separator line which can be used to separate the Usage by Data-views section from the Usage by Dependencies section and can include a summary of the usage of the data element by data-views in the workbench design area.		
	81	integer	Number of data-views that use the data element.
15	Heading line for Usage by Dependencies section.		
	No parameters		
16	Heading line for details of a functional dependency that uses the data element as a left-hand side or right-hand side data element.		
	81	integer	Number of data elements on the left-hand side of the dependency.
17	The first left-hand side and right-hand side data elements of the functional dependency containing the data element.		
	101	string	Name of the first data element on the left-hand side of the dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	105	string	Extraneous data element marker, the value of which may be blank or `*`.
	106	integer	Number of the dependency in the workbench design area (absolute dependency number).
	111	string	Name of the data element on the right-hand side of the dependency.
	112	string	EXTRACT 1 DATA-ELEMENTS (P111)
	113	string	EXTRACT 2 DATA-ELEMENTS (P111)
	114	string	EXTRACT 3 DATA-ELEMENTS (P111)
18	The remaining left-hand side data elements of the functional dependency containing the data element.		
	101	string	Name of a data element other than the first on the left-hand side of the dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)

Format Line Number	Parameter Number	Parameter Type	Parameter Description
18 (continued)	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	105	string	Extraneous data element marker, the value of which may be blank or the string `*`.
	106	integer	Number of the dependency in the workbench design area (absolute dependency number).
19	A separator line which can be used to separate details of a functional dependency containing the data element from details of the origin of that dependency.		
	No parameters		
20	Heading line for details of a multivalued dependency which uses the data element as a left hand side or a right-hand side data element.		
	81	integer	Number of data elements on the left-hand side of the dependency.
	82	integer	Number of data elements on the right-hand side of the dependency.
21	The first left-hand side and right-hand side data elements of the multivalued dependency containing the data element.		
	101	string	Name of the first data element on the left-hand side of the dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	105	integer	Number of the dependency in the workbench design area (absolute dependency number).
	111	string	Name of the first data element on the right-hand side of the dependency.
	112	string	EXTRACT 1 DATA-ELEMENTS (P111)
	113	string	EXTRACT 2 DATA-ELEMENTS (P111)
	114	string	EXTRACT 3 DATA-ELEMENTS (P111)

Format Line Number	Parameter Number	Parameter Type	Parameter Description
22	The remaining left-hand side and right-hand side data elements of the multivalued dependency containing the data element.		
	101	string	Name of a data element other than the first on the left-hand side of the multivalued dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	105	string	Number of the dependency in the workbench design area (absolute dependency number).
	111	string	Name of a data element other than the first on the right-hand side of the multivalued dependency.
	112	string	EXTRACT 1 DATA-ELEMENTS (P111)
	113	string	EXTRACT 2 DATA-ELEMENTS (P111)
	114	string	EXTRACT 3 DATA-ELEMENTS (P111)
23	A separator line which can be used to separate the details of a multivalued dependency containing the data element from details of the origin of that dependency.		
	No parameters		
40	Heading line for details of a domain dependency which uses the data element as a left-hand side or a right-hand-side data element.		
	81	integer	Number of data elements on the left-hand side of the dependency.
	82	integer	Number of data elements on the right-hand side of the dependency.
41	The first left-hand side and right-hand side data elements of the domain dependency containing the data element.		
	101	string	Name of the first data element on the left-hand side of the dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 2 DATA-ELEMENTS (P101)
	105	integer	Number of the dependency in the workbench design area (absolute dependency number).

Format Line Number	Parameter Number	Parameter Type	Parameter Description
41 (continued)	111	string	Name of the first data element on the right-hand side of the dependency.
	112	string	EXTRACT 1 DATA-ELEMENTS (P111)
	113	string	EXTRACT 2 DATA-ELEMENTS (P111)
	114	string	EXTRACT 3 DATA-ELEMENTS (P111)
42	The remaining left-hand side and right-hand side data elements of the domain dependency containing the data element.		
	101	string	Name of a data element other than the first on the left-hand side of the domain dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	105	integer	Number of the dependency in the workbench design area (absolute dependency number).
	111	string	Name of a data element other than the first on the right-hand side of the domain dependency.
	112	string	EXTRACT 1 DATA-ELEMENTS (P111)
	113	string	EXTRACT 2 DATA-ELEMENTS (P111)
	114	string	EXTRACT 3 DATA-ELEMENTS (P111)
43	A separator line which can be used to separate the details of a domain dependency containing the data element from details of the origin of that dependency.		
	No parameters		
24	Heading line for details of the origin of a dependency using the data element.		
	81	integer	Number of origins of the dependency.
25	Details of the first data-view containing the dependency, or the fact that the dependency is implied.		
	101	string	Name of the first data-view containing the dependency, or the string `IMPLIED`.
	102	string	EXTRACT 1 DATA-VIEWS (P101), if applicable.

Format Line Number	Parameter Number	Parameter Type	Parameter Description
25 (continued)	103	string	EXTRACT 2 DATA-VIEWS (P101), if applicable.
	104	string	EXTRACT 3 DATA-VIEWS (P101), if applicable.
	105	string	Number of the dependency in the data-view (relative dependency number), or `0`.
	106	string	Data-view type (USERVIEW or ENTITY).
26	Details of other data-views containing the dependency, if applicable.		
	101	string	Name of a data-view other than the first containing the dependency.
	102	string	EXTRACT 1 DATA-VIEWS (P101)
	103	string	EXTRACT 2 DATA-VIEWS (P101)
	104	string	EXTRACT 3 DATA-VIEWS (P101)
	105	integer	Number of the dependency in the data-view (relative dependency number).
	106	string	Data-view type (USERVIEW or ENTITY).
27	A separator line which can be used to separate details of one dependency using the data element from other such dependencies.		
	No parameters		
28	Separator line which can be used to separate the Usage by Dependencies section from following output, and can include a summary of the usage of the data element by dependencies in the workbench design area.		
	81	integer	Number of dependencies which use the data element.
	82	integer	Number of functional dependencies which use the data element.
	83	integer	Number of multivalued dependencies which use the data element.
	84	integer	Number of dependency left-hand sides in which the data element appears.
	85	integer	Number of dependency right-hand sides in which the data element appears.
	86	integer	Number of domain dependencies which use the data element.

Format Line Number	Parameter Number	Parameter Type	Parameter Description
29	Heading line for Usage by Relations section.		
	No parameters		
30	Details of the relation (if one exists in the workbench design area) for which this data element is the key.		
	81	integer	Relation number
	82	string	Relation name (or blanks if it has not been NAMEd).
31	Details of a relation for which this data element forms part of the key.		
	81	string	Relation number
	82	integer	Relation name (or blanks if it has not been NAMEd).
32	Details of a relation in which this data element is a non-key data element.		
	81	integer	Relation number
	82	integer	Relation name (or blanks if it has not been NAMEd).
33	Separator line which can be used to separate the Usage by Relations section from following output, and can include a summary of the usage of the data element by relations in the workbench design area.		
	81	integer	Number of relations which use the data element.
	82	integer	Number of relations (1 or 0, as appropriate) which use the data element as the key.
	83	integer	Number of relations which use the data element as part of the key.
	84	integer	Number of relations which use the data element as a non-key data element.
34	Separator line which can be used to separate information relating to the usage of individual data elements.		
	No parameters		
35	The terminating line of the data element usage analysis report.		
	No parameters		

Data-Element-Usage-Analysis Report: Variable Parameter Availability

This section shows the variable parameter availability by format line for the Data-Element-Usage Report output category:

Format Line	Available Parameter Numbers						
01	Global (1-10)	FM-01 defined (21-22)					
02	..	..	FM-02 defined (41-46)				
03	..	..	..	FM-03 defined (none)			
04	..	..	..	..	FM-04 defined (81-86		
05	..	..	..	..	..	FM-05 defined (101)	
06	..	..	..	..	..	..	FM-06 defined (121-128, 131-134)
07	..	..	..	..	..	..	FM-07 defined (121-128)
08	..	..	..	..	..	..	FM-08 defined (none)
09	..	..	..	..	..	FM-09 defined (81-82)	
10	..	..	..	..	..	..	FM-10 defined (121-124, 126-129, 131-134)
11	..	..	..	..	..	..	FM-11 defined (121-124, 126-129, 131-134)

Format Line	Available Parameter Numbers						
12	Global (1-10)	FM-01 defined (21-22)	FM-02 defined (41-46)	FM-03 defined (none)	FM-04 defined (81-86	FM-09 defined (81-82)	FM-12 defined (none)
36	..	..	..	..	..	FM-36 defined (101-102)	
37	..	..	..	..	..	..	FM-37 defined (121-124, 127-128, 131-134)
38	..	..	..	..	..	..	FM-38 defined (121-124, 127-128, 131-134)
39	..	..	..	..	..	..	FM-39 defined (none)
13	..	..	..	..	..	FM-13 defined (none)	
14	..	..	..	..	FM-14 defined (81)		
15	..	..	..	FM-15 defined (none)			
16	..	..	..	..	FM-16 defined (81)		
17	..	..	..	..	..	FM-17 defined (101-106, 111-114)	
18	..	..	..	..	..	FM-18 defined (101-106)	
19	..	..	..	..	..	FM-19 defined (none)	
20	..	..	..	..	FM-20 defined (81-82)		

Format Line	Available Parameter Numbers						
21	Global (1-10)	FM-01 defined (21-22)	FM-02 defined (41-46)	FM-15 defined (none)	FM-20 defined (81-82)	FM-21 defined (101-105, 111-114)	
22	..	..	..	..	..	FM-22 defined (101-105, 111-114)	
23	..	..	..	..	..	FM-23 defined (none)	
40	..	..	..	..	..	FM-40 defined (81-82)	
41	..	..	..	..	..	..	FM-41 defined (101-105, 111-114)
42	..	..	..	..	..	..	FM-42 defined (101-105, 111-114)
43	..	..	..	..	..	..	FM-43 defined (101-105, 111-114)
24	..	..	..	..	FM-24 defined (81)		
25	..	..	..	..	..	FM-25 defined (101-106)	
26	..	..	..	..	..	FM-26 defined (101-106)	
27	..	..	..	..	..	FM-27 defined (none)	
28	..	..	..	..	FM-28 defined (81-86)		
29	..	..	..	FM-29 defined (none)			

Format Line	Available Parameter Numbers				
30	Global (1-10)	FM-01 defined (21-22)	FM-02 defined (41-46)	FM-29 defined (none)	FM-30 defined (81-82)
31	..	..	..	..	FM-31 defined (81-82)
32	..	..	..	..	FM-32 defined (81-82)
33	..	..	..	..	FM-33 defined (81-84)
34	..	..	..	FM-34 defined (none)	
35	..	..	FM-35 defined (none)		

10 Output Category: Network Cluster

FORMAT members of the output category NETWORK CLUSTER are used to format the output from the command:

```
PLOT NETWORK-SCHEMA....USING FORMAT format-name
```

(except when this command includes the CONSOLIDATED keyword).

FORMAT members of this category can only be used when the user's installation includes the User Printer Graphics facility (selectable unit DSR-UD3l).

A general description of the output of this command is given as part of the description of the User Printer Graphics facility in the *ASG-DesignManager User's Guide* (except that, in release 2.7 of DesignManager onwards, the term *relation* has been replaced by the term *record* in the description of network cluster plots).

Figure 11 on page 143 shows the structure of this category of output. "Network Cluster: Parameter Numbers Defined" on page 146 shows the parameters that are defined for each format line of a FORMAT member of the NETWORK CLUSTER category. "Network Cluster: Variable Parameter Availability" on page 160 shows the extended availability of each parameter.

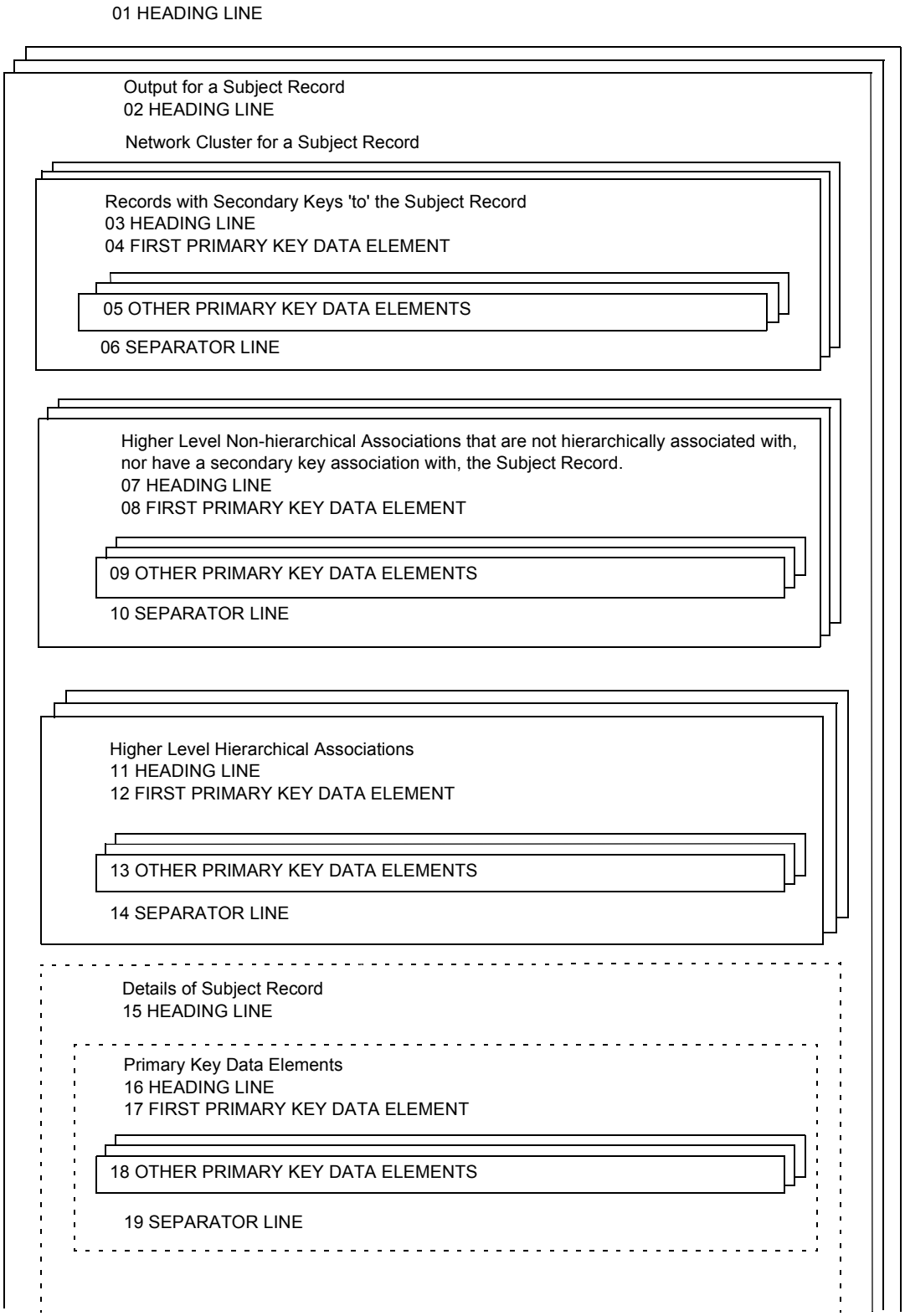
The term *subject record* is used in this chapter with the same meaning as the term *subject relation* is used in the description of the User Printer Graphics facility in the *ASG-DesignManager User's Guide*. That is, the record for which an individual network cluster is plotted is the subject record of that particular cluster.

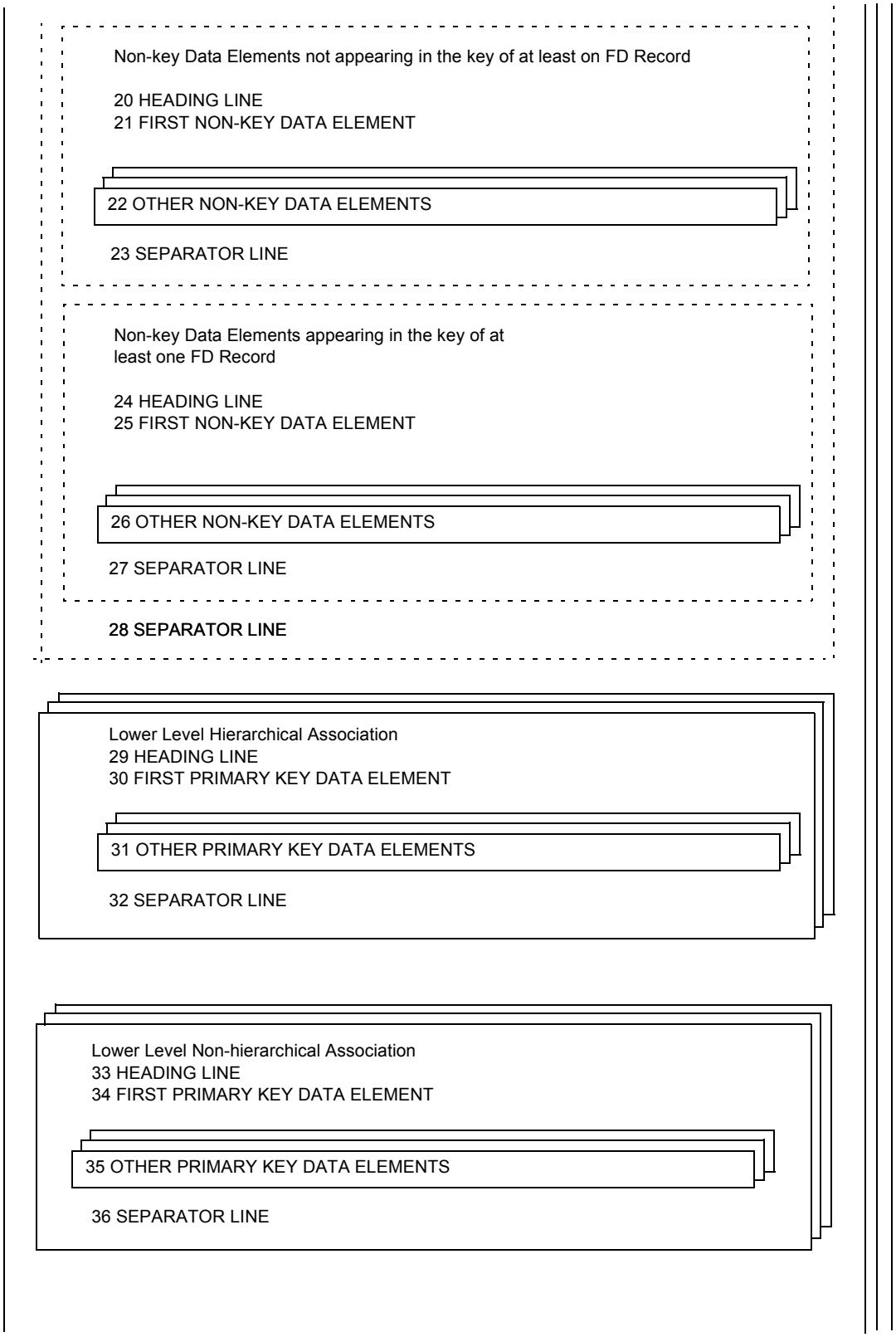
The terms *higher level* and *lower level* are used to refer to those associated records in each cluster whose details are respectively shown above and below the details of the cluster's subject record in the plot output.

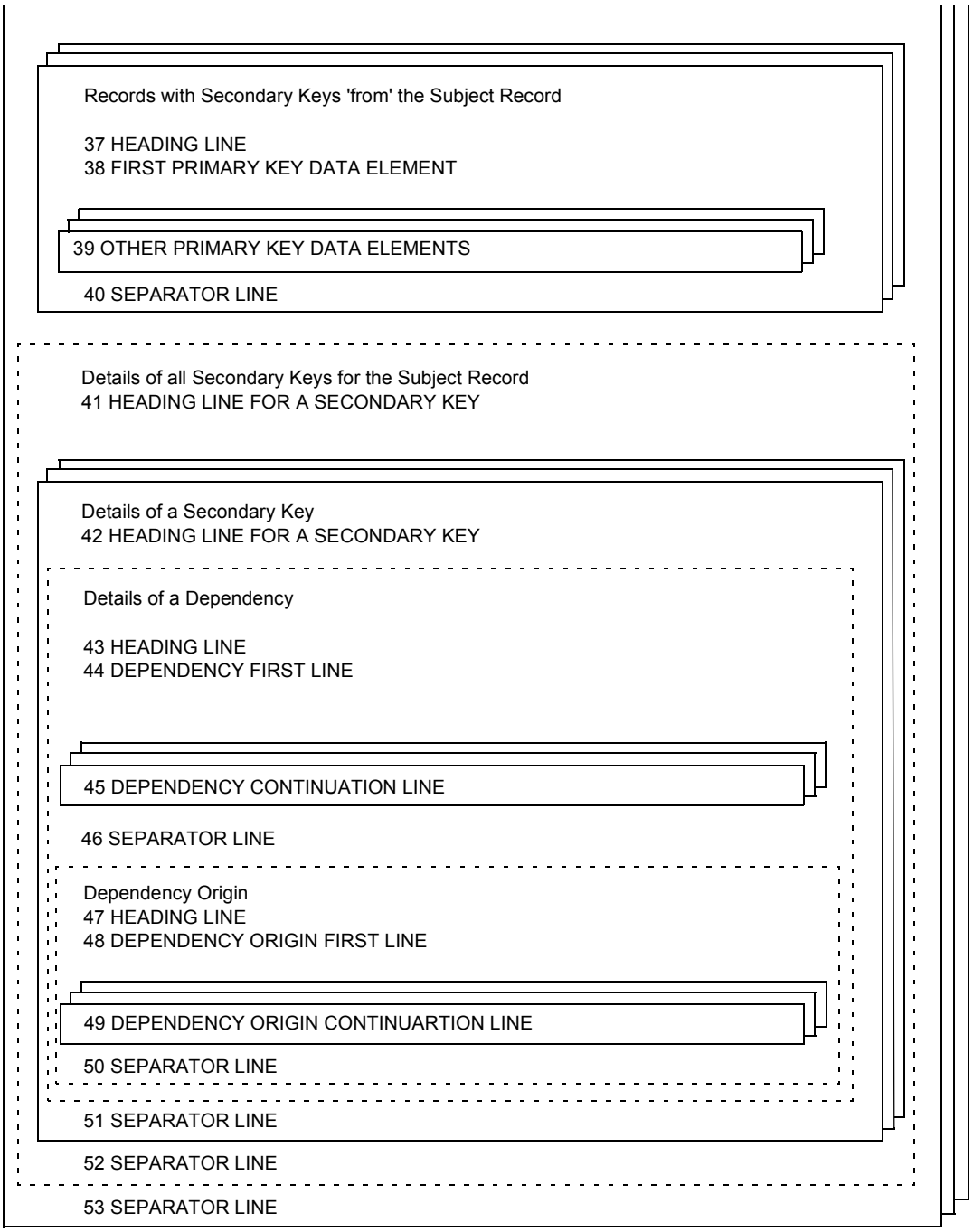
The terms *type 1 associated record*, *type 2 associated record*, and so on, are used in this chapter to refer collectively to those associated records that are plotted in the same area of a cluster and share a common vertical connection line to or from the cluster's subject record. Each plotted cluster may contain up to six such groups. For example, the higher-level records whose details appear at the top right- hand side of each cluster plot are referred to as type 1 associated records. The type number which applies to each of these groups of records is stated in the specification of the first format line that applies to that particular record group.

The only parts of the three association matrices that can be formatted are their heading lines. One format line is provided for the heading line of each of the three association matrices. If the format line that corresponds to any of the heading lines is included in a FORMAT member, then the whole of the corresponding association matrix is included in the output when that FORMAT member is used. If any of these format lines is not included in a FORMAT member, then the whole of the corresponding matrix is omitted from the output when that FORMAT member is used.

Figure 11. Network Cluster Plot Structure




Non-key Data Elements not appearing in the key of at least on FD Record
20 HEADING LINE
21 FIRST NON-KEY DATA ELEMENT
22 OTHER NON-KEY DATA ELEMENTS
23 SEPARATOR LINE
Non-key Data Elements appearing in the key of at least one FD Record
24 HEADING LINE
25 FIRST NON-KEY DATA ELEMENT
26 OTHER NON-KEY DATA ELEMENTS
27 SEPARATOR LINE
28 SEPARATOR LINE
Lower Level Hierarchical Association
29 HEADING LINE
30 FIRST PRIMARY KEY DATA ELEMENT
31 OTHER PRIMARY KEY DATA ELEMENTS
32 SEPARATOR LINE
Lower Level Non-hierarchical Association
33 HEADING LINE
34 FIRST PRIMARY KEY DATA ELEMENT
35 OTHER PRIMARY KEY DATA ELEMENTS
36 SEPARATOR LINE



54 SEPARATOR LINE
55 HEADING LINE FOR THE HIERARCHICAL ASSOCIATION MATRIX
56 HEADING LINE FOR THE NON-HIERARCHICAL ASSOCIATION MATRIX
57 HEADING LINE FOR THE COMBINED ASSOCIATION MATRICES

Network Cluster: Parameter Numbers Defined

This table shows the parameter numbers defined for each format line, arranged by order of processing for the network cluster output category:

Format Line	Parameter Number	Parameter Type	Parameter Description
01 Heading line for the network plot.			
	No parameters		
02 Heading line for details of a cluster of records.			
	No parameters		
03 Heading line for a record (type 1 associated record) that has secondary keys to the subject record.			
	41	string	Name of the associated record.
	42	integer	Number of the associated record.
	43	3-character string	Left-hand side of the association arrow, the value of which is ---.
	44	3-character string	Right-hand side of the association arrow, the value of which is ->>.
	45	1-character string	For connection line to the subject record. Value is | if it is not the first such record to be reported on, otherwise blank.
04 Details of the first data element in the primary key of the current type 1 associated record.			
	61	string	Name of first data element in the primary key of the associated record.
	62	string	EXTRACT 1 DATA-ELEMENTS (P61)
	63	string	EXTRACT 2 DATA-ELEMENTS (P61)
	64	string	EXTRACT 3 DATA-ELEMENTS (P61)

Format Line	Parameter Number	Parameter Type	Parameter Description
05	Details of the data elements other than the first in the primary key of the current type 1 associated record.		
	61	string	Name of a data element other than the first in the primary key of the associated record.
	62	string	EXTRACT 1 DATA-ELEMENTS (P61)
	63	string	EXTRACT 2 DATA-ELEMENTS (P61)
	64	string	EXTRACT 3 DATA-ELEMENTS (P61)
06	Separator line.		
	No parameters		
07	Heading line for details of a higher-level associated record (type 2 associated record) that is not hierarchically associated with, nor has a secondary key association with, the subject record.		
	41	string	Name of the associated record.
	42	integer	Number of the associated record.
	43	3-character string	Left-hand side of the association arrow, the value of which is <<- or ---, as appropriate.
	44	3-character string	Right-hand side of the association arrow, the value of which is -->, ---, or ==>, as appropriate.
	45	1-character string	For the vertical connection line between the subject record and the type 1 associated records. Value is | or a blank, as appropriate.
	47	1-character string	For the vertical connection line between the subject record and the type 2 associated records. Value is | or a blank, as appropriate.
08	Details of the first data element in the primary key of a type 2 associated record.		
	61	string	Name of first data element in the primary key of the associated record.
	62	string	EXTRACT 1 DATA-ELEMENTS (P61)
	63	string	EXTRACT 2 DATA-ELEMENTS (P61)

Format Line	Parameter Number	Parameter Type	Parameter Description
08 (continued)	64	string	EXTRACT 3 DATA-ELEMENTS (P61)
	65	1-character string	For the vertical connecting line between the subject record and the type 1 associated records. Value is | or blank, as appropriate.
09	Details of the data elements other than the first in the primary key of the associated record of type 2.		
	61	string	Name of a data element other than the first in the primary key of the associated record.
	62	string	EXTRACT 1 DATA-ELEMENTS (P61)
	63	string	EXTRACT 2 DATA-ELEMENTS (P61)
	64	string	EXTRACT 3 DATA-ELEMENTS (P61)
	65	1-character string	For the vertical connecting line between the subject record and the type 1 associated records. Value is | or blank, as appropriate.
10	Separator line.		
	65	1-character string	For the vertical connecting line between the subject record and the type 1 associated records. Value is | or blank, as appropriate.
11	Heading line for details of a higher-level record (type 3 associated record) that is hierarchically associated with the subject record.		
	41	string	Name of the associated record.
	42	integer	Number of the associated record.
	43	3-character string	Left-hand side of the association arrow, the value of which is <<-.
	44	3-character string	Right-hand side of the association arrow, the value of which is -->.
	45	1-character string	For the connection line to the subject record for associated records of type 1. Value is | or a blank, as appropriate.
	47	1-character string	For the connection line to the subject record for associated records of type 2. Value is | or a blank, as appropriate.
	48	1-character string	For the connection line to the subject record for associated records of type 3. Value is | or a blank, as appropriate.

Format Line	Parameter Number	Parameter Type	Parameter Description
12 Details of the first data element in the primary key of an associated record of type 3.			
	61	string	Name of first data element in the primary key of the associated record.
	62	string	EXTRACT 1 DATA-ELEMENTS (P61)
	63	string	EXTRACT 2 DATA-ELEMENTS (P61)
	64	string	EXTRACT 3 DATA-ELEMENTS (P61)
	65	1-character string	For the connection line to the subject record for associated records of type 1. Value is | or blank, as appropriate.
	67	1-character string	For the connection line to the subject record for associated records of type 2. Value is | or blank, as appropriate.
13 Details of the data elements other than the first in the primary key of the associated record of type 3.			
	61	string	Name of a data element other than the first in the primary key of the associated record.
	62	string	EXTRACT 1 DATA-ELEMENTS (P61)
	63	string	EXTRACT 2 DATA-ELEMENTS (P61)
	64	string	EXTRACT 3 DATA-ELEMENTS (P61)
	65	1-character string	For the connection line to the subject record for associated records of type 1. Value is | or blank, as appropriate.
	67	1-character string	For the connection line to the subject record for associated records of type 2. Value is | or blank, as appropriate.
14 Separator line.			
	65	1-character string	For the connection line to the subject record for associated records of type 1. Value is | or blank, as appropriate.
	67	1-character string	For the connection line to the subject record for associated records of type 2. Value is | or blank, as appropriate.

Format Line	Parameter Number	Parameter Type	Parameter Description
15 Heading line for details of the subject record.			
	41	string	Name of the subject record.
	42	integer	Number of the subject record.
	49	1-character string	For the connection line to the subject record for associated records of type 2. Value is | or blank, as appropriate.
	50	1-character string	For the connection line to the subject record for associated records of type 1. Value is | or blank, as appropriate.
	51	7-character string	For the connection line to the subject record for associated records of type 2. Value is +------ or 7 blanks, as appropriate.
	52	9-character string	For the connection line to the subject record for associated records of type 1. Value is --------+ or 9 blanks, as appropriate.
16 Heading line for details of the primary key of the subject record.			
	61	integer	Number of data elements in the primary key of the subject record.
17 Details of the first data element in the primary key of the subject record.			
	81	string	Name of the first data element in the primary key of subject record.
	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)
18 Details of the other data elements in the primary key of the subject record.			
	81	string	Name of a data element other than the first in the primary key of the subject record.
	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)

Format Line	Parameter Number	Parameter Type	Parameter Description
19	Separator line which can be used to separate the details of the primary key data elements of the subject record from the non-key data elements of that record.		
	No parameters		
20	Heading line for details of the non-key data elements of the subject record that do not appear in the key of any FD record.		
	61	integer	Number of non-key data elements in the subject record that do not appear in the key of any FD record.
21	Details of the first non-key data element in the subject record that does not appear in the key of any FD record.		
	81	string	Name of the data element.
	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)
22	Details of the non-key data elements (other than the first) in the subject record that do not appear in the key of any FD record.		
	81	string	Name of a non-key data element (other than the first) in the subject record that does not appear in the key of any FD record.
	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)
23	Separator line which can be used to mark the end of the details of the non-key data elements in the subject record that do not appear in the key of any FD record.		
	No parameters		
24	Heading line for details of the non-key data elements of the subject record that appear in the key of at least one FD record.		
	61	integer	Number of non-key data elements in the subject record that appear in the key of at least one FD record.

Format Line	Parameter Number	Parameter Type	Parameter Description
25	Details of the first non-key data element in the subject record that appears in the key of at least one FD record.		
	81	string	Name of the data element.
	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)
26	Details of the non-key data elements (other than the first) in the subject record that appear in the key of at least one FD record.		
	81	string	Name of a non-key data element (other than the first) in the subject record that appears in the key of at least one FD record.
	82	string	EXTRACT 1 DATA-ELEMENTS (P81)
	83	string	EXTRACT 2 DATA-ELEMENTS (P81)
	84	string	EXTRACT 3 DATA-ELEMENTS (P81)
27	Separator line which can be used to mark the end of the details of the non-key data elements in the subject record that appear in the key of at least one FD record.		
	No parameters		
28	A separator line which can be used to separate the details of the subject record from the details of the lower-level associated records.		
	49	1-character string	For the connection line to the subject record for associated records of type 2. Value is | or blank, as appropriate.
	50	1-character string	For the connection line to the subject record for associated records of type 1. Value is | or blank, as appropriate.
	51	7-character string	For the connection line to the subject record for associated records of type 5. Value is +------ or 7 blanks, as appropriate.
	52	9-character string	For the connection line to the subject record for associated records of type 6. Value is --------+ or 9 blanks, as appropriate.

Format Line	Parameter Number	Parameter Type	Parameter Description
29	Heading line for details of a lower-level record (type 4 associated record) that is hierarchically associated with the subject record.		
	41	string	Name of the associated record.
	42	integer	Number of the associated record.
	43	3-character string	Left-hand side of the association arrow, the value of which is <--.
	44	3-character string	Right-hand side of the association arrow, the value of which is ->>.
	45	1-character string	For the connection line to the subject record for the associated records of type 6. Value is | or a blank, as appropriate.
	47	1-character string	For the connection line to the subject record for associated records of type 5. Value is | or blank, as appropriate.
	48	1-character string	For the connection line to the subject record for associated records of type 4. Value is | or blank, as appropriate.
30	Details of the first data element in the primary key of an associated record of type 4.		
	61	string	Name of the first data element in the primary key of the associated record.
	62	string	EXTRACT 1 DATA-ELEMENTS (P61)
	63	string	EXTRACT 2 DATA-ELEMENTS (P61)
	64	string	EXTRACT 3 DATA-ELEMENTS (P61)
	65	1-character string	For the connection line to the subject record for associated records of type 6. Value is | or blank, as appropriate.
	67	1-character string	For the connection line to the subject record for associated records of type 5. Value is | or blank, as appropriate.
	68	1-character string	For the connection line to the subject record for associated records of type 4. Value is | or a blank, as appropriate.
31	Details of data elements other than the first in the primary key of a type 4 associated record.		
	61	string	Name of a data element other than the first in the primary key of the associated record.
	62	string	EXTRACT 1 DATA-ELEMENTS (P61)

Format Line	Parameter Number	Parameter Type	Parameter Description
31 (continued)	63	string	EXTRACT 2 DATA-ELEMENTS (P61)
	64	string	EXTRACT 3 DATA-ELEMENTS (P61)
	65	1-character string	For the connection line to the subject record for associated records of type 6. Value is | or blank, as appropriate.
	67	1-character string	For the connection line to the subject record for associated records of type 5. Value is |or blank, as appropriate.
	68	1-character string	For the connection line to the subject record for associated records of type 4. Value is | or a blank, as appropriate.
32	Separator line.		
	65	1-character string	For the connection line to the subject record for associated records of type 6. Value is | or blank, as appropriate.
	67	1-character string	For the connection line to the subject record for associated records of type 5. Value is | or blank, as appropriate.
	68	1-character string	For the connection line to the subject record for associated records of type 4. Value is | or a blank, as appropriate.
33	Heading line for details of a lower-level record (type 5 associated record) that is non-hierarchically associated with the subject record.		
	41	string	Name of the associated record.
	42	integer	Number of the associated record.
	43	3-character string	Left-hand side of the association arrow, the value of which is `<<-`, `<--`, `---`, `===`, or `<==` , as appropriate.
	44	3-character string	Right-hand side of the association arrow, the value, of which is `->>`, `-->`, `---`, `===`, or `==>`, as appropriate.
	45	1-character string	For the connection line to the subject record for the associated records of type 6. Value is | or a blank, as appropriate.

Format Line	Parameter Number	Parameter Type	Parameter Description
33 (continued)	47	1-character string	For the connection line to the subject record for associated records of type 5. Value is | or a blank, as appropriate.
34	Details of the first data element in the primary key of an associated record of type 5.		
	61	string	Name of the first data element in the primary key of the associated record.
	62	string	EXTRACT 1 DATA-ELEMENTS (P61)
	63	string	EXTRACT 2 DATA-ELEMENTS (P61)
	64	string	EXTRACT 3 DATA-ELEMENTS (P61)
	65	1-character string	For the connection line to the subject record for associated records of type 6. Value is | or a blank, as appropriate.
	67	1-character string	For the connection line to the subject record for associated records of type 5. Value is | or a blank, as appropriate.
35	Details of the data elements other than the first in the primary key of an associated record of type 5.		
	61	string	Name of a data element other than the first in the primary key of the associated record.
	62	string	EXTRACT 1 DATA-ELEMENTS (P61)
	63	string	EXTRACT 2 DATA-ELEMENTS (P61)
	64	string	EXTRACT 3 DATA-ELEMENTS (P61)
	65	1-character string	For the connection line to the subject record for associated records of type 6. Value is | or blank, as appropriate.
	67	1-character string	For the connection line to the subject record for associated records of type 5. Value is | or blank, as appropriate.
36	Separator line.		
	65	1-character string	For the connection line to the subject record for associated records of type 6. Value is | or blank, as appropriate.
	67	1-character string	For the connection line to the subject record for associated records of type 5. Value is | or a blank, as appropriate.

Format Line	Parameter Number	Parameter Type	Parameter Description
37	Heading line for details of a record (type 6 associated record) whose key exists in the subject record as a secondary key.		
	41	string	Name of the associated record.
	42	integer	Number of the associated record.
	43	3-character string	Left-hand side of the association arrow, the value of which is <<-.
	44	3-character string	Right-hand side of the association arrow, the value of which is ---.
	45	1-character string	For connection line to the subject record. Value is | or a blank, as appropriate.
38	Details of the first data element in the primary key of the associated record.		
	61	string	Name of the first data element in the primary key of the associated record.
	62	string	EXTRACT 1 DATA-ELEMENTS (P61)
	63	string	EXTRACT 2 DATA-ELEMENTS (P61)
	64	string	EXTRACT 3 DATA-ELEMENTS (P61)
	65	1-character string	For the connection line to the subject record. Value is | or a blank, as appropriate.
39	Details of the data elements other than the first in the primary key of the associated record.		
	61	string	Name of a data element other than the first in the primary key of the associated record.
	62	string	EXTRACT 1 DATA-ELEMENTS (P61)
	63	string	EXTRACT 2 DATA-ELEMENTS (P61)
	64	string	EXTRACT 3 DATA-ELEMENTS (P61)
	65	1-character string	For connection line to the subject record. Value is | or a blank, as appropriate.
40	Separator line.		
	65	1-character string	For connection line to the subject record. Value is | or a blank, as appropriate.

Format Line	Parameter Number	Parameter Type	Parameter Description
41 Heading line for details of secondary keys.			
	41	integer	Number of secondary keys to the subject record.
	42	integer	Number of secondary keys contained in the subject record.
42 Heading line for the details of a secondary key.			
	61	string	Name of a record containing a secondary key in the current cluster plot.
	62	integer	Number of a record containing a secondary key in the current cluster plot.
	71	string	Name of a record whose key is the secondary key contained in the record named in P61.
	72	integer	Number of the record named in P71.
43 Heading line for details of a multivalued dependency.			
	81	integer	Number of left-hand side data elements.
	82	integer	Number of right-hand side data elements.
44 The first left-hand side and right-hand side data elements of the multivalued dependency.			
	101	string	Name of the first data element on the left-hand side of the dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	106	integer	Number of the dependency in the workbench design area (absolute dependency number).
	111	string	Name of the first data element on the right-hand side of the dependency.
	112	string	EXTRACT 1 DATA-ELEMENTS (P111)
	113	string	EXTRACT 2 DATA-ELEMENTS (P111)
	114	string	EXTRACT 3 DATA-ELEMENTS (P111)

Format Line	Parameter Number	Parameter Type	Parameter Description
45	The remaining left-hand side and right-hand side data elements of the multivalued dependency.		
	101	string	Name of a data element other than the first on the left-hand side of the dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	106	integer	Number of the dependency in the workbench design area (absolute dependency number).
	111	string	Name of a data element other than the first on the right-hand side of the dependency.
	112	string	EXTRACT 1 DATA-ELEMENTS (P111)
	113	string	EXTRACT 2 DATA-ELEMENTS (P111)
	114	string	EXTRACT 3 DATA-ELEMENTS (P111)
46	A separator line which can be used to separate the details of the multivalued dependency from the associated data-view details which follow.		
	No parameters		
47	Heading line for details of the origin of the multivalued dependency.		
	81	integer	Number of data-views containing the multivalued dependency.
48	Details of the first data-view containing the multivalued dependency.		
	101	string	Name of first data-view containing the dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	105	integer	Number of the dependency in the data-view (relative dependency number).

Format Line	Parameter Number	Parameter Type	Parameter Description
49	Details of the data-views other than the first containing the multivalued dependency.		
	101	string	Name of a data-view other than the first containing the dependency.
	102	string	EXTRACT 1 DATA-ELEMENTS (P101)
	103	string	EXTRACT 2 DATA-ELEMENTS (P101)
	104	string	EXTRACT 3 DATA-ELEMENTS (P101)
	105	integer	Number of the dependency in the data-view (relative dependency number).
50	A separator line.		
	No parameters		
51	A separator line which can be used to separate details of successive secondary keys.		
	No parameters		
52	A separator line to denote the end of the detailed secondary key report.		
	No parameters		
53	A separator line to denote the end of the output for an individual subject record.		
	No parameters		
54	A separator line used to separate the output details for the subject records from the association matrices.		
	No parameters		
55	Heading line for the hierarchical association matrix.		
	No parameters		

Format Line	Parameter Number	Parameter Type	Parameter Description
56	Heading line for the non-hierarchical association matrix.		
	No parameters		
57	Heading line for the combined association matrices.		
	No parameters		

Network Cluster: Variable Parameter Availability

This table shows the variable parameter availability by format line for the network cluster output category:

Format Line	Available Parameter Numbers			
01	Global (1-10)	FM-01 defined (none)		
02	..	FM-02 defined (none)		
03	..	..	FM-03 defined (41-45)	
04	..	..	..	FM-04 defined (61-64)
05	..	..	..	FM-05 defined (61-64)
06	..	..	..	FM-06 defined (none)
07	..	..	FM-07 defined (41-45, 47)	
08	..	..	..	FM-08 defined (61-65)

Format Line	Available Parameter Numbers				
09	Global (1-10)	FM-02 defined (none)	FM-07 defined (41-45, 47)	FM-09 defined (61-65)	
10	..	..	..	FM-10 defined (65)	
11	..	..	FM-11 defined (41-45, 47-48)		
12	..	..	..	FM-12 defined (61-65, 67)	
13	..	..	..	FM-13 defined (61-65, 67)	
14	..	..	..	FM-14 defined (65,67)	
15	..	..	FM-15 defined (41-42, 49-52)		
16	..	..	..	FM-16 defined (61)	
17	..	..	..	..	FM-17 defined (81-84)
18	..	..	..	..	FM-18 defined (81-84)
19	..	..	..	..	FM-19 defined (none)
20	..	..	..	FM-20 defined (61)	
21	..	..	..	..	FM-21 defined (81-84)

Format Line	Available Parameter Numbers				
22	Global (1-10)	FM-02 defined (none)	FM-15 defined (41-42, 49-52)	FM-20 defined (61)	FM-22 defined (81-84)
23	..	..	..	..	FM-23 defined (none)
24	..	..	..	FM-24 defined (61)	
25	..	..	..	..	FM-25 defined (81-84)
26	..	..	..	..	FM-26 defined (81-84)
27	..	..	..	..	FM-27 defined (none)
28	..	..	..	FM-28 defined (49-52)	
29	..	..	FM-29 defined (41-45, 47-48)		
30	..	..	..	FM-30 defined (61-65, 67-68)	
31	..	..	..	FM-31 defined (61-65, 67-68)	
32	..	..	..	FM-32 defined (65, 67-68)	
33	..	..	..	FM-33 defined (41-45, 47)	
34	..	..	..	FM-34 defined (61-65, 67)	

Format Line	Available Parameter Numbers					
35	Global (1-10)	FM-02 defined (none)	FM-29 defined (41-45, 47-48)	FM-35 defined (61-65, 67)		
36	..	..	..	FM-36 defined (65, 67)		
37	..	..	FM-37 defined (41-45)			
38	..	..	..	FM-38 defined (61-65)		
39	..	..	..	FM-39 defined (61-65)		
40	..	..	..	FM-40 defined (65)		
41	..	..	FM-41 defined (41, 42)			
42	..	..	..	FM-42 defined (61-62, 71-72)		
43	..	..	..	..	FM-43 defined (81-82)	
44	..	..	FM-41 defined (41-42)	FM-42 defined (61-62, 71-72)	FM-43 defined (81-82)	FM-44 defined (101-104, 106, 111-114)
45	..	..	..	..	..	FM-45 defined (101-104, 106, 111-114)
46	..	..	..	..	..	FM-46 defined (none)

Format Line	Available Parameter Numbers					
47	Global (1-10)	FM-02 defined (none)	FM-41 defined (41-42)	FM-42 defined (61-62, 71-72)	FM-47 defined (81)	
48	..	..	..	..	..	FM-48 defined (101-105)
49	..	..	..	..	..	FM-49 defined (101-105)
50	..	..	..	..	..	FM-50 defined (none)
51	..	..	..	..	FM-51 defined (none)	
52	..	..	..	FM-52 defined (none)		
53	..	..	FM-53 defined (none)			
54	..	FM-54 defined (none)				
55	..	FM-55 defined (none)				
56	..	FM-56 defined (none)				
57	..	FM-57 defined (none)				

11 Output Category: Load-Factor-Analysis Report

FORMAT members of the LOAD-FACTOR-ANALYSIS REPORT output category are used to format the output from the command:

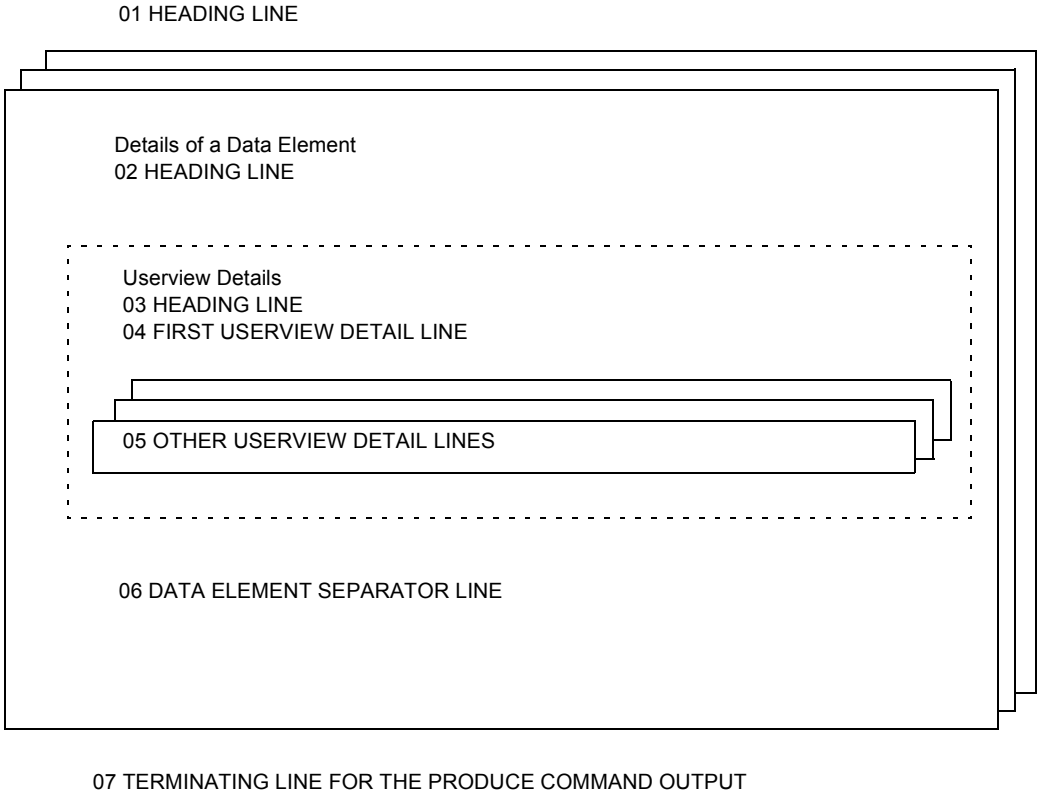
```
REPORT LOAD-FACTOR-ANALYSIS....USING format-name
```

Their use is only valid if the Load-Factor-Calculation facility (selectable unit DSR-PH10) is installed.

The structure of a Load-Factor-Analysis Report is shown in Figure 12 on page 166, the parameter members defined for each format line are shown in "Load-Factor-Analysis Report: Parameters Defined" on page 167, and the availability of parameter numbers is shown in "Load-Factor-Analysis: Parameter Availability" on page 169.

Using a format name to specify the layout of a Load-Factor-Analysis Report, in addition to the facilities allowed by use of the DETAILS and SUMMARY keywords, allows the user to specify extract values for each of the data element and userview names that are mentioned in the Report.

Figure 12. Load-Factor-Analysis Report Structure



Load-Factor-Analysis Report: Parameters Defined

This table shows the parameters defined for each format line of the Load-Factor-Analysis Report, arranged by the order of processing:

Format Line Number	Parameter Number	Parameter Type	Parameter Description
01	Heading line for the Load-Factor-Calculation Report.		
	No parameters		
02	Heading line for details of each data element,		
	41	integer	Number of data element.
	42	string	Data element name.
	43	string	EXTRACT 1 DATA-ELEMENTS (P42)
	44	string	EXTRACT 2 DATA-ELEMENTS (P42)
	45	string	EXTRACT 3 DATA-ELEMENTS (P42)
	46	string	Minimum response time.
	47	string	Maximum response time.
	48	string	Minimum userview name.
	49	string	EXTRACT 1 USERVIEWS (P48)
	50	string	EXTRACT 2 USERVIEWS (P48)
	51	string	EXTRACT 3 USERVIEWS (P48)
	52	string	Maximum userview name.
	53	string	EXTRACT 1 USERVIEWS (P52)
	54	string	EXTRACT 2 USERVIEWS (P52)
	55	string	EXTRACT 3 USERVIEWS (P52)
	56	string	Total access frequency.
	57	string	Average response time.
03	Heading line for the userviews of this data element.		
	No parameters		

Format Line Number	Parameter Number	Parameter Type	Parameter Description
04 Details of the first userview.			
	81	integer	Userview number.
	82	string	Userview name.
	83	string	EXTRACT 1 USERVIEWS (P82)
	84	string	EXTRACT 2 USERVIEWS (P82)
	85	string	EXTRACT 3 USERVIEWS (P82)
	86	string	Percentage contribution to total access frequency.
	87	string	Relative frequency error message.
	88	string	Response time error message.
05 Details of the other userviews.			
	81	integer	Userview number.
	82	string	Userview name.
	83	string	EXTRACT 1 USERVIEWS (P82)
	84	string	EXTRACT 2 USERVIEWS (P82)
	85	string	EXTRACT 3 USERVIEWS (P82)
	86	string	Percentage contribution to total access frequency.
	87	string	Relative frequency error message.
	88	string	Response time error message.
06 A separator line to separate the details of successive data elements.			
	No parameters		
07 A terminating line to mark the end of the load factor analysis report.			
	No parameters		

Load-Factor-Analysis: Parameter Availability

This table shows the parameter availability by format line for the Load-Factor-Analysis Report output category:

Format Line	Available Parameter Numbers		
01	Global (1-10)	FM-01 defined (none)	
02	..	FM-02 defined (41-57)	
03	..	FM-03 defined (none)	
04	..	..	FM-04 defined (81-88)
05	..	..	FM-05 defined (81-88)
06	..	..	FM-06 defined (none)
07	..	FM-07 defined (none)	

12 Output Category: PRODUCE SQL

FORMAT members of the PRODUCE SQL output category are used to format the output of the command:

```
PRODUCE SQL....USING FORMAT format-name
```

This form of the PRODUCE command can be used whenever the User Formatted Output and the SQL/DS Source Language Generation optional additional facilities are both included in a user's installation.

The format lines that are used to format each part of SQL source language output are shown in Figure 13 on page 172. The parameter numbers defined for each of these format lines are shown in "Produce SQL: Parameters Defined" on page 173, and the availability of parameter numbers is shown in "Produce SQL: Parameter Availability" on page 176.

The EXTRACT 1.... clause is used to specify which common clause (and if necessary which part of that clause) contains the data type of each table column. For example, if a FORMAT member definition includes the clause:

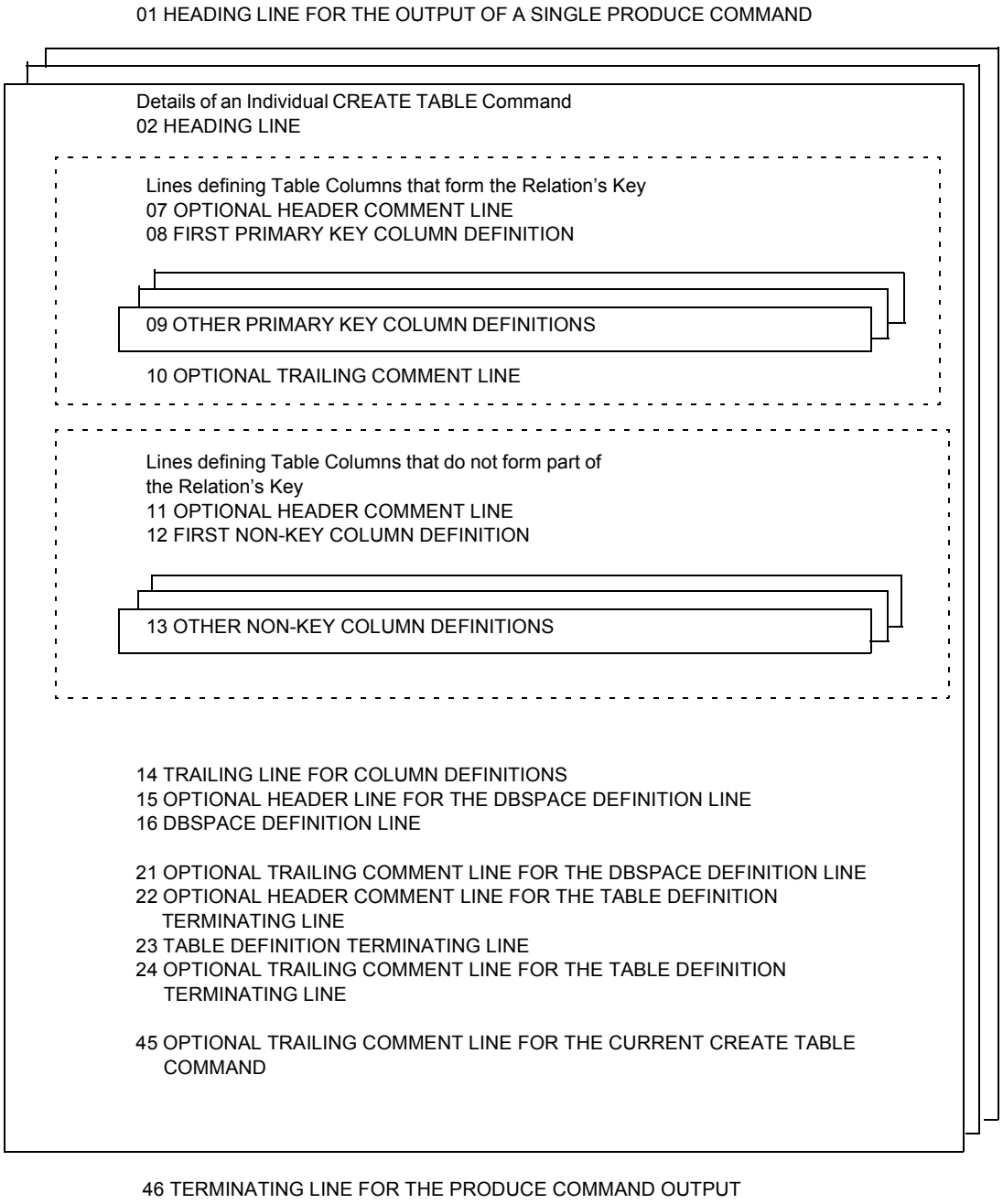
```
EXTRACT 1 DATA-ELEMENTS 'ALIASES'....
```

then each column data type that is generated using this FORMAT member will be extracted from the ALIAS clause of the data element that defines that particular table column.

If a FORMAT member does not contain an EXTRACT 1.... clause, then the value of the XTRACT parameter of the LOPTl installation macro is used instead. EXTRACT 2.... and EXTRACT 3.... clauses can be used to include other data from common clauses in formatted output.

Parameters prefixed with A are used in FORMAT members of the PRODUCE SQL output category whenever the SQL/DS validation checks are required, for example whenever a parameter represents the name of a table column. These checks help to ensure that the SQL/DS table definition being generated is valid. However, if a P parameter is used where an A parameter is required, then the P parameter is accepted, but no validation is carried out on it. Parameters that should be written as A parameters are explicitly shown as such in the tables below. Some P parameters would normally be used in FORMAT members of the PRODUCE SQL category. Examples are the global parameters (P1-P10) and parameters that represent parts of the generated output that are treated by SQL/DS as comments.

Figure 13. Structure of SQL Output File



Produce SQL: Parameters Defined

This table shows the parameters defined for each format line of the Produce SQL output category, arranged by the order of processing:

Format Line Number	Parameter Number	Parameter Type	Parameter Description
01	Heading line for the output of a single PRODUCE command.		
	21	integer	Number of relations in the Workbench Design Area.
02	The first line (CREATE TABLE) of an individual CREATE TABLE command.		
	20	1-character string	SQL continuation character.
	A4l	string	Name of the SQL table being defined.
	42	integer	Number of the SQL table being defined.
07	An optional SQL comment line that can serve as a header line for the lines that specify the key data elements of the table.		
	61	integer	Number of data elements that form the primary key of the table.
08	The table line that defines the first column that is part of the table's key.		
	A81	string	Name of column (taken from the name of the corresponding relation in the Workbench Design Area).
	A82	string	Column data type (EXTRACT 1 DATA-ELEMENTS (A81)).
	A83	string	EXTRACT 2 DATA-ELEMENTS (A81)
	A84	string	EXTRACT 3 DATA-ELEMENTS (A81)
09	A table line that defines a primary key column of the table (except for the first).		
	A81	string	Name of column (taken from the name of the relation in the Workbench Design Area).
	A82	string	Column data type (EXTRACT 1 DATA-ELEMENTS (A81)).
	A83	string	EXTRACT 2 DATA-ELEMENTS (A81)
	A84	string	EXTRACT 3 DATA-ELEMENTS (A81)

Format Line Number	Parameter Number	Parameter Type	Parameter Description
10	An optional SQL comment line that separates table lines that define key columns of the table from the columns that define non-key columns of the table.		
	No parameters		
11	An optional SQL comment line that serves as a heading for the table lines that specify the non-key columns of the table.		
	61	integer	The number of non-key data elements in the table.
12	The first table line that specifies a non-key column of the table.		
	A81	string	Name of column (taken from the name of the relation in the Workbench Design Area).
	A82	string	Column data type (EXTRACT 1 DATA-ELEMENTS (A8l)).
	A83	string	EXTRACT 2 DATA-ELEMENTS (A81)
	A84	string	EXTRACT 3 DATA-ELEMENTS (A81)
13	Other table lines that define non-key columns of the table.		
	A81	string	Name of column (taken from the corresponding relation in the Workbench Design Area).
	A82	string	Column data type (EXTRACT 1 DATA-ELEMENTS (A81)).
	A83	string	EXTRACT 2 DATA-ELEMENTS (A8l)
	A84	string	EXTRACT 3 DATA-ELEMENTS (A81)
14	The line that contains the concluding right parenthesis ()) character of the current CREATE TABLE command.		
	No parameters		
15	An optional SQL comment that can serve as a header line for THE DBSPACE specification line.		
	No parameters		
16	The DBSPACE specification line.		
	A120	string	Dbspace-name

Format Line Number	Parameter Number	Parameter Type	Parameter Description
21	An optional SQL comment line that can be used to separate the DBSPACE specification line from the terminating symbol of the current CREATE TABLE command.		
	No parameters		
22	Another optional SQL comment line that can be used to separate the DBSPACE specification line from the terminating symbol of the current CREATE TABLE command.		
	No parameters		
23	The line that contains the terminating symbol (;) of the current CREATE TABLE command.		
	No parameters		
24	An optional SQL comment line that serves as a separator line.		
	No parameters		
45	An optional SQL comment line that serves to separate the individual CREATE TABLE commands.		
	No parameters		
46	An optional SQL comment line that serves to terminate the output from the current PRODUCE command.		
	No parameters		

Produce SQL: Parameter Availability

This table shows the parameter availability by format line for the Produce SQL output category:

Format Line	Available Parameter Numbers				
01	Global (1-10)	FM-0l defined (21)			
02	..	..	FM-02 defined (20, A41,42)		
07	..	..	..	FM-07 defined (61)	
08	..	..	..	..	FM-08 defined (A81-A84)
09	..	..	..	..	FM-09 defined (A81-A84)
10	..	..	..	..	FM-10 defined (none)
11	..	..	..	FM-11 defined (61)	
12	..	..	..	..	FM-12 defined (A81-A84)
13	..	..	..	..	FM-13 defined (A81-A84)
14	..	..	..	FM-14 defined (none)	
15	..	..	..	FM-l5 defined (none)	
16	..	..	..	FM-16 defined (A120)	

Format Line	Available Parameter Numbers			
21	..	..	..	FM-21 defined (none)
22	..	..	..	FM-22 defined (none)
23	..	..	..	FM-23 defined (none)
24	..	..	..	FM-24 defined (none)
45	..	..	..	FM-45 defined (none)
46	..	..	FM-46 defined (none)	

13 Output Category: PRODUCE DB2

FORMAT members of the PRODUCE DB2 output category are used to format the output of the command:

```
PRODUCE DB2....USING FORMAT format-name
```

This form of the PRODUCE command can be used whenever the User Formatted Output and the DB2 Source Language Generation optional additional facilities are both included in a user's installation.

The format lines that are used to format each part of DB2 source language output are shown in Figure 14 on page 180. The parameter numbers defined for each of these format lines are shown in "Produce DB2: Parameters Defined" on page 181, and the availability of parameter numbers is shown in "Produce DB2: Parameter Availability" on page 184.

The EXTRACT 1.... clause is used to specify which common clause (and if necessary which part of that clause) contains the data type of each table column. For example, if a FORMAT member definition includes the clause:

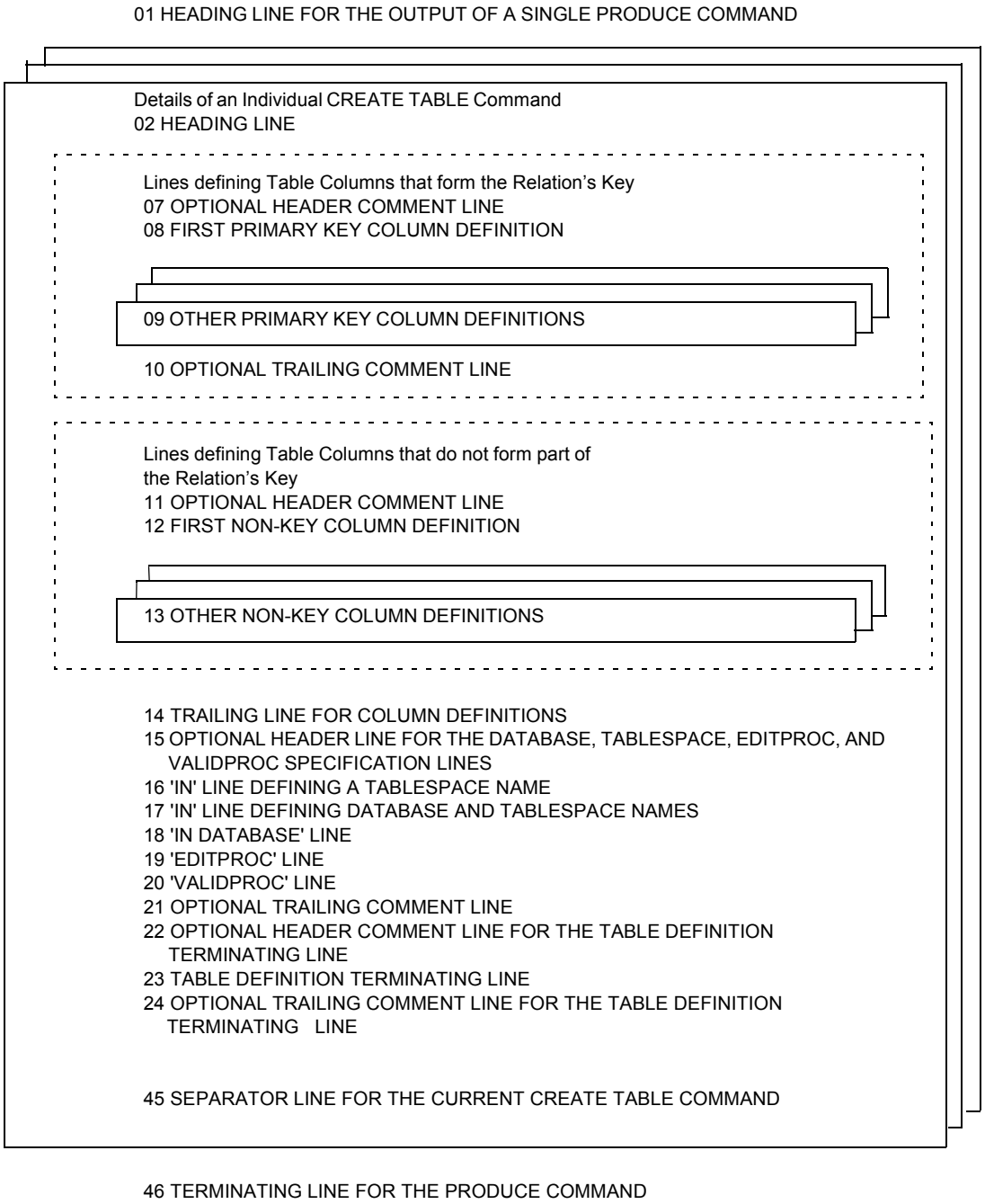
```
EXTRACT 1 DATA-ELEMENTS 'ALIASES'....
```

then each column data type that is generated using this FORMAT member will be extracted from the ALIAS clause of the data element that defines that particular table column.

If a FORMAT member does not contain an EXTRACT 1.... clause, then the value of the XTRACT parameter of the LOPT1 installation macro is used instead. EXTRACT 2.... and EXTRACT 3.... clauses can be used to include other data from common clauses in formatted output.

Parameters prefixed with A are used in FORMAT members of the PRODUCE DB2 output category whenever the DB2 validation checks are required, for example whenever a parameter represents the name of a table column. These checks help to ensure that the DB2 table definition being generated is valid. However, if a P parameter is used where an A parameter is required, then the P parameter is accepted, but no validation on it is carried out. Parameters that should be written as A parameters are explicitly shown as such in the tables below. Some P parameters would normally be used in FORMAT members of the PRODUCE DB2 category. Examples are the global parameters (P1-Pl0) and parameters that represent parts of the generated output that are treated by DB2 as comments.

Figure 14. Structure of DB2 Output File



Produce DB2: Parameters Defined

This table shows the parameters defined for each format line for the Produce DB2 output category, arranged by the order of processing:

Format Line Number	Parameter Number	Parameter Type	Parameter Description
01	Heading line for the output of a single PRODUCE command.		
	21	integer	Number of relations in the Workbench Design Area.
02	The first line (`CREATE TABLE`) of an individual CREATE TABLE command.		
	20	1-character string	DB2 continuation character.
	A41	string	Name of the DB2 table being created.
	42	integer	Number of the DB2 table being created.
	A144	string	Authorization-identifier
07	An optional DB2 comment line that can serve as a header line for the lines that specify the key data elements of the table.		
	61	integer	Number of data elements that form the primary key of the table.
08	The table line that defines the first column that is part of the table's key.		
	A81	string	Name of column (taken from the name of the corresponding relation in the Workbench Design Area).
	A82	string	Column data type (EXTRACT 1 DATA ELEMENTS (A81))
	A83	string	EXTRACT 2 DATA-ELEMENTS (A81)
	A84	string	EXTRACT 3 DATA-ELEMENTS (A81)
09	A table line that defines a primary key column of the table (except for the first).		
	A81	string	Name of column (taken from the name of the corresponding relation in the Workbench Design Area).
	A82	string	Column data type (EXTRACT 1 DATA-ELEMENTS (A81)).
	A83	string	EXTRACT 2 DATA-ELEMENTS (A81)
	A84	string	EXTRACT 3 DATA-ELEMENTS (A81)

Format Line Number	Parameter Number	Parameter Type	Parameter Description
10	An optional DB2 comment line that can serve to separate table lines that define key columns of the table from the columns that define non-key columns of the table.		
	No parameters		
11	An optional DB2 comment line that serves as a heading for the table lines that specify the non-key columns of the table		
	61	integer	The number of non-key data elements in the table.
12	The first table line that specifies a non-key column of the table.		
	A81	string	Name of column (taken from the name of the corresponding relation in the Workbench Design Area).
	A82	string	Column data type (EXTRACT 1 DATA-ELEMENTS (A81)).
	A83	string	EXTRACT 2 DATA-ELEMENTS (A81)
	A84	string	EXTRACT 3 DATA-ELEMENTS (A81)
13	Other table lines that define non-key columns of the table.		
	A81	string	Name of column (taken from the name of the corresponding relation in the Workbench Design Area).
	A82	string	Column data type (EXTRACT 1 DATA-ELEMENTS (A81)).
	A83	string	EXTRACT 2 DATA-ELEMENTS (A81)
	A84	string	EXTRACT 3 DATA-ELEMENTS (A81)
14	The line that contains the concluding right parenthesis ()) of the current CREATE TABLE command.		
	No parameters		
15	An optional DB2 comment that can serve as a header line for any database, tablespace, editproc, and validproc specification lines.		
	No parameters		

Format Line Number	Parameter Number	Parameter Type	Parameter Description
16	The IN line, when this line does not include a database-name.		
	A140	string	Tablespace-name
17	The IN line, when this line includes both a database-name and a tablespace-name.		
	A140	string	Tablespace-name
	A141	string	Database-name
18	The IN DATABASE line.		
	A141	string	Database-name
19	The EDITPROC line.		
	A142	string	Edit-procedure-name
20	The VALIDPROC line.		
	A143	string	Validation-procedure-name
21	An optional DB2 comment line that can be used to separate any IN, IN DATABASE, EDITPROC, and VALIDPROC lines from the terminating symbol of the current CREATE TABLE command.		
	No parameters		
22	Another optional DB2 comment line that can be used to separate any IN, IN DATABASE, EDITPROC, and VALIDPROC lines from the terminating symbol of the current CREATE TABLE command.		
	No parameters		
23	The line that contains the terminating symbol (;) for the current CREATE TABLE command.		
	No parameters		
24	An optional DB2 comment line that serves as a separator line.		
	No parameters		

Format Line Number	Parameter Number	Parameter Type	Parameter Description
45	An optional DB2 comment line that serves to separate the individual CREATE TABLE commands.		
	No parameters		
46	An optional DB2 comment line that serves to terminate the output from the current PRODUCE command.		
	No parameters		

Produce DB2: Parameter Availability

This table shows the parameter availability by format line for the Produce DB2 output category:

Format Line	Available Parameter Numbers				
01	Global (1-10)	FM-01 defined (21)			
02	..	..	FM-02 defined (20, A41, 42, A144)		
07	..	..	..	FM-07 defined (61)	
08	..	..	..	..	FM-08 defined (A81-A84)
09	..	..	..	..	FM-09 defined (A81-A84)
10	..	..	..	..	FM-10 defined (none)
11	..	..	..	FM-11 defined (61)	
12	..	..	..	..	FM-12 defined (A81-A84)

Format Line	Available Parameter Numbers				
13	Global (1-10)	FM-01 defined (21)	FM-02 defined (20, A41, 42, A144)	FM-11 defined (61)	FM-13 defined (A81-A84)
14	..	..	..	FM-14 defined (none)	
15	..	..	..	FM-15 defined (none)	
16	..	..	..	FM-16 defined (A140)	
17	..	..	..	FM-17 defined (A140, A141)	
18	..	..	..	FM-18 defined (A141)	
19	..	..	..	FM-19 defined (A142)	
20	..	..	..	FM-20 defined (A143)	
21	..	..	..	FM-21 defined (none)	
22	..	..	..	FM-22 defined (none)	
23	..	..	..	FM-23 defined (none)	

Format Line	Available Parameter Numbers			
24	Global (1-10)	FM-01 defined (21)	FM-02 defined (20, A41, 42, A144)	FM-24 defined (none)
45	..	..	..	FM-45 defined (none)
46	..	..	FM-46 defined (none)	

Index

Symbols

/ specifier 12, 24, 30
’ (apostrophe) specifier 31

A

A parameters 25, 171, 179
ADD command, use in defining FORMAT members 31
ALL keyword 27
Am specifier 25

B

basic parts 4
basic parts, of lists 13

C

C specifier 25, 29
centering, of parameter values 10, 29
COLUMN keyword 22, 27
column positioning of output 11
comments, in FORMAT members 30
common clauses
  in FORMAT members 21, 25
  use in extract clauses 27
compound lists 13
CONTENTS clause, of a FORMAT member 8, 21
continuation, of format lines 28
conventions page iv

D

Data-Element-Usage Analysis report, formatting of 123
dataview report, formatting of 33
date of output
  see global parameters
DB2 Source Language Generation facility 1, 179
Design Audit report, formatting of 75
DESIGN command 1–2, 19, 21
DETAILS keyword 2, 19

E

end part, of output structures 4
Entity reports, formatting of 33
examples
  commands using FORMAT members 20
  output category structures 4
extract clauses
  syntax of 22
  use of 27

F

field width, of parameter values 10, 25
format line, syntax of 23
FORMAT member type, syntax of 21
format selection clause, of commands 2
FROM keyword 22, 27

G

global parameters 7
  use of 24
GLOSSARY command, within FORMAT member definition 27

H

header control clause
  syntax of 22
  use of 31
heading part
  of list structures 13
  of output structures 4

I

Intersecting-Data-Element reports, formatting of 67

L

LINE keyword 27
listed output, formatting of 13
Load-Factor-Analysis report, formatting of 165

logical-schema cluster plot, formatting
of 113

M
modeling dictionary 2, 19

N
network schema cluster plot, formatting
of 141
new lines, in formattable output 2, 12
notation for statement formats v

O
output categories 2
availability of 22
list of 22
output category structure diagrams 5
output lines, length of 28
output specifications 2

P
P parameters 8, 25
page headers, control of
see header control clause
parameter numbers
syntax of 23
use of 6–7
parameters 7
parentheses, in format lines 12
parts, of output structures 4, 6
PLOT command 1
PRODUCE command 1, 179

R
R specifier 10
repetition
of specifiers 12, 30
output specification values 9
REPORT command 1
right-justification, of parameter values 11

S
selectable units required 1
SET HEADER command
see header control clause
specifiers, syntax of 24
SQL/DS Source Language Generation
facility 1, 171
SQL/DS source language, formatting of 171
statements
notation for
see notation for statements
SUMMARY keyword 2
supplied FORMAT members 3

T
TITLE command 2, 8

U
User Printer Graphics facility 1
Userview reports, formatting of 33
using FORMAT key phrase 1

W
workbench design area 6

X
X specifier 11, 24