

## CHAPTER

## 15

## Using the Report Engine

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<i>Chapter Overview</i>	141
<i>Additional Information</i>	141
<i>Creating and Modifying a Simple List Report</i>	141
<i>Creating the Report</i>	142
<i>Modifying the Report</i>	144
<i>Adding Titles to a Report Engine Report</i>	144
<i>Running the Modified Report</i>	146
<i>Saving a Report to a SAS Catalog</i>	146
<i>Creating a Dynamic Report</i>	147
<i>Creating the AIRLINE Sample Tables</i>	147
<i>Creating the Report</i>	150
<i>Exiting This Task</i>	152

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### Chapter Overview

In Chapter 3, you learned to produce listing, tabular, and counts reports. This chapter describes the SAS/ASSIST Report Engine, which is a more advanced, more powerful tool for producing reports. Using the Report Engine, you can create lists; tables; graphics, including bar charts, pie charts, and plots; and dynamic reports with drill-down features. You can easily change from one report style to another using the Report Engine.

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### Additional Information

For more information on producing reports, refer to Chapter 3, “Report Writing,” on page 29 in this book; Chapter 4, “Graphics,” on page 47 in this book; and the PROC REPORT chapter in *SAS Procedures Guide*.

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### Creating and Modifying a Simple List Report

The Report Engine allows you to generate reports quickly and gives you several ways to modify and customize different aspects of your report. This section shows you how to create a simple listing report and use the Report Engine’s customizing tools to make some modifications to the report.

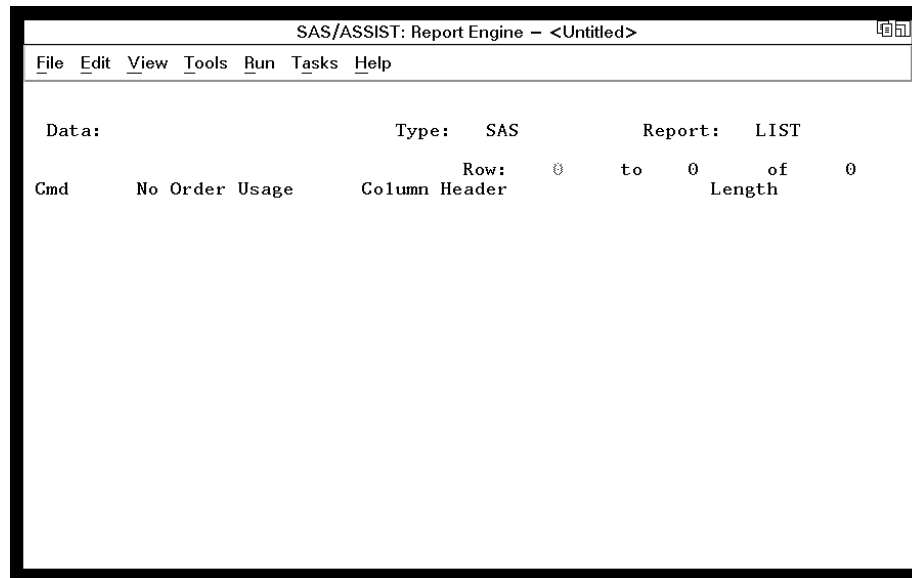
## Creating the Report

- 1 Follow this selection path:



The Report Engine window appears.

**Display 15.1** Report Engine Window



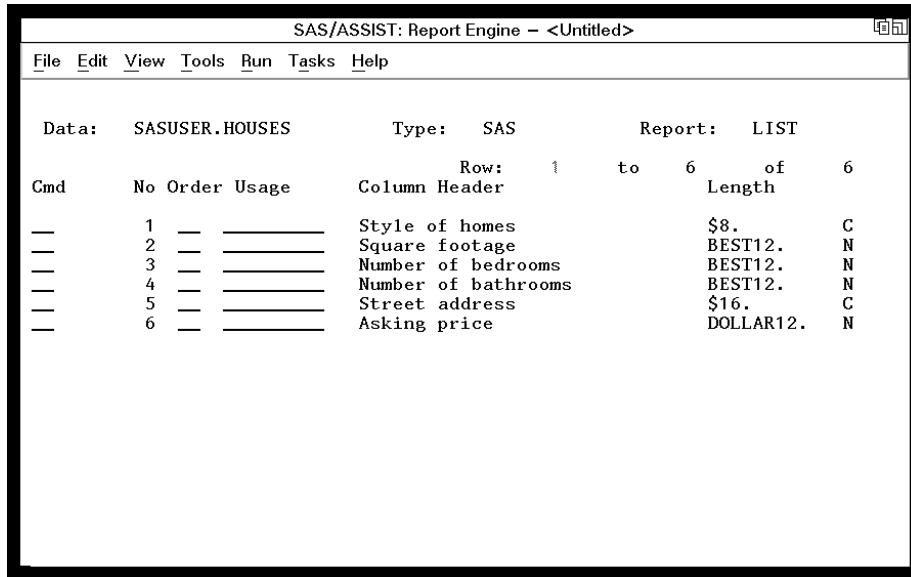
- 2 If you have previously run a Report Engine report, the selections for that report are displayed automatically in the Report Engine window. If report selections exist in the Report Engine window, follow this selection path to clear all selections from the window:



- 3 Ensure that the value in the **type** field is SAS. If it is not, type **SAS** over the value in the **type** field. Note that the **type** field must be filled in before you select a table.
- 4 Use one of the following methods to select the SASUSER.HOUSES table:
- Type **SASUSER.HOUSES** in the **Data** field and press ENTER.
  - Type a ? in the **Data** field, and then select the SASUSER.HOUSES table from the Select Table window. For more information on the Select Table window, see “Selecting a Table” on page 24.

When the SASUSER.HOUSES table is loaded into the Report Engine window, **SASUSER.HOUSES** appears in the **Data** field. The table’s columns are listed in the window.

Display 15.2 Report Engine Window with HOUSES Table



- 5 Type **LIST** in the **Report** field in the Report Engine window, if it does not already appear there.
- 6 Follow this selection path to generate the report:



The report appears in the Report Output window.

Display 15.3 Report Output Window

Style of homes	Square footage	Number of bedrooms	Number of bathrooms	Street address
CONDO	1400	2	1.5	Market Street
	1390	3	2.5	Hampshire Avenue
	2105	4	2.5	Jeans Avenue
RANCH	1860	2	2	Arcata Avenue
	1250	2	1	Sheppard Avenue
	1500	3	3	Kemble Avenue
	1535	3	3	State Highway
SPLIT	720	1	1	Nicholson Drive
	1190	1	1	Rand Street
	1615	4	3	West Drive
TWOSTORY	1305	3	1.5	Graham Avenue
	1810	4	3	Garris Street
	1040	2	1	Sanders Road
	1240	2	1	Fairbanks Circle

If the report is wider or longer than one display, use the scroll bars, the **view** pull-down menu, or the **FORWARD**, **BACKWARD**, **LEFT**, and **RIGHT** function keys to look at the report.

- 7 To return to the Report Engine window, follow this selection path:




---

## Modifying the Report

The Report Engine offers you a number of ways to modify and customize your report. This section shows you some of them.

- 1 You can delete columns from the report output. For this example, position the cursor in the **Cmd** field of the **Number of bathrooms** row, type **D**, and press ENTER. The **Number of bathrooms** row disappears from the Report Engine window, and the column will not appear in the report. The column does remain, however, in the HOUSES table.
- 2 You can modify the column headers. Position the cursor in the **Column Header** field of the **Number of bedrooms** row. Type **Bedrooms** over the existing column header text. You may need to delete or type blanks over the remaining column header text. Press ENTER; the column header will be renamed **Bedrooms** in the report.
- 3 You can rearrange the order in which the columns appear in the report. The values of **No** (for Number) determine where the columns appear, with 1 representing the left edge. Position the cursor in the **No** field of the **Street address** row. Type a **5**, and then move the cursor to the **No** field of the **Asking price** row. Type a **4** and press ENTER. The Asking Price column will appear to the left of the Street Address column in the report.

*Note:* If you wish to undo your modifications, follow this selection path:



This action restores the original columns, including their ordering and column headers, and it also restores any deleted columns.  $\triangle$

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## Adding Titles to a Report Engine Report

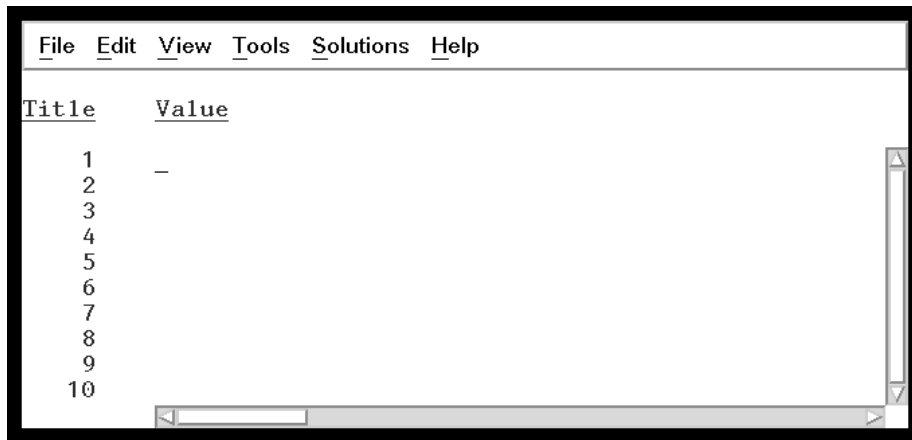
Adding titles to a Report Engine report is slightly different from adding titles in the other SAS/ASSIST report-generating functions. Unlike the titles specified in other report-writing tasks, the titles you specify in the Report Engine are used in Report Engine reports only and do not carry over into other report writing tasks. Similarly, titles defined in other report writing tasks are not used in Report Engine reports.

- 1 To add titles to your Report Engine report, follow this selection path from the Report Engine window:



The TITLES window appears.

Display 15.4 Report Engine Titles Window



- 2 Each numbered line in the Titles window represents a title line. A Report Engine report can have up to 10 title lines. For this example, type **Houses for Sale** in the **Value** field for title number 1, and then type **By Style** in the **Value** field for title number 2.
- 3 Return to the Report Engine window by following this selection path:

**File** ► **Close**

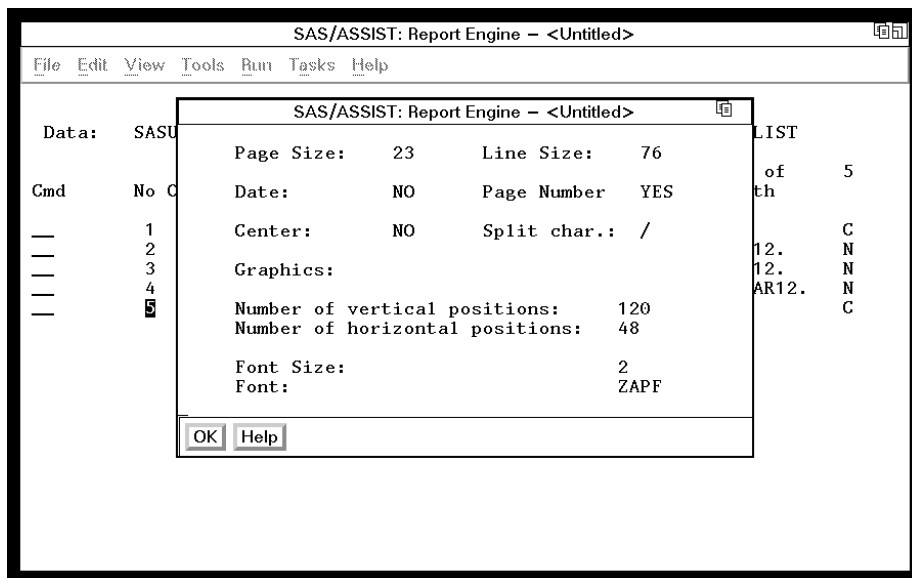
A prompt appears asking if you want to save your changes. Select **Yes**.

- 4 Titles appear flush left by default in Report Engine reports. To center the titles, follow this selection path:

**Edit** ► **Page Layout**

The Page Layout window appears.

Display 15.5 Page Layout Window



- 5 In the **Center** field, type

YES

and press ENTER.

- 6 Select **OK**. The Page Layout window disappears.

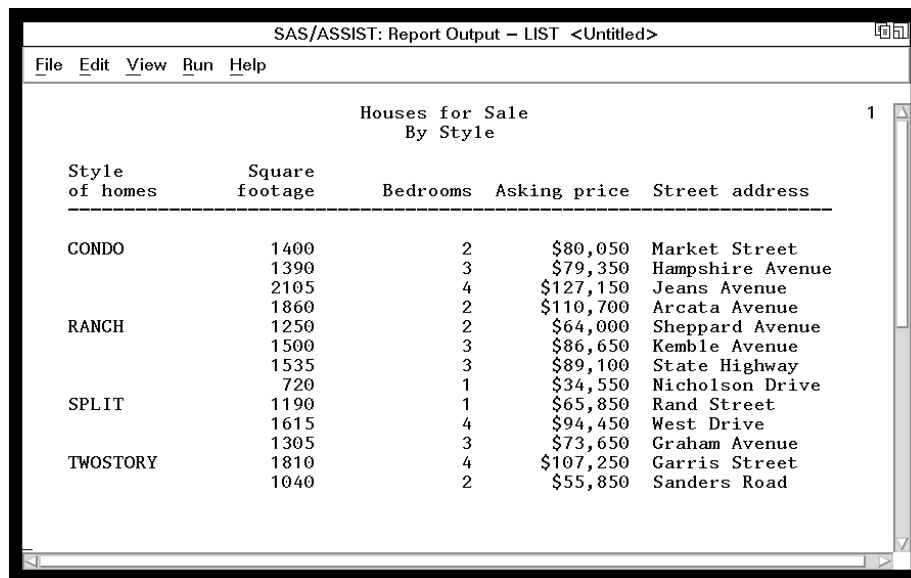
## Running the Modified Report

- 1 Run the report with your titles by following this selection path:

**Run** ► **Submit**

Your report appears in the Report Output window, with the modifications and titles.

**Display 15.6** Modified Report Output



SAS/ASSIST: Report Output - LIST <Untitled>

File Edit View Run Help

Houses for Sale  
By Style

Style of homes	Square footage	Bedrooms	Asking price	Street address
CONDO	1400	2	\$80,050	Market Street
	1390	3	\$79,350	Hampshire Avenue
	2105	4	\$127,150	Jeans Avenue
RANCH	1860	2	\$110,700	Arcata Avenue
	1250	2	\$64,000	Sheppard Avenue
	1500	3	\$86,650	Kemble Avenue
	1535	3	\$89,100	State Highway
SPLIT	720	1	\$34,550	Nicholson Drive
	1190	1	\$65,850	Rand Street
	1615	4	\$94,450	West Drive
TWO STORY	1305	3	\$73,650	Graham Avenue
	1810	4	\$107,250	Garris Street
	1040	2	\$55,850	Sanders Road

- 2 To return to the Report Engine window, follow this selection path:

**File** ► **Close**

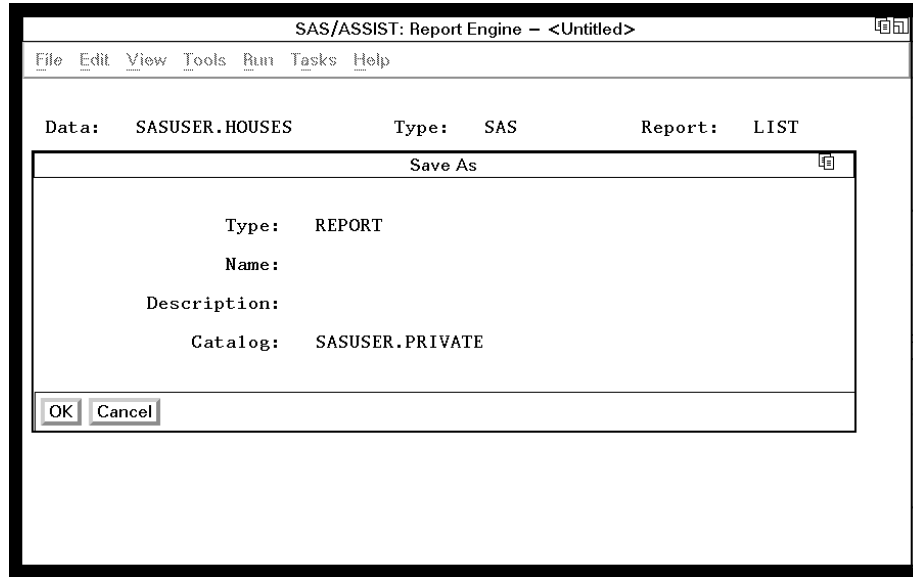
## Saving a Report to a SAS Catalog

To save a report for future use, follow these steps:

- 1 From the Report Engine window's menu bar, follow this selection path:

**File** ► **Save As...**

The Save As window appears.

**Display 15.7** Save As Window

- 2 Type a name for the report in the **Name** field. The name must be no longer than eight characters. For this example, type the name **LSTHOUSE**.
- 3 You may choose to type a description of the report in the **Description** field. The description must be no longer than 32 characters. For this example, type **Houses for Sale (Report Engine)**.
- 4 Select **OK** to save the report. If the report name exists, you are prompted to select **OK** again to write over the existing report, or you can type a new name for the report.
- 5 The Report Engine window reappears. If you modify the report further and wish to save it again, follow this selection path from the Report Engine window's menu bar:

**File** ► **Save**

*Note:* For a list of existing reports, type a ? in the **Name** field of the Save As window. You can type **S** (for Select) in the **Cmd** field to select a report from the resulting selection list. For a list of available catalogs, type a ? in the **Catalog** field. Select the catalog from the resulting selection list.  $\Delta$

---

## Creating a Dynamic Report

Dynamic reports enable you to set up a report and then drill down to view more details of the report.

---

### Creating the AIRLINE Sample Tables

To appreciate the power of the dynamic report, you should use large and complex tables. This section shows you how to create the AIRLINE sample tables, a set of tables for a fictitious airline company called International Airways. The AIRLINE sample tables are more complex than the SAS/ASSIST sample tables. There are tables with employee information as well as tables with information about flights, delays, boarding numbers, and so on. To create the AIRLINE tables, follow these steps:


- 1 If you are using the OS/390 or CMS operating environments, continue to step 2. Otherwise, create a library, directory, or folder, depending on your operating environment, where you want the AIRLINE sample tables to reside. You may name this library or directory anything you want, but we use the name **sampltab** in these examples. See the SAS companion for your operating environment, or contact the SAS Software Consultant at your site if you do not know how to perform this step.

*Note:* The name **sampltab** that we use in these examples is the physical file or directory name. Do not confuse this name with the libname, which you will specify in a later step. △

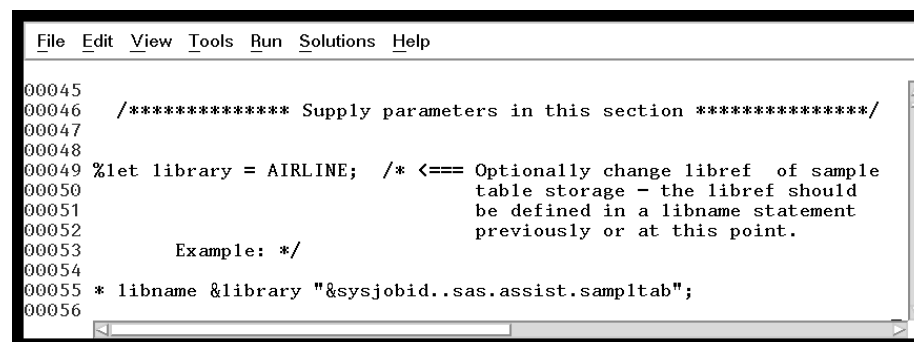
- 2 Go to the Program Editor window by using the PREVWIND function key or by clicking on the window, depending on your operating environment. From the Program Editor window, follow this selection path:

File ► Open object...

The Open window appears with a list of available libraries in the left pane.

- 3 Select the  symbol next to the **sashe1p** library. The contents of the Sashelp library appear in the left pane.
- 4 Scroll down in the left pane until you see the **Qassist** catalog. Select the **Qassist** catalog. A list of entries in the Qassist catalog appears in the right pane.
- 5 Scroll down in the right pane until you see the **Samplsas** source entry. Select the **Samplsas** source entry.
- 6 Select **Open**. The Samplsas program appears in the Program Editor window.
- 7 Scroll down in the Program Editor window (or use the DOWN function key) until you find the “Supply parameters” section, as shown in the following display.

**Display 15.8** SAMPLSAS Source Code



```

00045
00046 /***** Supply parameters in this section *****/
00047
00048
00049 %let library = AIRLINE; /* <=== Optionally change libref of sample
00050                          table storage - the libref should
00051                          be defined in a libname statement
00052                          previously or at this point.
00053                          Example: */
00054
00055 * libname &library "&sysjobid..sas.assist.sampltab";
00056

```

- 8 Find the line that reads

```
* libname &library '&sysjobid..sas.assist.sampltab';
```

You may need to scroll further down to find this line. This line is the LIBNAME statement that SAS software uses to assign a libref to a physical file or directory. For more information on librefs, see “SAS Data Libraries” on page 115.

- 9 Remove the \* by placing the cursor over it and pressing the SPACE BAR.
- 10 If you are using OS/390, continue to the next step. Otherwise, replace the information between the quotation marks (") with the name of the library or directory you created in step 1. (For CMS users, use the name in the following table.) Use the following table as a guide. Ensure that the name is enclosed in quotation marks and that a semicolon (;) is at the end of the line.



**Table 15.1** Examples of LIBNAME Statements

Operating Environment	Example
OS/390	<code>libname &amp;library "userid .assist.sampltab";</code>
CMS	<code>libname &amp;library "SAMPLTAB FILE A";</code>
OpenVMS	<code>libname &amp;library "DEVICE:[SAMPLTAB]";</code>
UNIX	<code>libname &amp;library "/u/userid /assist/sampltab";</code>
OS/2 or Windows	<code>libname &amp;library "C:\assist\sampltab";</code>

11 To run the program, follow this selection path:

►

After the program finishes, statistics about the created tables appear in the Output window.

**Display 15.9** AIRLINE Sample Table Statistics

The screenshot shows a SAS Output window titled "Verify table Creation:" with a menu bar (File, Edit, View, Tools, Solutions, Help) and a page number "3" in the top right corner. The output displays a table with the following data:

Row	Library Name	Member Name	Number of Observations	Number of Variables	Type of Indexes	Dataset Label
1	AIRLINE	JOBCODES	17	2	SIMPLE	IAW Jobcode table
2	AIRLINE	SCHEDULE	84	3	COMPOSITE	Crew-Flight Schedule 1-7 Mar94

*Note:* The Airline libref is assigned for the duration of your current SAS session only. The next time you invoke the SAS System and SAS/ASSIST software, you will need to assign the libref again by following the directions in "Using SAS/ASSIST Software to Assign a New Libref" on page 117. Alternatively, you can specify that the Airline libref be automatically defined, each time you invoke the SAS System, by assigning the libref in the SAS Explorer window. See the online help for the SAS Explorer window for details.  $\Delta$

12 Return to the Report Engine window by using the PREVWIND or NEXT function keys, or by clicking on the SAS/ASSIST window, depending on your operating environment.

## Creating the Report

To create a dynamic report, you must add usages to the **Usage** column. Usages determine what a column represents and change the appearance of a report. For dynamic reports, usages determine the columns on which you can drill down.

- 1 Type **AIRLINE.MARCH** and then press ENTER in the Report Engine window's **Data** field.
- 2 For each column, enter the usage and column header indicated in the following table. Use the TAB key to move from field to field.

**Table 15.2** Preparing the Dynamic Report

Column No.	Usage	Column Header
1	GROUP	Flight
2	ACROSS	Date
3	GROUP	Time
4	SUM	Mail
5	SUM	Freight
6	SUM	Boarded
7	SUM	Transfer
8	SUM	Non-pay
9	SUM	Deplane
10	GROUP	Capacity

The usages for the columns create a drill-down report that shows the sum of the mail, freight, number of passengers boarded, number of passengers transferred, number of nonpaying passengers, and the number of disembarked passengers. Each of the columns can be shown by flight number, departure time, capacity, and date. The column headers have been shortened so that they fit in the Dynamic Report window buttons.

- 3 Type **DRILL** in the **Report** field, and then press ENTER.
- 4 Follow this selection path to run the report:

►

The Dynamic Report window appears, with eight buttons for columns defined with GROUP, ACROSS, BREAK, or PAGE usages.

Display 15.10 Dynamic Report Window

SAS/ASSIST: Dynamic Report

File Edit View Help

Capacity  
Date  
Time  
Flight

Mail Freight Boarded Transfer

Total	241E3	211E3	83684	9133
-------	-------	-------	-------	------

- 5 Select **F**light to obtain a list of all the flights along with the figures for mail, freight, boarded passengers, transferred passengers, nonpaying passengers, and deplaned passengers.

Display 15.11 Information by Flight Number

SAS/ASSIST: Dynamic Report

File Edit View Help

Capacity  
Date  
Time  
Flight

Flight Mail Freight Boarded Transfer

114	11774	10474	5122	506
132	11086	10507	3461	437
182	12778	10266	4096	444
183	11768	9988	2728	474
202	12240	10539	4108	441
219	12045	10414	5738	403
271	10568	9336	4095	409
290	11565	11039	2931	461
302	12329	11503	2814	444
308	12105	10416	4482	444
387	10436	8947	3569	383
416	11836	11055	2879	430

The figures for nonpaying passengers and deplaned passengers do not initially appear. If the report has more columns than can be displayed in the window, the scroll buttons (the small buttons below the eight analysis buttons) contain arrows to indicate the availability of additional columns. Select the right-arrow button to see columns to the right. Each time you select a scroll button, one new column appears.

- 6 Drill down on Flight 202 by selecting 202 in the table, and then selecting **D**ate. The figures for Flight 202 for each date appear.

**Display 15.12** Information by Date for Flight 202

Date	Mail	Freight	Boarded	Transfer
01MAR94	369	244	151	11
02MAR94	399	161	120	15
03MAR94	458	370	118	27
04MAR94	295	464	148	11
05MAR94	357	494	104	6
06MAR94	383	286	115	19
07MAR94	439	220	175	10
08MAR94	508	334	130	11
09MAR94	335	323	141	15
10MAR94	535	386	127	9
11MAR94	438	435	165	12
12MAR94	280	213	112	9

- 7 Drill down on **05MAR94** and select **Capacity** to display the capacity figures for Flight 202 on March 5, 1994.

**Display 15.13** Capacity Information for Flight 202 on March 5, 1994

Capacity	Mail	Freight	Boarded	Transfer
210	357	494	104	6

- 8 To return to the Report Engine window, follow this selection path:

**File** ► **Close**

## Exiting This Task

When you are ready to return to the WorkPlace menu or move on to another task, follow the directions in “Exiting a Task” on page 26.

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