

# ASG-DataManager™ User Defined Output

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# Contents

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Preface	iii
About this Publication	iii
Publication Conventions	iv
Requesting Publication Changes	iv
1 Introduction	1
Outline of the Facility	1
Some Examples of User-defined Output Layouts	3
Summary	3
Example 1	4
Example 2	5
Example 3	8
Example 4	9
2 The Component Engineering Process	11
Summary	11
Outline of the Process	11
The ASG-supplied Member Set	12
3 Specifying User-defined Report Layouts	15
Introduction	15
Format Line and Parameter Numbers	15
Format Code Elements	16
Summary	16
Format Lines	17
Layout Characters and Character Strings	20
4 Facility Language and Coding	23
Command Syntax	23
FORMAT	23
MP-AID LIST FORMATS	25
QUERY FORMAT	25
SET FORMAT	25
Definition Syntax	28
FORMAT	28
5 Interaction with Other DataManager Optional Facilities	35
User-defined Syntax	35
Status	36

Appendix A	
Format Member Listings	37
Summary	37
Member UFITM	37
Member TABALS-FM	38
Appendix B	
ASG-supplied Member Set	39
Appendix C	
Format Line and Parameter Numbers	45
Appendix D	
The User Interface Dictionary	59
Index	61

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# Preface

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*ASG-DataManager User Defined Output* provides the User Defined Output facility (selectable unit DMR-UD15), which allows ASG-DataManager (herein called DataManager) users to specify their own alternative layouts for the output generated by certain DataManager commands. Thus, it acts as an extension to the preferred set of alternative report layouts that is now a part of the DataManager nucleus.

ASG welcomes your comments, as a preferred or prospective customer, on this publication or on the DataManager product.

## About this Publication

The *ASG-DataManager User Defined Output* consists of these chapters:

- Chapter 1, "Introduction," outlines the capabilities of the facility, and includes a series of examples to show some of the layouts that it is possible to specify using the facility.
- Chapter 2, "The Component Engineering Process," describes how users can make use of the facility to specify their own layouts for report output. It also describes the source members that ASG supplies to help users to do this.
- Chapter 3, "Specifying User-defined Report Layouts," describes, in detail, the coding elements that are used to specify the lines of user-defined report layouts.
- Chapter 4, "Facility Language and Coding," describes the syntax of the new commands and member-types that are provided by the facility.
- Chapter 5, "Interaction with Other DataManager Optional Facilities," describes the interactions between the User Defined Output selectable unit and other DataManager and ASG-ControlManager selectable units.

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<b>Convention</b>	<b>Represents</b>
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).
<i>lowercase italic monospace</i>	Information that you provide according to your particular situation. For example, you would replace <i>filename</i> 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.

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# 1

## Introduction

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### Outline of the Facility

The DataManager User Defined Output facility provides DataManager users with the capability of tailoring the layout of output from REPORT commands to their particular requirements.

This facility extends the provision for all DataManager users of the preferred set of alternative report layouts in the DataManager nucleus. This nucleus capability gives all DataManager users a choice of layouts for the output of REPORT commands, the choice lying between the standard layouts and the members of the preferred set of alternative report layouts. They can use the preferred alternative formats by using either of the following two commands:

```
SET FORMAT FOR REPORT OF member-type AS  
FORMAT AS
```

The User Defined Output facility allows DataManager users to define their own REPORT layouts, by using the process of Component Engineering to set up dictionary members whose member-type is FORMAT. The names of these FORMAT members are then included within SET FORMAT and FORMAT commands in the same way as the members of the alternative format preferred set. FORMAT members are encoded, and may be manipulated by ASG-ControlManager (herein called ControlManager) and DataManager commands, in the same way as other dictionary members.

The facility can be used to specify the layout of the report output of:

- Members whose type is one of the basic DataManager member types (that is, ITEM, GROUP, FILE, MODULE, PROGRAM or SYSTEM), or
- A synonym member-type (the term *synonym* is defined in the publication *ASG-Manager Products User Defined Syntax*), or
- SESAM Interface member types (SESAM-STORAGE, SESAM-TABLE and SESAM-VIEW members). SESAM Interface extension to the SYSTEM, PROGRAM and MODULE member types are supported.
- Any other database management system interface facility extensions to the MODULE, PROGRAM and SYSTEM member types, only to the extent of the PROCESSES keyword and its associated database type keyword; further elements within the PROCESS clause are not supported by the User Defined Output facility, or
- Any of the common clauses from any member-type.

The facility can also be used to specify the layout of BULK REPORT commands.

Existing REPORT and BULK REPORT commands in user programs that are not modified to use FORMAT members will continue to generate their output in the standard report format.

The layouts that are defined for use in individual data dictionaries can be made available for use by users of other dictionaries in the installation. This is done by setting up FORMAT members in the Manager Products Administrative and Information Dataset (MP-AID), such that these MP-AID members correspond to the existing data dictionary FORMAT members. The System Administrator carries out this process, using restricted commands.

All the installation's users may then use these FORMAT members, as well as the FORMAT members in their own data dictionaries and the preferred set members, to format REPORT outputs. Users can find out which FORMAT members their MP-AID contains by using the MP-AID LIST FORMATS command. The user of the User Defined Output facility uses the same commands (SET FORMAT and FORMAT) as are used with the preferred set of report layouts. The output of a REPORT command is specified to be produced in a user defined layout by calling the FORMAT member which specifies the required layout. There are two ways of doing this. The first way is to prefix the REPORT command by a FORMAT prefix command that includes the name of the required FORMAT member. For example, if you wish to have the report output of a dictionary ITEM member named TRANS-CODE formatted as specified by a dictionary FORMAT member called ITEM-LAYOUT, then you would issue the following command:

```
FORMAT VIA DICTIONARY ITEM-LAYOUT REPORT TRANS-CODE ;
```

The above prefixing would only apply to that particular REPORT command.

The second way of calling a FORMAT member is as follows. You may specify that a FORMAT member is to be used as a default during the current session for defining the layout of report output of all dictionary members of a particular member-type. This is done by using the ControlManager command SET FORMAT. Any such specification only applies to the user who makes it and it only remains in force for the current session. It is normally carried out at the beginning of a session. For example, you can specify that the report outputs of all GROUP members are to be formatted as defined by the contents of a FORMAT member called GROUP-LAYOUT-A, by issuing the command

```
SET FORMAT FOR REPORT OF GROUPS  
TO DICTIONARY GROUP-LAYOUT-A ;
```

before any of the relevant REPORT commands. You can turn off this setting (that is, revert to the standard report layouts) by using the SET FORMAT command with the keyword OFF:

```
SET FORMAT FOR REPORT OF GROUPS OFF ;
```

Thus the output of any report of a GROUP member that is generated between these two settings will be formatted as specified by FORMAT member GROUP-LAYOUT-A. The only exception to the use of this setting is where the FORMAT command prefixes a REPORT command. The use of a FORMAT prefix command always takes priority over an existing SET FORMAT setting.

Thus in the following sequence of commands:

```
SET FORMAT FOR REPORT OF GROUPS
TO DICTIONARY GROUP-LAYOUT-A;
REPORT EMP-DEPT-INFO;
FORMAT VIA DICTIONARY GROUP-LAYOUT-B REPORT
EMP-DEPT-INFO;
REPORT EMP-DEPT-INFO;
SET FORMAT FOR REPORT OF GROUPS OFF;
REPORT EMP-DEPT-INFO;
```

the format of the first and third report outputs of GROUP member EMP-DEPT-INFO would be specified by GROUP-LAYOUT-A, the second by GROUP-LAYOUT-B, and the fourth report would be output in the standard format.

You can use FORMAT members from the MP-AID, rather than from a data dictionary, by using modified versions of the SET FORMAT and FORMAT commands. For example, if an MP-AID FORMAT member named GRLAYOUT, instead of a dictionary FORMAT member, was being used to specify a report layout for dictionary GROUP members, then the appropriate forms of the commands would be:

```
SET FORMAT FOR REPORT OF GROUPS
TO MP-AID GRLAYOUT;
```

and

```
FORMAT VIA MP-AID GRLAYOUT . . .
```

## Some Examples of User-defined Output Layouts

### Summary

The examples of report output in this section show some of the possible layouts in which report output can be produced by using the User Defined Output facility. Each example is discussed in turn below, and source listings are given where any FORMAT or COMMAND-STREAM member used is not one of the ASG-supplied set.

The first three examples show some of the possible ways in which report output of an ITEM member called TRANS-CODE can be arranged. The source listing of this member's data definition is:

```
ITEM
ENTERED-AS CHARACTER 2
HELD-AS NUMERIC-CHARACTER 2 CONTENTS RANGE 10 TO 90
REPORTED-AS PICTURE '99'

ALIAS
  'EMPLOYEE-TRANSACTION-CODE'
  ASSEMBLER 'EMPTRAN'
  COBOL 'ENTRANS'

CATALOGUE 'BATCH', 'MONTHLY', 'EMPLOYEE', 'TRANSACTION',
'CODE'

DESCRIPTION 'EMPLOYEE TRANSACTION CODE'

NOTE
'AUTHOR DBA'
'DATE 13/01/1983'
```

### **Example 1**

Figure 1 on page 5 shows a report layout in which the information for individual clauses of the member being reported is re-aligned and boxed-in with additional character strings. The layout has been specified by a user-coded FORMAT member named UFITM in the following command:

```
FORMAT VIA DICTIONARY UFITM REPORT TRANS-CODE;
```

The data definition of UFITM is given in Appendix A, "Format Member Listings," on page 37.

```

* -----*
* REPORT OF ITEM                                TRANS-CODE
* -----*
* EDITION  STATUS  PROTECTION  ENCODED-BY  REPORTED
* -----*
* 3          UDO    NONE        MASTER
*          NON-FROZEN        13 JUN 1983  16 JUN 1983
*                               AT 12.38    AT 18.10
* LANGUAGE ALIAS  ASSEMBLER  EMPTRAN
*                   COBOL    EMPTRANS
*                               EMPLOYEE-TRANSACTION-CODE
* -----*
* CATALOGUED AS      BATCH
*                   MONTHLY
*                   EMPLOYEE
*                   TRANSACTION
*                   CODE
* -----*
* DESCRIPTION  EMPLOYEE TRANSACTION  CODE
* -----*
* NOTE        AUTHOR  DBA
*             DATE   13/01/1983
* -----*
* DIRECT USAGES      10
* DIRECT REFERENCES  1
* -----*
* ***** ENTERED-AS VERSION 1 *****
*                   CHARACTERS 2
* -----*
* ***** HELD-AS VERSION 1 *****
*                   NUMERIC-CHARACTER 2
* . . .CONTENTS. . .
*                   RANGE 10 TO 90
* -----*
* ***** REPORTED-AS VERSION 1 *****
*                   PICTURE '99(2) '
* -----*
* *****=E N D =*****

```

Figure 1. Example 1

**Example 2**

Figure 2 on page 6 shows a report layout in which the order of clause information is changed from that of the standard report layout. This report has been produced by using a COMMAND-STREAM member named REPORT-CS containing FORMAT members that specify the report layout of individual clauses, rather than by using a single REPORT command which is prefixed by FORMAT member that specifies the layout of the whole report. In the example, the report generated is identical to that in the preferred set alternative layout, except that the order of output of the references, CATALOG clause, and ALIAS clause information has been changed. The individual FORMAT members used in REPORT-CS are selected from the ASG-supplied preferred alternative set, so that the data corresponding to each clause is output in the same format as it would be in the preferred alternative report layout.

```
FM01: D21..... D22...  D23...
      REPORT OF ITEM      TRANS-CODE

      D24.... D25 D26..... D27... D28 D29..... D30 D31.....
      EDITION 3 ENCODED BY MASTER AT 12.38.45 ON 13 JUN 1983
      D32... D33..
      STATUS UDO
      D34..... D35...
      PROTECTION: NONE
FM02: D41.. ALIAS
      ALIAS
      D42..  D43..
      ASSEMBLER EMPTRAN
      COBOL    EMPRANS
      EMPLOYEE-TRANSACTION-CODE

FM05: D44.....
      CATALOGUED AS
      D45....
      BATCH
      MONTHLY
      EMPLOYEE
      TRANSACTION
      CODE

FM08: D46.....
      DESCRIPTION
      D47-----*
      EMPLOYEE TRANSACTION CODE

FM11: D48.
      NOTE
      D49-----*
      AUTHOR DBA
      DATE 13/01/1983

FM56: D90..... D91..... D92 D93..
      THIS MEMBER IS DIRECTLY REFERRED TO 10 TIMES
      D94..... D95 D96.....
      THIS MEMBER CONTAINS 1 DIRECT REFERENCES
      D100... D101...
      ITEM      TRANS-CODE

FM60: D110...  D111...D112
      ENTERED-AS VERSION 1
      D124..... D125/D126          D127 D128/D129
      CHARACTERS                    2

FM60: D110...  D111...D112
      HELD-AS VERSION 1
      D124..... D125/D126          D127 D128/D129
      NUMERIC-CHARACTER              2
      D150.....
      CONTENTS
      D153. D154.....
      RANGE 10 TO 90

FM60: D110...  D111...D112
      REPORTED-AS VERSION 1
      D133... D134.....
      PICTURE '9(2)'
```

Figure 2. Example 2

This is the member definition of REPORT-CS:

```
COMMAND-STREAM
DESCRIPTION 'TO RE-SEQUENCE REPORT CLAUSES '
CONTENTS
  FORMAT VIA DICTIONARY PSR-INITIAL REPORT * NOSKIP;
  FORMAT VIA DICTIONARY PSR-REFERENCES REPORT * NOSKIP;
  FORMAT VIA DICTIONARY PSR-DESCRIPTION REPORT * NOSKIP;
  FORMAT VIA DICTIONARY PSR-CATALOGUE REPORT * NOSKIP;
  FORMAT VIA DICTIONARY PSR-ALIAS REPORT * NOSKIP;
  FORMAT VIA DICTIONARY PSR-FORM REPORT * NOSKIP;
  FORMAT VIA DICTIONARY PSR-NOTE REPORT * NOSKIP;
;
```

and this is the command that generates the whole report:

```
PERFORM COMMAND-STREAM REPORT-CS MEMBER TRANS-CODE;
```

The data definitions of the FORMAT members used can be found from the Example dictionary.

**Example 3**

Figure 3 on page 8 shows the report layout generated for an ITEM member by the use of the ASG-supplied FORMAT member UDO-FMT-ASSIST. The command used to generate the output of this example is:

```
FORMAT VIA DICTIONARY UDO-FMT-ASSIST REPORT TRANS-CODE ;
```

```
*****  
ITEM TRANS-CODE  
*****  
EDITION 3      ENCODED BY      MASTER      ON 13 JUN 1983 AT 12.38  
STATUS        NON-FROZEN      UDO  
PROTECTION:   NONE  
REFERENCES    DIRECT USAGES      10  
              DIRECT REFERENCES 1  
DESCRIPTION   EMPLOYEE TRANSACTION CODE  
CATALOGUED AS BATCH  
              MONTHLY  
              EMPLOYEE  
              TRANSACTION  
              CODE  
ALIAS         ASSEMBLER      EMPTRAN  
              COBOL          EMTRANS  
              EMPLOYEE-TRANSACTION-CODE  
  
ENTERED-AS    VERSION 1  
              CHARACTERS 2  
  
HELD-AS       VERSION 1  
              NUMERIC-CHARACTER 2  
... CONTENTS. . .  
              RANGE 10 TO 90  
  
REPORTED-AS   VERSION 1  
              PICTURE '9(2)'  
  
NOTE          AUTHOR DBA  
              DATE 13/01/1983
```

Figure 3. Example 3

**Example 4**

Figure 4 on page 10 shows how a FORMAT member can be used in conjunction with a BULK REPORT command to produce tabular output in which each line of the table holds information about a single member. This form of output is generated by accumulating the names of the relevant members in a kept-data list; the title line of the whole report is specified as a TEXT command, and a report format consisting of the report output for each member, giving member name, member-type, alias-types and aliases, is defined. A COMMAND-STREAM member called TABALS-CS whose execution would produce this output would have the following definition:

```
COMMAND-STREAM
CONTENTS
SKIP ;
TEXT '          MEMBER-NAME          TYPE          LANGUAGE ' ;
TEXT '          ALIAS ' ;
TEXT '          -----          ----          ----- ' ;
TEXT '          ----- ' ;
FORMAT VIA DICTIONARY TABALS-FM BULK REPORT NOSKIP
KEPT-DATA ;
;
```

The format of report output for each member is specified by the contents of a FORMAT member TABALS-FM, whose data definition is given in Appendix A, "Format Member Listings," on page 37.

The report output shown in Figure 4 on page 10 would then be generated by the following commands:

```
KEEP AND LIST WHEN ANY EQ TRANS ;
PERFORM COMMAND-STREAM TABALS-CS ;
```

**ASG-DataManager User Defined Output**

<u>MEMBER-NAME</u>	<u>TYPE</u>	<u>LANGUAGE</u>	<u>ALIAS</u>
FILE-SORT-TRANS	FILE		SORTED-TRANSACTION-FILE
		COBOL	SORT-TRANS
FILE-VALIDATE-EMP-TRANS	FILE		VALIDATE-EMPLOYEE-TRANSACTION-FILE
		COBOL	EMP-VALID-TRANS
		ASSEMBLER	VALEMP
MOD-GET-SORT-TRANS	MODULE	PL/I	EMPVLTRN
		COBOL	GET-SORTED-TRANSACTION-RECORDS
		ASSEMBLER	SORT-TRANS
MOD-TRANS-MAIN-EDIT	MODULE	PL/I	SORT-TRNS
		COBOL	SORT-TRANS
		ASSEMBLER	EDIT-MAIN-TRANSACTION-MODULE
MOD-UPD-TRANS-MASTER	MODULE	COBOL	MAIN-EDIT-TRANS-MOD
		PL/I	EDTRANS
		ASSEMBLER	EDTRNS
MOD-VALIDATE-TRANS	MODULE	COBOL	UPDATE-TRANSACTIONS-MASTER-FILE
		PL/I	UPD-TRANS-MAST-MOD
		ASSEMBLER	UPDTRANS
MOD-VALIDATE-TRANS	MODULE	COBOL	UPDTRANS
		ASSEMBLER	VALIDATE-TRANSACTION-MODULE
		PL/I	TRANSVALID-MOD
PROG-SORT-TRANS	PROGRAM	ASSEMBLER	TRANSVAL
		COBOL	TRANSVAL
		PL/I	TRANS-ACTION-SORT-PROGRAM
PROG-VALIDATE-TRANS	PROGRAM	COBOL	SORT-TRANS
		ASSEMBLER	SORTTRNS
		PL/I	SORT-TRANS
TRANS-CODE	ITEM	COBOL	VALIDATE-TRANSACTION-PROGRAM
		ASSEMBLER	VALID-TRANS
		PL/I	VALTRANS
TRANS-DATA	ITEM	COBOL	VAL-TRANS
		ASSEMBLER	EMPLOYEE-TRANSACTION-CODE
		PL/I	EMPTRANS
TRANS-DATE	ITEM	COBOL	EMPTRAN
		ASSEMBLER	EMPLOYEE-TRANSACTION-DATA
		PL/I	TRANSDATA
TRANS-TOT	ITEM	COBOL	EMPTRADA
		ASSEMBLER	EMPTRADA
		PL/I	TRANDATA
TRANS-TOT	ITEM	COBOL	EMPLOYEE-TRANSACTION-DATE
		ASSEMBLER	TRANSDATE
		PL/I	EMPDATE
TRANS-TOT	ITEM	COBOL	TRANDATE
		ASSEMBLER	TRANSACTION-TOTAL
		PL/I	TRANS-TOTAL
TRANS-TOT	ITEM	COBOL	TRANS-TOTAL
		ASSEMBLER	TRANS-TOT
		PL/I	TRANS-TOTAL

Figure 4. Example 4

---

# 2

## The Component Engineering Process

---

### Summary

This chapter describes the process of Component Engineering—ASG’s term for the process of creating new dictionary or MP-AID FORMAT members that specify the particular report output layouts that you require. It also describes one of the two datasets that ASG supplies to help you carry out component engineering—the set of FORMAT and COMMAND-STREAM members that provide a starting point for you to engineer your own members. The other dataset, the Post dictionary, is described in Appendix D, "The User Interface Dictionary," on page 59.

### Outline of the Process

As mentioned in Chapter 1, "Introduction," on page 1, user defined report layouts are specified by the elements contained in dictionary, or MP-AID, FORMAT members. ASG provides a set of source versions of FORMAT members, and of COMMAND-STREAM members that contain prefixed REPORT commands, to serve as a basis for the Component Engineering process. These members are described in "The ASG-supplied Member Set" on page 12. ASG recommends that you create FORMAT members which specify the report layouts that you require by copying one of these supplied members and editing it as required.

ASG also recommends that, whenever possible, you create separate FORMAT members for formatting the report output of separate member types. This is because it is simpler to code a FORMAT member to process the report output for the clauses of members of a single type, rather than to code a FORMAT member to process the much wider range of possible output from a range of member types. In some cases, however, this may not be possible; for example, in the case of a BULK REPORT with user defined layout, where the FORMAT member may have to be capable of laying out the clause output of a number of different member types.

ASG supplies COMMAND-STREAM and FORMAT members for the following reason. In most cases, a user defined report layout can be completely defined by the contents of a single FORMAT member, but this is not possible for some layouts. These layouts are those where the order of information corresponding to the various clauses of the reported member is different from the order in the basic or the preferred set of alternative layouts. To produce output in these layouts, you must define a COMMAND-STREAM that consists of a set of REPORT commands, where each REPORT command is prefixed by a FORMAT command. You should code the FORMAT member that you include in each FORMAT command so that the REPORT command that it prefixes outputs only the information corresponding to a single clause of the reported member. Within the COMMAND-STREAM, you should arrange these prefixed REPORT commands in the order in which you wish the individual clauses of the reported member to be output.

Before attempting to modify any of the ASG-supplied members, you should read Chapter 3, "Specifying User-defined Report Layouts," on page 15 to find out how to use the various types of coding element that you can include in a FORMAT member. You may also wish to refer to the syntax definition of a FORMAT dictionary member; this is in Chapter 4, "Facility Language and Coding," on page 23.

When you have generated and tested a FORMAT dictionary member which specifies report output that is laid out to your requirements, you may wish to make the member available to other users of your installation. In this case, you should ask the System Administrator of your installation to set up a corresponding FORMAT member in the MP-AID.

## The ASG-supplied Member Set

The ASG-supplied member set consists of a set of FORMAT and COMMAND-STREAM members (where the COMMAND-STREAM members contain other FORMAT members). These members are included in status UDO of the Example Dictionary. They are listed in Appendix B, "ASG-supplied Member Set," on page 39.

These members fall into three groups:

- FORMAT members that specify the standard report output of a single member type. One such member is supplied for each basic member type. Their names are of the form `UDO-FMT-SR-member-type`. ASG suggests that you use these members as a basis for engineering your own FORMAT members when you want to define a layout that is only slightly different from a standard layout.

In addition, an assistance FORMAT member called UDO-FMT-ASSIST is supplied. You can use this member to find out which format line and parameter numbers you need to use in order to define your own layout for the report output of a particular member. When it is used, the resulting output is laid out in the standard layout, but the output lines are annotated with the format line and parameter numbers that were used to format the lines of output. This output can then serve as a starting-point for the engineering of FORMAT members. However, the data definition of the member itself should not be used as a starting-point for component engineering. UDO-FMT-ASSIST can be used with any of the basic member types. An example of the layout that it generates is shown in "Example 3" on page 8.

ASG recommends that this member should be constructed onto the MP-AID for use throughout your installation.

- COMMAND-STREAM members that specify the preferred set alternative report output of a basic member type. One such member is supplied for each basic member type. Their names are of the form *PSRmember-type-CS*. You can use them (in conjunction with the FORMAT members described below) as a basis for engineering your own COMMAND-STREAMs if you wish to vary the standard order of clause output in your own report layouts. An example of this type is shown in "Example 2" on page 5.
- FORMAT members that specify the preferred set alternative report layout for a single clause of one of the basic member types. One such member is supplied for each clause that can be included in the data definitions of any of the basic member types. The names of these members are of the form *PSR-clause-keyword*. You can use them (in conjunction with the COMMAND-STREAMs mentioned above) as a basis for engineering your own COMMAND-STREAMs if you wish to vary the standard order of clause output in your layouts. You can also use them to engineer FORMAT members for layouts that include significantly fewer clauses than the standard layouts.



---

# 3

## Specifying User-defined Report Layouts

---

### Introduction

When a FORMAT member is used to specify a report layout, the layout of the report output is defined by the contents of the CONTENTS clause of the FORMAT member. No other clause of a FORMAT member has any effect on the format of report outputs; thus the user can, as a minimum, set up FORMAT members that contain a CONTENTS clause as their only clause. Other clauses, such as NOTE and DESCRIPTION clauses, may be included, but these will have no effect on how the corresponding report output is formatted.

### Format Line and Parameter Numbers

Consider the output from a REPORT command as being divided into individual parts, where each part corresponds to a single clause of the member being reported. Each of these parts in turn can be thought of as being divided into a number of subparts, where each subpart corresponds to a single word or phrase of a clause. For example, consider the output generated in the report of an ITEM dictionary member, where the member's definition includes the catalog clause:

```
CATALOGUE 'BATCH' , 'MONTHLY' , 'EMPLOYEE' , 'TRANSACTION' , 'CODE'
```

The corresponding lines of the standard format report output are:

```
CATALOGUED AS BATCH
    MONTHLY
    EMPLOYEE
    TRANSACTION
    CODE
```

These lines can be considered as a single part of the whole report output and the character string CATALOGUED-AS as one subpart. Each catalog classification can be considered as another subpart, with this subpart being repeated within the catalog part for each catalog classification.

In the User Defined Output facility, all types of report outputs are similarly divided into parts and subparts, and each subpart is given an identifying number (called a *parameter number*). Thus in the above example, the two subparts CATALOGUED-AS and catalog classification would be assigned the parameter numbers D44 and D45 respectively.

Each possible subpart that can occur in the report output of a DataManager basic member type is assigned a parameter number. A complete listing of the parameter numbers assigned is shown in Appendix C, "Format Line and Parameter Numbers," on page 45.

Appendix C also shows the parameter numbers assigned to subparts of lines that are output as part of a BULK REPORT command but do not appear in a REPORT command.

ASG also provides a set of system parameter numbers (D1-D7). These are provided to enable you to specify that data such as the current date, time, dictionary name, or dictionary status are to be included in formatted report output. These system parameters are included in the full parameter list in Appendix C, "Format Line and Parameter Numbers," on page 45.

You can see the assignment of parameter numbers to subparts in the report output for a member of your choice demonstrated, by using the ASG-supplied FORMAT member UDO-FMT-ASSIST to format the report output of that member. Each line of the resulting output is annotated by the parameter numbers that are assigned to each subpart that has been produced. An example of this type of annotated output for the report of an ITEM type member appears in "Example 3" on page 8.

The format line number is another device used to specify the formatting of report output, in addition to the parameter number. Each part of a report output is assigned either one or three format line numbers. (The term *part* is used in the same sense as it was used in the discussion of parameter numbers above.) As an example, the part of an ITEM report that begins with the string CATALOGUED-AS and includes the catalog classifications of the item, is assigned format line numbers FM05, FM06, and FM07. The number of format line numbers assigned to each part depends on whether or not any of the subparts of that part may be repeated. Thus, using the same example, the CATALOGUED-AS part must be assigned three format line numbers, as the catalog classification subpart may repeat.

Appendix C, "Format Line and Parameter Numbers," on page 45 also includes a full list of the format line numbers that are used to label each line of the reports of the various DataManager basic member types.

## Format Code Elements

### Summary

The CONTENTS clause of a FORMAT member contains a sequence of code elements (called *specifiers*) that specify the various possible parts of a REPORT output that are to be generated, and the order and layout of these parts in the output. There are three types of specifiers:

- Format line numbers
- Parameter numbers
- Characters that control the layout of the output (for example, insertion of new lines and spaces) and fixed character strings.

Commas are used to separate the individual specifiers in each format line.

A FORMAT member does not contain any specification of the member type of the members whose report outputs it is designed to format. Thus, when coding a FORMAT member, you should take care to include format line and parameter numbers for all the clauses that you want to include in the formatted reports of these members.

An exact definition of the syntax of a FORMAT member (and of the specifiers that can be included in its CONTENTS clause) is given in Chapter 4, "Facility Language and Coding," on page 23. What follows is a survey of the various specifiers and the effect that each of them has on the layout of report output.

#### **Format Lines**

The specifiers in a FORMAT member CONTENTS clause are grouped into *format lines*, where each format line specifies the format of the report output corresponding to the whole or part of a single clause in a member report output. Each format line must begin with one of the format line numbers assigned to the output for that clause (followed by a colon). For example, the format line that specifies the layout of the line that begins REPORT OF in the report of an ITEM would have the form:

```
FM01: (other specifiers)
```

In the cases where only a single format line number has been assigned to part of a report output, then the format line written above (given that suitable values of the other specifiers are included) is sufficient to specify the format of that particular part. However, in the cases where subparts of a part may repeat, then three format lines may be needed to specify completely the report format for such parts. In these cases three format line numbers are assigned for this part of the report, each with its own format line number. This is done as follows. The first of the three format lines is prefixed by the first format line number assigned to that part; this format line specifies the layout of a line of output that includes the first occurrence of the repeating subpart. The second format line is prefixed by the second format line number assigned to that part; this line specifies the layout of the lines of output that include the second and subsequent occurrences of the repeating subpart. The third format line is prefixed by the third format line number assigned; it specifies the layout of the final line of this part of the report; it can also contain a reference to the final occurrence of a repeating subpart. For example, three format lines of the form:

```
FM05: (other specifiers)
FM06: (other specifiers)
FM07: (other specifiers)
```

would specify the layout of the part of the report output corresponding to a CATALOGUE common clause. You could specify that only a part of the possible output be produced; for example, if the format line beginning with FM07 is omitted, then no concluding line is output. If the format line beginning with FM06 is omitted, then only the first occurrence of the repeating subpart is output. If the FM05 format line is omitted then the line that includes the first catalog classification will not be output.

In addition to the cases where a subpart may repeat, there are several cases where a whole part of a report output may repeat. An example is the form description of an ITEM report output, where the form description will be repeated if the ITEM definition contains more than one of the HELD-AS, REPORTED-AS, ENTERED-AS or DEFAULTED-AS clauses. Another example is where a FILE or GROUP member definition includes more than one CONTAINS clause. In these cases, three format lines are used to specify the report layout of these parts. These lines are used as follows. The first and third of the lines are only used to specify heading and trailing lines of characters; the output layout of all occurrences of the repeating part is specified by the second of the format lines. The layout of each occurrence of a repeating part must be the same, because only one instance of the second format line is accepted. For example, the three format lines with numbers FM59, FM60, and FM61 respectively are used to format the report output of the ITEM form description clauses mentioned above. If an ITEM definition includes both a REPORTED-AS and a ENTERED-AS clause, then the following set of format lines will format the report layout of these clauses:

```
FM59:(specifiers for heading line layout)
FM60:(specifiers for each form description clause)
FM61:(specifiers for trailing line layout)
```

Each format line (apart from its prefixing format line number and any separators) consists of parameter numbers and layout characters. The parameter numbers specify which subparts are to be output in each particular line of output, and the layout characters specify the physical positioning of these values in the output line. Layout characters can also be used to include additional characters or titles in a line of output.

As an example, consider the report output for an ITEM member called TRANSCODE. If a FORMAT member containing this format line:

```
FM01: D21, D22, D23
```

were used to format the report output of TRANS-CODE, then this line of output would be included in the report:

```
REPORT OF ITEM TRANS-CODE
```

If the format line was amended to this:

```
FM01: D21, D23
```

then the corresponding line of output would be this:

```
REPORT OF TRANS-CODE
```

Similarly, if the status of member TRANS-CODE was LIVE, then this format line:

```
FM01: D21, D22, D32, D6
```

would generate output of this line in the report:

```
REPORT OF ITEM STATUS LIVE
```

As an example of a part with repeating subparts, consider the report output where the above-mentioned member TRANS-CODE has the catalog classifications BATCH, MONTHLY, EMPLOYEE, TRANSACTION, and CODE. If these format lines:

```
FM05: D44, D45
FM06: D45
FM07: (specifiers for layout of final line of part)
```

are included in the appropriate FORMAT member, then (disregarding any questions of layout) these corresponding lines of output would be produced:

```
CATALOGUED AS BATCH
MONTHLY
EMPLOYEE
TRANSACTION
CODE
(final line)
```

Omission of the FM06 format line would stop the second and subsequent occurrences of this catalog classification being output:

```
CATALOGUED AS BATCH
(final line)
```

Alternatively, the omission of parameter D44 in the FM05 format line would stop output of the CATALOGUED AS string, giving this output:

```
BATCH
MONTHLY
EMPLOYEE
TRANSACTION
CODE
(final line).
```

You can set a limit to the number of times that a repeating subpart will appear in a report output by adding a repeat count to the subpart's parameter number. You could specify, for example, that a maximum of two catalog classifications for a member are to be included in report output by changing the three format lines given above to this:

```
FM05: D44,D45
FM06R1: D45
FM07: (final line specifiers)
```

This causes the output of the first of the classifications to be specified by the D45 parameter in the FM05 format line, and the output of a second classification to be specified by the D45 parameter in the FM06 format line.

## Layout Characters and Character Strings

The report output specified by each format line always begins on a new physical line and in column one (as shown in the examples in the previous section) of the current output device. The positioning of report output may be extended from this basis in several ways, as follows. The report output specified by a format line can be made to begin on a new page, rather than a new line, by coding the prefixing format line number with an S instead of an M (for example, FS05 instead of FM05). You can continue output on a new line at any point in report output by including a slash (/) character in a format line at the appropriate point, and you can specify the column number in which output is to begin by including a *Cnn* constant before the appropriate parameter number or character string. In the example of the previous section, if the format lines formatting the CATALOGUE clause of TRANS-CODE were expanded to this:

```
FM05: D44, /, C5, D45
FM06: C10, D45
```

the corresponding output would become this:

```
CATALOGUED AS
      BATCH
            MONTHLY
            EMPLOYEE
            TRANSACTION
            CODE
```

with CATALOGUED AS starting at column one.

You can also position output at a particular column by using the X (skip) character. This causes a single column space to be passed over in the output line. For example, the previous output format of catalog details could be specified by these format lines:

```
FM05: D44, /, X, X, X, X, D45
FM06: X, X, X, X, X, X, X, X, D45
```

Format line numbers	Parameter numbers	Report output subparts
FM140, FM141, FM142	D240	"EDIT-UPDATE"
	D241	Edit update(text)
Details of MODULE, PROGRAM, and SYSTEM members:		
FM146, FM147, FM148	D250	"LANGUAGE"
	D251	Lang.string "NOT SPECIFIED"
FM149, FM150, FM151	D253	"ENTRY-POINT"
	D254	Entry-point string
FM152, FM153, FM154	D255	"PARAMETERS"
	D256	"NO-DATA"

<b>Format line numbers</b>	<b>Parameter numbers</b>	<b>Report output subparts</b>
	D257	Member-type
	D258	Member-name (for params)
FM155, FM156, FM157	D260	"INPUTS"
	D262	Member-type
	D263	Member-name
FM158, FM159, FM160	D264	"OUTPUTS"
	D266	Member-type
	D267	Member-name
FM161, FM162, FM163	D268	"UPDATES"
	D270	Member-type
	D271	Member-name
FM164, FM165, FM166	D275	"CALLS"
	D276	"NO MEMBERS"
	D277	Member-type
	D278	Member-name
	D279	"AT"
	D280	At-string(entry-point)
	D281	"PASSING"
	D282	Member-type passed
	D283	Member-name passed
FM173, FM174, FM175	D284	"PROCESSES" (see "Outline of the Facility" on page 1)
	D285	DB-type
FM176, FM177, FM178	D290	"CONTAINS"
	D291	"NO MEMBERS"
	D292	Member-type
	D293	Member-name

You can also adjust the positioning of parameters in an output line by specifying them to be left or right-justified within a particular field. For example, the catalog classifications of the previous example could be aligned on their right-most characters by specifying them to be right-justified within a field known to be sufficiently large to contain the longest known catalog classification (suppose this to be 11 characters for this example). You can do this by including these format lines in the appropriate FORMAT member:

```
*FINAL EXAMPLE OF CATALOGUE
*CLAUSE FORMATTING
FM05: D44, C15, D45.10.R
FM06: C15, D45.10.R
FM07: 'THESE CATALOGUE NAMES ARE RIGHT-JUSTIFIED',
- 'IN COLS.15-25'
```

The dash (-) character in the previous line is a continuation character. You use this character to continue the definition of a format line on to a second (or subsequent) physical line of your input.

The format lines immediately above would give this output:

```
CATALOGUED AS      BATCH
                  MONTHLY
                  EMPLOYEE
                  TRANSACTION
                  CODE

THESE CATALOGUE NAMES ARE RIGHT-JUSTIFIED IN COLS.15-25
```

---

# 4

## Facility Language and Coding

---

### Command Syntax

These commands are available for use with the User Defined Output facility:

- The SET FORMAT command. This ControlManager command specifies that the report output for a particular member type is to be formatted as specified by a named FORMAT member. This specification remains in effect until it is explicitly switched off by a variant of the same command, an ENDDMR command, or a log-off command.
- The FORMAT prefix command. This command prefixes a REPORT command. It indicates that the output of the prefixed REPORT command (only) is to be formatted as specified by the FORMAT member included in the prefix command.
- The MP-AID LIST FORMATS command. This ControlManager command enables you to find which FORMAT members are available for general use in your installation, by listing the names of all the FORMAT members that are on the MP-AID.
- The QUERY FORMAT command. This ControlManager command allows you to check which (if any) formats have been specified by a SET FORMAT command in the current session. The command generates a list of the user defined formats currently specified for each DataManager member type.

Other facility commands are used by the System Administrator of your Manager Products installation to insert or replace FORMAT members on the MP-AID. These commands are described in the restricted *ASG-Manager Products Systems Administrator's Manual*.

### FORMAT

#### Purpose

The FORMAT prefix command specifies the FORMAT member whose contents are to be used to format the output of the REPORT or BULK REPORT command that it prefixes.

#### Format

```
FORMAT { AS preferred-set-format-name  
        { VIA MP-AID mp-aid-format-name  
          VIA DICTIONARY dictionary-format-name }  
report-command { ;  
                { . }
```

where:

*preferred-set-format-name* is the name of one of the preferred set of alternative report layouts.

*mp-aid-format-name* is the name of a FORMAT member in the MP-AID of the user's installation.

*dictionary-format-name* is the name of a FORMAT member of the user's data dictionary.

*report-command* is any valid DataManager REPORT or BULK REPORT command (as defined in the *ASG-DataManager User's Guide*).

### Remarks

1. This command may be used to prefix any REPORT or BULK REPORT command in a DataManager run. The scope of the command is restricted to that REPORT command only. For that particular REPORT command, it overrides the effect of any previous SET FORMAT command.
2. When the AS keyword is used, DataManager looks for a preferred set alternative layout whose name is *preferred-set-format-name*. This is then used to specify the layout of the output produced by the prefixed REPORT command. If no such layout exists, then DataManager outputs a diagnostic message and starts processing the next command.
3. When the VIA MP-AID keywords are used, then DataManager searches MP-AID for a FORMAT member whose name is *mp-aid-format-name*; the contents of this member are used to specify the layout of the output produced by the prefixed REPORT command. If no such FORMAT member exists, then DataManager outputs a diagnostic message and starts processing the next command.
4. If the keywords VIA DICTIONARY are used, then DataManager searches the user's data dictionary for a FORMAT member whose name is *dictionary-format-name*; the contents of this FORMAT member are then used to specify the layout of the output produced by the prefixed REPORT command. If no such member exists, then DataManager outputs a diagnostic message and starts processing the next command.

### Examples

```
FORMAT AS PSR-FILE REPORT FILENAME ;
```

This command generates a report for the FILE member named FILENAME in the user's data dictionary; the report output is formatted in the preferred set alternative layout.

```
FORMAT VIA DICTIONARY UFITM REPORT TRANS-CODE ;
```

This command generates a report for the dictionary member TRANS-CODE; the output is formatted as specified by the dictionary FORMAT member named UFITM.

**MP-AID LIST FORMATS****Purpose**

This variant of the MP-AID LIST command causes the names of all FORMAT members of the MP-AID to be listed.

**Format**

$$\left\{ \begin{array}{l} \underline{\text{MP-AID}} \\ \underline{\text{MPAID}} \end{array} \right\} \underline{\text{LIST}} \underline{\text{FORMATS}} \left\{ \begin{array}{l} ; \\ . \end{array} \right\}$$
**Remarks**

This command causes a list of the names of all the FORMAT members of the installation's MP-AID to be displayed.

**QUERY FORMAT****Purpose**

This variant of the QUERY command causes a list of all current SET FORMAT settings to be displayed.

**Format**

$$\underline{\text{QUERY}} \underline{\text{FORMAT}} \left\{ \begin{array}{l} ; \\ . \end{array} \right\}$$
**Remarks**

The output list includes, for each setting, the name of the FORMAT member used, the member types whose report output is being formatted, and an indication of whether the FORMAT member used is an MP-AID or a dictionary member.

**Examples**

```
QUERY FORMAT ;
```

This is the only form of the command.

**SET FORMAT****Purpose**

The SET FORMAT command causes ControlManager to lay out all subsequent report outputs for particular DataManager member types as specified by the named FORMAT member, or (if the OFF keyword is used) to unset any existing layout specification for those members.

## Format

```
SET FORMAT [FOR] REPORT
  OF { [GENERIC] basic-member-type }
    { member-type }
  [ , { [GENERIC] basic-member-type } ]...
    { member-type }
  { AS preferred-set-format-name } { ; }
  { TO MP-AID mp-aid-format-name } { . }
  { TO DICTIONARY dictionary-format-name }
  OFF
```

where:

*basic-member-type* is:

```
{
  ITEMS
  GROUPS
  CONVENTIONAL-FILES
  MODULES
  PROGRAMS
  SYSTEMS
}
```

*member-type* is basic-member-type or the keyword for any synonym of a basic member type

*preferred-set-format-name* is the name of one of the preferred set of alternative report layouts

*mp-aid-format-name* is the name of a FORMAT member in the MP-AID of the user's installation

*dictionary-format-name* is the name of a FORMAT member in the user's data dictionary.

## Remarks

1. You may use the SET FORMAT command at any time during execution of ControlManager after a dictionary has been opened.

2. Your choice of member type keyword in the command determines the DataManager member type or types whose REPORT output format is to be specified by this command, as follows.

You can always specify the member-type keyword to be one of the basic member-type keywords. The current SET FORMAT command then applies to the report output of members of that type.

If your installation includes the DataManager User Defined Syntax optional facility, then you have two additional options:

- You can specify the member type keyword to be the keyword of any synonym of a basic member type. The SET FORMAT command then applies to the report output of members of the synonym type
- You can use the keyword GENERIC. When this keyword is used, the SET FORMAT command applies to reports of all members whose member type is *basic-member-type*, and also to all members that are synonyms of the specified basic member type.

3. When the AS keyword is used, DataManager looks for a preferred set alternative layout whose name is *preferred-set-format-name*. If there is no such layout, then DataManager outputs a diagnostic message and stops processing the current command.
4. When the keywords TO MP-AID are included, then DataManager searches the MP-AID for the FORMAT member whose name is *mp-aid-format-name*, and uses the contents of this member to format the report output of the appropriate members. If such a FORMAT member does not exist in MP-AID, then DataManager outputs a diagnostic message and stops processing the current command.
5. When the keywords TO DICTIONARY are included, then DataManager searches the user's data dictionary for a FORMAT member whose name is *dictionary-format-name*, and uses the contents of this member to format the report output of the appropriate members. If such a FORMAT member does not exist in the user's data dictionary, then DataManager outputs a diagnostic message and stops processing the current command.
6. If the OFF keyword is used, then DataManager cancels any existing use of a FORMAT member (whether MP-AID or dictionary) to specify the report output layout of members whose type is member-type. Until another SET FORMAT command is issued for these members, their REPORT output will be in the standard DataManager format (unless a FORMAT prefix command is used).

### Examples

```
SET FORMAT FOR REPORT OF GROUPS AS PSR-GROUP ;
```

This command specifies that subsequent reports of GROUP members in the current session will be formatted as specified by the preferred set member PSR-GROUP.

```
SET FORMAT FOR REPORT OF GROUPS OFF ;
```

This command specifies that subsequent reports of GROUP members in the current session will be output in the basic DataManager format.

```
SET FORMAT REPORT OF ITEMS TO MP-AID FORM-USER;
```

This command specifies that subsequent reports of ITEM members in the current session will be output in the format specified by an MP-AID member named FORM-USER.

## Definition Syntax

### FORMAT

#### Format

```
FORMAT
[ { MP-AID } mp-aid-format-name ]
  { MPAID }

[ common-clauses ]

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

  { ; }
  { . }
```

where:

*mp-aid-format-name* is a 1 to 10 character name that may be used to access this FORMAT member from the MP-AID.

*common-clauses* is any of the DataManager common clauses, as defined in the *ASG-Manager Products Dictionary/Repository User's Guide*.

*format-line* is:

```
format-line-number [output-line-specification]
```

where:

*format-line-number* is:

```
F { M } n[Rr];
  { 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

*n* is an integer in the range 1 to 9999 that identifies a valid format line number for the corresponding part of the report output

R specifies that the current format line may only be repeated a specified number of times

*r* is an integer in the range 1 to 32767 that specifies the maximum number of times that this format line may be repeated.

*output-line-specification* is:

$$[q] \left\{ \begin{array}{l} \text{specifier} \\ (\text{specifier}[, \text{specifier}] . . .) \end{array} \right\}$$

$$[, [q] \left\{ \begin{array}{l} \text{specifier} \\ (\text{specifier}[, \text{specifier}] . . .) \end{array} \right\}] \dots$$

where:

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

*specifier* is:

$$\left\{ \begin{array}{l} / \\ X \\ Cn \\ 'string' \\ \left\{ \begin{array}{l} Dm \\ Um \end{array} \right\} [ .field-width [ \left\{ \begin{array}{l} .R \\ .C \end{array} \right\} ] ] \end{array} \right\}$$

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 16 regarding the inclusion of printable apostrophe (') characters within the string). A space (hexadecimal 40) is considered a printable character.

*Dm* (with the exception mentioned immediately below) identifies a parameter number valid for the current format line, where *m* is an unsigned integer

*Um* identifies a parameter number valid in a format line specifying the report layout of a user defined attribute (see "User-defined Syntax" on page 35), where *m* is an unsigned integer

*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 are always left-justified within a field unless right-justification or centering is specified; parameters that have integer values 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 can be present in any type of data definition statement. 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. The format line numbers and parameter numbers that are assigned to the report output of the various basic member types are listed in Appendix C, "Format Line and Parameter Numbers," on page 45.
3. Format lines can continue over more than one input line but each continuation line must commence with a hyphen (-) to denote the continuation. Optionally, the hyphen may be followed by one or more spaces. This commencing hyphen may appear in any column of the input line.
4. All elements in the output-line specification (with the exceptions stated in Remarks 5 and 6) may be preceded or followed by spaces to enhance the readability of format lines. Such spaces are ignored when the position of the output on the output device is calculated.
5. If a field width value is specified for a parameter, there must be no spaces between field-width, its preceding stop (period), and the parameter number (*Um* or *Dm*).

6. Similarly, if right-justification or centering of a parameter is required, then the `.R` or `.C` specification must immediately follow the field-width specification; there must be no intervening spaces.
7. The following 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 value is left-justified in the specified field with trailing spaces to fill the field
      - If  $W = N$ , the parameter value fills the specified field exactly
      - If  $W < N$ , the parameter value is truncated from the right to fill the field exactly.
    - If right-justification is specified:
      - If  $W > N$ , the parameter value is right-justified within the specified field with leading spaces to fill the field
      - If  $W = N$ , the parameter value fills the field exactly
      - If  $W < N$ , the parameter value 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 value is right justified within the field with leading spaces
    - If  $W = N$ , the parameter value fills the field exactly
    - If  $W < N$ , the field is filled with asterisks (\*) to denote overflow.
8. 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, DataManager truncates the output line to 132 characters.
9. 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.
10. The output specified by any part of an output line specification following a slash (/) is positioned on the next line of output.

11. Syntax checking of the output line specifications in the CONTENTS clause of a FORMAT member is not carried out when the member is encoded, but when any of the REPORT commands that use the layout specified by that member are about to be executed. At this stage, DataManager checks that the member's CONTENTS clause begins with a syntactically correct format line number. If it does not, then DataManager outputs this diagnostic error message:

*format-member*: HAS INVALID CONTENTS FORMAT

where *format-member* is the format member's name. DataManager then stops further processing of the FORMAT member and skips to the command after the current REPORT command. If there are any other errors in a FORMAT member's CONTENTS clause, then DataManager processes the line containing the error up to the point of the error, and ignores the remaining specifiers on that format line. The layout of the resulting report will be specified only by the output line specifications that have been processed.

12. The format lines within any single FORMAT member definition may be given in any order. Their order has no effect on the order in which the corresponding parts of the report are output, which is specified by the order of format line numbers in Appendix C, "Format Line and Parameter Numbers," on page 45.
13. When more than one output-line specification has the same format-line identifier, then all but the last specification are ignored.
14. Comment lines enable users to include documentation within the CONTENTS clause of the FORMAT member. They are not included in report output. Each comment line must be contained in one input line. There is no restriction, however, on the number of consecutive comment lines.
15. The MP-AID clause enables users to specify that the MP-AID version of a FORMAT member is to have a different name from that of the original data dictionary version of the member.

If an MP-AID clause is included in the definition of a FORMAT dictionary member, then whenever the member is constructed onto the installation's MP-AID, the name of the MP-AID version will be *mp-aid-format-name*. (This name must not be more than 10 characters long.)

If an MP-AID clause is not included in the definition of a FORMAT dictionary member, then, whenever the member is constructed onto the installation's MP-AID, the MP-AID member will have the same name as the original dictionary member.

The name of a dictionary FORMAT member must always be 10 characters or less in length if the member is to be constructed onto the MP-AID with the same name. Otherwise an MP-AID clause must be included in the member's definition.

16. A straight quote ( ' ) character can be included within a character string by placing a pair of them at the appropriate position in the string. For example, the character string:

AB ' CD ' E

would be generated in report output by including the character string:

' A ' ' CD ' ' E '

within the appropriate format line.



---

# 5

## Interaction with Other DataManager Optional Facilities

### User-defined Syntax

If your Manager Products installation includes the selectable units for both User Defined Output and User Defined Syntax optional facilities, then you can tailor the layout of the report output of members that are synonyms of any of the DataManager basic member types, as mentioned in the description of the SET FORMAT command in "SET FORMAT" on page 25.

You can also tailor the report output of DataManager members that include user-defined attributes. The output layout of user-defined attributes is specified by the same mechanism of format line numbers and parameter numbers that is described in Chapter 3, "Specifying User-defined Report Layouts," on page 15. When you create a user-defined attribute, and the User Defined Output facility is also installed, DataManager will generate format line numbers and parameter numbers and store them in the UDS table on your data dictionary. You can determine the numbers assigned for a particular user-defined attribute by using the SHOW UDS command with the key phrases USER-DEFINED ATTRIBUTES and GIVING DETAILS.

For example, if you have defined an attribute TITLE that is used in a member type called RPT-TITLE, then the output generated by the command:

```
SHOW UDS USER-DEFINED ATTRIBUTES
FOR RPT-TITLE
GIVING DETAILS ;
```

will include these lines relating to attribute TITLE:

```
UDO PARAMETER NUMBER m LINE 1
KEYWORD IS PARAMETER NUMBER n
FORMAT LINE NUMBER p
```

where:

$FM_p$  is the format line number for TITLE attribute output

$Un$  is the parameter number assigned to the keyword TITLE

$Um$  is the parameter number assigned to the output of particular values of TITLE.

You can then include these format line and parameter numbers in format lines that specify the layout of the report output of user defined attributes, in the same way as you would for basic attributes, as described in Chapter 3, "Specifying User-defined Report Layouts," on page 15. These format lines can then be incorporated into the FORMAT members that specify the report output of members with user defined attributes.

This form of the SHOW command is fully described in the publication *ASG-Manager Products User Defined Syntax*.

## **Status**

If your DataManager installation includes the Status facility, then the operation of the User Defined Output facility will be affected as follows.

When you use the SET FORMAT or FORMAT command to specify a report layout by means of a dictionary FORMAT member, then if the current status does not include the specified member, DataManager will search in turn all frozen statuses of the dictionary (if any) to see if they contain the specified member. This process is fully described in the publication *ASG-Manager Products Introduction to Status*.

---

## Appendix A

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# Format Member Listings

## Summary

This appendix contains the data definitions of the FORMAT members that are used in "Some Examples of User-defined Output Layouts" on page 3. The only exceptions are the ASG-supplied members that are included in the Example Dictionary.

## Member UFITM

```
FORMAT
DESC 'UDO EXAMPLE FOR AN ITEM'
CONTENTS
FS01: C11, '*' ,63'-','*'
      -,/,C11, '| '|,D21,X,D22,C47, '| '|,D23,C75, '| '|
      -,/,C11, '*' ,63'-','*'
      -,/,C11, '| '|,C21, '| '|,C34, '| '|,C47, '| '|,C61, '| '|,C75, '| '|
      -,C13, ' EDITION',C25, ' STATUS',C36, ' PROTECTION',C49
      ,
      -, ' ENCODED-BY'
      ,
      -,C65, ' REPORTED'
      -,/,C11, '*' ,63'-','*'
      -,/,C11, '| '|,C21, '1',C34, '| '|,C47, '| '|,C61, '| '|,C75, '| '|
      -,C13,D25,C23,D33,C36,D35,C51,D27
      -,/,C11, '| '|,C21, '1',C34, '| '|,C47, '| '|,C61, '| '|,C75, '| '|
      -,C23,D7,C49,D31,C63,D1
      -,/,C11, '| '|,C21, '| '|,C34, '| '|,C47, '| '|,C61, '| '|,C75, '| '|
      -,C51,D28,X,D29.5,C65, ' AT',D3.5
      -,/,C11, '*' ,63'=' , '*'
FM02: C11, '| '|, ' LANGUAGE',D41,C34, '| '|,D42,C47,D43,C75, '| '|
FM03: C11, '| '|, C34, '| '|,D42,C47,D43,C75, '| '|
FM04: C11, '*' ,63'-','*'
FM05: C11, '| '|,D44, C34, '| '|,D45, C75, '| '|
FM06: C11, '| '|, C34, '| '|,D45, C75, '| '|
FM07: C11, '*' ,63'-','*'
FM08: C11, '| '|,D46,C25,D47,C75, '| '|
FM09: C11, '| '|, C25,D47,C75, '| '|
```

```
FM10: C11,'*',63'-','*'
FM11: C11,'|',D48,C25,D49,C75,'|'
FM12: C11,'|',C25,D49,C75,'|'
FM13: C11,'*',63'-','*'
FM56: C11,'|','DIRECT USAGES',C34,D92,C75,'|'
      -./,C11,'|','DIRECT REFERENCES',C34,D95,C75,'|'
      -./,C11,'*',63'-','*'
      -./,C11,'|',D102,C75,'|'
FM60: C11,'|','*',10'='','*',D110,X,D111,X,D112,'*',10'='','*'
      -,C75,'|'
      -./,C11,'|',C23,D113,X,D114,C75,'|'
      -./,C11,'|',C23,D115,X,D116,C75,'|'
      -./,C11,'|',C23,D117,X,D118,C75,'|'
      -./,C11,'|',C23,D119,X,D120,X,D121,X,D122,X,D123,C75,'|'
      -./,C11,'|'
      ',C33,D124,X,D125,D126,X,D127,X,D128,D129,C75,'|'
      -./,C11,'|',C33,D130,X,D131,X,D132,C75,'|'
      -./,C11,'|',C33,D133,X,D134,C75,'|'
      -./,C11,'|',C33,D135,X,D136,X,D137,X,D138,C75,'|'
      -./,C11,'|',C17,'.....',C21,D150,C75,'|'
      -./,C11,'|',C17,'.....',C23,D151,C75,'|'
      -./,C11,'|',C33,D152,C75,'|'
      -./,C11,'|',C33,D153,X,D154,C75,'|'
      -./,C11,'|',C33,D155,X,D156,C75,'|'
      -./,C11,'|',C33,D157,X,D158,C75,'|'
      -./,C11,'|',C33,D159,X,D160,X,D161,X,D162,X,D163,X,D164
      -,C75,'|'
      -./,C11,'|',C33,D165,C75,'|'
FM61: C11,'*',63'-','*'
FM9999: C11,'*',28'='','E N D',28'='','*'
;
```

## Member TABALS-FM

```
FORMAT
DESC 'TABULATE ALIAS CLAUSE FOR ALL MEMBER-TYPES'
CONTENTS
*      LINE 20/21  ALIAS
FM02: C1,D23,C26,D22,C35,D42,C51,D43
FM03:                C35,D42,C51,D43
;
```

---

## Appendix B

---

### ASG-supplied Member Set

These members are supplied in status UDO of the Example Dictionary on the Manager Products installation tape.

<b>Member Name</b>	<b>Member Type</b>	<b>Use</b>
UDO-FMT-ASSIST	FORMAT	To show the assignment of format line and parameter numbers to the clauses of report output for any of the DataManager basic member types.
UDO-FMT-SR-ITEM	FORMAT	Specifies the standard layout for report output of ITEM dictionary members.
UDO-FMT-SR-GROUP	FORMAT	Specifies the standard layout for report output of GROUP dictionary members.
UDO-FMT-SR-FILE	FORMAT	Specifies the standard layout for report output of FILE dictionary members.
UDO-FMT-SR-MODULE	FORMAT	Specifies the standard layout for report output of MODULE dictionary members.
UDO-FMT-SR-PROGRAM	FORMAT	Specifies the standard layout for report output of PROGRAM dictionary members.
UDO-FMT-SR-SYSTEM	FORMAT	Specifies the standard layout for report output of SYSTEM dictionary members.
PSR-ITEM-CS	COMMAND-STREAM	To generate the report output for an ITEM dictionary member, in the layout specified by the preferred set member PSR-ITEM.
PSR-GROUP-CS	COMMAND-STREAM	To generate the report output for a GROUP dictionary member, in the layout specified by the preferred set member PSR-GROUP.
PSR-FILE-CS	COMMAND-STREAM	To generate the report output for a FILE dictionary member, in the layout specified by the preferred set member PSR-FILE.
PSR-MODULE-CS	COMMAND-STREAM	To generate the report output for a MODULE dictionary member, in the layout specified by the preferred set member PSR-MODULE.

<b>Member Name</b>	<b>Member Type</b>	<b>Use</b>
PSR-PROGRAM-CS	COMMAND- STREAM	To generate the report output for a PROGRAM dictionary member, in the layout specified by the preferred set member PSR-PROGRAM.
PSR-SYSTEM-CS	COMMAND- STREAM	To generate the report output for a SYSTEM dictionary member, in the layout specified by the preferred set member PSR-SYSTEM.
PSR-SUMMARY-CS	COMMAND- STREAM	To generate the summary report output for any member, in the layout specified by the corresponding preferred set FORMAT member.
PSR-INITIAL	FORMAT	Specifies the preferred set alternative layout for report output of member name, member type, encoding, status, and security information for a member of any type.
PSR-ALIAS	FORMAT	Specifies the preferred set alternative layout for report output of ALIAS clause information for any DataManager basic type member.
PSR-CATALOGUE	FORMAT	Specifies the preferred set alternative layout for report output of CATALOGUE clause information for any DataManager basic type member.
PSR-DESCRIPTION	FORMAT	Specifies the preferred set alternative layout for report output of DESCRIPTION clause information for any DataManager basic type member.
PSR-NOTE	FORMAT	Specifies the preferred set alternative layout for report output of NOTE clause information for any DataManager basic type member.
PSR-ADMINISTRATIVE	FORMAT	Specifies the preferred set alternative layout for report output of ADMINISTRATIVE-DATA clause information for any DataManager basic type member.
PSR-EFFECTIVE	FORMAT	Specifies the preferred set alternative layout for report output of EFFECTIVE-DATE clause information for any DataManager basic type member.
PSR-OBSOLETE	FORMAT	Specifies the preferred set alternative layout for report output of OBSOLETE-DATE clause information for any DataManager basic type member.
PSR-COMMENT	FORMAT	Specifies the preferred set alternative layout for report output of COMMENT clause information for any DataManager basic type member.

<b>Member Name</b>	<b>Member Type</b>	<b>Use</b>
PSR-QUERY	FORMAT	Specifies the preferred set alternative layout for report output of QUERY clause information for any DataManager basic type member.
PSR-FREQUENCY	FORMAT	Specifies the preferred set alternative layout for report output of FREQUENCY clause information for any DataManager basic type member.
PSR-SECURITY	FORMAT	Specifies the preferred set alternative layout for report output of SECURITY clause information for any DataManager basic type member.
PSR-ACCESS	FORMAT	Specifies the preferred set alternative layout for report output of ACCESS-AUTHORITY clause information for any DataManager basic type member.
PSR-SEE	FORMAT	Specifies the preferred set alternative layout for report output of SEE clause information for any DataManager basic type member.
PSR-REFERENCES	FORMAT	Specifies the preferred set alternative layout for report output of to- and from references for DataManager basic type members.
PSR-ITEM-FORM	FORMAT	Specifies the preferred set alternative layout for report output of ENTERED-AS, HELD-AS, REPORTED-AS, DEFAULTED-AS, and form description clause information for ITEM dictionary members.
PSR-GENERATION	FORMAT	Specifies the preferred set alternative layout for report output of GENERATION-CYCLE clause information for FILE dictionary members.
PSR-RETENTION	FORMAT	Specifies the preferred set alternative layout for report output of RETENTION-PERIOD clause information for FILE dictionary members.
PSR-GROWTH	FORMAT	Specifies the preferred set alternative layout for report output of GROWTH-RATE clause information for FILE dictionary members.
PSR-DENSITY	FORMAT	Specifies the preferred set alternative layout for report output of DENSITY clause information for FILE dictionary members.
PSR-VOLUME	FORMAT	Specifies the preferred set alternative layout for report output of VOLUME clause information for FILE dictionary members.

<b>Member Name</b>	<b>Member Type</b>	<b>Use</b>
PSR-SIZE	FORMAT	Specifies the preferred set alternative layout for report output of SIZE clause information for FILE dictionary members.
PSR-ORGANISATION	FORMAT	Specifies the preferred set alternative layout for report output of organisational (accessing) information for FILE dictionary members.
PSR-BLOCKING	FORMAT	Specifies the preferred set alternative layout for report output of block format information for FILE dictionary members.
PSR-BLOCKS	FORMAT	Specifies the preferred set alternative layout for report output of block size information for FILE dictionary members.
PSR-RECORDS	FORMAT	Specifies the preferred set alternative layout for report output of record size information for FILE dictionary members.
PSR-LABELS	FORMAT	Specifies the preferred set alternative layout for report output of label information for FILE dictionary members.
PSR-DEVICE	FORMAT	Specifies the preferred set alternative layout for report output of DEVICE clause information for FILE dictionary members.
PSR-SORTKEY	FORMAT	Specifies the preferred set alternative layout for report output of SORT-KEY clause information for FILE dictionary members.
PSR-AUTHOR	FORMAT	Specifies the preferred set alternative layout for report output of AUTHOR clause information for SYSTEM, PROGRAM, or MODULE dictionary members.
PSR-INSTALLATION	FORMAT	Specifies the preferred set alternative layout for report output of INSTALLATION clause information for SYSTEM, PROGRAM, or MODULE dictionary members.
PSR-WRITTEN	FORMAT	Specifies the preferred set alternative layout for report output of DATE-WRITTEN clause information for process members.
PSR-SOURCE	FORMAT	Specifies the preferred set alternative layout for report output of SOURCE-COMPUTER clause information for process members.
PSR-OBJECT	FORMAT	Specifies the preferred set alternative layout for report output of OBJECT-COMPUTER clause information for process members.

<b>Member Name</b>	<b>Member Type</b>	<b>Use</b>
PSR-SPECIAL	FORMAT	Specifies the preferred set alternative layout for report output of SPECIAL-NAMES clause information for FILE dictionary members.
PSR-I-O-CONTROL	FORMAT	Specifies the preferred set alternative layout for report output of I-O-CONTROL clause information for process members.
PSR-ASSIGNMENT	FORMAT	Specifies the preferred set alternative layout for report output of ASSIGNMENT clause information for process members.
PSR-EDIT-INPUT	FORMAT	Specifies the preferred set alternative layout for report output of EDIT-INPUT clause information for process members.
PSR-EDIT-OUTPUT	FORMAT	Specifies the preferred set alternative layout for report output of EDIT-OUTPUT clause information for process members.
PSR-EDIT-UPDATE	FORMAT	Specifies the preferred set alternative layout for report output of EDIT-UPDATE clause information for process members.
PSR-LANGUAGE	FORMAT	Specifies the preferred set alternative layout for report output of LANGUAGE clause information for process members.
PSR-ENTRY-POINT	FORMAT	Specifies the preferred set alternative layout for report output of ENTRY-POINT clause information for process members.
PSR-PARAMETERS	FORMAT	Specifies the preferred set alternative layout for report output of PARAMETERS clause information for process members.
PSR-INPUTS	FORMAT	Specifies the preferred set alternative layout for report output of INPUTS clause information for process members.
PSR-OUTPUTS	FORMAT	Specifies the preferred set alternative layout for report output of OUTPUTS clause information for process members.
PSR-UPDATES	FORMAT	Specifies the preferred set alternative layout for report output of UPDATES clause information for process members.
PSR-CALLS	FORMAT	Specifies the preferred set alternative layout for report output of CALLS clause information for process members.
PSR-PROCESSES	FORMAT	Specifies the preferred set alternative layout for report output of PROCESSES clause information for process members.

<b>Member Name</b>	<b>Member Type</b>	<b>Use</b>
PSR-MPS-CONTAINS	FORMAT	Specifies the preferred set alternative layout for report output of CONTAINS clause information for process members.
PSR-GRP-FILE-FORM	FORMAT	Specifies the preferred set alternative layout for report output of form clause information for FILE and GROUP members, and of USER-EXIT clause information for GROUP members.
PSR-KEYS	FORMAT	Specifies the preferred set alternative layout for report output of KEYS clause information for GROUP dictionary members.
PSR-GRP-FILE-CONTAINS	FORMAT	Specifies the preferred set alternative layout for report output of CONTAINS clause information for FILE and GROUP members.
PSR-HIERARCHY	FORMAT	Specifies the preferred set alternative layout for report output when the HIERARCHY keyword is used.
PSR-BULK-TOTALS	FORMAT	Specifies the preferred set alternative layout for lines of bulk report output that give the totals of processed and inaccessible members.

---

## Appendix C

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### Format Line and Parameter Numbers

This table lists all the format line and parameter numbers used for formatting report output. Individual parameter numbers may only be used in the format lines against which they are listed, except that parameters D1 to D40 may be used in any format line (not just FM01).

Format Line Numbers	Parameter Numbers	Report Output Subparts
	System Parameters:	
FM01	D1	Date
	D2	Password
	D3	Time
	D4	LOGON user-id
	D5	Dictionary name
	D6	Status
	D7	Status condition

Other parameter numbers that may be used in any format line, provided that the REPORT command is not a REPORT. . .HIERARCHY or REPORT. . .DOWN-TO.

D21	"REPORT OF"
D22	Member-type
D23	Member-name
D24	"EDITION"
D25	Edition number
D26	"ENCODED BY"
D27	User
D28	"AT"
D29	Time
D30	"ON"

<b>Format Line Numbers</b>	<b>Parameter Numbers</b>	<b>Report Output Subparts</b>
	D31	Date
	D32	"STATUS"
	D33	Status value
	D34	"PROTECTION"
	D35	"NONE"/Owner
	D36	"REMOVE"
	D37	"ALTER"
	D38	"ACCESS"
	D39	"OWNED BY"
	D40	Owner name

Details of common clauses:

FM02, FM03, FM04	D41	"ALIAS"
	D42	Alias type
	D43	Alias name
FM05, FM06, FM07	D44	"CATALOGUED AS"
	D45	Catalogue classification string
FM08, FM09, FM10	D46	"DESCRIPTION"
	D47	Description string
FM11, FM12, FM13	D48	"NOTE"
	D49	Note string
FM14, FM15, FM16	D51	"ADMINISTRATIVE-DATA"
	D52	Administrative data string
FM32, FM33, FM34	D77	"EFFECTIVE-DATE"
	D78	Effective date
FM35, FM36, FM37	D79	"OBSOLETE-DATE"
	D80	Obsolete date
FM38, FM39, FM40	D53	"COMMENT"
	D54	Comment string
FM41, FM42, FM43	D55	"QUERY"
	D56	Query string

---

**Appendix C - Format Line and Parameter Numbers**

<b>Format Line Numbers</b>	<b>Parameter Numbers</b>	<b>Report Output Subparts</b>
FM44, FM45, FM46	D57	"FREQUENCY"
	D58	Process-mode
	D59	Interval
	D60	Value/details
FM47, FM48, FM49	D70	"SECURITY-CLASSIFICATION"
	D71	Security details string
	D72	"FROM"
FM50, FM51, FM52	D73	Date
	D74	"ACCESS-AUTHORITY"
	D75	Access authority
FM53, FM54, FM55	D76	Name of access-authority mode
	D81	"SEE"
	D82	See-member-name
FM56, FM57, FM58	D83	"FOR"
	D84	See-qualification
	D90	"THIS MEMBER IS"
	D91	"DIRECTLY REFERRED TO"
	D92	Count
	D93	"TIMES"
	D94	"THIS MEMBER CONTAINS"
D95	Count	
Bulk report totals:	D96	"DIRECT REFERENCES"
	D100	Member-type
	D101	Member-name
	D102	"CONTAINS NO ENTRIES"
	FM197, FM198, FM199	D105
D106		"MEMBERS PROCESSED BY BULK REPORT"
D107		Number of inaccessible members
D108		"INACCESSIBLE MEMBERS"

<b>Format Line Numbers</b>	<b>Parameter Numbers</b>	<b>Report Output Subparts</b>
	Details of ITEM members (form description):	
FM59, FM60, FM61	D110	Form
	D111	"VERSION"
	D112	Version number
	D113	"USER-EXIT"
	D114	User-exit module name
	D115	"HEADINGS"
	D116	Headings string
	D117	"USAGE"
	D118	Usage string
	D119	"SIGNED"/"UNSIGNED"
	D120	"VARIABLE"/"FIXED"/"NULL"
	D121	"TRUNCATED"/"ROUNDED"
	D122	"COMPRESSED"
	D123	"LEFT-" / "RIGHT-JUSTIFIED"
	D124	Item type
	D125	Minimum length integer digits
	D126	Minimum length fractional digits
	D127	"TO"
	D128	Integer digits
	D129	Fractional digits
	D130	"NAME"
	D131	Item-name
	D132	Item-version
	D133	"PICTURE"
	D134	Picture string (delimited)
	D135	"WITH"
	D136	"SEPARATE"
	D137	"LEADING"/"TRAILING"
	D138	"SIGN"
	D150	"CONTENTS"

Format Line Numbers	Parameter Numbers	Report Output Subparts
	D151	"ELSE"
	D152	Item-type (that is, "ALPHABETIC" / "ALPHANUMERIC" / . . . / "FLOATING-POINT")
	D153	"IS"/"RANGE"
	D154	Lower limit "TO" Upper limit
	D155	"CONDITION-NAME"
	D156	Condition-name
	D157	"FORMAT"
	D158	Format
	D159	"IF"/"AND"/"OR"
	D160	Item-name-B
	D161	Version-B
	D162	"EQ"/"NE" etc.
	D163	Item-name-C/literal
	D164	Version-C

Details of FILE members:

FM62, FM63, FM64	D180	"GENERATION-CYCLE"
	D181	Generation-cycle
FM65, FM66, FM67	D182	"RETENTION-PERIOD"
	D183	Retention period value
	D184	Retention period detail units
FM68, FM69, FM70	D185	"GROWTH-RATE"
	D186	Growth-rate value
	D187	"PERCENT"
	D188	Details string/interval
FM71, FM72, FM73	D173	"DENSITY"
	D174	Density
FM74, FM75, FM76	D175	"VOLUME"
	D176	Volume-name
FM77, FM78, FM79	D177	"SIZE"

<b>Format Line Numbers</b>	<b>Parameter Numbers</b>	<b>Report Output Subparts</b>
	D178	Size value
	D179	Size-units/size-details string
FM80, FM81, FM82	D190	"ORGANISATION"
	D191	"IS"
	D192	"SEQUENTIAL"
	D193	"INDEXED"
	D194	"DIRECT"
	D195	"KEYED"
	D196	"VSAM"
	D197	"PARTITIONED"
FM83, FM84, FM85	D202	"BLOCKING"
	D203	"IS"
	D204	Block format
FM86, FM87, FM88	D205	"BLOCK SIZE"
	D206	"IS"
	D207	Block size
FM89, FM90, FM91	D208	"RECORD SIZE"
	D209	"IS"
	D210	Record size
FM92, FM93, FM94	D198	"NO LABELS" / "LABELS"
	D199	"ARE"
	D200	"STANDARD LABELS" / user-labels module
	D201	User-label module name
FM98, FM99, FM100	D170	"DEVICE"
	D171	Device type
	D172	Device number/model
FM101, FM102, FM103	D211	"SORT-KEY"
	D212	Member-type
	D213	Member-name
	D214	"ASCENDING"/"DESCENDING"

<b>Format Line Numbers</b>	<b>Parameter Numbers</b>	<b>Report Output Subparts</b>
Details of PROGRAM members:		
FM110, FM111, FM112	D215	"AUTHOR"
	D216	Author
FM113, FM114, FM115	D217	"INSTALLATION"
	D218	Installation name
FM116, FM117, FM118	D219	"DATE-WRITTEN"
	D220	Date
FM119, FM120, FM121	D221	"SOURCE-COMPUTER"
	D227	Source computer
FM122, FM123, FM124	D228	"OBJECT-COMPUTER"
	D229	Object computer
FM125, FM126, FM127	D230	"SPECIAL NAMES"
	D231	Special names
FM128, FM129, FM130	D232	"I-O-CONTROL"
	D233	I-O-Control(text)
FM131, FM132, FM133	D234	"ASSIGNMENT"
	D235	Assignment(text)
FM134, FM135, FM136	D236	"EDIT-INPUT"
	D237	Edit-input(text)
FM137, FM138, FM139	D238	"EDIT-OUTPUT"
	D239	Edit-output(text)
FM140, FM141, FM142	D240	"EDIT-UPDATE"
	D241	Edit-update(text)
Details of MODULE, PROGRAM, and SYSTEM members:		
FM146, FM147, FM148	D250	"LANGUAGE"
	D251	Language string/"NOT SPECIFIED"
FM149, FM150, FM151	D253	"ENTRY-POINT"
	D254	Entry-point string
FM152, FM153, FM154	D255	"PARAMETERS"
	D256	"NO-DATA"

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**ASG-DataManager User Defined Output**

<b>Format Line Numbers</b>	<b>Parameter Numbers</b>	<b>Report Output Subparts</b>
	D257	Member-type
	D258	Member-name (for params)
FM155, FM156, FM157	D260	"INPUTS"
	D262	Member-type
	D263	Member-name
FM158, FM159, FM160	D264	"OUTPUTS"
	D266	Member-type
	D267	Member-name
FM161, FM162, FM163	D268	"UPDATES"
	D270	Member-type
	D271	Member-name
FM164, FM165, FM166	D275	"CALLS"
	D276	"NO MEMBERS"
	D277	Member-type
	D278	Member-name
	D279	"AT"
	D280	At-string(entry-point)
	D281	"PASSING"
	D282	Member-type passed
	D283	Member-name passed
FM173, FM174, FM175	D284	"PROCESSES" (see "Outline of the Facility" on page 1)
	D285	DB-type
FM176, FM177, FM178	D290	"CONTAINS"
	D291	"NO MEMBERS"
	D292	Member-type
	D293	Member-name

Details of GROUP members:

FM185, FM186, FM187	D300	"FORM"
---------------------	------	--------

<b>Format Line Numbers</b>	<b>Parameter Numbers</b>	<b>Report Output Subparts</b>
	D301	Form (ENTERED/HELD/REPORTED/ DEFAULTED-AS)
	D302	"USER-EXIT"
	D303	User-exit name
FM188, FM189, FM190	D304	"KEYS"
	D305	Item name
	D306	"UNIQUE" / "DUPLICATED"
	D307	"ASCENDING" / "DESCENDING"

CONTAINS clause in FILE and GROUP members:

FM191, FM192, FM193	D310	"CONTAINS"
	D311	"NO MEMBERS"
	D312	"ELSE"
	D313	Bound start
	D314	Bound literal
	D315	Bound version
	D316	Member-type
	D317	Member-name
	D318	"ALIGNED" / "UNALIGNED"
	D320	"KNOWN-AS"
	D321	Known-as name
	D325	"INDEXED-BY"
	D326	Indexed-by name
	D330	"IF" / "AND" / "OR"
	D331	Item-name(1)
	D332	Version
	D333	Operator(EQ, NE, etc.)
	D334	Item name(2)
	D335	Version

Concluding report lines when DOWN-TO key phrase used:

FM194, FM195, FM196	D340	Member-type
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<b>Format Line Numbers</b>	<b>Parameter Numbers</b>	<b>Report Output Subparts</b>
	D341	Member-name
	D342	"REFERS TO"
	D343	"NO APPROPRIATE MEMBERS" / "NO MEMBERS"
	D344	Member-type
	D345	Referenced member-name

Details of SESAM-STORAGE members:

FM340, FM341, FM342	D500	"STORAGE-NAME"
	D501	Storage-name
	D502	"IDENTIFIER"
	D503	Identifier number
	D504	"PARCEL-SIZE"
	D505	Size value
	D506	"RECORD-NUMBERING"
	D507	Record-number string
	D508	"SECONDARY-INDEXING"
	D509	"DENSITY"
	D510	Density number
	D511	"REORGANIZATION"
	D512	Reorganizing number
	D513	"SORTUNIT"
	D514	Sort unit number
	D515	"ZD-FILE"
	D516	File-name
	D517	"DEVICE"
	D518	"PUBLIC"
	D519	"PRDISC"
	D520	Device model
	D521	"VOLUME"
	D522	Volume-size
	D523	"PRIMARY"
	D524	Primary number

<b>Format Line Numbers</b>	<b>Parameter Numbers</b>	<b>Report Output Subparts</b>
	D525	"SECONDARY"
	D526	Secondary number
	D527	"DENSITY"
	D528	Density value
	D529	"REORGANIZATION"
	D530	Reorganization number
	D531	"ORG-FILE"
	D532	File-name
	D533	"DEVICE"
	D534	"PUBLIC"
	D535	"PRDISC"
	D536	Device model
	D537	"VOLUME"
	D538	Volume-size
	D539	"WORK-AREA"
	D540	Work-area number
	D541	"PRIMARY"
	D542	Primary number
	D543	"SECONDARY"
	D544	Secondary number
	D545	"DENSITY"
	D546	Density value
	D547	"REORGANIZATION"
	D548	Reorganization number
	D549	"PASSWORD"
	D550	Password string
	D551	"CODE"
	D552	Code string
	D553	"CATALOG-SIZE"
	D554	Catalog-size number
	D555	"ATTRIBUTE-CATALOG"

<b>Format Line Numbers</b>	<b>Parameter Numbers</b>	<b>Report Output Subparts</b>
	D556	Attribute catalog number
	D557	"CHECKPOINT"
	D558	Checkpoint string
	D559	"AFTER-IMAGE"
	D560	After-image string
FM343, FM344, FM345	D561	"ACCESS-IS"
	D562	"KEY"
	D563	Item-name
	D564	"COMPOUND-KEY"
	D565	Item-names
FM349, FM350, FM351	D566	"SECONDARY-KEYS"
	D567	Item-names
FM352, FM353, FM354	D568	"CONTAINS"
	D569	Table-name

Details of SESAM-TABLE members:

FM361, FM362, FM363	D570	"KEY-VALUES"
	D571	"FOR"
	D572	Item-names
	D573	"IS"
	D574	String
FM364, FM365, FM366	D575	"SYMBOLIC-NAMES"
	D576	SESAM-names
	D577	"FOR"
	D578	Item-names

Details of SESAM-VIEW members:

FM373, FM374, FM375	D580	"SELECT"
FM376, FM377, FM378	D581	"ALL"
FM378, FM379, FM380	D582	"MEMBERS"
	D583	Member-types

<b>Format Line Numbers</b>	<b>Parameter Numbers</b>	<b>Report Output Subparts</b>
FM382, FM383, FM384	D584	"FROM"
	D585	Table-name
FM385, FM386, FM387	D586	"AND"
FM388, FM389, FM390	D587	"ALL"
FM391, FM392, FM393	D588	"MEMBERS"
	D589	Member-types
FM394, FM395, FM396	D590	"FROM"
	D591	Table-names
FM397, FM398, FM399	D592	"WHERE"
	D593	"JOIN"
	D594	Join string
FM400, FM401, FM402	D595	"SELECTION"
	D596	Selection string

Details of SYSTEM members:

FM409, FM410, FM411	D597	View-name
	D598	"TUPLES"
	D599	Tuples number

An optional concluding line for the whole report:

FM9999	Any character string. No parameters may be used with this format line.
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## Appendix D

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# The User Interface Dictionary

Some of the information that is given in Appendix C, "Format Line and Parameter Numbers," on page 45, is also held in an alternative form, in a preset data dictionary which ASG supplies as part of selectable unit DMR-UDI5. This dictionary is called the User Interface Dictionary, and the status supplied to users is POST500.

This Dictionary contains information (in the form of dictionary members) that ASG provides for users of several DataManager optional additional facilities. This appendix describes the members of the Dictionary that are provided as part of the User Defined Output selectable unit. The members that are designed to be accessed in the first instance by users are a set of GROUP members whose names are DFM00 $nnn$ , where FM $nnn$  are all the format line numbers that are listed in Appendix C, "Format Line and Parameter Numbers," on page 45. Each member is used to provide information about the corresponding format line; for example, member DFM00002 holds data about format line number FM02. These members reference other GROUP and ITEM members of the Dictionary; the common clauses of the referenced members contain further data about REPORT output formatting.

The following examples illustrate some of the ways in which these Dictionary members can provide information. If a user wishes to obtain information about the REPORT output lines that correspond to format number FM02, then the user would first access GROUP member DFM00002 and the Dictionary members that DFM00002 references, by commands such as:

```
KEEP AND WHAT CONSTITUTES DFM00002 ;  
GLOSSARY KEPT-DATA GIVING ALIASES , DESCRIPTIONS , NOTES ;
```

These commands will generate a list of glossaried members whose ALIAS, DESCRIPTION, and NOTE clauses give the following information about the REPORT line in question. The ALIAS clause of each glossaried member holds one of the parameter numbers assigned to that REPORT line, the DESCRIPTION clause describes the contents of that part of the line, and the NOTE clause (if present) gives any additional information (for example, that part of the line is a variable-length name which is extended if necessary to eight characters with spaces). If a user wishes to find out which part of a REPORT output is formatted by parameter D42, then the output generated by the command:

```
WHOSE ALIAS IS "D42" ;
```

indicates the Dictionary member that corresponds to the part of a REPORT output that is formatted using parameter number D42. Further information about the same part of the REPORT line could then be obtained by interrogating the indicated dictionary member.

The User Interface Dictionary is contained in the DM.UIDICT data set on the installation tape. For information about installing the User Interface Dictionary, refer to the DataManager-specific parts of the appropriate installation manual:

- *ASG-Manager Products Installation in OS Environments, or*
- *ASG-Manager Products Installation in DOS Environments.*

## A

Alternative report layouts 1, 13, 24, 26  
AS keyword 24, 27  
ASG-supplied members 12  
    complete listing of 39  
    naming of 12

## B

Basic DataManager member types 1, 26–27  
BULK REPORT command 2, 11, 16, 23  
    example of use 9

## C

CATALOGUE clauses 15  
character 31  
Character strings 16, 20, 31, 33  
Coding elements 12, 17  
Column starts 20  
COMMAND-STREAM members of  
    ASG-supplied member set 11  
Comments in FORMAT members 30  
Common clause 30  
Common clauses in FORMAT members 28,  
    30  
Component engineering 1, 11  
CONTENTS clauses 15–16  
CONTENTS clauses of FORMAT  
    members 32  
Continuation of format lines 22, 30

## D

Database Management System interface  
    facilities, extent of support 1  
DataManager nucleus 1  
DEFAULTED-AS clauses 18  
DESCRIPTION clauses 15  
Diagnostic messages 24, 27, 32  
DM.UIDICT data set 60

## E

ENDDMR command 23  
ENTERED-AS clauses 18

Example Dictionary 12, 37  
Examples of user-defined layouts 3

## F

FILE member type 1  
FORMAT command 2, 12, 23, 36  
    examples of use 4, 23  
    syntax 23  
Format line numbers 15, 30, 32  
    complete listing 45  
Format lines 17  
    syntax of 32  
FORMAT members 1  
    on MP-AID 2, 11  
FORMAT members on dictionary  
    syntax of 28

## G

GENERIC keyword 27  
GROUP member type 1

## H

HELD-AS clauses 18

## I

Installation tape 60  
ITEM member type 1, 15

## L

Layout characters 18  
Left-justification of parameter values 22  
LOGOFF command 23

## M

Manager Products Administrative and  
    Information Dataset (MP-AID) 2  
MODULE member type 1  
MP-AID clause of FORMAT members 24,  
    32  
MP-AID LIST FORMATS command 2, 23,  
    25

**N**

New lines in layouts 20  
New pages in layouts 20  
NOTE clauses 15

**O**

OFF keyword 2, 25, 27  
Output line specification 29, 31

**P**

Parameter numbers 15, 30  
    complete list 45  
    of user-defined attributes 36  
Parts of report layouts 15  
POST status 59  
PROCESSES clauses 1  
PROGRAM member type 1

**Q**

QUERY FORMAT command 23, 25

**R**

Repeating parts 18  
Repeating sub-parts 17  
Repetition of characters 20  
REPORT command 2, 15, 23–24  
    examples of use 24  
REPORTED-AS clauses 18  
Right-justification 22, 30–31

**S**

Separators in format lines 18  
SESAM Interface member types 1  
    SESAM-STORAGE 1, 54  
    SESAM-TABLE 1, 56  
    SESAM-VIEW 1, 56  
SET FORMAT command 1–2, 23–24, 26, 36  
    example of use 27  
    syntax 25  
SHOW UDS command 35  
Specifiers 16, 29, 31–32  
Standard report layouts 2  
Status  
    User Interface Dictionary 60  
Status facility 36  
Status, of Example Dictionary 12  
System Administrator 2, 23  
SYSTEM member type 1, 57  
System parameters 16, 45

**T**

TO DICTIONARY keyphrase 27  
TO MP-AID keyphrase 27

**U**

UDO-FMT-ASSIST FORMAT member 12,  
    16, 39  
User Defined Syntax facility 35  
User Interface Dictionary 60  
User-defined attributes 35  
User-defined layouts, development of  
    examples 3

**V**

VIA DICTIONARY keyphrase 24  
VIA MP-AID keyphrase 24



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