CA MICS® Resource Management

Analyzer Option for MQSeries

Release 12.9

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Chapter 1: OVERVIEW

CA MICS Analyzer for MQSeries is a data integration application that collects and stores data from WebSphere MQ in the CA MICS database.

The CA MICS MQSeries Analyzer processes WebSphere MQ data from SMF record types 115 and 116 and WebSphere Message Broker data from SMF record type 117. CA MICS automatically integrates MQSeries Analyzer data with any other data that CA MICS maintains. This is possible because CA MICS stores data in a format that is common to all CA MICS products.

The CA MICS Analyzer for MQSeries integrates the WebSphere activity and utilization data collected in SMF records into the CA MICS database to provide the following:

- A common database to support the variety of information provided by WebSphere MQ and WebSphere Message Broker.
- Informative online inquiry reports.
- A comprehensive data dictionary describing the data elements in the database.
- Detection of erroneous input data and its exclusion from the database. This data verification increases the reliability and usability of the data.
- Inclusion of a wide range of standard exits allowing you to readily examine, alter, extract, or delete data as required.

This section contains the following topics:

1.1 Files

Raw SMF data is manipulated in the CA MICS Analyzer for MQSeries information management process to create the Performance Information Area, the Accounting Information Area, and the Message Broker Information Area.

The MQSeries Performance Information Area supports the following files to provide performance statistics and measurement information:

- Buffer Manager Statistics File MQSBMS
- Coupling Facility Statistics File MQSCMS
- DB2 Manager Statistics File MQSDBS
- Data Manager Statistics File MQSDMS
- Log Manager Statistics File MQSLMS
- Message Manager Statistics File MQSMMS

The MQSeries Accounting Information Area supports the following files to provide information on the activities and resources used by applications and channels:

- Message Manager Accounting File MQAMMA
- Queue Activity File MQAQAA
- Task Accounting File MQATAA
- Channel Activity File MQA_CH

The Message Broker Information Area supports the following files to provide information on message flow activity:

- Message Flow Accounting File MQBMFA
- Message Flow Node File MQBMFN

Files are described in Chapter 5, Files.

Figure 1-1 illustrates the data sources and files of the Performance Information Area, the Accounting Information Area, and the Message Broker Information Area.

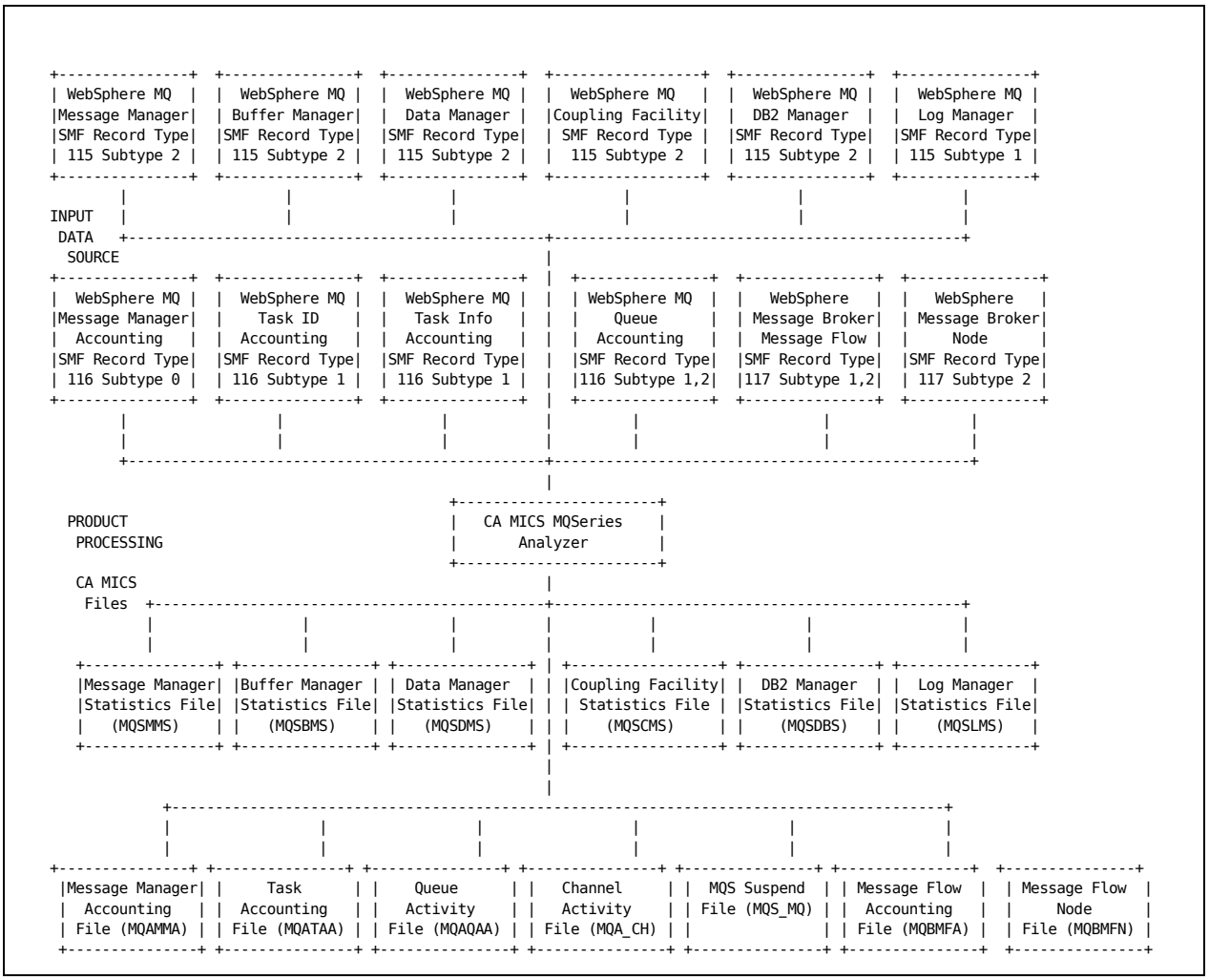


Figure 1-1. Information Area Structure

1.2 Reports

The CA MICS MQSeries Analyzer's reports provide concise and comprehensive information to help manage the WebSphere MQ and WebSphere Message Broker environments. CA MICS provides interactive capabilities that allow quick responses to complex requests. The types of CA MICS MQSeries Analyzer reports that are provided are listed below.

CA MICS INFORMATION CENTER FACILITY (MICF)

MICF is a panel-oriented productivity tool that allows you to access information in the CA MICS database. When you define input, selection criteria, and report options, MICF dynamically builds an inquiry program that executes in either interactive or batch mode. Depending on your specific requirements, MICF either prints the inquiry report, displays the results at your terminal, or catalogs the results for later viewing. MICF reports are described in Chapter 3, Reports.

GRAPHIC DISPLAYS

Graphic reports can be produced in color or non-color modes by using the MICF tool. The line graphics are illustrated in this guide. Data used in the graphic analysis queries can also generate CSV files for subsequent use in the CA MICS Query and Reporting Workstation product. Graphic reports are described in Chapter 3, Reports.

STANDARD SAS LANGUAGE INTERFACE

The CA MICS Workstation Facility (MWF) provides an online environment that supports the standard SAS language interface in both interactive and batch modes. SAS allows easy data manipulation and statistical analysis, and provides coding facilities for programmers who are conducting extensive analysis efforts or designing new reports for business applications. Because you can use the SAS system across different types of machines (mainframes, micros, and minis), it provides tremendous flexibility. CA MICS uses the SAS system as a data manager and as an advanced analysis language.

1.3 Prerequisites

The CA MICS MQSeries Analyzer runs in a CA MICS environment operating under z/OS.

You must have IBM's WebSphere MQ and/or WebSphere Message Broker and IBM's System Management Facility (SMF) active on your system. To take advantage of full CA MICS MQSeries Analyzer functionality, you should generate SMF record types 115, 116, and 117.

Chapter 2: USAGE CONSIDERATIONS

The CA MICS MQSeries Analyzer records and analyzes WebSphere MQ and WebSphere Message Broker activity operating under z/OS. It processes WebSphere MQ data from SMF record types 115 and 116 to provide performance statistics and accounting information on individual application and channel usage, and SMF record type 117 to provide statistics on message flow activity.

WebSphere MQ from IBM provides secure common cross-platform communication. WebSphere MQ integrates applications and its infrastructures by enabling reliable communications between platforms and applications through a common application programming interface (API). It allows communication not only between various subsystems, but also through programs operating under CICS, IMS, Batch, TSO, and other platforms.

Data from the CA MICS Analyzer for MQSeries lends significant value to the use of other CA MICS products. The MICF interface is described briefly in this chapter. More detailed information is described in Chapter 3, Reports.

This section contains the following topics:

2.1 CA MICS Information Center Facility (MICF)

The CA MICS Information Center Facility (MICF), accessible from the CA MICS Workstation Facility (MWF), is a powerful tool that enables you to create, to view, and to modify inquiries using the data from the CA MICS MQSeries Analyzer. In addition, a number of inquiries pertaining to the MQSeries Analyzer are available. The inquiries are organized under the reporting group of PERFORM. Using MICF, you can build inquiries that meet your site's reporting requirements.

Using the Production Reporting feature of MICF, you can schedule MICF inquiries to run as part of the CA MICS processing job streams (for example, DAILY, WEEKLY, MONTHLY).

Chapter 3: REPORTS

The MQSeries Analyzer produces reports using the CA MICS Information Center Facility (MICF), which is part of the CA MICS Workstation Facility (MWF).

MICF inquiries produce meaningful reports from the CA MICS database and provide you with the flexibility to code and save your own report formats. You can execute and easily modify distributed MICF inquiries using the Database Inquiries option from the MICF main menu.

This section contains the following topics:

3.1 MICF Inquiries for the MQSeries Analyzer

The table that follows lists the MICF inquiries distributed with the MQSeries Analyzer. The remainder of this chapter follows this category listing. Each section contains a brief description of the inquiry and the panels used to generate it.

MQSeries Analyzer's graphic reports can be produced in color or non-color modes. The line graphics are illustrated in this guide. Data used in the graphic analysis queries can also generate CSV files for subsequent use in the CA MICS Query and Reporting Workstation product.

All graphs and reports can be produced at multiple summarization levels. Dates and titles will be adjusted appropriately based on the timespan and summarization level chosen for the execution. After data has been collected for a time period, this summarization capability can be used to "drill down" to a specific time frame. For example, you may want to analyze trends at a weekly level for the last 6 weeks as a starting point. If last week's data showed erratic behavior at this level you can drill down to the days level, days by hour, and detail levels, to pinpoint the potential cause of the behavior.

Usage Considerations:

The MICF inquiries provide a user exit that you can use to perform additional data selection from the CA MICS database. To invoke this exit, you must first copy the shared inquiry into your private MICF catalog, then select it for modification. Finally, code SAS statements in the SELECT macro, bracketed by the %MACRO and %MEND statements.

The default for the SELECT macro is null. This macro is invoked when the observations are read from the specified CA MICS files. You can use it to delete observations from the data as it is selected. For example, in a system activity study, you might want to exclude test systems starting with a T from the analysis. You would then code the following:

```
%MACRO SELECT;
IF SYSID NE: 'T';
%MEND  SELECT;
```

Note that you do not have to code the %MACRO and %MEND statements, as they are already provided for you.

IMPORTANT! You must code each specified SAS statement in accordance with the syntax of the SAS Macro Language, as described in the SAS guides. No validity checking is done on the defined code. If the user code contains syntax or logic errors, the inquiry will either terminate abnormally or will produce unpredictable results.

Category	Report Name	Inquiry ID	Use	Additional Information
CA MICS MQSeries Overview Reports	CA MICS MQSeries Buffer Pool Summary	MQSSL1	Overview of Buffer Pool configuration and utilization	N/A
	CA MICS MQSeries Performance Summary	MQSSL2	General overview of MQSeries utilization and configuration	MQSSL1
Buffer Pool Analysis	Available Buffer Pool Analysis	MQSCSA	Graph of Available Buffers to Total Buffers	MQSSL1 MQSSL2
	Page Get Analysis	MQSCSB	Graph of Page Get related metrics	MQSSL1 MQSSL2
	Page Write Analysis	MQSCSC	Graph of Page Write related metrics	MQSSL1 MQSSL2
Data Manager Analysis	Data Manager Analysis	MQSCSD	Graph of Data Manager activity metrics	MQSSL2
Message Manager Analysis	Message Manager Analysis	MQSCSE	Graph of Message Manager activity metrics	MQSSL2
Log Manager Manager	Log Manager Write Analysis	MQSCSF	Graph of Log Manager Write related metrics	MQSSL2
	Log Manager Read Analysis	MQSCSG	Graph of Log Manager Read related metrics	MQSSL2
Coupling Facility Analysis	Coupling Facility Analysis	MQSCSH	Graph of Coupling Facility single and multiple update calls	N/A
DB2 Manager Analysis	DB2 Shared Queue Analysis	MQSCSI	Graph of DB2 shared queue related metrics	N/A
Queue Activity Reports	Queue Activity	MQSSL3	Report of overall queue activity	MQSSL5
	Queue Summary	MQSSL5	Report of queue activity by individual queue	MQSSL3

Task Accounting Report	Task Accounting	MQSSL4	Report of task level metrics	N/A
Message Broker Reports	Message Flow Summary	MQSSL6	Report of message flow activity by message flow within execution group	MQSSL7
	Message Flow Node Activity	MQSSL7	Report of message flow activity at the node level	MQSSL6

The following sections describe the individual inquiries:

```
 1 - MQSeries Multiple System Inquiries
 2 - MQSeries Buffer Pool Statistics File Inquiries
 3 - MQSeries Data Manager Statistics File Inquiry
 4 - MQSeries Message Manager Statistics File Inquiry
 5 - MQSeries Log Manager Statistics File Inquiries
 6 - MQSeries Coupling Facility File Inquiry
 7 - MQSeries DB2 Manager Statistics File Inquiry
 8 - MQSeries Queue Activity File Inquiries
 9 - MQSeries Task Accounting File Inquiry
10 - Message Broker Message Flow File Inquiry
11 - Message Broker Message Flow Node File Inquiry
```

3.1.1 MQSeries Multiple System Inquiries

The CA MICS MQSeries Analyzer provides inquiries that report on data from the following reports:

```
  1 - MQSeries Performance Summary (MQSSL2)
  2 - MQSeries Buffer Pool Summary (MQSSL1)
```

3.1.1.1 MQSeries Performance Summary (MQSSL2)

The CA MICS MQSeries Performance Summary uses measurements from the Buffer Manager Statistics File (MQSBMS), Log Manager Statistics File (MQSLMS), Message Manager Statistics File (MQSMMS), and the Data Manager Statistics File (MQSDMS) to display an overall view of the CA MICS MQSeries configuration, activity, and service measurements over the date and/or time ranges you select.

Each report produced displays categorized information on activity, configuration, and utilization. The report categories and labels are listed on the left side of the report pages. Individual columns on the report represent the element's value for the appropriate granularity level (hour or date) as denoted above the columns. The last column on the report represents the percent increase or decrease over the time periods represented on the report page.

The following table displays the relationship between report labels and database source elements under each report category.

Report Category: MESSAGE MANAGER ACTIVITY

Report Label	File	Element
MQGET REQUESTS	MQSMMS	MMSGET
MQPUT REQUESTS	MQSMMS	MMSPUT
MQPUT1 REQUESTS	MQSMMS	MMSPUT1
MQOPEN REQUESTS	MQSMMS	MMSOPEN
MQCLOSE REQUESTS	MQSMMS	MMSCLOS

Report Category: BUFFER POOL n UTILIZATION*

Report Label	File	Element
AVERAGE BUFFERS IN POOL	MQSBMS	BMSAVBUF
AVERAGE AVAIL. BUFFERS	MQSBMS	BMSAVAVB
NO AVAILABLE BUFFERS	MQSBMS	BMSSOS
TOTAL GETS (NEW+CURRENT)	MQSBMS	BMSTNGET
% PAGE READS TO DASD	MQSBMS	BMSPCRIO
% GETS - NOT IN BUFFER	MQSBMS	BMSPCSTL
PAGE GETS(CURRENT PAGE)	MQSBMS	BMSGETP
% REQUESTS NEW/EMPTY PAGE	MQSBMS	BMSPCNP
PAGE WRITES	MQSBMS	BMSWIO
PAGE UPDATES	MQSBMS	BMSSTW
% PAGE UPDATES	MQSBMS	BMSPCSTW
SYNC. PAGE WRITES	MQSBMS	BMSIMW

SYNC PAGE PROCESSOR START	MQSBMS	BMSDMC
NO. OF PAGES TO DASD	MQSBMS	BMSTPW

Report Category: LOG MANAGER STATISTICS

Report Label	File	Element
TOTAL LOG WRITE REQUESTS	MQSLMS	LMSTNLWR
% WRITE REQUESTS - WAIT	MQSLMS	LMSPCWRW
% WRITE REQUESTS - FORCE	MQSLMS	LMSPCWRF
TOTAL LOG READ REQUESTS	MQSLMS	LMSTNLRR
% READ LOG REQ IN BUFFER	MQSLMS	LMSPCRBU
% READ ACTIVE LOG DS	MQSLMS	LMSPCRAC
% READ ARCHIVE LOG DS	MQSLMS	LMSPCRAR
% READ DELAYED (MAXALLC)	MQSLMS	LMSPCWTL
WAIT-UNAVAILABLE BUFFERS	MQSLMS	LMSWTB

Report Category: DATA MANAGER STATISTICS

Report Label	File	Element
OBJECT_GET REQUESTS	MQSDMS	DMSDGET
OBJECT_LOCATE REQUESTS	MQSDMS	DMSDLOC
OBJECT_PUT REQUESTS	MQSDMS	DMSDPUT
OBJECT_CREATE REQUESTS	MQSDMS	DMSDCRE
OBJECT_DELETE REQUESTS	MQSDMS	DMSDDEL

* By default there will be one category section for each Buffer Pool ID (0 through 15). However, if you have restricted selection to only certain buffer pools, only those selected pool categories will be displayed.

Note: The label associated with the field DATE in the column titles varies based on the timespan used.

To produce the report:

- Enter the CA MICS Workstation Facility (MWF)
- Choose option 2, CA MICS Information Center Facility (MICF)
- Choose option 2, Database Inquiries
- Select MQSSL2, whose Catalog Group is PERFORM
- Complete the MICF Execution panel
- Complete the specification panel illustrated below

(Descriptions of the fields follow the panel)

The result displays on your terminal. An example report is shown at the end of this section.

```
+------------------------------------------------------------------------+
|------------------  MQSeries Performance Summary  -------------------|
| Command ===>                                                           |
|                                                                        |
| Composing Inquiry: MQSSL2 - MQSeries Performance Summary               |
|                                                                        |
| Database ===> ____________________________________________             |
| Cycle(s) ===> __ - __                                                  |
| Timespan ===> ______  (DETAIL/DAYS/WEEKS/MONTHS)                       |
| Report by hour if timespan is DAYS or WEEKS  ===> _ (Y/N)              |
| Generate a report for each value of Zone     ===> _ (Y/N)              |
| Data Selection:                                                        |
|                     dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy      |
|   Date Ranges  ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __      |
|   Hour         ===> __ - __    __ - __    __ - __                     |
|   Zone         ===> _ _ _ _ _ _ _ _ _                                  |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                      |
|   MQS Queue Manager Name(MQMSSI)  ===> ____ ____ ____ ____ ____ ____   |
|   MQS Buffer Pool ID Selection(BMSPOOL) (Separate by commas)           |
|    example 0,3,5,14 ===> ____________________________________          |
|                                                                        |
+------------------------------------------------------------------------+
```

Database - Required. No default. Specify up to six database unit IDs (the IDs of the CA MICS database units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one database unit, this parameter is set automatically. To display a selection list of valid database unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified timespan of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (for example, 7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Timespan - Required. Default varies by report. The timespan of the CA MICS database from which the primary input files are selected. Required input files must be available at the specified timespan.

Report by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly, DAILY, or WEEKLY level. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week and a single report listing all days or weeks is produced.

Generate a plot for each value of Zone - Required. Defaults to Y. Reports for each zone can be generated when requested if you specify Y (Yes). The nature and resource requirements of processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Date Ranges - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of

the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

Queue Manager Name (MQMSSI) - Optional. No default. 1-4 character value identifying the name of the Queue Manager (MQMSSI). Specify up to six Queue Manager Names. An input observation is selected if its identifier is equal to any of the specified values.

MQS Buffer Pool ID (BMSPOOL) - Optional. No default. 1-4 numeric buffer pool value (BMSPOOL). Specify up to fifteen buffer pools. An input observation is selected if its identifier is equal to any of the specified values. Leading zeros are not required, however any 4 numeric values are accepted. For example, specifying 1 is equivalent to 0001.

14:50 Tuesday, mmm dd, yyyy

C A

CA MICS MQSeries Analyzer

HOURLY PERFORMANCE SUMMARY

FOR ZONE = 1

SYSTEM = XE44 MQM SUBSYSTEM = CSQ1 RUNDATE = mmm dd, yyyy

HOUR-WEEK (HR-MM/DD):	08-01/02	09-01/02	10-01/02	11-01/02	12-01/02	13-01/02	14-01/02	15-01/02	16-01/02	CHANGE %
MESSAGE MANAGER ACTIVITY										
MQGET REQUESTS	165	165	113	165	49886	153480	150815	153531	178865	8303.03 %
MQPUT REQUESTS	3	3	2	3	47718	147090	144515	147243	171412	3633.33 %
MQPUT1 REQUESTS	3	3	2	3	3	3	3	2	3	---
MQOPEN REQUESTS	12	12	8	12	1211	3760	3701	3762	4368	6300.00 %
MQCLOSE REQUESTS	12	12	8	12	1133	3520	3465	3521	4087	3958.33 %

BUFFER POOL 0 UTILIZATION	08-01/02	09-01/02	10-01/02	11-01/02	12-01/02	13-01/02	14-01/02	15-01/02	16-01/02	CHANGE %
AVERAGE BUFFERS IN POOL	50000	50000	50000	50000	50000	50000	50000	50000	50000	---
AVERAGE AVAIL. BUFFERS	49376	49376	49376	49376	49371	49366	49365	49364	49073	-0.61 %
NO AVAILABLE BUFFERS	0	0	0	0	0	0	0	0	0	N.A.
TOTAL GETS (NEW+CURRENT)	709	604	412	621	258897	796695	784886	796304	929486	998.17 %
PAGE GETS(CURRENT PAGE)	708	603	412	620	236084	726463	715833	725998	847630	9621.75 %
% GETS - NOT IN BUFFER	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.06%	N.A.
% PAGE READS TO DASD	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	N.A.
PAGE WRITES	0	0	0	0	0	0	0	0	0	N.A.
PAGE UPDATES	23	19	11	19	165762	510604	502010	511204	594861	6252.17 %
% PAGE UPDATES	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.99%	100.0%	100.0%	---
SYNC. PAGE WRITES	0	0	0	0	0	0	1	0	0	N.A.
SYNC PAGE PROCESSOR START	0	0	0	0	0	0	0	0	0	N.A.
NO. OF PAGES TO DASD	0	0	0	0	0	0	1	0	0	N.A.

14:50 Tuesday, mmm dd, yyyy

C A
CA MICS MQSeries Analyzer
HOURLY PERFORMANCE SUMMARY
FOR ZONE = 1
SYSTEM = XE44 MQM SUBSYSTEM = CSQ1 RUNDATE = mmm dd, yyyy

HOUR-WEEK (HR-MM/DD):	08-01/02	09-01/02	10-01/02	11-01/02	12-01/02	13-01/02	14-01/02	15-01/02	16-01/02	CHANGE %
BUFFER POOL 1 UTILIZATION										
AVERAGE BUFFERS IN POOL	1050	1050	1050	1050	1050	1050	1050	1050	1050	---
AVERAGE AVAIL. BUFFERS	979	978	978	977	976	976	975	975	974	-0.51 %
NO AVAILABLE BUFFERS	0	0	0	0	0	0	0	0	0	N.A.
TOTAL GETS (NEW+CURRENT)	367	363	246	363	406	483	486	362	507	38.15 %
PAGE GETS(CURRENT PAGE)	366	363	245	363	405	483	485	362	506	38.25 %
% GETS - NOT IN BUFFER	0.27%	0.00%	0.40%	0.00%	0.24%	0.00%	0.20%	0.00%	0.19%	-25.93 %
% PAGE READS TO DASD	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	N.A.
PAGE WRITES	0	0	0	0	0	0	1	0	0	N.A.
PAGE UPDATES	6	3	5	3	6	3	7	2	6	---
% PAGE UPDATES	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	87.50%	100.0%	100.0%	---
SYNC. PAGE WRITES	0	0	0	0	0	0	1	0	0	N.A.
SYNC PAGE PROCESSOR START	0	0	0	0	0	0	0	0	0	N.A.
NO. OF PAGES TO DASD	0	0	0	0	0	0	1	0	0	N.A.
BUFFER POOL 2 UTILIZATION										
AVERAGE BUFFERS IN POOL	1050	1050	1050	1050	1050	1050	1050	1050	1050	---
AVERAGE AVAIL. BUFFERS	1050	1050	1050	1050	1050	1049	1049	1049	1049	-0.10 %
NO AVAILABLE BUFFERS	0	0	0	0	0	0	0	0	0	N.A.
TOTAL GETS (NEW+CURRENT)	0	0	0	0	39	120	119	120	140	N.A.
PAGE GETS(CURRENT PAGE)	0	0	0	0	39	120	119	120	140	N.A.
% GETS - NOT IN BUFFER	N.A.	N.A.	N.A.	N.A.	0.00%	0.00%	0.00%	0.00%	0.00%	N.A.
% PAGE READS TO DASD	N.A.	N.A.	N.A.	N.A.	0.00%	0.00%	0.00%	0.00%	0.00%	N.A.
PAGE WRITES	0	0	0	0	0	0	1	0	0	N.A.
PAGE UPDATES	0	0	0	0	0	0	1	0	0	N.A.
% PAGE UPDATES	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	50.00%	N.A.	N.A.	N.A.
SYNC. PAGE WRITES	0	0	0	0	0	0	1	0	0	N.A.
SYNC PAGE PROCESSOR START	0	0	0	0	0	0	0	0	0	N.A.
NO. OF PAGES TO DASD	0	0	0	0	0	0	1	0	0	N.A.

14:50 Tuesday, mmm dd, yyyy

C A
CA MICS MQSeries Analyzer
HOURLY PERFORMANCE SUMMARY
FOR ZONE = 1
SYSTEM = XE44 MQM SUBSYSTEM = CSQ1 RUNDATE = mmm dd, yyyy

HOUR-WEEK (HR-MM/DD):	08-01/02	09-01/02	10-01/02	11-01/02	12-01/02	13-01/02	14-01/02	15-01/02	16-01/02	CHANGE %
BUFFER POOL 3 UTILIZATION										
AVERAGE BUFFERS IN POOL	1050	1050	1050	1050	1050	1050	1050	1050	1050	---
AVERAGE AVAIL. BUFFERS	1050	1050	1050	1050	1050	1049	1049	1049	1049	-0.10 %
NO AVAILABLE BUFFERS	0	0	0	0	0	0	0	0	0	N.A.
TOTAL GETS (NEW+CURRENT)	0	0	0	0	39	120	119	120	140	N.A.
PAGE GETS(CURRENT PAGE)	0	0	0	0	39	120	119	120	140	N.A.
% GETS - NOT IN BUFFER	N.A.	N.A.	N.A.	N.A.	0.00%	0.00%	0.00%	0.00%	0.00%	N.A.
% PAGE READS TO DASD	N.A.	N.A.	N.A.	N.A.	0.00%	0.00%	0.00%	0.00%	0.00%	N.A.
PAGE WRITES	0	0	0	0	0	0	1	0	0	N.A.
PAGE UPDATES	0	0	0	0	0	0	1	0	0	N.A.
% PAGE UPDATES	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	50.00%	N.A.	N.A.	N.A.
SYNC. PAGE WRITES	0	0	0	0	0	0	1	0	0	N.A.
SYNC PAGE PROCESSOR START	0	0	0	0	0	0	0	0	0	N.A.
NO. OF PAGES TO DASD	0	0	0	0	0	0	1	0	0	N.A.
BUFFER POOL 4 UTILIZATION										
AVERAGE BUFFERS IN POOL	0	0	0	0	0	0	0	0	0	N.A.
AVERAGE AVAIL. BUFFERS	0	0	0	0	0	0	0	0	0	N.A.
NO AVAILABLE BUFFERS	0	0	0	0	0	0	0	0	0	N.A.
TOTAL GETS (NEW+CURRENT)	0	0	0	0	0	0	0	0	0	N.A.
PAGE GETS(CURRENT PAGE)	0	0	0	0	0	0	0	0	0	N.A.
% GETS - NOT IN BUFFER	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	N.A.
% PAGE READS TO DASD	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	N.A.
PAGE WRITES	0	0	0	0	0	0	0	0	0	N.A.
PAGE UPDATES	0	0	0	0	0	0	0	0	0	N.A.
% PAGE UPDATES	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	N.A.
SYNC. PAGE WRITES	0	0	0	0	0	0	0	0	0	N.A.
SYNC PAGE PROCESSOR START	0	0	0	0	0	0	0	0	0	N.A.
NO. OF PAGES TO DASD	0	0	0	0	0	0	0	0	0	N.A.
LOG MANAGER STATISTICS										
TOTAL LOG WRITE REQUESTS	84	67	53	75	227	563	617	537	563	570.24 %
% WRITE REQUESTS - WAIT	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	N.A.
% WRITE REQUESTS - FORCE	1.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.16%	0.00%	0.00%	N.A.
TOTAL LOG READ REQUESTS	0	0	0	0	0	0	0	0	0	N.A.
% READ LOG REQ IN BUFFER	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
% READ ACTIVE LOG DS	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
% READ ARCHIVE LOG DS	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
% READ DELAYED (MAXALLC)	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
WAIT-UNAVAILABLE BUFFERS	0	0	0	0	0	0	0	0	0	N.A.
DATA MANAGER STATISTICS										
OBJECT_GET REQUESTS	6	6	4	6	553	1677	1658	1692	1959	2550.00 %
OBJECT_LOCATE REQUESTS	39	39	26	39	2807	8632	8513	8652	10027	5610.26 %
OBJECT_PUT REQUESTS	0	0	0	0	0	0	0	0	0	N.A.
OBJECT_CREATE REQUESTS	0	0	0	0	1	0	0	0	1	N.A.
OBJECT_DELETE REQUESTS	0	0	0	0	257	708	710	719	828	N.A.

3.1.1.2 MQSeries Buffer Pool Summary (MQSSL1)

The CA MICS MQSeries Buffer Pool Summary uses measurements from the Buffer Manager Statistics File (MQSBMS) to display an overall view of the utilization and activity for each of the selected Buffer Pools for the date and/or time ranges you select.

Each report produced displays categorized information on configuration and utilization. The report categories and element labels are listed on the left side of the report pages. Individual columns on the report represent the element's value for the appropriate granularity level (hour or date) as denoted above the columns. The last column on the report represents the percent increase or decrease over the time periods represented on the report page.

By default there will be one category section for each Buffer Pool ID (0 through 15). However, if you have restricted selection to only certain buffer pools, only those selected pool categories will be displayed. The following table displays the relationship between report labels and CA MICS database source elements for each buffer pool category.

Report Label	File	Element
AVERAGE BUFFERS IN POOL	MQSBMS	BMSAVBUF
AVERAGE AVAIL. BUFFERS	MQSBMS	BMSAVAVB
MINIMUM BUFFERS IN POOL	MQSBMS	BMSMNBUF
MINIMUM AVAIL. BUFFERS	MQSBMS	BMSMNAVB
NO AVAILABLE BUFFERS	MQSBMS	BMSSOS
TOTAL GETS (NEW+CURRENT)	MQSBMS	BMSTNGET
% REQUESTS NEW/EMPTY PAGE	MQSBMS	BMSPCNP
PAGE GETS(CURRENT PAGE)	MQSBMS	BMSGETP
% GETS - NOT IN BUFFER	MQSBMS	BMSPCSTL
% PAGE READS TO DASD	MQSBMS	BMSPCRIO
PAGE WRITES	MQSBMS	BMSWIO
PAGE UPDATES	MQSBMS	BMSSTW
% PAGE UPDATES	MQSBMS	BMSPCSTW
ASYNC WRITE PROCESSES	MQSBMS	BMSDWT
SYNC. PAGE WRITES	MQSBMS	BMSIMW
SYNC PAGE PROCESSOR START	MQSBMS	BMSDMC
NO. OF PAGES TO DASD	MQSBMS	BMSTPW

Note: The label associated with the field DATE in the column titles varies based on the timespan used.

To produce the report:

- Enter the CA MICS Workstation Facility (MWF)
- Choose option 2, CA MICS Information Center Facility (MICF)
- Choose option 2, Database Inquiries
- Select MQSSL1, whose Catalog Group is PERFORM
- Complete the MICF Execution panel (If you are not familiar with MICF, refer to the CA MICS Resource Management MICF Reference Guide)
- Complete the specification panel illustrated below (Descriptions of the fields follow the panel)

The result displays on your terminal. An example report is shown at the end of this section.

```
+-------------------------------------------------------------------------+
|------------------  MQSeries Buffer Pool Summary  --------------------|
| Command ===>                                                            |
|                                                                         |
| Composing Inquiry: MQSSL1 - MQSeries Buffer Pool Summary                |
|                                                                         |
| Database ===> ____________________________________________              |
| Cycle(s) ===> __ - __                                                   |
| Timespan ===> ______  (DETAIL/DAYS/WEEKS/MONTHS)                        |
| Report by hour if timespan is DAYS or WEEKS  ===> _ (Y/N)               |
| Generate a report for each value of Zone     ===> _ (Y/N)               |
| Data Selection:                                                         |
|                     dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy       |
|   Date Ranges  ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __       |
|   Hour         ===> __ - __    __ - __    __ - __                      |
|   Zone         ===> _ _ _ _ _ _ _ _ _                                   |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                       |
|   MQS Queue Manager Name(MQMSSI)  ===> ____ ____ ____ ____ ____ ____    |
|   MQS Buffer Pool ID Selection(BMSPOOL) (Separate by commas)            |
|    example 0,3,5,14 ===> ____________________________________           |
|                                                                         |
+-------------------------------------------------------------------------+
```

Database - Required. No default. Specify up to six database unit IDs (the IDs of the CA MICS database units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one database unit, this parameter is set

automatically. To display a selection list of valid database unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified timespan of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (for example, 7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Timespan - Required. Default varies by report. The timespan of the CA MICS database from which the primary input files are selected. Required input files must be available at the specified timespan.

Report by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly, DAILY, or WEEKLY level. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week and a single report listing all days or weeks is produced.

Generate a report for each value of Zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Date Ranges - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC

94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

Queue Manager Name (MQMSSI) - Optional. No default. 1-4 character value identifying the name of the Queue Manager (MQMSSI). Specify up to six Queue Manager Names. An input observation is selected if its identifier is equal to any of the specified values.

MQS Buffer Pool ID (BMSPOOL) - Optional. No default. 1-4 numeric buffer pool value (BMSPOOL). Specify up to fifteen buffer pools. An input observation is selected if its identifier is equal to any of the specified values. Leading zeros are not required, however any 4 numeric values are accepted. For example, specifying 1 is equivalent to 0001.

14:49 Tuesday, mmm dd, yyyy

C A
CA MICS MQSeries Analyzer
HOURLY BUFFER POOL SUMMARY
FOR ZONE = 1
SYSTEM = XE44 MQM SUBSYSTEM = CSQ1 RUNDATE = mmm dd, yyyy

HOUR-WEEK (HR-MM/DD):	08-01/02	09-01/02	10-01/02	11-01/02	12-01/02	13-01/02	14-01/02	15-01/02	16-01/02	CHANGE %
BUFFER POOL 0 UTILIZATION										
AVERAGE BUFFERS IN POOL	50000	50000	50000	50000	50000	50000	50000	50000	50000	---
AVERAGE AVAIL. BUFFERS	49376	49376	49376	49376	49371	49366	49365	49364	49073	-0.61 %
MINIMUM BUFFERS	50000	50000	50000	50000	50000	50000	50000	50000	50000	---
MINIMUM AVAIL. BUFFERS	49376	49376	49376	49376	49366	49364	49364	49363	48780	-1.21 %
NO AVAILABLE BUFFERS	0	0	0	0	0	0	0	0	0	N.A.
TOTAL GETS (NEW+CURRENT)	709	604	412	621	258897	796695	784886	796304	929486	998.17 %
% REQUESTS NEW/EMPTY PAGE	0.14%	0.16%	0.00%	0.16%	8.81%	8.81%	8.79%	8.82%	8.80%	6192.86 %
PAGE GETS(CURRENT PAGE)	708	603	412	620	236084	726463	715833	725998	847630	9621.75 %
% GETS - NOT IN BUFFER	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.06%	N.A.
% PAGE READS TO DASD	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	N.A.
PAGE WRITES	0	0	0	0	0	0	1	0	0	N.A.
PAGE UPDATES	23	19	11	19	165762	510604	502010	511204	594861	6252.17 %
% PAGE UPDATES	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	99.99%	100.0%	100.0%	---
ASYNC WRITE PROCESSES	0	0	0	0	0	0	0	0	0	N.A.
SYNC. PAGE WRITES	0	0	0	0	0	0	1	0	0	N.A.
SYNC PAGE PROCESSOR START	0	0	0	0	0	0	0	0	0	N.A.
NO. OF PAGES TO DASD	0	0	0	0	0	0	1	0	0	N.A.
BUFFER POOL 1 UTILIZATION										
AVERAGE BUFFERS IN POOL	1050	1050	1050	1050	1050	1050	1050	1050	1050	---
AVERAGE AVAIL. BUFFERS	979	978	978	977	976	976	975	975	974	-0.51 %
MINIMUM BUFFERS	1050	1050	1050	1050	1050	1050	1050	1050	1050	---
MINIMUM AVAIL. BUFFERS	978	978	977	977	976	976	975	975	974	-0.41 %
NO AVAILABLE BUFFERS	0	0	0	0	0	0	0	0	0	N.A.
TOTAL GETS (NEW+CURRENT)	367	363	246	363	406	483	486	362	507	38.15 %
% REQUESTS NEW/EMPTY PAGE	0.27%	0.00%	0.40%	0.00%	0.24%	0.00%	0.20%	0.00%	0.19%	-25.93 %
PAGE GETS(CURRENT PAGE)	366	363	245	363	405	483	485	362	506	38.25 %
% GETS - NOT IN BUFFER	0.27%	0.00%	0.40%	0.00%	0.24%	0.00%	0.20%	0.00%	0.19%	-25.93 %
% PAGE READS TO DASD	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	N.A.
PAGE WRITES	0	0	0	0	0	0	1	0	0	N.A.
PAGE UPDATES	6	3	5	3	6	3	7	2	6	---
% PAGE UPDATES	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	87.50%	100.0%	100.0%	---
ASYNC WRITE PROCESSES	0	0	0	0	0	0	0	0	0	N.A.
SYNC. PAGE WRITES	0	0	0	0	0	0	1	0	0	N.A.
SYNC PAGE PROCESSOR START	0	0	0	0	0	0	0	0	0	N.A.
NO. OF PAGES TO DASD	0	0	0	0	0	0	1	0	0	N.A.

C A
CA MICS MQSeries Analyzer
HOURLY BUFFER POOL SUMMARY
FOR ZONE = 1
SYSTEM = XE44 MQM SUBSYSTEM = CSQ1 RUNDATE = mmm dd, yyyy

HOUR-WEEK (HR-MM/DD):	08-01/02	09-01/02	10-01/02	11-01/02	12-01/02	13-01/02	14-01/02	15-01/02	16-01/02	CHANGE %
BUFFER POOL 2 UTILIZATION										
AVERAGE BUFFERS IN POOL	1050	1050	1050	1050	1050	1050	1050	1050	1050	---
AVERAGE AVAIL. BUFFERS	1050	1050	1050	1050	1050	1049	1049	1049	1049	-0.10 %
MINIMUM BUFFERS	1050	1050	1050	1050	1050	1050	1050	1050	1050	---
MINIMUM AVAIL. BUFFERS	1050	1050	1050	1050	1049	1049	1049	1049	1049	-0.10 %
NO AVAILABLE BUFFERS	0	0	0	0	0	0	0	0	0	N.A.
TOTAL GETS (NEW+CURRENT)	0	0	0	0	39	120	119	120	140	N.A.
% REQUESTS NEW/EMPTY PAGE	N.A.	N.A.	N.A.	N.A.	0.00%	0.00%	0.00%	0.00%	0.00%	N.A.
PAGE GETS(CURRENT PAGE)	0	0	0	0	39	120	119	120	140	N.A.
% GETS - NOT IN BUFFER	N.A.	N.A.	N.A.	N.A.	0.00%	0.00%	0.00%	0.00%	0.00%	N.A.
% PAGE READS TO DASD	N.A.	N.A.	N.A.	N.A.	0.00%	0.00%	0.00%	0.00%	0.00%	N.A.
PAGE WRITES	0	0	0	0	0	0	1	0	0	N.A.
PAGE UPDATES	0	0	0	0	0	0	1	0	0	N.A.
% PAGE UPDATES	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	50.00%	N.A.	N.A.	N.A.
ASYNC WRITE PROCESSES	0	0	0	0	0	0	0	0	0	N.A.
SYNC. PAGE WRITES	0	0	0	0	0	0	1	0	0	N.A.
SYNC PAGE PROCESSOR START	0	0	0	0	0	0	0	0	0	N.A.
NO. OF PAGES TO DASD	0	0	0	0	0	0	1	0	0	N.A.
BUFFER POOL 3 UTILIZATION										
AVERAGE BUFFERS IN POOL	1050	1050	1050	1050	1050	1050	1050	1050	1050	---
AVERAGE AVAIL. BUFFERS	1050	1050	1050	1050	1050	1049	1049	1049	1049	-0.10 %
MINIMUM BUFFERS	1050	1050	1050	1050	1050	1050	1050	1050	1050	---
MINIMUM AVAIL. BUFFERS	1050	1050	1050	1050	1049	1049	1049	1049	1049	-0.10 %
NO AVAILABLE BUFFERS	0	0	0	0	0	0	0	0	0	N.A.
TOTAL GETS (NEW+CURRENT)	0	0	0	0	39	120	119	120	140	N.A.
% REQUESTS NEW/EMPTY PAGE	N.A.	N.A.	N.A.	N.A.	0.00%	0.00%	0.00%	0.00%	0.00%	N.A.
PAGE GETS(CURRENT PAGE)	0	0	0	0	39	120	119	120	140	N.A.
% GETS - NOT IN BUFFER	N.A.	N.A.	N.A.	N.A.	0.00%	0.00%	0.00%	0.00%	0.00%	N.A.
% PAGE READS TO DASD	N.A.	N.A.	N.A.	N.A.	0.00%	0.00%	0.00%	0.00%	0.00%	N.A.
PAGE WRITES	0	0	0	0	0	0	1	0	0	N.A.
PAGE UPDATES	0	0	0	0	0	0	1	0	0	N.A.
% PAGE UPDATES	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	50.00%	N.A.	N.A.	N.A.
ASYNC WRITE PROCESSES	0	0	0	0	0	0	0	0	0	N.A.
SYNC. PAGE WRITES	0	0	0	0	0	0	1	0	0	N.A.
SYNC PAGE PROCESSOR START	0	0	0	0	0	0	0	0	0	N.A.
NO. OF PAGES TO DASD	0	0	0	0	0	0	1	0	0	N.A.

3.1.2 MQSeries Buffer Pool Statistics File Inquiries

The CA MICS MQSeries Analyzer provides the following inquiries that report on data from:

1 - MQSeries Available Buffer Pool Analysis (MQSCSA)
2 - MQSeries Page Get Analysis (MQSCSB)
3 - MQSeries Page Write Analysis (MQSCSC)

3.1.2.1 MQSeries Available Buffer Pool Analysis (MQSCSA)

The CA MICS MQSeries Available Buffer Pool Analysis uses measurements from the Buffer Manager Statistics File (MQSBMS) to display the number of total buffers compared with the number of available buffers over the date and/or time intervals you request.

The following CA MICS MQSeries Analyzer elements will be selected:

KEY ELEMENTS:

- o SYSID - System Identifier
- o MQMSSI - Queue Manager Name
- o BMSPOOL - Buffer Pool ID
- o HOUR - Hour Of Day

DATA ELEMENTS:

- o BMSNBUF - Buffers in this Buffer Pool
- o BMSCBS - Available Buffers

Note: The label associated with the field DATE in the column titles varies based on the timespan used.

To produce the report:

- Enter the CA MICS Workstation Facility (MWF)
- Choose option 2, CA MICS Information Center Facility (MICF)
- Choose option 2, Database Inquiries
- Select MQSCSA, whose Catalog Group is PERFORM
- Complete the MICF Execution panel
- Complete the specification panel illustrated below (Descriptions of the fields follow the panel)

The result displays on your terminal. An example report is shown at the end of this section.

```
+-------------------------------------------------------------------------+
|---------------  MQSeries Available Buffer Pool Analysis  ------------|
| Command ===>                                                            |
|                                                                         |
| Composing Inquiry: MQSCSA - MQS Available Buffer Pool Analysis          |
|                                                                         |
| Database ===> ____________________________________________              |
| Cycle(s) ===> __ - __                                                   |
| Timespan ===> ______ (DETAIL/DAYS/WEEKS/MONTHS)                         |
| Plot by hour if timespan is DAYS or WEEKS     ===> _ (Y/N)              |
| Generate a plot for each value of Zone        ===> _ (Y/N)              |
| Generate color graphic plots                  ===> _ (Y/N)              |
| Generate CSV Extract for Query and Reporting  ===> _ (Y/N)              |
| Data Selection:                                                         |
|                     dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy       |
|   Date Ranges  ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __       |
|   Hour         ===> __ - __    __ - __    __ - __                      |
|   Zone         ===> _ _ _ _ _ _ _ _ _ _                                 |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                       |
|   MQS Queue Manager Name(MQMSSI)  ===> ____ ____ ____ ____ ____ ____    |
|   MQS Buffer Pool ID Selection(BMSPOOL) (Separate by commas)            |
|    example 0,3,5,14 ===> ____________________________________           |
|                                                                         |
|                                                                         |
+-------------------------------------------------------------------------+
```

Database - Required. No default. Specify up to six database unit IDs (the IDs of the CA MICS database units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one database unit, this parameter is set

automatically. To display a selection list of valid database unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified timespan of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (for example, 7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Timespan - Required. Default varies by report. The timespan of the CA MICS database from which the primary input files are selected. Required input files must be available at the specified timespan.

Plot by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly, DAILY, or WEEKLY level. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week and a single report listing all days or weeks is produced.

Generate a plot for each value of Zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of Unix processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Generate color graphic plots - Required. Defaults to N (No). Specify Y (Yes) if you want to generate color graphics plots. SAS/GRAPH software is a prerequisite for color graphics. When set to No standard SAS plots and graphs will be produced (non-color, line formats).

Generate CSV Extract for Query and Reporting - Required. Defaults to N (No). Specify Y (Yes) if you want to generate

an extract CSV file for subsequent use in CA MICS Query and Reporting. This option is only valid when CA MICS Query and Reporting is installed.

Date Ranges - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

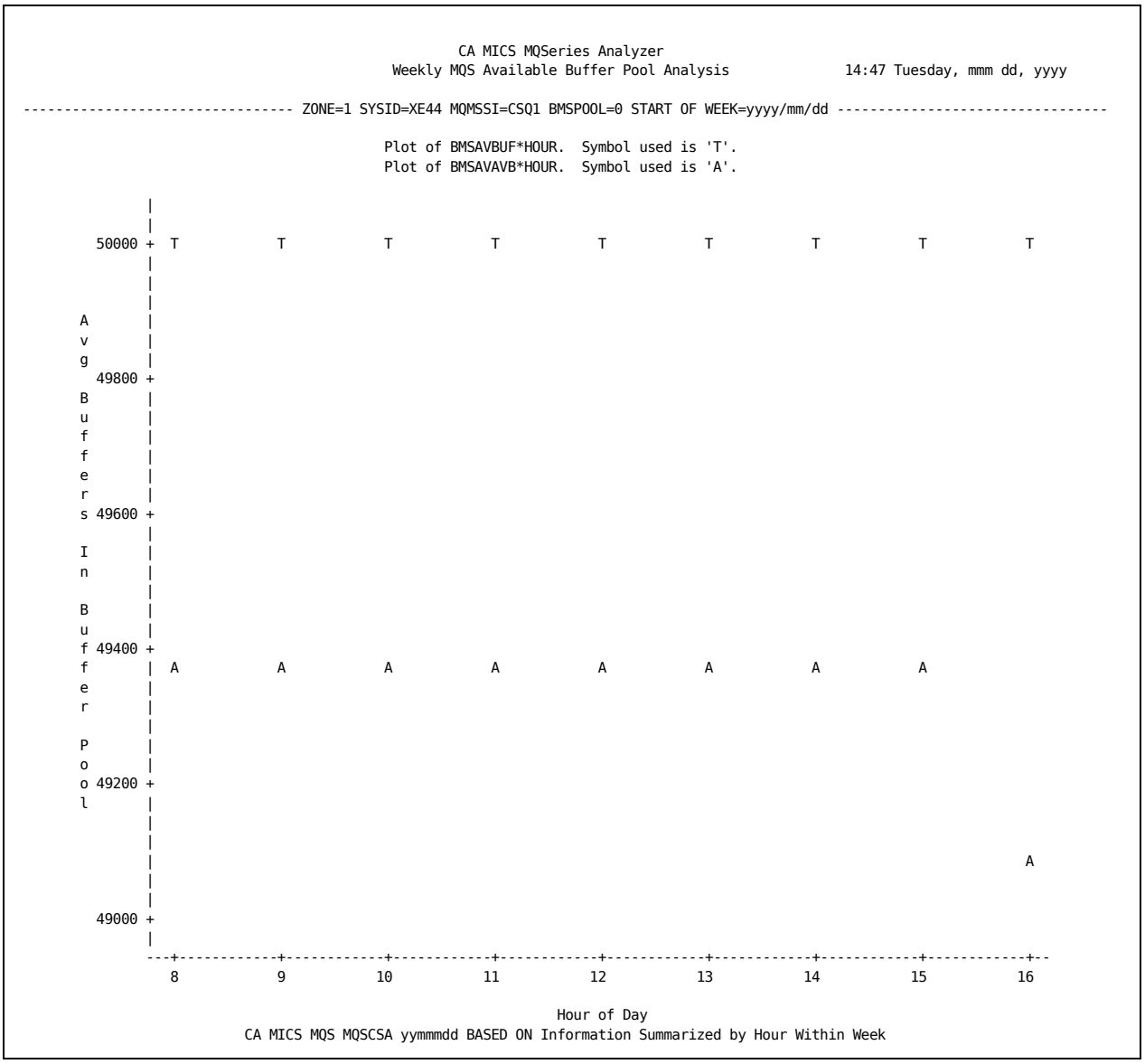
Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

Queue Manager Name (MQMSSI) - Optional. No default. 1-4 character value identifying the name of the Queue Manager (MQMSSI). Specify up to six Queue Manager Names. An input observation is selected if its identifier is equal to any of the specified values.

MQS Buffer Pool ID (BMSPOOL) - Optional. No default. 1-4 numeric buffer pool value (BMSPOOL). Specify up to fifteen buffer pools. An input observation is selected if its identifier is equal to any of the specified values. Leading zeros are not required, however any 4 numeric values are accepted. For example, specifying 1 is equivalent to 0001.


CA MICS MQSeries Analyzer
Weekly MQS Available Buffer Pool Analysis
14:47 Tuesday, mmm dd, yyyy
ZONE=1 SYSID=XE44 MQMSSI=CSQ1 BMSPOOL=0 START OF WEEK=yyyy/mm/dd
Plot of BMSAVBUF*HOUR. Symbol used is 'T'.
Plot of BMSAVAVB*HOUR. Symbol used is 'A'.
Avg Buffers In Buffer Pool
50000
49800
49600
49400
49200
49000
8
9
10
11
12
13
14
15
16
Hour of Day
CA MICS MQS MQSCSA yymmmdd BASED ON Information Summarized by Hour Within Week

3.1.2.2 MQSeries Page Get Analysis (MQSCSB)

The CA MICS MQSeries Page Get Analysis uses measurements from the Buffer Manager Statistics File (MQSBMS) to display an overall view of the page get activity over the date and/or time ranges you select. The plot displays the page gets for each Queue Manager based on the report summarization options you specify.

The following CA MICS Analyzer for MQSeries elements will be selected:

KEY ELEMENTS:

- o SYSID - System Identifier
- o MQMSSI - Queue Manager Name
- o BMSPOOL - Buffer Pool ID
- o HOUR - Hour Of Day

DATA ELEMENTS:

- o BMSGETN - Page Get Calls For New or Empty Page
- o BMSGETP - Page Get Calls For Current Page Content
- o BMSRIO - Page Read DASD Operations
- o BMSSTL - Page Get Calls Not Found In Buffer
- o BMSGETN + BMSGETP - Total Get Calls (TOTGETS)

Note: The label associated with the field DATE varies based on the timespan used.

To produce the report:

- o Enter the CA MICS Workstation Facility (MWF).
- o Choose option 2, CA MICS Information Center Facility (MICF).
- o Choose option 2, Database Inquiries.
- o Select MQSCSB, whose Catalog Group is PERFORM.
- o Complete the MICF Execution panel.
- o Complete the specification panel illustrated below. (Descriptions of the fields follow the panel.)

The result displays on your terminal. An example report is

shown at the end of this section.

```
+------------------------------------------------------------------------+
|------------------  MQSeries Page Get Analysis  ---------------------|
| Command ===>                                                           |
|                                                                        |
| Composing Inquiry: MQSCSB - MQS Page Get Analysis                      |
|                                                                        |
| Database ===> ____________________________________________             |
| Cycle(s) ===> __ - __                                                  |
| Timespan ===> ______ (DETAIL/DAYS/WEEKS/MONTHS)                        |
| Plot by hour if timespan is DAYS or WEEKS     ===> _ (Y/N)             |
| Generate a plot for each value of Zone        ===> _ (Y/N)             |
| Generate color graphic plots                  ===> _ (Y/N)             |
| Generate CSV Extract for Query and Reporting  ===> _ (Y/N)             |
| Data Selection:                                                        |
|                      dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy     |
|   Date Ranges  ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __     |
|   Hour         ===> __ - __    __ - __    __ - __                     |
|   Zone         ===> _ _ _ _ _ _ _ _ _ _                                |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                      |
|   MQS Queue Manager Name(MQMSSI)  ===> ____ ____ ____ ____ ____ ____ |
|   MQS Buffer Pool ID Selection(BMSPOOL) (Separate by commas)           |
|    example 0,3,5,14 ===> ____________________________________          |
|                                                                        |
|                                                                        |
+------------------------------------------------------------------------+
```

Database - Required. No default. Specify up to six database unit IDs (the IDs of the CA MICS database units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one database unit, this parameter is set automatically. To display a selection list of valid database unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified timespan of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (for example, 7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Timespan - Required. Default varies by report. The timespan of the CA MICS database from which the primary input files are selected. Required input files must be available at the specified timespan.

Plot by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at hourly, DAILY, or WEEKLY levels. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour, and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week, and a single report listing all days or weeks is produced.

Generate a plot for each value of zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Generate color graphic plots - Required. Defaults to N (No). Specify Y (Yes) if you want to generate color graphics plots. SAS/GRAPH software is a prerequisite for color graphics. When set to No standard SAS plots and graphs will be produced (non-color, line formats).

Generate CSV Extract for Query and Reporting - Required. Defaults to N (No). Specify Y (Yes) if you want to generate an extract CSV file for subsequent use in CA MICS Query and Reporting. This option is only valid when CA MICS Query and Reporting is installed.

Date Ranges - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

Hour - Optional. No default. 0-23. Up to three hour

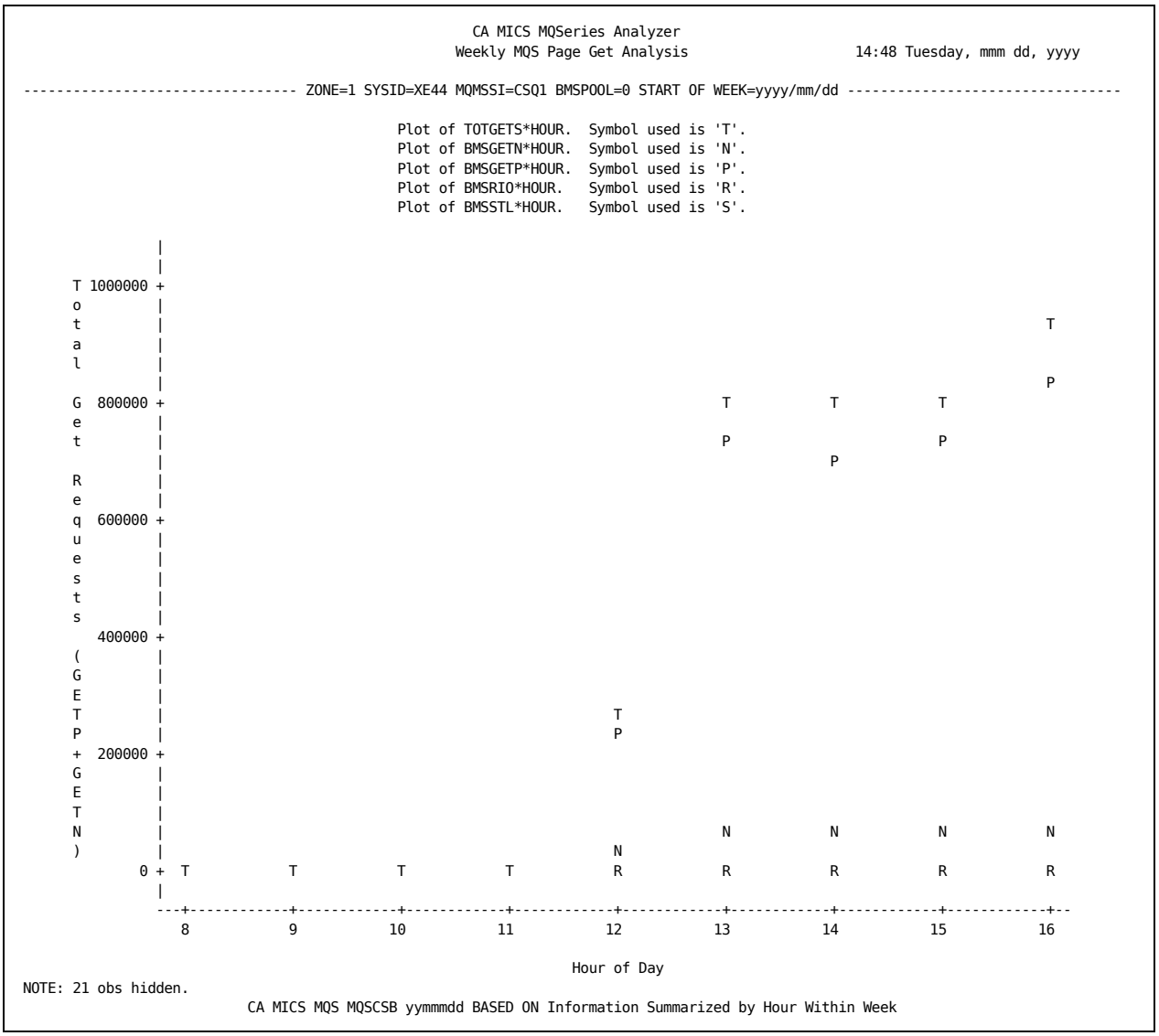
ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

Queue Manager Name (MQMSSI) - Optional. No default. 1-4 character value identifying the name of the Queue Manager (MQMSSI). Specify up to six Queue Manager Names. An input observation is selected if its identifier is equal to any of the specified values.

MQS Buffer Pool ID (BMSPOOL) - Optional. No default. 1-4 numeric buffer pool value (BMSPOOL). Specify up to fifteen buffer pools. An input observation is selected if its identifier is equal to any of the specified values. Leading zeros are not required, however any 4 numeric values are accepted. For example, specifying 1 is equivalent to 0001.


CA MICS MQSeries Analyzer
Weekly MQS Page Get Analysis
14:48 Tuesday, mmm dd, yyyy
ZONE=1 SYSID=XE44 MQMSSI=CSQ1 BMSPOOL=0 START OF WEEK=yyyy/mm/dd
Plot of TOTGETS*HOUR. Symbol used is 'T'.
Plot of BMSGETN*HOUR. Symbol used is 'N'.
Plot of BMSGETP*HOUR. Symbol used is 'P'.
Plot of BMSRIO*HOUR. Symbol used is 'R'.
Plot of BMSSTL*HOUR. Symbol used is 'S'.
Total Get Requests (GETP + GETN)
1000000
800000
600000
400000
200000
0
8
9
10
11
12
13
14
15
16
Hour of Day
NOTE: 21 obs hidden.
CA MICS MQS MQSCSB yymmmdd BASED ON Information Summarized by Hour Within Week

3.1.2.3 MQSeries Page Write Analysis (MQSCSC)

The CA MICS MQSeries Page Write Analysis uses measurements from the Buffer Manager Statistics File (MQSBMS) to display an overall view of the page write activity over the date and/or time ranges you select. The plot displays the page writes for each Queue Manager based on the report summarization options you specify.

The following CA MICS MQSeries Analyzer elements will be selected:

KEY ELEMENTS:

- SYSID - System Identifier
- MQMSSI - Queue Manager Name
- BMSPOOL - Buffer Pool ID
- HOUR - Hour Of Day

DATA ELEMENTS:

- BMSSTW - Page Updates
- BMSWIO - Page Write Operations
- BMSDMC - Sync. Proc. Starts (Write Threshold)
- BMSIMW - Sync. Page Write Operations
- BMSDWT - Async. Write Processor was started

Note: The label associated with the field DATE varies based on the timespan used.

To produce the report:

- Enter the CA MICS Workstation Facility (MWF).
- Choose option 2, CA MICS Information Center Facility (MICF).
- Choose option 2, Database Inquiries.
- Select MQSCSC, whose Catalog Group is PERFORM.
- Complete the MICF Execution panel.
- Complete the specification panel illustrated below. (Descriptions of the fields follow the panel.)

The result displays on your terminal. An example report is

shown at the end of this section.

```
+-------------------------------------------------------------------------+
|----------------------MQSeries Page Write Analysis-----------------------|
| Command ===>                                                            |
|                                                                         |
| Composing Inquiry: MQSCSC - MQS Page Write Analysis                     |
|                                                                         |
| Database ===> ____________________________________________              |
| Cycle(s) ===> __ - __                                                   |
| Timespan ===> ______ (DETAIL/DAYS/WEEKS/MONTHS)                         |
| Plot by hour if timespan is DAYS or WEEKS     ===> _ (Y/N)              |
| Generate a plot for each value of Zone        ===> _ (Y/N)              |
| Generate color graphic plots                  ===> _ (Y/N)              |
| Generate CSV Extract for Query and Reporting  ===> _ (Y/N)              |
| Data Selection:                                                         |
|                      dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy      |
|   Date Ranges  ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __      |
|   Hour         ===> __ - __    __ - __    __ - __                      |
|   Zone         ===> _ _ _ _ _ _ _ _ _                                   |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                       |
|   MQS Queue Manager Name(MQMSSI)  ===> ____ ____ ____ ____ ____ ____    |
|   MQS Buffer Pool ID Selection(BMSPOOL) (Separate by commas)            |
|    example 0,3,5,14 ===> ___________________________________            |
|                                                                         |
|                                                                         |
+-------------------------------------------------------------------------+
```

Database - Required. No default. Specify up to six database unit IDs (the IDs of the CA MICS database units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one database unit, this parameter is set automatically. To display a selection list of valid database unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified timespan of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (for example, 7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Timespan - Required. Default varies by report. The timespan

of the CA MICS database from which the primary input files are selected. Required input files must be available at the specified timespan.

Plot by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly, DAILY, or WEEKLY level. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week and a single report listing all days or weeks is produced.

Generate a plot for each value of Zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Generate color graphic plots - Required. Defaults to N (No). Specify Y (Yes) if you want to generate color graphics plots. SAS/GRAPH software is a prerequisite for color graphics. When set to No standard SAS plots and graphs will be produced (non-color, line formats).

Generate CSV Extract for Query and Reporting - Required. Defaults to N (No). Specify Y (Yes) if you want to generate an extract CSV file for subsequent use in CA MICS Query and Reporting. This option is only valid when CA MICS Query and Reporting is installed.

Date Ranges - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher

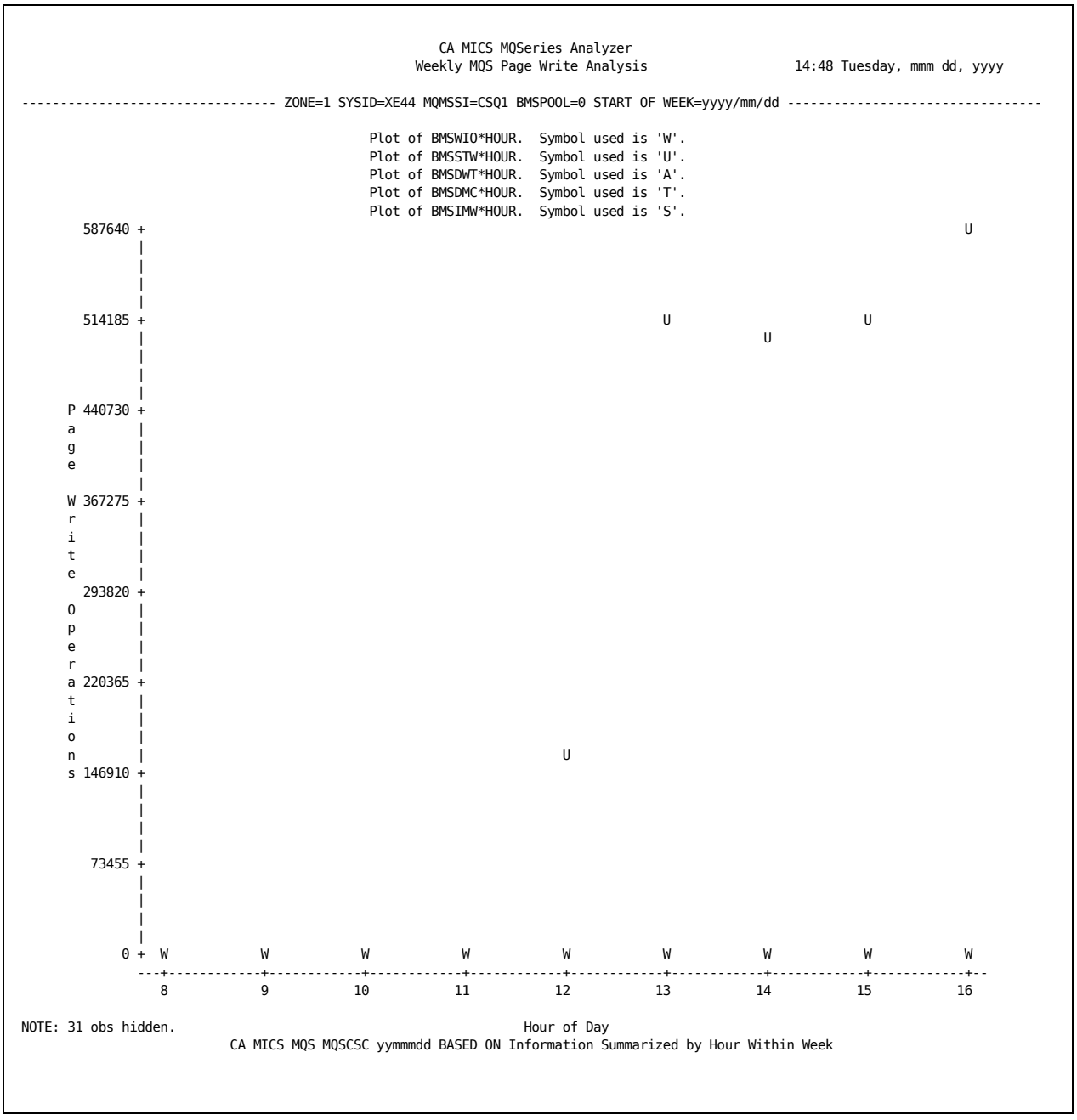
than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

Queue Manager Name (MQMSSI) - Optional. No default. 1-4 character value identifying the name of the Queue Manager (MQMSSI). Specify up to six Queue Manager Names. An input observation is selected if its identifier is equal to any of the specified values.

MQS Buffer Pool ID (BMSPOOL) - Optional. No default. 1-4 numeric buffer pool value (BMSPOOL). Specify up to fifteen buffer pools. An input observation is selected if its identifier is equal to any of the specified values. Leading zeros are not required, however any 4 numeric values are accepted. For example, specifying 1 is equivalent to 0001.



3.1.3 MQSeries Data Manager Statistics File Inquiry

The CA MICS MQSeries Analyzer provides the following inquiry that reports on data about:

1 - MQSeries Data Manager Analysis (MQSCSD)

3.1.3.1 MQSeries Data Manager Analysis (MQSCSD)

CA MICS MQSeries Data Manager Analysis uses measurements from the Data Manager Statistics File (MQSDMS) to display the relevant metrics for analyzing the data manager activity over the date and/or time intervals you select.

The following CA MICS Analyzer for MQSeries elements will be selected:

KEY ELEMENTS:

- SYSID - System Identifier
- MQMSSI - Queue Manager Name
- HOUR - Hour of Day

DATA ELEMENTS:

- DMSDGET - Object_Get Calls
- DMSDPUT - Object_Put Calls
- DMSDCRE - Object_Create Calls
- DMSDDEL - Object_Delete Calls
- DMSDLOC - Object_Locate Calls
- DMSALST - Stgclass Change Calls

Note: The label associated with the field DATE varies based on the timespan used.

To produce the report:

- Enter the CA MICS Workstation Facility (MWF).
- Choose option 2, CA MICS Information Center Facility (MICF).
- Choose option 2, Database Inquiries.
- Select MQSCSD, whose Catalog Group is PERFORM.
- Complete the MICF Execution panel.
- Complete the specification panel illustrated below. (Descriptions of the fields follow the panel.)

The result displays on your terminal. An example report is shown at the end of this section.

```
+------------------------------------------------------------------------+
|-------------------- MQSeries Data Manager Analysis -------------------|
| Command ===>                                                           |
|                                                                        |
| Composing Inquiry: MQSCSD - MQS Data Manager Analysis                  |
|                                                                        |
| Database ===> ____________________________________________             |
| Cycle(s) ===> __ - __                                                  |
| Timespan ===> ______ (DETAIL/DAYS/WEEKS/MONTHS)                        |
| Plot by hour if timespan is DAYS or WEEKS     ===> _ (Y/N)             |
| Generate a plot for each value of Zone        ===> _ (Y/N)             |
| Generate color graphic plots                  ===> _ (Y/N)             |
| Generate CSV Extract for Query and Reporting  ===> _ (Y/N)             |
| Data Selection:                                                        |
|                      dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy     |
|   Date Ranges  ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __     |
|   Hour         ===> __ - __    __ - __    __ - __                     |
|   Zone         ===> _ _ _ _ _ _ _ _ _ _                                |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                      |
|   MQS Queue Manager Name(MQMSSI)  ===> ____ ____ ____ ____ ____ ____  |
|                                                                        |
+------------------------------------------------------------------------+
```

Database - Required. No default. Specify up to six database unit IDs (the IDs of the CA MICS database units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one database unit, this parameter is set automatically. To display a selection list of valid database unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified timespan of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (for example, 7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Timespan - Required. Default varies by report. The timespan of the CA MICS database from which the primary input files are selected. Required input files must be available at the specified timespan.

Report by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at hourly, DAILY, or WEEKLY levels. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour, and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week, and a single report listing all days or weeks is produced.

Generate a report for each value of Zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Generate color graphic plots - Required. Defaults to N (No). Specify Y (Yes) if you want to generate color graphics plots. SAS/GRAPH software is a prerequisite for color graphics. When set to No standard SAS plots and graphs will be produced (non-color, line formats).

Generate CSV Extract for Query and Reporting - Required. Defaults to N (No). Specify Y (Yes) if you want to generate an extract CSV file for subsequent use in CA MICS Query and Reporting. This option is only valid when CA MICS Query and Reporting is installed.

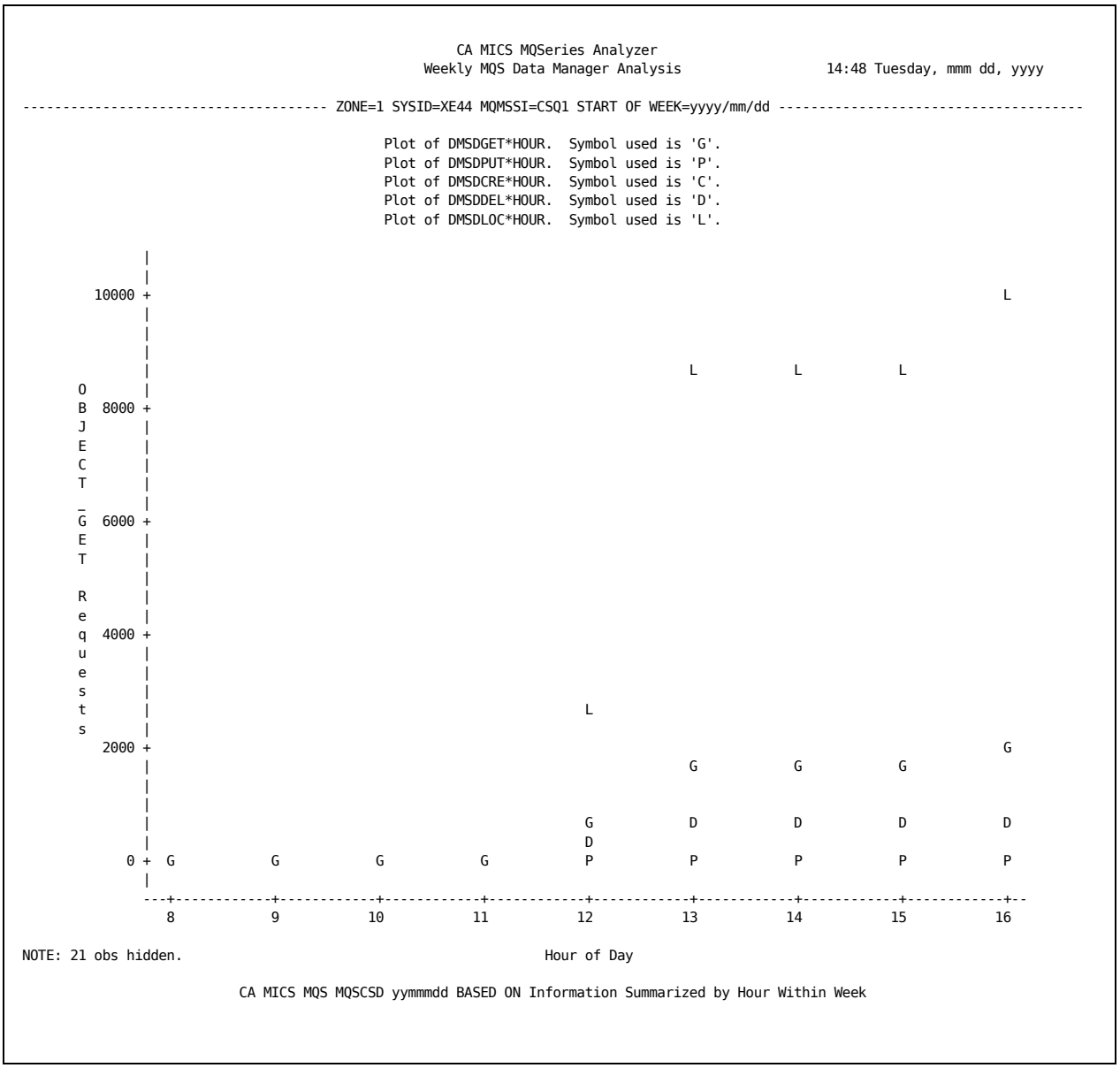
Date Ranges - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

Queue Manager Name (MQMSSI) - Optional. No default. 1-4 character value identifying the name of the Queue Manager (MQMSSI). Specify up to six Queue Manager Names. An input observation is selected if its identifier is equal to any of the specified values.



3.1.4 MQSeries Message Manager Statistics File Inquiry

The CA MICS MQSeries Analyzer provides the following inquiry that reports on data about:

1 - MQSeries Message Manager Analyzer (MQSCSE)

3.1.4.1 MQSeries Message Manager Analysis (MQSCSE)

The CA MICS MQSeries Message Manager Analysis uses measurements from the Message Manager Statistics File (MQSMMS) to display the relevant metrics for analyzing the message manager activity over the date and/or time intervals you request.

The following CA MICS MQSeries Analyzer elements will be selected:

KEY ELEMENTS:

- SYSID - System Identifier
- MQMSSI - Queue Manager Name
- HOUR - Hour of Day

DATA ELEMENTS:

- MMSGET - MQGET Calls
- MMSPUT - MQPUT Calls
- MMSPUT1 - MQPUT1 Calls
- MMSCLOS - MQCLOSE Calls
- MMSOPEN - MQOPEN Calls
- MMSINQ - MQINQ Calls
- MMSSET - MQSET Calls
- MMSCALH - 'Close Handle' Calls

Note: The label associated with the field DATE varies based on the timespan used.

To produce the report:

- Enter the CA MICS Workstation Facility (MWF).
- Choose option 2, CA MICS Information Center Facility (MICF).
- Choose option 2, Database Inquiries.
- Select MQSCSE. The Catalog Group is PERFORM.
- Complete the panel shown below.

The result displays on your terminal. An example report is shown at the end of this section.

```
+-------------------------------------------------------------------------+
|-----------------  MQSeries Message Manager Analysis  -----------------|
| Command ===>                                                            |
|                                                                         |
| Composing Inquiry: MQSCSE - MQS Message Manager Analysis                |
|                                                                         |
| Database ===> ____________________________________________              |
| Cycle(s) ===> __ - __                                                   |
| Timespan ===> ______ (DETAIL/DAYS/WEEKS/MONTHS)                         |
| Plot by hour if timespan is DAYS or WEEKS     ===> _ (Y/N)              |
| Generate a plot for each value of Zone        ===> _ (Y/N)              |
| Generate color graphic plots                  ===> _ (Y/N)              |
| Generate CSV Extract for Query and Reporting  ===> _ (Y/N)              |
| Data Selection:                                                         |
|                     dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy       |
|   Date Ranges  ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __       |
|   Hour         ===> __ - __    __ - __    __ - __                      |
|   Zone         ===> _ _ _ _ _ _ _ _ _ _                                 |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                       |
|   MQS Queue Manager Name(MQMSSI)  ===> ____ ____ ____ ____ ____ ____    |
|                                                                         |
+-------------------------------------------------------------------------+
```

Database - Required. No default. Specify up to six database unit IDs (the IDs of the CA MICS database units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one database unit, this parameter is set automatically. To display a selection list of valid database unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified timespan of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (for example, 7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Timespan - Required. Default varies by report. The timespan of the CA MICS database from which the primary input files are selected. Required input files must be available at the specified timespan.

Plot by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly, DAILY, or WEEKLY level. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour, and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week, and a single report listing all days and weeks is produced.

Generate a report for each value of Zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Generate color graphic plots - Required. Defaults to N (No). Specify Y (Yes) if you want to generate color graphics plots. SAS/GRAPH software is a prerequisite for color graphics. When set to No standard SAS plots and graphs will be produced (non-color, line formats).

Generate CSV Extract for Query and Reporting - Required. Defaults to N (No). Specify Y (Yes) if you want to generate an extract CSV file for subsequent use in CA MICS Query and Reporting. This option is only valid when CA MICS Query and Reporting is installed.

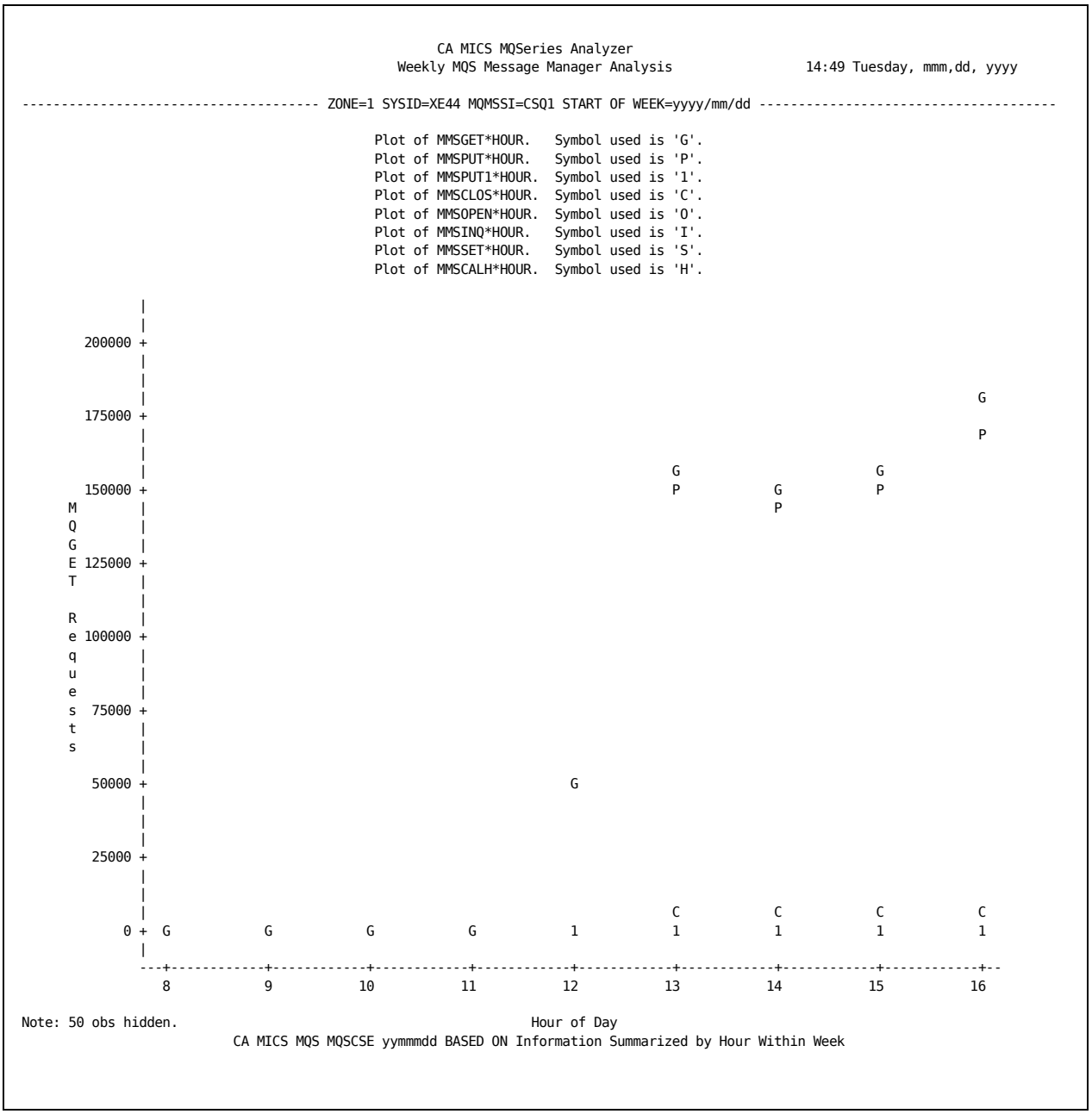
Date Ranges - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

Queue Manager Name (MQMSSI) - Optional. No default. 1-4 character value identifying the name of the Queue Manager (MQMSSI). Specify up to six Queue Manager Names. An input observation is selected if its identifier is equal to any of the specified values.



3.1.5 MQSeries Log Manager Statistics File Inquiries

The CA MICS MQSeries Analyzer provides the following inquiries that report on data about:

1 - MQSeries Log Manager Write Analysis (MQSCSF)
2 - MQSeries Log Manager Read Analysis (MQSCSG)

3.1.5.1 MQSeries Log Manager Write Analysis (MQSCSF)

```
The CA MICS MQSeries Log Manager Write Analysis uses
measurements from the Log Manager Statistics File (MQSLMS) to
display the relevant metrics for analyzing performance
associated with LOG writes over the date and/or time ranges
you select.  The plot displays LOG writes for each Queue
Manager based on the report summarization option that you
specify.

The following CA MICS Analyzer for MQSeries elements will be
selected:

KEY ELEMENTS:

o SYSID    - System Identifier
o MQMSSI   - Queue Manager Name
o HOUR     - Hour of Day

DATA ELEMENTS:

o LMSTNLWR - Total Number of Log Write Calls
o LMSWRW   - Write Call Count - Wait
o LMSWRNW  - Write Call Count - No Wait
o LMSWRF   - Write Call Count - Force
o LMSWTB   - Wait Count For Unavailable Buffers

Note: The label associated with the field DATE varies based
on the timespan used.

To produce the report:

o Enter the CA MICS Workstation Facility (MWF).

o Choose option 2, CA MICS Information Center Facility
  (MICF).

o Choose option 2, Database Inquiries.

o Select MQSCSF, whose Catalog Group is PERFORM.

o Complete the MICF Execution panel.

o Complete the specification panel illustrated below.
  (Descriptions of the fields follow the panel.)

The result displays on your terminal.  An example report is
shown at the end of this section.
+-------------------------------------------------------------------------+
```

```
|----------------- MQSeries Log Manager Write Analysis ----------------|
| Command ===>                                                         |
|                                                                      |
| Composing Inquiry: MQSCSF - MQS Log Manager Write Analysis           |
|                                                                      |
| Database ===> ____________________________________________           |
| Cycle(s) ===> __ - __                                                |
| Timespan ===> ______ (DETAIL/DAYS/WEEKS/MONTHS)                      |
| Plot by hour if timespan is DAYS or WEEKS     ===> _ (Y/N)           |
| Generate a plot for each value of Zone        ===> _ (Y/N)           |
| Generate color graphic plots                  ===> _ (Y/N)           |
| Generate CSV Extract for Query and Reporting  ===> _ (Y/N)           |
| Data Selection:                                                      |
|                     dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy    |
|   Date Ranges  ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __    |
|   Hour         ===> __ - __    __ - __    __ - __                   |
|   Zone         ===> _ _ _ _ _ _ _ _ _                                |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                    |
|   MQS Queue Manager Name(MQMSSI)   ===> ____ ____ ____ ____ ____ ____|
|                                                                      |
+----------------------------------------------------------------------+
```

Database - Required. No default. Specify up to six database unit IDs (the IDs of the CA MICS database units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one database unit, this parameter is set automatically. To display a selection list of valid database unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified timespan of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (for example, 7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Timespan - Required. Default varies by report. The timespan of the CA MICS database from which the primary input files are selected. Required input files must be available at the specified timespan.

Plot by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly, DAILY, or WEEKLY level. If you specify Y (Yes) to Report by Hour, the data is summarized and displayed by hour, and separate reports are produced for each day or week. If you specify N (No) to Report by Hour, the data is summarized by day or week, and a single report listing all days or weeks is produced.

Generate a plot for each value of zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Generate color graphic plots - Required. Defaults to N (No). Specify Y (Yes) if you want to generate color graphics plots. SAS/GRAPH software is a prerequisite for color graphics. When set to No standard SAS plots and graphs will be produced (non-color, line formats).

Generate CSV Extract for Query and Reporting - Required. Defaults to N (No). Specify Y (Yes) if you want to generate an extract CSV file for subsequent use in CA MICS Query and Reporting. This option is only valid when CA MICS Query and Reporting is installed.

Date Ranges - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

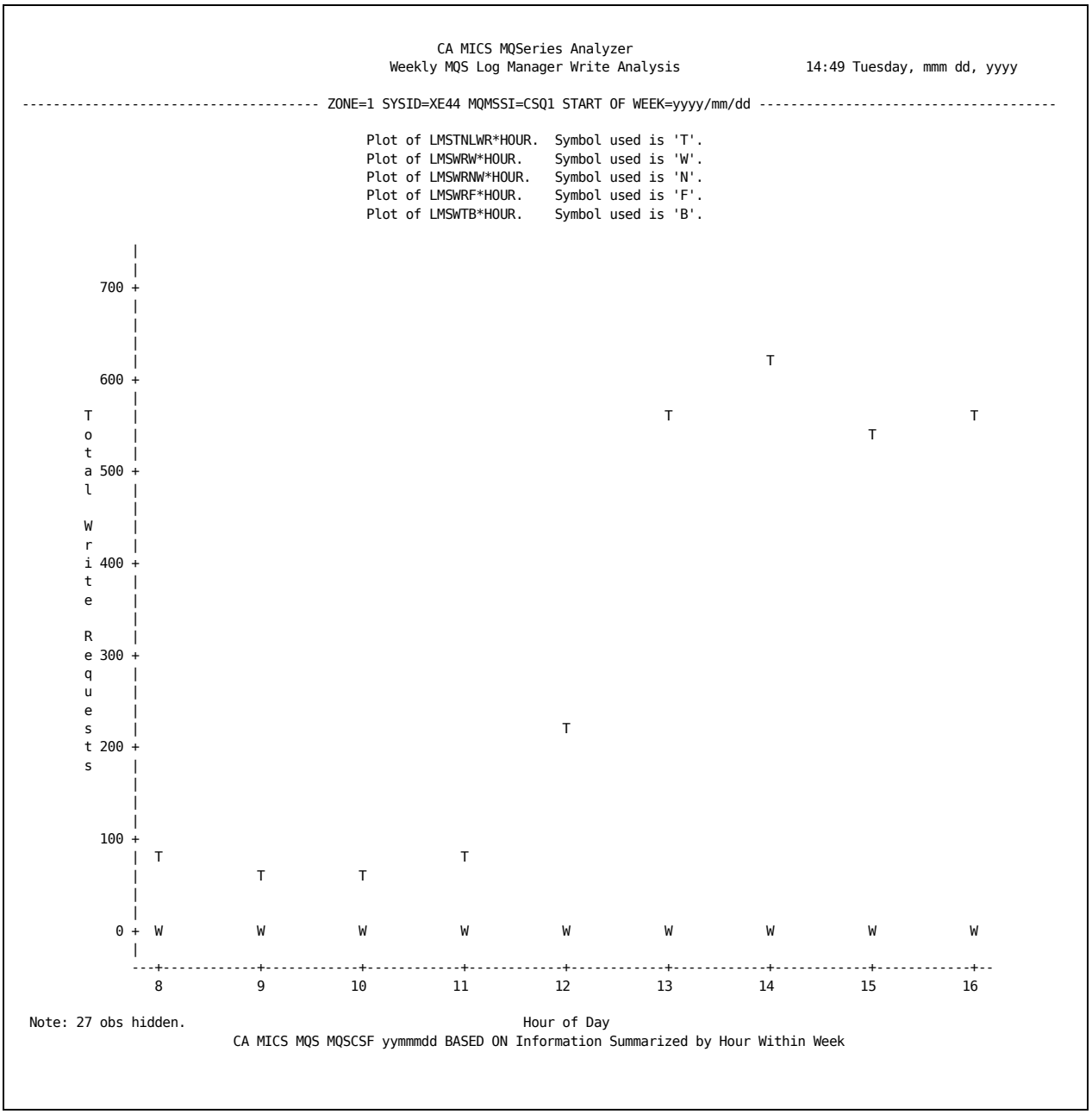
Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range.

For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

Queue Manager Name (MQMSSI) - Optional. No default. 1-4 character value identifying the name of the Queue Manager (MQMSSI). Specify up to six Queue Manager Names. An input observation is selected if its identifier is equal to any of the specified values.


CA MICS MQSeries Analyzer
Weekly MQS Log Manager Write Analysis
14:49 Tuesday, mmm dd, yyyy
ZONE=1 SYSID=XE44 MQMSSI=CSQ1 START OF WEEK=yyyy/mm/dd
Plot of LMSTNLWR*HOUR. Symbol used is 'T'.
Plot of LMSWRW*HOUR. Symbol used is 'W'.
Plot of LMSWRNW*HOUR. Symbol used is 'N'.
Plot of LMSWRF*HOUR. Symbol used is 'F'.
Plot of LMSWTB*HOUR. Symbol used is 'B'.
Total Write Requests
700
600
500
400
300
200
100
0
8
9
10
11
12
13
14
15
16
Note: 27 obs hidden.
Hour of Day
CA MICS MQS MQSCSF yymmmdd BASED ON Information Summarized by Hour Within Week

3.1.5.2 MQSeries Log Manager Read Analysis (MQSCSG)

The CA MICS MQSeries Log Manager Read Analysis uses measurements from the Log Manager Statistics File (MQSLMS) to display the relevant metrics for analyzing performance associated with LOG reads over the date and/or time ranges you select. The plot displays LOG reads for each Queue Manager based on the report summarization option that you specify.

The following CA MICS Analyzer for MQSeries elements will be selected:

KEY ELEMENTS:

- o SYSID - System Identifier
- o MQMSSI - Queue Manager Name
- o HOUR - Hour of Day

DATA ELEMENTS:

- o LMSTNLRR - Total Number of Log Read Calls
- o LMSRBUF - Read Log Call In-Storage Buffer
- o LMSRACT - Read Log Call Active Log Data Set
- o LMSRARH - Read Log Call Archive Log Data Set
- o LMSWTL - Read Log Call Delayed

To produce the report:

- o Enter the CA MICS Workstation Facility (MWF).
- o Choose option 2, CA MICS Information Center Facility (MICF).
- o Choose option 2, Database Inquiries.
- o Select MQSCSG, whose Catalog Group is PERFORM.
- o Complete the MICF Execution panel.
- o Complete the specification panel illustrated below. (Descriptions of the fields follow the panel.)

The result displays on your terminal. An example report is shown at the end of this section.

```
+-------------------------------------------------------------------------+
|------------------  MQSeries Log Manager Read Analysis  --------------|
| Command ===>                                                            |
```

```
|                                                                          |
| Composing Inquiry: MQSCSG - MQS Log Manager Read Analysis                |
|                                                                          |
| Database ===> ____________________________________________               |
| Cycle(s) ===> __ - __                                                    |
| Timespan ===> ______ (DETAIL/DAYS/WEEKS/MONTHS)                          |
| Plot by hour if timespan is DAYS or WEEKS     ===> _ (Y/N)               |
| Generate a plot for each value of Zone        ===> _ (Y/N)               |
| Generate color graphic plots                  ===> _ (Y/N)               |
| Generate CSV Extract for Query and Reporting  ===> _ (Y/N)               |
| Data Selection:                                                          |
|                     dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy        |
|   Date Ranges  ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __        |
|   Hour         ===> __ - __    __ - __    __ - __                       |
|   Zone         ===> _ _ _ _ _ _ _ _ _ _                                  |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                        |
|   MQS Queue Manager Name(MQMSSI)  ===> ____ ____ ____ ____ ____ ____     |
|                                                                          |
+--------------------------------------------------------------------------+
```

Database - Required. No default. Specify up to six database unit IDs (the IDs of the CA MICS database units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one database unit, this parameter is set automatically. To display a selection list of valid database unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified timespan of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (for example, 7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Timespan - Required. Default varies by report. The timespan of the CA MICS database from which the primary input files are selected. Required input files must be available at the specified timespan.

Plot by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly, DAILY,

or WEEKLY level. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour, and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week, and a single report listing all days or weeks is produced.

Generate a plot for each value of Zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Generate color graphic plots - Required. Defaults to N (No). Specify Y (Yes) if you want to generate color graphics plots. SAS/GRAPH software is a prerequisite for color graphics. When set to No standard SAS plots and graphs will be produced (non-color, line formats).

Generate CSV Extract for Query and Reporting - Required. Defaults to N (No). Specify Y (Yes) if you want to generate an extract CSV file for subsequent use in CA MICS Query and Reporting. This option is only valid when CA MICS Query and Reporting is installed.

Date Ranges - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

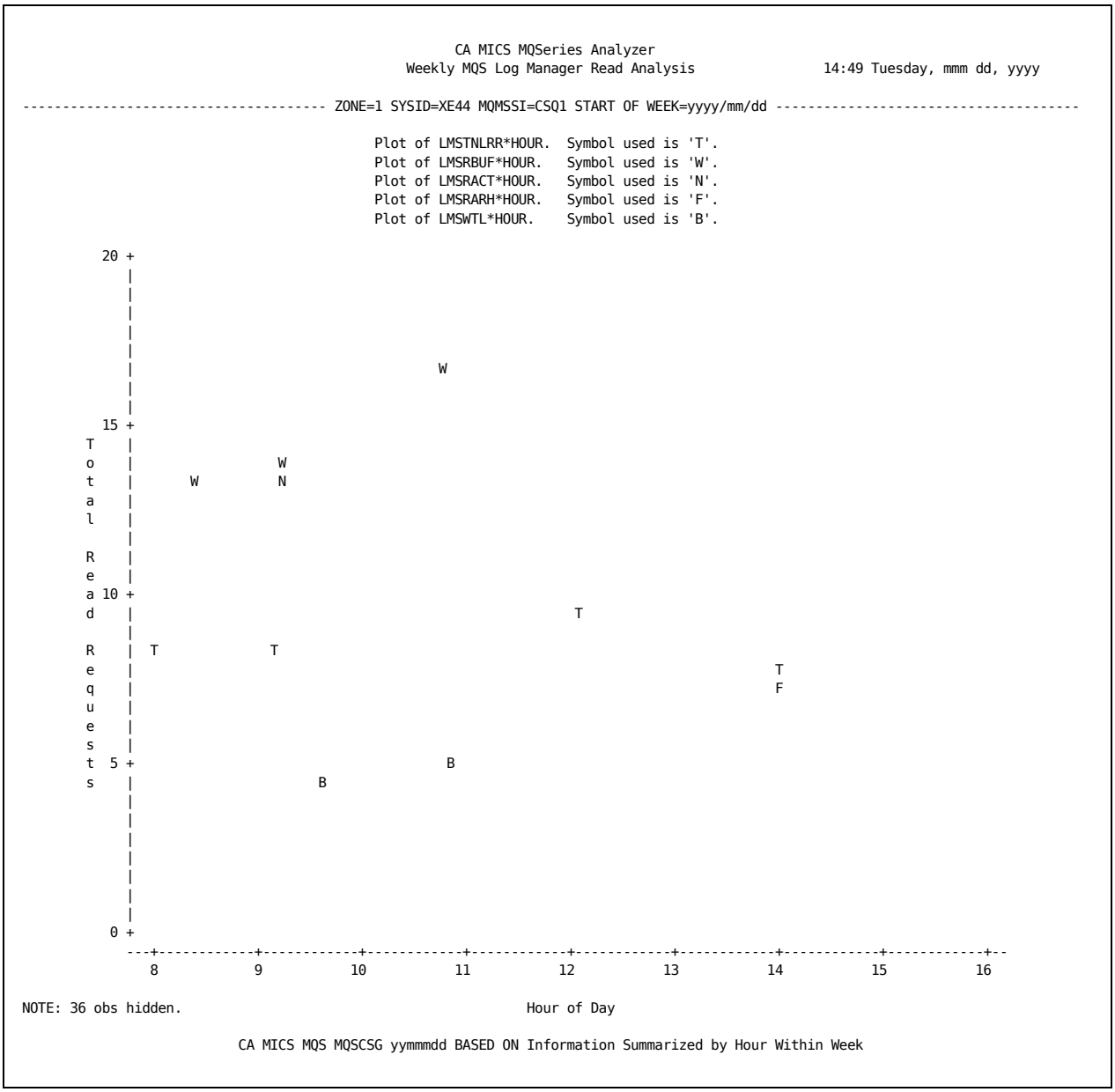
Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value

is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

Queue Manager Name (MQMSSI) - Optional. No default. 1-4 character value identifying the name of the Queue Manager (MQMSSI). Specify up to six Queue Manager Names. An input observation is selected if its identifier is equal to any of the specified values.



3.1.6 MQSeries Coupling Facility File Inquiry

The MQSeries Analyzer provides the following inquiries that report on data about:

1 - MQSeries Coupling Facility Analysis (MQSCSH)

3.1.6.1 MQSeries Coupling Facility Analysis(MQSCSH)

The CA MICS MQSeries Coupling Facility Analysis uses measurements from the Coupling Facility Statistics File (MQSCMS) to display the metrics for single and multiple update calls over the date and/or time ranges you select. The plot displays the update calls by CF Structure Name for each Queue Manager based on the summarization option that you specify.

The following CA MICS MQSeries Analyzer elements will be selected:

KEY ELEMENTS:

- SYSID - System Identifier
- CMSSTRNM - Structure Name
- MQMSSI - Queue Manager Name
- HOUR - Hour Of Day

DATA ELEMENTS:

- CMSCSEC - Single Update Calls (IXLLSTE)
- CMSCMEC - Mult Update Calls (IXLLSTM)

Note: The label associated with the field DATE varies based on the timespan used.

To produce the report:

- Enter the CA MICS Workstation Facility (MWF).
- Choose option 2, CA MICS Information Center Facility (MICF).
- Choose option 2, Database Inquiries.
- Select MQSCSH, whose Catalog Group is PERFORM.
- Complete the MICF Execution panel.
- Complete the specification panel illustrated below. (Descriptions of the fields follow the panel.)

The result displays on your terminal. An example report is shown at the end of this section.

```
+-------------------------------------------------------------------------+
|---------------  MQSeries Coupling Facility Analysis  ---------------|
| Command ===>                                                            |
|                                                                         |
| Composing Inquiry:  MQSCSH -  MQS Coupling Facility Analysis            |
| Database ===> _____________________________________________             |
| Cycle(s) ===> __ - __                                                   |
| Timespan ===> ______ (DETAIL/DAYS/WEEKS/MONTHS)                         |
| Plot by hour if timespan is DAYS or WEEKS     ===> _ (Y/N)              |
| Generate a plot for each value of Zone        ===> _ (Y/N)              |
| Generate color graphic plots                  ===> _ (Y/N)              |
| Generate CSV Extract for Query and Reporting  ===> _ (Y/N)              |
| Data Selection:                                                         |
|                     dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy       |
|   Date Ranges  ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __       |
|   Hour         ===> __ - __    __ - __    __ - __                      |
|   Zone         ===> _ _ _ _ _ _ _ _ _ _                                 |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                       |
|   MQS Queue Manager Name(MQMSSI)  ===> ____ ____ ____ ____ ____ ____    |
|   CF Structure Name(CMSSTRNM)  ===> ____________ ____________           |
|                                ===> ____________ ____________           |
+-------------------------------------------------------------------------+
```

Database - Required. No default. Specify up to six database unit IDs (the IDs of the CA MICS database units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one database unit, this parameter is set automatically. To display a selection list of valid database unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified timespan of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (for example, 7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Timespan - Required. Default varies by report. The timespan of the CA MICS database from which the primary input files are selected. Required input files must be available at the specified timespan.

Plot by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly, DAILY, or WEEKLY level. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week and a single report listing all days or weeks is produced.

Generate a plot for each value of zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Generate color graphic plots - Required. Defaults to N (No). Specify Y (Yes) if you want to generate color graphics plots. SAS/GRAPH software is a prerequisite for color graphics. When set to No standard SAS plots and graphs will be produced (non-color, line formats).

Generate CSV Extract for Query and Reporting - Required. Defaults to N (No). Specify Y (Yes) if you want to generate an extract CSV file for subsequent use in CA MICS Query and Reporting. This option is only valid when CA MICS Query and Reporting is installed.

Date Ranges - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

Hour - Optional. No default. 0-23. Up to three hour

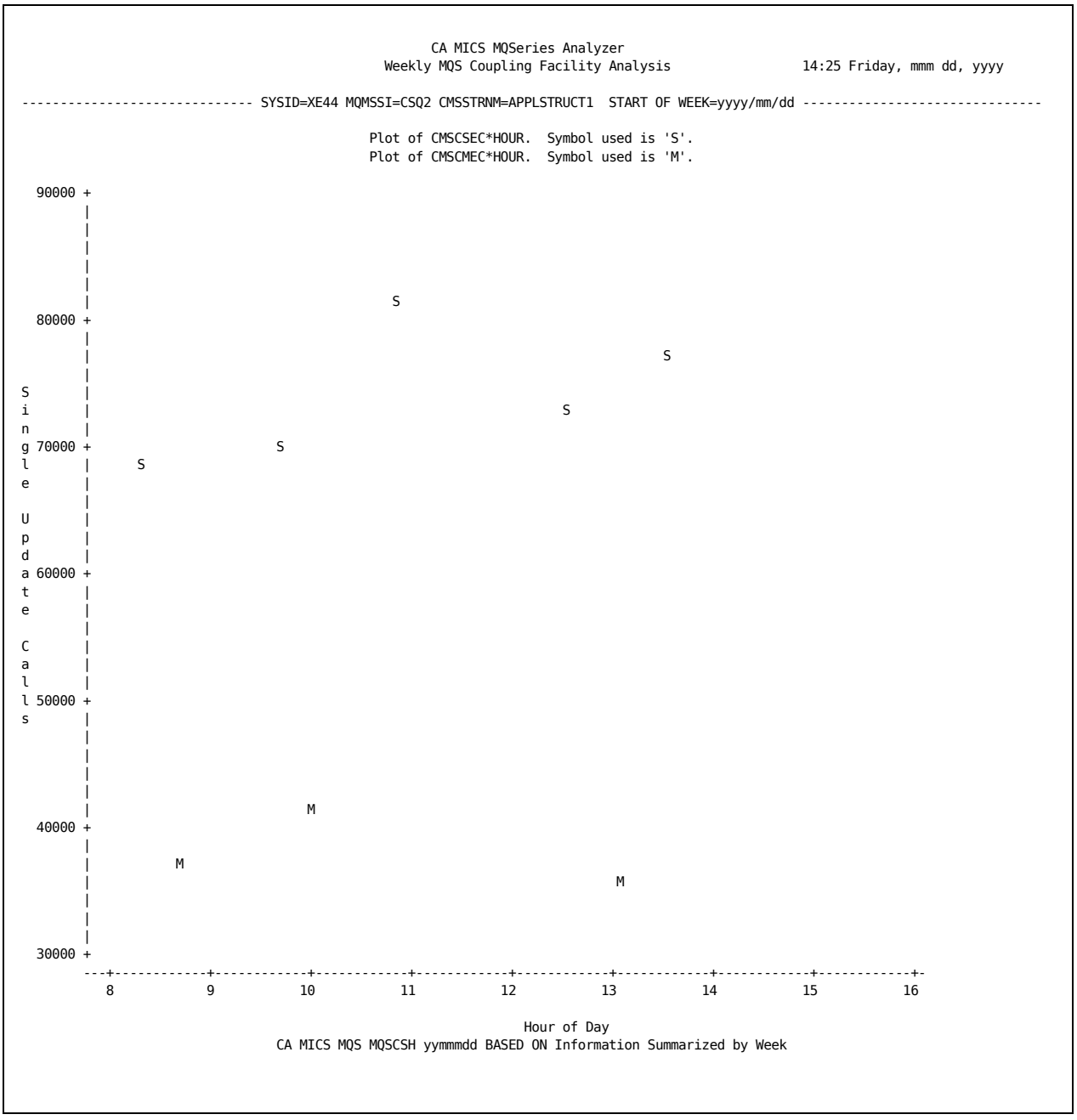
ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

Queue Manager Name (MQMSSI) - Optional. No default. 1-4 character value identifying the name of the Queue Manager (MQMSSI). Specify up to six Queue Manager Names. An input observation is selected if its identifier is equal to any of the specified values.

CF Structure Name (CMSSTRNM) - Optional. No default. 1-12 character value. Specify up to four coupling facility structure names. An input observation is selected if its identifier is equal to any of the specified values.



3.1.7 MQSeries DB2 Manager Statistics File Inquiry

The CA MICS MQSeries Analyzer provides the following inquiries that report on data about:

1 - MQSeries DB2 Shared Queue Analysis (MQSCSI)

3.1.7.1 MQSeries DB2 Shared Queue Analysis (MQSCSI)

The MQSeries DB2 Shared Queue Analysis uses measurements from the DB2 Manager Statistics File (MQSDBS) to display metrics for DB2 read, write, delete, list, and update requests for shared queues over the date and/or time ranges you select.

The following CA MICS MQSeries Analyzer elements will be selected:

KEY ELEMENTS:

- SYSID - System Identifier
- MQMSSI - Queue Manager Name
- HOUR - Hour Of Day

DATA ELEMENTS:

- DBSREAD - Total Read Requests
- DBSWRITE - Total Write Requests
- DBSDEL - Total Delete Requests
- DBSLIST - Total List Requests
- DBSUPD - Total Update Requests

Note: The label associated with the field DATE varies based on the timespan used.

To produce the report:

- Enter the CA MICS Workstation Facility (MWF).
- Choose option 2, CA MICS Information Center Facility (MICF).
- Choose option 2, Database Inquiries.
- Select MQSCSI, whose Catalog Group is PERFORM.
- Complete the MICF Execution panel.
- Complete the specification panel illustrated below. (Descriptions of the fields follow the panel.)

The result displays on your terminal. An example report is shown at the end of this section.

```
+-------------------------------------------------------------------------+
|-----------------  MQSeries DB2 Shared Queue Analysis -----------------|
| Command ===>                                                            |
|                                                                         |
| Composing Inquiry:  MQSCSI -  MQS DB2 Shared Queue Analysis             |
|                                                                         |
| Database ===> ____________________________________________              |
| Cycle(s) ===> __ - __                                                   |
| Timespan ===> ______ (DETAIL/DAYS/WEEKS/MONTHS)                         |
| Plot by hour if timespan is DAYS or WEEKS     ===> _ (Y/N)              |
| Generate a plot for each value of Zone        ===> _ (Y/N)              |
| Generate color graphic plots                  ===> _ (Y/N)              |
| Generate CSV Extract for Query and Reporting  ===> _ (Y/N)              |
| Data Selection:                                                         |
|                     dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy       |
|   Date Ranges  ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __       |
|   Hour         ===> __ - __    __ - __    __ - __                      |
|   Zone         ===> _ _ _ _ _ _ _ _ _ _                                 |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                       |
|   MQS Queue Manager Name(MQMSSI)  ===> ____ ____ ____ ____ ____ ____    |
|                                                                         |
|                                                                         |
+-------------------------------------------------------------------------+
```

Database - Required. No default. Specify up to six database unit IDs (the IDs of the CA MICS database units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one database unit, this parameter is set automatically. To display a selection list of valid database unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified timespan of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (for example, 7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Timespan - Required. Default varies by report. The timespan of the CA MICS database from which the primary input files are selected. Required input files must be available at the specified timespan.

Plot by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly, DAILY, or WEEKLY level. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week and a single report listing all days or weeks is produced.

Generate a plot for each value of zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Generate color graphic plots - Required. Defaults to N (No). Specify Y (Yes) if you want to generate color graphics plots. SAS/GRAPH software is a prerequisite for color graphics. When set to No standard SAS plots and graphs will be produced (non-color, line formats).

Generate CSV Extract for Query and Reporting - Required. Defaults to N (No). Specify Y (Yes) if you want to generate an extract CSV file for subsequent use in CA MICS Query and Reporting. This option is only valid when CA MICS Query and Reporting is installed.

Date Ranges - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

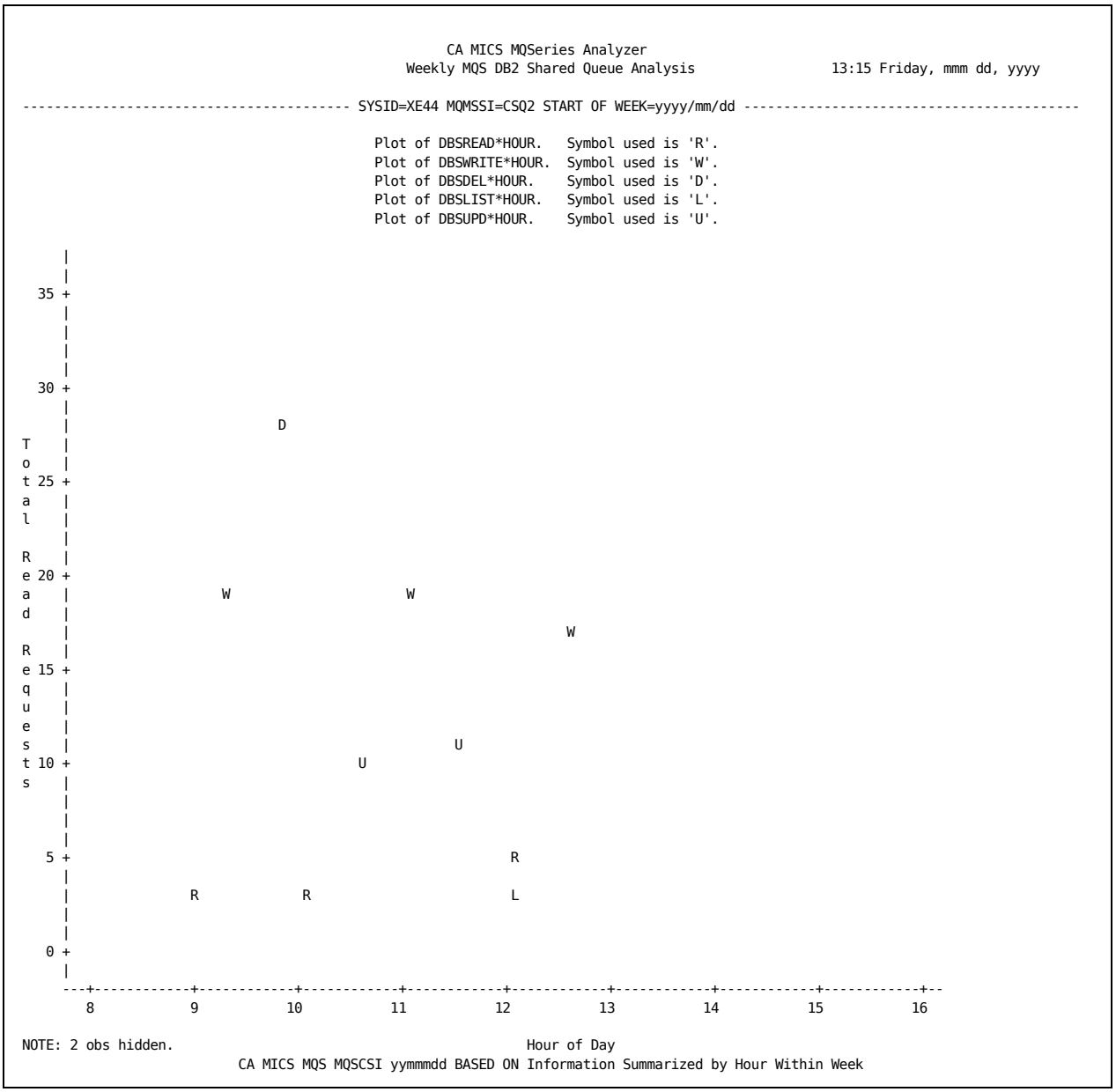
Hour - Optional. No default. 0-23. Up to three hour

ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

Queue Manager Name (MQMSSI) - Optional. No default. 1-4 character value identifying the name of the Queue Manager (MQMSSI). Specify up to six Queue Manager Names. An input observation is selected if its identifier is equal to any of the specified values.



3.1.8 MQSeries Queue Activity File Inquiries

The CA MICS MQSeries Analyzer provides the following inquiries that report on data:

1 - MQSeries Queue Activity Report (MQSSL3)
2 - MQSeries Queue Summary Report (MQSSL5)

3.1.8.1 MQSeries Queue Activity Report (MQSSL3)

The CA MICS MQSeries Queue Activity Report uses measurements from the Queue Manager Activity file (MQAQAA) to display the relevant metrics for analyzing queue activity over the date and/or time ranges you select.

The following CA MICS Analyzer for MQSeries elements will be selected:

KEY ELEMENTS:

- o SYSID - System Identifier
- o MQMSSI - Queue Manager Name
- o QAABASNM - Base Queue Name
- o MQSATYP - Type of Connection
- o HOUR - Hour of Day

DATA ELEMENTS:

- o QAABUFFP - Buffer Pool Number
- o QAACFSTR - Name of Coupling Facility Structure
- o QAAINDX - Index Type of Queue
- o QAANPS - Page Set Number
- o QAAQSG - Queue Sharing Group
- o QAAQTYPE - Queue Type
- o QAAGN - MQGET Calls (see note)
- o QAAGETB - Bytes Got (see note)
- o QAAGCTM - CPU Time Used MQGET Calls
- o QAAAVGCT - Avg MQGET CPU Time
- o QAAGETM - Elapsed Time MQGET Calls
- o QAAAVGTM - Avg MQGET Time
- o QAAGPSN - Page Set Reads (see note)
- o QAAGSUS - Times Suspended MQGET (see note)
- o QAAGJWN - Journal (Log) Write Calls MQGET (see note)
- o QAAGJWTM - Wait Time Journal (Log) Write MQGET
- o AVGGJTM - Average Wait Time Journal (Log) Write MQGET
  computed: AVGGJTM=QAAGJWTM/QAAGJWN
- o QAAPN - MQPUT Calls (see note)
- o QAAPUTB - Bytes Put (see note)
- o QAAPCTM - CPU Time Used MQPUT Calls
- o QAAAVPCT - Avg MQPUT CPU Time
- o QAAPETM - Total Elapsed Time MQPUT Calls
- o QAAAVPTM - Avg MQPUT Time
- o QAAPPSN - Page Set Put Calls (see note)
- o QAAPSUS - Times Suspended MQPUT (see note)
- o QAAPJWN - Journal (Log) Write Calls MQPUT (see note)
- o QAAPJWTM - Wait Time Journal (Log) Write MQPUT
- o AVGPJTM - Average Wait Time Journal (Log) Write MQPUT

```
              computed:  AVGPJTM=QAAPJWTM/QAAPJWN
  o QAAP1N    - MQPUT1 Calls (see note)
  o QAAP1CTM  - CPU Time Used MQPUT1 Calls
  o QAAAV1CT  - Avg MQPUT1 CPU Time
  o QAAP1ETM  - Total Elapsed Time MQPUT1 Calls
  o QAAAV1TM  - Avg MQPUT1 Time
  o QAAP1PSN  - Page Set MQPUT1 Calls (see note)
  o QAAP1SUS  - Times Suspended MQPUT1 (see note)
  o QAAP1JWN  - Journal (Log) Write Calls MQPUT1 (see note)
  o QAAP1JTM  - Wait Time Journal (Log) Write MQPUT1
  o AVGP1JTM  - Average Wait Time Journal (Log) Write MQPUT1
              computed:  AVGP1JTM=QAAP1JTM/QAAP1JWN
  o QAAON     - MQOPEN Calls (see note)
  o QAAOCTM   - Total CPU Time Used MQOPEN Calls
  o QAAAVOCT  - Avg MQOPEN CPU Time
  o QAAOETM   - Total Elapsed Time MQOPEN
  o QAAAVOTM  - Avg MQOPEN Time
  o QAACN     - MQCLOSE Calls (see note)
  o QAACCTM   - Total CPU Time Used MQCLOSE
  o QAAAVCCT  - Avg MQCLOSE CPU Time
  o QAACETM   - Total Elapsed Time MQCLOSE
  o QAAAVCTM  - Avg MQCLOSE Time
  o QAASN     - MQSET Calls (see note)
  o QAASCTM   - CPU Time Used MQSET Calls
  o QAAAVSCT  - Avg MQSET CPU Time
  o QAASETM   - Total Elapsed Time MQSET Calls
  o QAAAVSTM  - Avg MQSET Time
  o QAASJWN   - Journal (Log) Write Calls MQSET (see note)
  o QAASJWTM  - Wait Time Journal (Log) Write MQSET
  o AVGSJTM   - Average Wait Time Journal (Log) Write MQSET
              computed:  AVGSJTM=QAASJWTM/QAASJWN
  o QAAIN     - MQINQ Calls (see note)
  o QAAICTM   - CPU Time Used MQINQ
  o QAAAVICT  - Avg MQINQ CPU Time
  o QAAIETM   - Total Elapsed Time MQINQ Calls
  o QAAAVITM  - Avg MQINQ Time

NOTE:  If the data element is greater than 99,999,999 it is
divided by 1,000,000 and the character 'm' is added to the
end of the value. If the data element is equal to 999,999
through 99,999,999, it is divided by 1,000 and the character
'k' is added to the end of the value.

  To produce the report:

  o Enter the CA MICS Workstation Facility (MWF).

  o Choose option 2, CA MICS Information Center Facility
    (MICF).
```

- Choose option 2, Database Inquiries.

- Select MQSSL3, whose Catalog Group is PERFORM.

- Complete the MICF Execution panel.

- Complete the specification panel illustrated below.
  (Descriptions of the fields follow the panel.)

The result displays on your terminal. An example report is shown at the end of this section.

```
+-------------------------------------------------------------------------+
|------------------  MQSeries Queue Activity Report  -----------------|
| Command ===>                                                            |
|                                                                         |
| Composing Inquiry:  MQSSL3 -  MQS Queue Activity                        |
| Database ===> _____________________________________________             |
| Cycle(s) ===> __ - __                                                   |
| Timespan ===> ______  (DETAIL/DAYS/WEEKS/MONTHS)                        |
| Report by hour if timespan is DAYS or WEEKS  ===> _ (Y/N)               |
| Generate a report for each value of Zone     ===> _ (Y/N)               |
| Data Selection:                                                         |
|                      dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy      |
|   Date Ranges  ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __      |
|   Hour         ===> __ - __    __ - __    __ - __                      |
|   Zone         ===> _ _ _ _ _ _ _ _ _ _                                 |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                       |
|   Queue Manager Name (MQMSSI)  ===> ____ ____ ____ ____ ____ ____       |
|   Type Of Connection (MQSATYP) 1=CICS, 6=Channel Init, etc.             |
|   (Separate by commas) example: 1,2,6  ===> _____________               |
|                                                                         |
|   Queue Name (QAABASNM) (Asterisk '*' as last character for             |
|   wildcard)  ===> ________________________________________________      |
|                                                                         |
+-------------------------------------------------------------------------+
```

Database - Required. No default. Specify up to six database unit IDs (the IDs of the CA MICS database units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one database unit, this parameter is set automatically. To display a selection list of valid database unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified timespan of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields

can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (for example, 7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Timespan - Required. Default varies by report. The timespan of the CA MICS database from which the primary input files are selected. Required input files must be available at the specified timespan.

Plot by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly, DAILY, or WEEKLY level. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour, and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week, and a single report listing all days or weeks is produced.

Generate a report for each value of zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Date Ranges - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap,

but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

Queue Manager Name (MQMSSI) - Optional. No default. 1-4 character value identifying the name of the Queue Manager (MQMSSI). Specify up to six Queue Manager Names. An input observation is selected if its identifier is equal to any of the specified values.

Type Of Connection (MQSATYP) - Optional. No default. Comma-separated list of Type of Connection (MQSATYP) codes. The input data file is compared to the list of Type of Connection codes. Reporting is restricted to the Type of Connection codes in the list. If no list is specified, all Type of Connections in the input data are reported on. The list does not need to be in any specific order. Do not insert blanks. Do not use leading zeros. The list must be entered as shown in the example: one-digit numbers separated by commas.

Queue Name (QAABASNM) - Optional. No default. 1-48 character value identifying the name of the queue (QAABASNM). You can specify an asterisk (*) as the last character for wildcard selection.

```
                                    Q U E U E   A C T I V I T Y   R E P O R T
  Report:    Queue Activity Summarized by Week                                                                    Page 001
  System ID: A2CC   Queue Manager: IQM6   Zone: 1
+-------------------------------------------------------------------------------------------------------------------------------+
| Queue Name: CICS.ICIC4T01.INITQ01                                    Week: 32                                                 |
| Queue Type: Local     Buffer Pool:    2       Shared Queue: No       Start: ddmmmyy:12:04:46.74                               |
| Index Type: None         Page Set:    2       CF Structure:            End: ddmmmyy:13:32:35.57                               |
|                                                                                                                               |
| Access                                 Total       Avg                  Avg    Page    Call      Log     Log Wait   Avg Log |
| Address      Call                       CPU        CPU      Elapsed    Elapsed    Set   Suspend   Write     Elapsed     Wait  |
| Space Type   Type     Calls   Bytes     Time       Time       Time       Time   Access   Count    Rqsts      Time       Time  |
| ----------  -----    ------  ------  -----------  -------  -----------  -------  ------  -------  ------  -----------  ------- |
| CICS        GET        4530   1549k  0:00:00.33  0.00007  0:00:01.32  0.00029       0        0       0  0:00:00.00  0.00000 |
|             PUT           0       0  0:00:00.00  0.00000  0:00:00.00  0.00000       0        0       0  0:00:00.00  0.00000 |
|             PUT1          0       0  0:00:00.00  0.00000  0:00:00.00  0.00000       0        0       0  0:00:00.00  0.00000 |
|             OPEN          2       -  0:00:00.00  0.00067  0:00:00.02  0.01190       -        -       -           -        - |
|             CLOSE         0       -  0:00:00.00  0.00000  0:00:00.00  0.00000       -        -       -           -        - |
|             SET           0       -  0:00:00.00  0.00000  0:00:00.00  0.00000       -        -       0  0:00:00.00  0.00000 |
|             INQ           0       -  0:00:00.00  0.00000  0:00:00.00  0.00000       -        -       -           -        - |
+-------------------------------------------------------------------------------------------------------------------------------+
+-------------------------------------------------------------------------------------------------------------------------------+
| Queue Name: IQM6.MQ.DSTEST1.QUEUE                                    Week: 32                                                 |
| Queue Type: Local     Buffer Pool:    0       Shared Queue: No       Start: ddmmmyy:10:11:40.61                               |
| Index Type: Model        Page Set:    0       CF Structure:            End: ddmmmyy:10:31:20.54                               |
|                                                                                                                               |
| Access                                 Total       Avg                  Avg    Page    Call      Log     Log Wait   Avg Log |
| Address      Call                       CPU        CPU      Elapsed    Elapsed    Set   Suspend   Write     Elapsed     Wait  |
| Space Type   Type     Calls   Bytes     Time       Time       Time       Time   Access   Count    Rqsts      Time       Time  |
| ----------  -----    ------  ------  -----------  -------  -----------  -------  ------  -------  ------  -----------  ------- |
| Batch/TSO   GET           6       0  0:00:00.00  0.00007  0:00:00.00  0.00035       0        0       0  0:00:00.00  0.00000 |
|             PUT      100000   10000k  0:00:14.23  0.00014  0:16:16.45  0.00976      33   100106  200074  0:31:21.05  0.00940 |
|             PUT1          0       0  0:00:00.00  0.00000  0:00:00.00  0.00000       0        0       0  0:00:00.00  0.00000 |
|             OPEN          8       -  0:00:00.00  0.00011  0:00:00.00  0.00019       -        -       -           -        - |
|             CLOSE         8       -  0:00:00.00  0.00003  0:00:00.00  0.00003       -        -       -           -        - |
|             SET           0       -  0:00:00.00  0.00000  0:00:00.00  0.00000       -        -       0  0:00:00.00  0.00000 |
|             INQ           0       -  0:00:00.00  0.00000  0:00:00.00  0.00000       -        -       -           -        - |
+-------------------------------------------------------------------------------------------------------------------------------+
```

3.1.8.2 MQSeries Queue Summary Report (MQSSL5)

The CA MICS MQSeries Queue Summary Report uses measurements from the Queue Manager Activity File (MQAQAA) to display the relevant metrics for analyzing queue activity for individual queues over the date and/or time ranges you select.

The following CA MICS MQSeries Analyzer elements will be selected:

KEY ELEMENTS:

- SYSID - System Identifier
- MQMSSI - Queue Manager Name
- QAABASNM - Base Queue Name
- HOUR - Hour Of Day

DATA ELEMENTS:

- QAAQTYPE - Queue Type
- TOTCALLS - Total Calls computed:
  TOTCALLS=SUM(QAAGN,QAAPN,QAAP1N,QAAON,QAACN,
  QAASN,QAAIN) (see note)
- TOTBYTES - Total Bytes computed:
  TOTBYTES=SUM(QAAGETB,QAAPUTB) (see note)
- QAAQCPTM - Total Queue CPU Time
- AVGQCPTM - Average Queue CPU Time computed:
  AVGQCPTM=QAAQCPTM/TOTCALLS
- TOTETM - Total Elapsed Time computed:
  TOTETM=SUM(QAACETM,QAAGETM,QAAIETM,QAAOETM,
  QAAPETM,QAAP1ETM,QAASETM)
- AVGETM - Average Elapsed Time computed:
  AVGETM=TOTETM/TOTCALLS
- TOTPSET - Total Page Set Access computed:
  TOTPSET=SUM(QAAGPSN,QAAPPSN,QAAP1PSN)
  (see note)

NOTE: Field values between 999,999 and 99,999,999 are divided by 1,000 and the character 'k' is added to the end. Field values between 1,000,000 and 99,999,999,999 are divided by 1,000,000 and the character 'm' is added to the end. For the Total Bytes field, field values greater than 99,999,999,999 are divided by 1,000,000,000 and the character 'g' is added to the end.

To produce the report:

- Enter the CA MICS Workstation Facility (MWF)

- Choose option 2, CA MICS Information Center Facility (MICF)
- Choose option 2, Database Inquiries
- Select MQSSL5, whose Catalog Group is PERFORM
- Complete the MICF Execution panel (If you are not familiar with MICF, see the CA MICS MICF Reference Guide)
- Complete the specification panel illustrated below (Descriptions of the fields follow the panel)

The result displays on your terminal. An example report is shown at the end of this section.

```
+-------------------------------------------------------------------------+
|-----------------------  MQSeries Queue Summary Report  ---------------|
| Command ===>                                                            |
|                                                                         |
| Composing Inquiry:  MQSSL5 -  MQS Queue Summary                         |
| Database ===> ____________________________________________              |
| Cycle(s) ===> __ - __                                                   |
| Timespan ===> _______ (DETAIL/DAYS/WEEKS/MONTHS)                        |
| Report by hour if timespan is DAYS or WEEKS  ===> _ (Y/N)               |
| Generate a report for each value of Zone     ===> _ (Y/N)               |
| Data Selection:                                                         |
|                     dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy       |
|   Date Ranges  ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __       |
|   Hour         ===> __ - __    __ - __     __ - __                      |
|   Zone         ===> _ _ _ _ _ _ _ _ _                                   |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                       |
|   Queue Manager Name (MQMSSI)  ===> ____ ____ ____ ____ ____ ____       |
|                                                                         |
|   Queue Name (QAABASNM) (Asterisk '*' as last character for             |
|   wildcard)  ===> ____________________________________________________  |
|                                                                         |
+-------------------------------------------------------------------------+
```

Database - Required. No default. Specify up to six database unit IDs (the IDs of the CA MICS database units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one database unit, this parameter is set automatically. To display a selection list of valid database unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified timespan of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (for example, 7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Timespan - Required. Default varies by report. The timespan of the CA MICS database from which the primary input files are selected. Required input files must be available at the specified timespan.

Plot by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly, DAILY, or WEEKLY level. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week and a single report listing all days or weeks is produced.
Generate a report for each value of zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Date Ranges - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

Queue Manager Name (MQMSSI) - Optional. No default. 1-4 character value identifying the name of the Queue Manager (MQMSSI). Specify up to six Queue Manager Names. An input observation is selected if its identifier is equal to any of the specified values.

Queue Name (QAABASNM) - Optional. No default. 1-48 character value identifying the name of the queue (QAABASNM). You can specify an asterisk (*) as the last character for wildcard selection.

```
                                    Q U E U E   S U M M A R Y   R E P O R T
                                                                                                     Page 001
 Report:    Queue Activity Summarized by Hour Within Day
 System ID: XE44   Queue Manager: CSQ5
-----------------------------------------------------------------------------------------------------------
                                              Day: ddmmmyy       Hour: 7

                                                                       Total       Avg      Total      Avg     Total
                                              Queue  Total    Total     CPU        CPU     Elapsed   Elapsed   Pg Set
Queue Name                                    Type   Calls    Bytes     Time       Time      Time      Time    Access
----------------------------------------------  -----  -------  --------  -----------  --------  -----------  --------  ------
CICS.INC56T5.INTQ05                           Local      2      684   0:00:00.00   0.00012   0:00:00.02   0.01087       0
CSQ5.MQS.IQ1                                  Local      3       11   0:00:00.00   0.00046   0:00:00.79   0.26496       0
CSQ5.MQS.IQ2                                  Local      3        0   0:00:00.00   0.00007   0:00:00.06   0.02131       0
SYS.CHANNEL.INT5Q                             Local      6        0   0:00:00.00   0.00008   0:00:00.00   0.00014       0
SYS.COMMAND                                   Local      5      419   0:00:00.00   0.00018   0:00:00.07   0.01333       0
SYS.CSQ5.Z28595                               Local     66    18876   0:00:00.00   0.00006   0:00:00.25   0.00374       0
-----------------------------------------------------------------------------------------------------------
                                              Day: ddmmmyy       Hour: 8

                                                                       Total       Avg      Total      Avg     Total
                                              Queue  Total    Total     CPU        CPU     Elapsed   Elapsed   Pg Set
Queue Name                                    Type   Calls    Bytes     Time       Time      Time      Time    Access
----------------------------------------------  -----  -------  --------  -----------  --------  -----------  --------  ------
SYS.CHANNEL.INT5Q                             Local      6        0   0:00:00.00   0.00008   0:00:00.00   0.00016       0
-----------------------------------------------------------------------------------------------------------
                                              Day: ddmmmyy       Hour: 9

                                                                       Total       Avg      Total      Avg     Total
                                              Queue  Total    Total     CPU        CPU     Elapsed   Elapsed   Pg Set
Queue Name                                    Type   Calls    Bytes     Time       Time      Time      Time    Access
----------------------------------------------  -----  -------  --------  -----------  --------  -----------  --------  ------
CSQ5.MQS.IQ1                                  Local     12       44   0:00:00.00   0.00008   0:00:00.01   0.00059       0
CSQ5.MQS.IQ2                                  Local     12        0   0:00:00.00   0.00005   0:00:00.00   0.00008       0
SYS.CHANNEL.INT5Q                             Local      6        0   0:00:00.00   0.00008   0:00:00.00   0.00008       0
SYS.COMMAND                                   Local      8      541   0:00:00.00   0.00014   0:00:00.02   0.00219       0
SYS.CSQ5.Z28595                               Local     62    17530   0:00:00.00   0.00005   0:00:00.03   0.00048       0
SYS.CSQ5.Z25034                               Local     62    17530   0:00:00.00   0.00006   0:00:00.06   0.00097       0
-----------------------------------------------------------------------------------------------------------
                                              Day: ddmmmyy       Hour: 10

                                                                       Total       Avg      Total      Avg     Total
                                              Queue  Total    Total     CPU        CPU     Elapsed   Elapsed   Pg Set
Queue Name                                    Type   Calls    Bytes     Time       Time      Time      Time    Access
----------------------------------------------  -----  -------  --------  -----------  --------  -----------  --------  ------
CSQ5.MQ.TEST.Q1                               Local  100022   10000k  0:00:14.24   0.00014   0:16:16.45   0.00976      33
SYS.CHANNEL.INT5Q                             Local      6        0   0:00:00.00   0.00007   0:00:00.00   0.00008       0
SYS.COMMAND                                   Local     53     6965   0:00:00.01   0.00013   0:00:00.01   0.00023       0
SYS.CSQ5.C32541                               Local     70    20222   0:00:00.00   0.00006   0:00:00.07   0.00096       0
SYS.CSQ5.C32544                               Local     58    16184   0:00:00.00   0.00005   0:00:00.05   0.00087       0
SYS.CSQ5.C32563                               Local     67    18876   0:00:00.00   0.00005   0:00:00.18   0.00272       0
SYS.CSQ5.C32564                               Local     62    17530   0:00:00.00   0.00005   0:00:00.04   0.00059       0
SYS.CSQ5.C32565                               Local    175    58026   0:00:00.01   0.00005   0:00:00.05   0.00026       0
-----------------------------------------------------------------------------------------------------------
```

3.1.9 MQSeries Task Accounting Inquiry

The CA MICS MQSeries Analyzer provides the following inquiries that report on data:

1 - MQSeries Task Accounting Report (MQSSL4)

3.1.9.1 MQSeries Task Accounting Report (MQSSL4)

The CA MICS MQSeries Task Accounting Report uses measurements from the Task Accounting file (MQATAA) to display the relevant metrics for task level analysis over the date and/or time ranges you select.

The following CA MICS MQSeries Analyzer elements will be selected:

KEY ELEMENTS:

- o SYSID - System Identifier
- o MQMSSI - Queue Manager Name
- o MQSATYP - Type Of Connection
- o HOUR - Hour Of Day
- o Summary Key - User specified data element (optional)

DATA ELEMENTS:

- o TAACOUNT - Task Count (see note)
- o TOTCPUTM - Total CPU Time computed: TOTCPUTM=SUM(TAANCPTM,TAAQCPTM)
- o AVGCPUTM - Average CPU Time computed: AVGCPUTM=TOTCPUTM/TAACOUNT
- o TAAEXCTM - Task Execution Time
- o AVGEXCTM Average Execution Time computed: AVGEXCTM=TAAEXCTM/TAACOUNT
- o TAASUSN - Task Suspended Count (see note)
- o TAASUSTM - Total Suspend Time

Non-queue Task Statistics:

- o TAACMN - Commit Calls (see note)
- o TAACMCTM - Commit CPU Time
- o AVGCMCTM - Average Commit CPU Time computed: AVGCMCTM=TAACMCTM/TAACMN
- o TAACMETM - Commit Elapsed Time
- o AVGCMETM - Average Commit Elapsed Time computed: AVGCMETM=TAACMETM/TAACMN
- o TAABAN - Backout Calls (see note)
- o TAABACTM - Backout CPU Time
- o AVGBACTM - Average Backout CPU Time computed: AVGBACTM=TAABACTM/TAABAN
- o TAABAETM - Backout Elapsed Time
- o AVGBAETM - Average Backout Elapsed Time computed: AVGBAETM=TAABAETM/TAABAN
- o TAAOTN - Other MQI Calls (see note)

```
o TAAOTCTM - Other MQI Calls CPU Time
o AVGOTCTM - Average Other MQI Calls CPU Time computed:
             AVGOTCTM=TAAOTCTM/TAAOTN
o TAAOTETM - Other MQI Calls Elapsed Time
o AVGOTETM - Average Other MQI Calls Elapsed Time computed:
             AVGOTETM=TAAOTETM/TAAOTN
o NQCALL   - Total Commit, Backout, and Other MQI Calls
             computed:  NQCALL=SUM(TAACMN,TAABAN,TAAOTN)
             (see note)
o NQCPUTM  - Total Commit, Backout, and Other MQI CPU Time
             computed:
             NQCPUTM=SUM(TAACMCTM,TAABACTM,TAAOTCTM)
o NQAVGCTM - Total Commit, Backout, and Other MQI Average
             CPU Time computed:  NQAVGCTM=TAANCPTM/TAACOUNT
o NQELATM  - Total Commit, Backout, and Other MQI Elapsed
             Time computed:
             NQELATM=SUM(TAACMETM,TAABAETM,TAAOTETM)
o NQAVGETM - Total Commit, Backout, and Other MQI Average
             Elapsed Time computed:
             NQAVGETM=NQELATM/NQCALL

Queue Task Statistics:

o TAAGN    - MQGET Calls (see note)
o TAAGETB  - Bytes Got (see note)
o TAAGCTM  - CPU Time Used MQGET Calls
o TAAAVGCT - Avg MQGET CPU Time All Queues
o TAAGETM  - Elapsed Time MQGET Calls
o TAAAVGTM - Avg MQGET Time All Queues
o TAAGPSN  - Page Set Reads (see note)
o TAAGSUS  - Times Suspended MQGET (see note)
o TAAGJWN  - Journal (Log) Write Calls MQGET (see note)
o TAAGJWTM - Wait Time Journal (Log) Write MQGET
o AVGGJTM  - Average Wait Time Journal (Log) Write Calls
             MQGET computed:  AVGGJTM=TAAGJWTM/TAAGJWN
o TAAPN    - MQPUT Calls (see note)
o TAAPUTB  - Bytes Put (see note)
o TAAPCTM  - CPU Time Used MQPUT Calls
o TAAAVPCT - Avg MQPUT CPU Time All Queues
o TAAPETM  - Total Elapsed Time MQPUT Calls
o TAAAVPTM - Avg MQPUT Time All Queues
o TAAPPSN  - Page Set Put Calls (see note)
o TAAPSUS  - Times Suspended MQPUT (see note)
o TAAPJWN  - Journal (Log) Write Calls MQPUT (see note)
o TAAPJWTM - Wait Time Journal (Log) Write MQPUT
o AVGPJTM  - Average Wait Time Journal (Log) Write Calls
             MQPUT computed:  AVGPJTM=TAAPJWTM/TAAPJWN
o TAAP1N   - MQPUT1 Calls (see note)
o PUT1BC   - Bytes Put1 computed from Bytes Put (TAAPUTB)
```

```
             (see note)
o TAAP1CTM - CPU Time Used MQPUT1 Calls
o TAAAV1CT - Avg MQPUT1 CPU Time All Queues
o TAAP1ETM - Total Elapsed Time MQPUT1 Calls
o TAAAV1TM - Avg MQPUT1 Time All Queues
o TAAP1PSN - Page Set MQPUT1 Calls (see note)
o TAAP1SUS - Times Suspended MQPUT1 (see note)
o TAAP1JWN - Journal (Log) Write Calls MQPUT1 (see note)
o TAAP1JTM - Wait Time Journal (Log) Write MQPUT1
o AVGP1JTM - Average Wait Time Journal (Log) Write Calls
             MQPUT1 computed:  AVGP1JTM=TAAP1JTM/TAAP1JWN
o TAAON    - MQOPEN Calls (see note)
o TAAOCTM  - Total CPU Time Used MQOPEN Calls
o TAAAVOCT - Avg MQOPEN CPU Time All Queues
o TAAOETM  - Total Elapsed Time MQOPEN
o TAAAVOTM - Avg MQOPEN Time All Queues
o TAACN    - MQCLOSE Calls (see note)
o TAACCTM  - Total CPU Time Used MQCLOSE
o TAAAVCCT - Avg MQCLOSE CPU Time All Queues
o TAACETM  - Total Elapsed Time MQCLOSE
o TAAAVCTM - Avg MQCLOSE Time All Queues
o TAASN    - MQSET Calls (see note)
o TAASCTM  - CPU Time Used MQSET Calls
o TAAAVSCT - Avg MQSET CPU Time All Queues
o TAASETM  - Total Elapsed Time MQSET Calls
o TAAAVSTM - Avg MQSET Time All Queues
o TAASJWN  - Journal (Log) Write Calls MQSET (see note)
o TAASJWTM - Wait Time Journal (Log) Write MQSET
o AVGSJTM  - Average Wait Time Journal (Log) Write Calls
             MQSET computed:  AVGSJTM=TAASJWTM/TAASJWN
o TAAIN    - MQINQ Calls (see note)
o TAAICTM  - CPU Time Used MQINQ
o TAAAVICT - Avg MQINQ CPU Time All Queues
o TAAIETM  - Total Elapsed Time MQINQ Calls
o TAAAVITM - Avg MQINQ Time All Queues
o QCALL    - Total Calls computed:
             QCALL=SUM(TAAGN,TAAPN,TAAP1N,TAAON,TAACN,
             TAASN,TAAIN) (see note)
o QBYTE    - Total Bytes computed:
             QBYTE=SUM(TAAGETB,TAAPUTB,PUT1BC) (see note)
o TAAQCPTM - Total Queue CPU Time
o QAVCPUTM - Total Average CPU Time computed:
             QAVCPUTM=TAAQCPTM/QCALL
o QELATM   - Total Elapsed Time computed:
             QELATM=SUM(TAAGETM,TAAPETM,TAAP1ETM,TAAOETM,
             TAACETM,TAASETM,TAAIETM)
o QAVELATM - Total Average Elapsed Time computed:
             QAVELATM=QELATM/QCALL
o QPSET    - Total Page Set Access computed:
```

```
                QPSET=SUM(TAAGPSN,TAAPPSN,TAAP1PSN) (see note)
  o QSUSCNT  - Total Call Suspend Count computed:
                QSUSCNT=SUM(TAAGSUS,TAAPSUS,TAAP1SUS)
                (see note)
  o QLOG     - Total Log Write Calls computed:
                QLOG=SUM(TAAGJWN,TAAPJWN,TAAP1JWN,TAASJWN)
                (see note)
  o QLOGETM  - Total Log Wait Elapsed Time computed:
                QLOGETM=SUM(TAAGJWTM,TAAPJWTM,TAAP1JTM,
                TAASJWTM)
  o QAVLOGTM - Total Average Log Wait Time computed:
                QAVLOGTM=QLOGETM/QLOG

NOTE:  Field values between 999,999 and 99,999,999 are
divided by 1,000 and the character 'k' is added to the end.
Field values between 1,000,000 and 99,999,999,999 are divided
by 1,000,000 and the character 'm' is added to the end.

  To produce the report:

  o Enter the CA MICS Workstation Facility (MWF).

  o Choose option 2, CA MICS Information Center Facility
    (MICF).

  o Choose option 2, Database Inquiries.

  o Select MQSSL4, whose Catalog Group is PERFORM.

  o Complete the MICF Execution panel.

  o Complete the specification panel illustrated below.
    (Descriptions of the fields follow the panel.)
```

The result displays on your terminal. An example report is shown at the end of this section.

```
+-------------------------------------------------------------------------+
|------------------  MQSeries Task Accounting Report -----------------|
| Command ===>                                                            |
|                                                                         |
| Composing Inquiry:  MQSSL4 -  MQS Task Accounting                       |
| Database ===> ____________________________________________              |
| Cycle(s) ===> __ - __                                                   |
| Timespan ===> ______  (DETAIL/DAYS/WEEKS/MONTHS)                        |
| Report by hour if timespan is DAYS or WEEKS  ===> _ (Y/N)               |
| Generate a report for each value of Zone     ===> _ (Y/N)               |
| Data Selection:                                                         |
|                      dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy      |
|   Date Ranges  ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __      |
|   Hour         ===> __ - __    __ - __    __ - __                      |
|   Zone         ===> _ _ _ _ _ _ _ _ _                                   |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                       |
|   Queue Manager Name (MQMSSI)  ===> ____ ____ ____ ____ ____ ____       |
|   Type Of Connection (MQSATYP) 1=CICS, 6=Channel Init, etc.             |
|   (Separate by commas) example: 1,2,6  ===> _______________             |
|   Optional Summarization Key  ===> _________                            |
|                                                                         |
+-------------------------------------------------------------------------+
```

Database - Required. No default. Specify up to six database unit IDs (the IDs of the CA MICS database units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one database unit, this parameter is set automatically. To display a selection list of valid database unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified timespan of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (for example, 7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Timespan - Required. Default varies by report. The timespan of the CA MICS database from which the primary input files are selected. Required input files must be available at the specified timespan.

Plot by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly, DAILY, or WEEKLY level. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week and a single report listing all days or weeks is produced.

Generate a report for each value of zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Date Ranges - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

Queue Manager Name (MQMSSI) - Optional. No default. 1-4 character value identifying the name of the Queue Manager (MQMSSI). Specify up to six Queue Manager Names. An input observation is selected if its identifier is equal to any of the specified values.

Type Of Connection (MQSATYP) - Optional. No default. Comma separated list of Type of Connection (MQSATYP) codes. The input data file is compared to the list of Type of Connection codes. Reporting is restricted to the Type of Connection codes in the list. If no list is specified, all Type of Connections in the input data are reported on. The list does not need to be in any specific order. Do not insert blanks. Do not use leading zeros. The list must be entered as shown in the example: one-digit numbers separated by commas.

Optional Summarization Key - Optional. No default. 1-8 character data element name. The Task Accounting Report will be summarized by the data element that is specified. It is restricted to the data elements in the Task Accounting File (MQATAA).

```
                                    T A S K   A C C O U N T I N G   R E P O R T
                                                                                                                        Page 001
  Report: Task Accounting Summarized by Hour Within Week
  System ID: XE44   Queue Manager: CSQ5
-----------------------------------------------------------------------------------------------------------------------------------

 Tasks:                        2      Optional Summary Key TAACHNL:  CSQ5.TO.CTS9                  Week:  48       Hour: 14
 Total CPU Time:       0:00:01.02      Connection Type: Chan Init                                   Start: ddmmmyy:14:53:55.71
 Avg CPU Time:            0.51132                                                                     End: ddmmmyy:14:54:23.85
 Task Execution Time:  0:00:43.06
 Avg Execution Time:  0:00:21.531
 Tasks Suspended:            3000
 Total Suspend Time:   0:00:09.81

    -----------------------------------------------------------------------------------------------------------------------
                                            NON-QUEUE TASK STATISTICS
    -----------------------------------------------------------------------------------------------------------------------
                                           Avg                  Avg
  Call                          CPU        CPU       Elapsed    Elapsed
  Type      Calls               Time       Time       Time       Time
 -------   ------           -----------  --------  -----------  --------
 Commit      3000            0:00:00.14   0.00005   0:00:09.94   0.00331
 Backout        0            0:00:00.00   0.00000   0:00:00.00   0.00000
 Other          0            0:00:00.00   0.00000   0:00:00.00   0.00000
           ------           -----------  --------  -----------  --------

 Totals      3000            0:00:00.14   0.06956   0:00:09.94   0.00331


    -----------------------------------------------------------------------------------------------------------------------
                                               QUEUE TASK STATISTICS
    -----------------------------------------------------------------------------------------------------------------------
                                           Avg                  Avg      Page      Call      Log     Log Wait     Avg Log
  Call                         CPU         CPU       Elapsed    Elapsed    Set     Suspend    Write    Elapsed       Wait
  Type     Calls    Bytes      Time        Time       Time       Time     Access    Count     Calls      Time        Time
  ------   ------   ------  -----------  --------  -----------  --------  -------  -------   ------  -----------  --------
  GET       4001    2000k   0:00:00.34   0.00009   0:00:03.20   0.00080        0     1001     2000   0:00:05.50   0.00275
  PUT       1000    2000k   0:00:00.14   0.00014   0:00:00.16   0.00016        0        3        0   0:00:00.00   0.00000
  PUT1      1000        0   0:00:00.21   0.00021   0:00:00.22   0.00022        0        0        0   0:00:00.00   0.00000
  OPEN      2001        -   0:00:00.14   0.00007   0:00:00.15   0.00007        -        -        -            -         -
  CLOSE     2000        -   0:00:00.04   0.00002   0:00:00.05   0.00002        -        -        -            -         -
  SET          0        -   0:00:00.00   0.00000   0:00:00.00   0.00000        -        -        0   0:00:00.00   0.00000
  INQ          0        -   0:00:00.00   0.00000   0:00:00.00   0.00000        -        -        -            -         -
          ------   ------  -----------  --------  -----------  --------  -------  -------   ------  -----------  --------

  Totals   10002    4000k   0:00:00.88   0.00009   0:00:03.77   0. 00038       0     1004     2000   0:00:05.50   0.00275
```

3.1.10 Message Broker Message Flow File Inquiry

The CA MICS MQSeries Analyzer provides the following inquiry that reports on data:

1 - Message Flow Summary Report (MQSSL6)

3.1.10.1 Message Flow Summary Report (MQSSL6)

```
The CA MICS Message Flow Summary Report uses measurements
from the Message Flow File (MQBMFA) to display relevant
metrics to analyze message flow processing within execution
group over the date and/or time ranges you select.

The following CA MICS MQSeries Analyzer elements will be
selected:

KEY ELEMENTS:

o SYSID    - System Identifier
o MQBBKNM  - Broker Name
o MQBEXNM  - Execution Group Name
o MQBMSGNM - Message Flow Name
o HOUR     - Hour Of Day

DATA ELEMENTS:

o MFAMSGN  - Total Messages
o MFAMSGS  - Total Bytes (see note)
o MFACTM   - Total CPU Time
o MFAAVCTM - Average CPU Time
o MFAETM   - Total Elapsed Time
o MFAAVETM - Average Elapsed Time
o MFAWCTM  - Total Wait CPU Time
o MFAAVWTM - Average Wait CPU Time

NOTE:  Field values between 999,999 and 99,999,999 are
divided by 1,000 and the character 'k' is added to the end.
Field values between 1,000,000 and 99,999,999,999 are divided
by 1,000,000 and the character 'm' is added to the end.  For
the Total Bytes field, field values greater than
99,999,999,999 are divided by 1,000,000,000 and the character
'g' is added to the end.
```

To produce the report:

- Enter the CA MICS Workstation Facility (MWF).
- Choose option 2, CA MICS Information Center Facility (MICF).
- Choose option 2, Database Inquiries.
- Select MQSSL6, whose Catalog Group is PERFORM.
- Complete the MICF Execution panel.
- Complete the specification panel illustrated below. (Descriptions of the fields follow the panel.)

The result displays on your terminal. An example report is shown at the end of this section.

```
+-------------------------------------------------------------------------+
|------------------  Message Flow Summary Report  --------------------|
| Command ===>                                                            |
|                                                                         |
| Composing Inquiry:  MQSSL6 - Message Flow Summary                       |
| Database ===> ____________________________________________              |
| Cycle(s) ===> __ - __                                                   |
| Timespan ===> _______ (DAYS/WEEKS/MONTHS)                               |
| Report by hour if timespan is DAYS or WEEKS  ===> _ (Y/N)               |
| Generate a report for each value of Zone     ===> _ (Y/N)               |
| Data Selection:                                                         |
|                     dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy       |
|   Date Ranges  ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __       |
|   Hour         ===> __ - __    __ - __    __ - __                      |
|   Zone         ===> _ _ _ _ _ _ _ _ _                                   |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                       |
|                                                                         |
|   Broker Name (MQBBKNM) (Asterisk '*' as last character for             |
|   wildcard)  ===> ________________________________________________      |
|   Execution Group (MQBEXNM) (Asterisk '*' as last character for         |
|   wildcard)  ===> ________________________________________________      |
|                                                                         |
+-------------------------------------------------------------------------+
```

Database - Required. No default. Specify up to six database unit IDs (the IDs of the CA MICS database units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one database unit, this parameter is set automatically. To display a selection list of valid database unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified timespan of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (for example, 7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Timespan - Required. Default varies by report. The timespan of the CA MICS database from which the primary input files are selected. Required input files must be available at the specified timespan.

Plot by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly, DAILY, or WEEKLY level. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week and a single report listing all days or weeks is produced.

Generate a report for each value of zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Date Ranges - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified values.

Broker Name (MQBBKNM) - Optional. No default. 1-32 character value identifying the name of the broker (MQBBKNM). You can specify an asterisk (*) as the last character for wildcard selection. Broker Name is case sensitive.

Execution Group Name (MQBEXNM) - Optional. No default. 1-32 character value identifying the name of the execution group(MQBEXNM). You can specify an asterisk (*) as the last character for wildcard selection.   Execution Group Name is case sensitive.

```
                                  M E S S A G E   F L O W   S U M M A R Y   R E P O R T
                                                                                                                        Page 001
  Report:    Message FLow Summarized by Day
  System ID: MV25   Queue Manager:        Broker Name:  VCP1BRK
-------------------------------------------------------------------------------------------------------------------------------------
 Execution Group:   IP13                                        Day: ddmmmyy

                                                         Total         Avg        Total         Avg       Total          Avg
                                 Total     Total          CPU          CPU       Elapsed      Elapsed    CPU Wait      CPU Wait
 Message Flow Name             Messages    Bytes         Time         Time        Time         Time        Time          Time
 ------------------------------  --------  --------  -----------  ----------  ----------  ----------  -----------  ----------
 CICSNODE                               0         0  0:00:00.00      0.00000  0:00:00.00     0.00000  0:00:00.00      0.00000
 DB2U                                   0         0  0:00:00.00      0.00000  0:00:00.00     0.00000  0:00:00.00      0.00000
 FANIN                                  0         0  0:00:00.00      0.00000  0:00:00.00     0.00000  0:00:00.00      0.00000
 FANOUT_plus_original_msg               0         0  0:00:00.00      0.00000  0:00:00.00     0.00000  0:00:00.00      0.00000
 ONE2ONE                             1000     4604k  0:00:00.16      0.00016  0:00:00.18     0.00018  0:00:00.14      0.00014
 PUBSUB                                 0         0  0:00:00.00      0.00000  0:00:00.00     0.00000  0:00:00.00      0.00000
 REQUEST_to_REPLY                       0         0  0:00:00.00      0.00000  0:00:00.00     0.00000  0:00:00.00      0.00000
 TOPUBSUB                               0         0  0:00:00.00      0.00000  0:00:00.00     0.00000  0:00:00.00      0.00000
 VSAMREAD                               0         0  0:00:00.00      0.00000  0:00:00.00     0.00000  0:00:00.00      0.00000
 XSLT                                   0         0  0:00:00.00      0.00000  0:00:00.00     0.00000  0:00:00.00      0.00000
```

3.1.11 Message Broker Message Flow Node File Inquiry

The CA MICS MQSeries Analyzer provides the following inquiry that reports on data:

1 - Message Flow Node Activity Report (MQSSL7)

3.1.11.1 Message Flow Node Activity Report (MQSSL7)

The CA MICS Message Flow Node Activity Report uses measurements from the Message Flow Node File (MQBMFN) to display relevant metrics to analyze the nodes (processing steps) within individual message flows by execution group and broker over the date and/or time ranges you select.

The following CA MICS MQSeries Analyzer elements will be selected:

KEY ELEMENTS:

- SYSID - System Identifier
- MQBBKNM - Broker Name
- MQBEXNM - Execution Group Name
- MQBMSGNM - Message Flow Name
- MFNNODNM - Node Name
- HOUR - Hour Of Day

DATA ELEMENTS:

- MFNNTYPE - Node Type
- MFNMSGN - Total Messages Processed by Node
- MFNITRMN - Input Terminals
- MFNOTRMN - Output Terminals
- MFNCTM - Node CPU Time Input Messages
- MFNAVCTM - Node Avg CPU Time Input Msgs
- MFNETM - Node Elapsed Time Input Messages
- MFNAVETM - Node Avg Elapsed Time Input Msgs

To produce the report:

- Enter the CA MICS Workstation Facility (MWF).
- Choose option 2, CA MICS Information Center Facility (MICF).
- Choose option 2, Database Inquiries.
- Select MQSSL7, whose Catalog Group is PERFORM.
- Complete the MICF Execution panel.
- Complete the specification panel illustrated below. (Descriptions of the fields follow the panel.)

The result displays on your terminal. An example report is shown at the end of this section.

```
+-------------------------------------------------------------------------+
|------------------  Message Flow Node Activity Report  ----------------|
| Command ===>                                                            |
|                                                                         |
| Composing Inquiry:  MQSSL7 -  Message Flow Node Activity                |
| Database ===> ____________________________________________              |
| Cycle(s) ===> __ - __                                                   |
| Timespan ===> _______ (DAYS/WEEKS/MONTHS)                               |
| Report by hour if timespan is DAYS or WEEKS  ===> _ (Y/N)               |
| Generate a report for each value of Zone     ===> _ (Y/N)               |
| Data Selection:                                                         |
|                     dd mmm yy   dd mmm yy   dd mmm yy   dd mmm yy       |
|   Date Ranges  ===> __ ___ __ - __ ___ __   __ ___ __ - __ ___ __       |
|   Hour         ===> __ - __    __ - __    __ - __                      |
|   Zone         ===> _ _ _ _ _ _ _ _ _                                   |
|   Sysid        ===> ____ ____ ____ ____ ____ ____                       |
|   Broker Name (MQBBKNM) (Asterisk '*' as last character for             |
|   wildcard)  ===> _________________________________                     |
|   Execution Group (MQBEXNM) (Asterisk '*' as last character for         |
|   wildcard)  ===> _________________________________                     |
|   Message Flow Name (MQBMSGNM) (Asterisk '*' as last character for      |
|   wildcard)  ===> _________________________________                     |
+-------------------------------------------------------------------------+
```

Database - Required. No default. Specify up to six database unit IDs (the IDs of the CA MICS database units from which files are read). Duplicates are not allowed. If CA MICS files exist in only one database unit, this parameter is set automatically. To display a selection list of valid database unit IDs, specify ? (question mark).

Cycle(s) - Required. Defaults to 01. This is the cycle or cycles of the specified timespan of the CA MICS files that are used as input to the analysis. Two data entry fields are provided so you can specify a range of cycles. The fields can contain any numeric value between 0 and 99. If you want only a single cycle (such as cycle 01), specify the selected cycle in the first entry field and leave the second field blank. Leading zeros are not required and are inserted automatically if you supply a single-digit number (for example, 7 becomes 07). If you specify a cycle range, you may specify it in either ascending or descending order (for example, 01-05 or 05-01).

Timespan - Required. Default varies by report. The timespan of the CA MICS database from which the primary input files

```
are selected.  Required input files must be available at
the specified timespan.
```

Plot by hour - Required. Defaults to Y. At the DAYS and WEEKS timespans, reports can be produced at an hourly, DAILY, or WEEKLY level. If you specify Y (Yes) to Report by hour, the data is summarized and displayed by hour and separate reports are produced for each day or week. If you specify N (No) to Report by hour, the data is summarized by day or week and a single report listing all days or weeks is produced.

Generate a report for each value of zone - Required. Defaults to Y. Specify Y (Yes) to generate reports for each zone. The nature and resource requirements of processing often change from one zone to another (for example, prime shift online demands versus production batch requirements at non-prime shift periods). Zone reporting gives you the ability to display separate reports for each observed zone. If you specify N (No), the data is summarized to the appropriate level and displayed on a single report.

Date Ranges - Optional. No default. Up to two date ranges in DD MMM YY format. The first value in each date range is the starting date and the last value is the ending date. The ending date must be higher than the starting date. The date ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid date range specification is specifying date range 1 as 01 JAN 95 - 31 DEC 95 and specifying date range 2 as 01 JAN 94 - 31 DEC 94. An input observation is selected if its date value is greater than or equal to the starting date and is less than or equal to the ending date of any specified date range.

Hour - Optional. No default. 0-23. Up to three hour ranges. The first value is the starting hour and the last value is the ending hour. The ending hour must be higher than the starting hour. The hour ranges should not overlap, but you can specify the higher range before the lower range. For example, a valid hour range specification is 18 - 23 and 09 - 17. An input observation is selected if its hour value is greater than or equal to the starting hour and is less than or equal to the ending hour of any specified hour range.

Zone - Optional. No default. 1-character zone value from 1 to 9. You can specify up to nine zone values. An input observation is selected if its zone value is equal to any of the specified values.

Sysid - Optional. No default. 1-4 character SYSID value. You can specify up to six SYSIDs. An input observation is selected if its SYSID value is equal to any of the specified

values.

Broker Name (MQBBKNM) - Optional. No default. 1-32 character value identifying the name of the broker (MQBBKNM). You can specify an asterisk (*) as the last character for wildcard selection. Broker Name is case sensitive.

Execution Group Name (MQBEXNM) - Optional. No default. 1-32 character value identifying the name of the execution group (MQBEXNM). You can specify an asterisk (*) as the last character for wildcard selection. Execution Group Name is case sensitive.

Message Flow Name (MQBMSGNM) - Optional. No default. 1-32 character value identifying the name of the message flow (MQBMSGNM). You can specify an asterisk (*) as the last character for wildcard selection. Message Flow Name is case sensitive.

```
                              M E S S A G E   F L O W   N O D E   A C T I V I T Y   R E P O R T
  Report:       Node Activity Summarized by Day                                                                                    Page 001
  System ID:    MV25    Queue Manager:
  Broker Name:  VCP1BRK
-------------------------------------------------------------------------------------------------------------------------------------------
   Execution Group Name:  IP13                                  Day:  ddmmmyy
   Message Flow Name:     PUBSUB                               Start:  ddmmmyy:09:26:23.98     End:  ddmmmyy:09:26:34.23

   Node Name:                                    Node Type:  MQeOutputNode

                                              Total          Avg                          Avg
      Total          Input       Output          CPU          CPU          Elapsed        Elapsed
     Messages      Terminals    Terminals        Time          Time          Time           Time
   -------------    ---------    ---------   -----------    -----------    -----------    -----------
         0               1            1     0:00:00.000    0:00:00.000    0:00:00.000    0:00:00.000
-------------------------------------------------------------------------------------------------------------------------------------------
   Execution Group Name:  IP13                                  Day:  ddmmmyy
   Message Flow Name:     DB2U                                 Start:  ddmmmyy:09:26:23.99     End:  ddmmmyy:09:26:34.23

   Node Name:  A failureNode                     Node Type:  MQOutputNode

                                              Total          Avg                          Avg
      Total          Input       Output          CPU          CPU          Elapsed        Elapsed
     Messages      Terminals    Terminals        Time          Time          Time           Time
   -------------    ---------    ---------   -----------    -----------    -----------    -----------
         0               1            2     0:00:00.000    0:00:00.000    0:00:00.000    0:00:00.000
-------------------------------------------------------------------------------------------------------------------------------------------
   Execution Group Name:  IP13                                  Day:  ddmmmyy
   Message Flow Name:     FANOUT_plus_original_msg             Start:  ddmmmyy:09:26:23.99     End:  ddmmmyy:09:26:34.23

   Node Name:  AggregateControl                  Node Type:  AggregateControlNode

                                              Total          Avg                          Avg
      Total          Input       Output          CPU          CPU          Elapsed        Elapsed
     Messages      Terminals    Terminals        Time          Time          Time           Time
   -------------    ---------    ---------   -----------    -----------    -----------    -----------
         0               1            2     0:00:00.000    0:00:00.000    0:00:00.000    0:00:00.000
-------------------------------------------------------------------------------------------------------------------------------------------
   Execution Group Name:  IP13                                  Day:  ddmmmyy
   Message Flow Name:     FANIN                                Start:  ddmmmyy:09:26:23.53     End:  ddmmmyy:09:26:34.23

   Node Name:  AggregateReply                    Node Type:  AggregateReplyNode

                                              Total          Avg                          Avg
      Total          Input       Output          CPU          CPU          Elapsed        Elapsed
     Messages      Terminals    Terminals        Time          Time          Time           Time
   -------------    ---------    ---------   -----------    -----------    -----------    -----------
         0               2            5     0:00:00.000    0:00:00.000    0:00:00.000    0:00:00.000
-------------------------------------------------------------------------------------------------------------------------------------------
```

Chapter 4: EXCEPTIONS

The CA MICS MQSeries Analyzer does not distribute exceptions.

Chapter 5: FILES

The CA MICS Analyzer for MQSeries divides its data logically into the Performance Information Area (MQS), the Accounting Information Area (MQA), and the Message Broker Information Area (MQB). Buffer Manager, Log Manager, Message Manager, Data Manager, DB2 Manager, and Coupling Facility comprise the Performance Information Area data files, the Message Manager Accounting, Task Accounting, and Queue Activity files are in the Accounting Information Area, and the Message Flow Accounting and Message Flow Node files are in the Message Broker Information Area. Figure 5-1 lists the product's files and the timespans that are activated for each file. The chart in Figure 5-2 describes the files supported by the CA MICS Analyzer for MQSeries and their data sources.

The table below identifies the individual database files and categorizes them by the information area to which they belong. For each file in an information area, the following data is provided:

XDWMYT - This entry defines the timespans in which the file is supported. A nonblank indicates that the file is supported. A period (.) indicates that the file is not supported. The timespans indicated by XDWMYT are as follows:

- X - DETAIL
- D - DAYS
- W - WEEKS
- M - MONTHS
- Y - YEARS
- T - TABLES AREA

File - The name used to access this file.

File Name - The descriptive label for the file.

Note: The timespans in which a file is supported are defined by each site when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your site.

```
+--------------------------------------+------------------+
| MQS Accounting                       | Date Generated:  |
| Information Area                     |Tue, May 12, 2009 |
+--------------------------------------+------------------+
|                                                         |
| XDWMYT  File    File Name                               |
|                                                         |
| XDWM..  MQAMMA  MESSAGE MANAGER ACCOUNTING FILE         |
| .DWM..  MQAQAA  QUEUE ACTIVITY FILE                     |
| .DWM..  MQATAA  TASK ACCOUNTING FILE                    |
+--------------------------------------+------------------+
| Message Broker                       | Date Generated:  |
| Information Area                     |Tue, May 12, 2009 |
+--------------------------------------+------------------+
|                                                         |
| XDWMYT  File    File Name                               |
|                                                         |
| XDWM..  MQBMFA  MESSAGE FLOW ACCOUNTING FILE            |
| XDWM..  MQBMFN  MESSAGE FLOW NODE FILE                  |
+--------------------------------------+------------------+
| MQS Performance                      | Date Generated:  |
| Information Area                     |Tue, May 12, 2009 |
+--------------------------------------+------------------+
|                                                         |
| XDWMYT  File    File Name                               |
|                                                         |
| X.....  MQS_MQ  MQS SUSPEND FILE                        |
| XDWM..  MQSBMS  BUFFER MANAGER STATISTICS FILE          |
| XDWM..  MQSCMS  COUPLING FACILITY STATISTICS FILE       |
| XDWM..  MQSDBS  DB2 MANAGER STATISTICS FILE             |
| XDWM..  MQSDMS  DATA MANAGER STATISTICS FILE            |
| XDWM..  MQSLMS  LOG MANAGER STATISTICS FILE             |
| XDWM..  MQSMMS  MESSAGE MANAGER STATISTICS FILE         |
|                                                         |
+---------------------------------------------------------+
```

Figure 5-1. Performance & Accounting Information Files

File	File Name	Description	Derivation
MQSBMS	Buffer Manager Statistics	Buffer pool management statistics	Type 115 (Subtype 2)
MQSLMS	Log Manager Statistics	Log management statistics	Type 115 (Subtype 1)
MQSMMS	Message Manager Statistics	Statistics on MQI calls for MQOPEN, MQCLOSE, MQGET, MQPUT, MQPUT1, MQINQ, MQSET, and Close Handle.	Type 115 (Subtype 2)
MQSDMS	Data Manager Statistics	MQS object management statistics on Puts, Creates, Deletes, Gets, Locates, and Stgclass changes of objects.	Type 115 (Subtype 2)
MQSCMS	Coupling Facility Statistics	Coupling Facility structure statistics on IXLLSTE and IXLLSTM calls and redrives.	Type 115 (Subtype 2)
MQSDBS	DB2 Manager Statistics	DB2 manager statistics in support of shared queues.	Type 115 (Subtype 2)
MQAMMA	Message Manager Accounting	Number of MQPUT and MQGET calls and the message lengths. The CPU time used and a thread cross reference.	Type 116 (Subtype 0)
MQATAA	Task Accounting	Task identification and task statistics on commit, backout, journal and logging, page sets, and CF manager calls and DB2 requests.	Type 116 (Subtype 1)
MQAQAA	Queue Activity	Queue statistics on MQOPEN, MQCLOSE, MQPUT, MQPUT1, MQGET, MQINQ, and MQSET calls.	Type 116 (Subtype 1,2)
MQBMFA	Message Flow Accounting	Message Broker statistics on message flow execution.	Type 117 (Subtype 1,2)
MQBMFN	Message Flow Node	Message Broker statistics on message flow execution at the node level.	Type 117 (Subtype 2)

Figure 5-2. Supported Files and their Data Sources

This chapter presents the CA MICS Analyzer for MQSeries data files as they are seen in the online database structure. The files can also be located offline in either audit or history archive files. The PIOM and the CA MICS Database Structure and Contents Guide discuss these other structures.

This section contains the following topics:

5.1 Data Element Naming Conventions

CA MICS data elements follow naming conventions that depend on whether they are standard or common data elements. Standard data elements use the first three characters of their name to identify the file in which they are defined. The following charts list the three-character prefixes with which the standard data element names begin and the files in which they are contained.

Performance Information Area (MQS)

File Name	File	Names Begin With
Buffer Manager Statistics	MQSBMS	BMS
Log Manager Statistics	MQSLMS	LMS
Data Manager Statistics	MQSDMS	DMS
Message Manager Statistics	MQSMMS	MMS
DB2 Manager Statistics	MQSDBS	DBS
Coupling Facility Statistics	MQSCMS	CMS

Accounting Information Area (MQA)

File Name	File	Names Begin With
Message Manager Accounting	MQAMMA	MMA
Task Accounting	MQATAA	TAA
Queue Activity	MQAQAA	QAA

Message Flow Information Area (MQB)

File Name	File	Names Begin With
Message Flow Accounting	MQBMFA	MFA
Message Flow Node	MQBMFN	MFN

Common data elements do not use a data element prefix. They have a common definition across database information areas or across files within an information area. You will find

common data elements listed under Sequence/Summary Data Elements and Common Data Elements in the Data Elements List sections that follow.

5.2 Performance Information Area (MQS) Files

This section identifies each file in the Performance Information Area and defines its levels of summarization and data sequencing. Also, it presents the list of available data elements for each file.

The files maintained in the Performance Information Area include:

1 - Buffer Manager Statistics File (MQSBMS)
2 - Data Manager Statistics File (MQSDMS)
3 - Message Manager Statistics File (MQSMMS)
4 - Log Manager Statistics File (MQSLMS)
5 - Coupling Facility Statistics File (MQSCMS)
6 - DB2 Manager Statistics File (MQSDBS)
7 - MQSeries Suspend File (MQS_MQ)

5.2.1 Buffer Manager Statistics File (MQSBMS)

The Buffer Manager Statistics File (MQSBMS) is derived from the Buffer Manager section of the SMF type 115 record (subtype 2). This section contains performance statistics data related to the WebSphere MQ Buffer Manager component. The Buffer Manager is the component of WebSphere MQ that handles the movement of data between DASD and virtual storage.

WebSphere MQ writes statistics to SMF for each buffer pool when statistics trace gathering has been requested. The records are cut based on a parameter set in WebSphere MQ.

The following sections describe the file's organization, list data elements maintained, and provide usage hints.

1 - MQSBMS File Organization
2 - MQSBMS Data Elements List
3 - MQSBMS Usage Considerations
4 - MQSBMS Retrieval Examples

5.2.1.1 MQSBMS File Organization

The table below identifies the sequence and summarization data elements for each time-span. N/A indicates that the file is not supported in a time-span. At the DETAIL level, data is sequenced but not summarized.

NOTE: The time-spans in which a file is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

Timespan	Level of Data Granularity				
DETAIL	SYSID	MQMSSI	BMSPOOL	YEAR	MONTH
	DAY	HOUR	ENDTS		
DAYS	SYSID	MQMSSI	BMSPOOL	YEAR	MONTH
	DAY	HOUR			
WEEKS	SYSID	MQMSSI	BMSPOOL	YEAR	WEEK
	ZONE	HOUR			
MONTHS	SYSID	MQMSSI	BMSPOOL	YEAR	MONTH
	ZONE				
YEARS	N/A				
TABLES	N/A				

Generation Date: Tue, May 12, 2009

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.
NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-3. MQSBMS Sort Sequence and Data Granularity

5.2.1.2 MQSBMS Elements List

The table below identifies data elements contained in this file. The entries for each data element are:

TIMESPAN: Defines the timespans in which the data element is supported. The timespans are indicated by the letters "XDWMYT" as follows:

X - DETAIL
D - DAYS
W - WEEKS
M - MONTHS
Y - YEARS
T - TABLES AREA
. - File is not supported

The timespan field also indicates Essential Elements with the letter E, if applicable.

DATA ELEMENT: The data element name.

DATA ELEMENT DESCRIPTION: The data element's long name.

The timespans in which a data element is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

GENERATION DATE: Tue, May 12, 2009

Note: Essential data elements are identified by an "E" under the Timespan asterisk (*) column.

Time-Span *	Data Element	Data Element Description (LABEL)

Sequence/Summary Data Elements

XDWM..E	BMSPOOL	- Buffer Pool ID
XD....E	DAY	- Day of Month
XDW...E	HOUR	- Hour of Day
XD.M..E	MONTH	- Month of Year
XDWM..E	MQMSSI	- Queue Manager Name
XDWM..E	SYSID	- System Identifier

```
 XDW...E  WEEK     - Week of Year
 XDWM..E  YEAR     - Year of Century
 XDWM..E  ZONE     - Time Zone
Common Data Elements

 XD....E  DAYNAME  - Name of Day of Week
 XDWM..E  DURATION - Recording Interval Time
 XDWM..E  ENDTS    - End Time Stamp
 XDWM..E  INTERVLS - Number of Recording Intervals
 XDWM..E  MICSVER  - CA MICS Version Number
 XDWM..E  STARTTS  - Start Time Stamp
Accumulated Data Elements

 XDWM..E  BMSCBS   - Available Buffers
 XDWM..E  BMSDMC   - Sync. Proc. Starts (Write Threshold)
 XDWM..E  BMSDWT   - Async. Write Processor Was Started
 XDWM..E  BMSGETN  - Page Get Calls For New or Empty Page
 XDWM..E  BMSGETP  - Page Get Calls For Current Page Content
 XDWM..E  BMSGETPB - Page Get Calls Found In Buffer
 XDWM..E  BMSIMW   - Sync. Page Write Operations
 XDWM..E  BMSNBUF  - Buffers In This Buffer Pool
 XDWM..E  BMSRIO   - Page Read DASD Operations
 XDWM..E  BMSSOS   - No. Of Times No Available Buf. Found
 XDWM..E  BMSSTL   - Page Get Calls Not Found In Buffer
 XDWM..E  BMSSTLA  - No. Of Times Hash Chain Changed
 XDWM..E  BMSSTW   - Page Updates
 XDWM..E  BMSTNGET - Page Get Calls Current and New/Empty
 XDWM..E  BMSTPW   - Pages Written To DASD
 XDWM..E  BMSWIO   - Page Write Operations
 XDWM..E  BMSWUO   - Page Write + Update Operations
Minimum Data Elements

 XDWM..E  BMSMNAVB - Minimum Number Of Available Buffers
 XDWM..E  BMSMNBUF - Minimum Buffers In Buffer Pool

Maximum Data Elements

 XDWM..E  BMSMXAVB - Maximum Number Of Available Buffers
 XDWM..E  BMSMXBUF - Maximum Buffers In Buffer Pool

Derived Data Elements

 XDWM..E  BMSAVAVB - Avg Number Of Available Buffers
 XDWM..E  BMSAVBUF - Avg Buffers In Buffer Pool
 XDWM..E  BMSPCNP  - Percent New or Empty Page Calls
 XDWM..E  BMSPCRIO - DASD Read Percent
 XDWM..E  BMSPCSTL - Page Call Not In Buffer Percent
 XDWM..E  BMSPCSTW - Page Update Percent
```

5.2.1.3 MQSBMS Usage Considerations

The MQSBMS file contains the data to effectively monitor and improve performance of the buffer pools and, in turn, enhances the overall performance of WebSphere MQ. To manage your buffer pools efficiently, you must consider the many factors that affect buffer pool I/O operations and also the statistics associated with the buffer pools. The goal is to maximize the amount of time pages spend in buffer pool memory, while allowing the system to function should system load put the buffer pool usage under stress.

Special considerations or techniques related to using the MQSBMS file are provided below.

To indicate a transaction pattern and page retrieval efficiency:

The ratio of BMSGETN to BMSGETP indicates the number of times an empty page, as opposed to a page that is not empty, has been requested. This value is an indication of a transaction pattern.

The ratio of BMSRIO to BMSGETP shows the efficiency of page retrieval within the buffer pool. If increasing the size of the buffer pool does not increase the page retrieval efficiency, it indicates that pages are not frequently accessed again. This implies a transaction pattern, where there is a long delay between messages being put and retrieved.

BMSSTL is a count of the number of times a page access call did not find the page already in the buffer pool. The lower the ratio of BMSSTL to (BMSGETP + BMSGETN) is, the higher the page retrieval efficiency. If increasing the size of the buffer pool does not increase the page retrieval efficiency, it indicates that there are long delays between puts and gets.

Indication of severe stress:

BMSSOS is the number of times that there were no buffers available for page get calls. If this value ever becomes nonzero, it is an indication that WebSphere MQ is under severe stress. If significantly increasing the buffer pool size does not make the value of BMSSOS zero, there may be I/O contention on the DASD page sets.

5.2.1.4 MQSBMS Retrieval Examples

This section presents typical MQSBMS retrieval examples.

1. Print the number of times that there were no buffers available for page get calls.

```
DATA;
SET &pMQSX..MQSBMS01;
PROC PRINT; VAR SYSID MQMSSI BMSSOS;
```

2. Print values for BMSGETN and BMSGETP and display the ratio between the two.

```
DATA;
SET &pMQSX..MQSBMS01;
BMSTNGET=BMSGETN/BMSGETP;
PROC PRINT; VAR SYSID MQMSSI BMSGETN BMSGETP BMSTNGET;
```

5.2.2 Data Manager Statistics File (MQSDMS)

The Data Manager Statistics File (MQSDMS) is derived from the Data Manager section of the SMF type 115 record (subtype 2). This section contains different counts of object calls related to the WebSphere MQ Data Manager component. The Data Manager component handles the links between messages and queues. The record is populated throughout a predetermined interval based on an interval parameter specified in WebSphere MQ. The record is then cut at the interval end.

The following sections describe the file organization, list data elements maintained, and provide usage hints.

1 - MQSDMS File Organization
2 - MQSDMS Data Elements List
3 - MQSDMS Usage Considerations
4 - MQSDMS Retrieval Examples

5.2.2.1 MQSDMS File Organization

The table below identifies the sequence and summarization data elements for each time-span. N/A indicates that the file is not supported in a time-span. At the DETAIL level, data is sequenced but not summarized.

NOTE: The time-spans in which a file is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

Timespan	Level of Data Granularity				
DETAIL	SYSID	MQMSSI	YEAR	MONTH	DAY
	HOUR	ENDTS			
DAYS	SYSID	MQMSSI	YEAR	MONTH	DAY
	HOUR				
WEEKS	SYSID	MQMSSI	YEAR	WEEK	ZONE
	HOUR				
MONTHS	SYSID	MQMSSI	YEAR	MONTH	ZONE
YEARS	N/A				
TABLES	N/A				

Generation Date: Tue, May 12, 2009

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.

NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-4. MQSDMS Sort Sequence and Data Granularity

5.2.2.2 MQSDMS Elements List

The table below identifies data elements contained in this file. The entries for each data element are:

TIMESPAN: Defines the timespans in which the data element is supported. The timespans are indicated by the letters "XDWMYT" as follows:

X - DETAIL
D - DAYS
W - WEEKS
M - MONTHS
Y - YEARS
T - TABLES AREA
. - File is not supported

The timespan field also indicates Essential Elements with the letter E, if applicable.

DATA ELEMENT: The data element name.

DATA ELEMENT DESCRIPTION: The data element's long name.

The timespans in which a data element is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

GENERATION DATE: Tue, May 12, 2009

Note: Essential data elements are identified by an "E" under the Timespan asterisk (*) column.

Time-Span *	Data Element	Data Element Description (LABEL)

Sequence/Summary Data Elements

XD....E	DAY	- Day of Month
XDW...E	HOUR	- Hour of Day
XD.M..E	MONTH	- Month of Year
XDWM..E	MQMSSI	- Queue Manager Name
XDWM..E	SYSID	- System Identifier
XDW...E	WEEK	- Week of Year

```
 XDWM..E  YEAR     - Year of Century
 XDWM..E  ZONE     - Time Zone

Common Data Elements

 XD....E  DAYNAME  - Name of Day of Week
 XDWM..E  DURATION - Recording Interval Time
 XDWM..E  ENDTS    - End Time Stamp
 XDWM..E  INTERVLS - Number of Recording Intervals
 XDWM..E  MICSVER  - CA MICS Version Number
 XDWM..E  STARTTS  - Start Time Stamp

Accumulated Data Elements

 XDWM..E  DMSALST  - Stgclass Change Calls
 XDWM..E  DMSDCRE  - Object_Create Calls
 XDWM..E  DMSDDEL  - Object_Delete Calls
 XDWM..E  DMSDGET  - Object_Get Calls
 XDWM..E  DMSDLOC  - Object_Locate Calls
 XDWM..E  DMSDPUT  - Object_Put Calls
 XDWM..E  DMSMGET  - Message Get Calls
 XDWM..E  DMSMPUT  - Message Put Calls

Derived Data Elements

 XDWM..E  DMSAVOBC - Average Number of Object_Create Calls
 XDWM..E  DMSAVOBD - Average Number of Object_Delete Calls
 XDWM..E  DMSAVOBG - Average Number of Object_Get Calls
 XDWM..E  DMSAVOBL - Average Number of Object_Locate Calls
 XDWM..E  DMSAVOBP - Average Number of Object_Put Calls
 XDWM..E  DMSAVOBS - Average Number Stgclass Change Calls
```

5.2.2.3 MQSDMS Usage Considerations

```
The MQSDMS file contains counts of different object calls.
This file gives you the ability to monitor the way in which
different WebSphere MQ subsystems manipulate objects.
```

5.2.2.4 MQSDMS Retrieval Examples

This section presents typical MQSDMS retrieval examples.

1. Print all the types of object calls and their values for a unique MVS subsystem ID and Queue Manager Name.

```
DATA;
SET &pMQSX..MQSDMS01;
PROC PRINT;
VAR SYSID MQMSSI DMSDCRE DMSDPUT DMSDDEL DMSDLOC DMSALST;
```

5.2.3 Message Manager Statistics File (MQSMMS)

The Message Manager Statistics File (MQSMMS) is derived from the Message Manager section of the SMF type 115 record (subtype 2). This section contains counts for the different MQI calls related to the WebSphere MQ Message Manager component. The Message Manager is the component of WebSphere MQ that processes all MQI calls. WebSphere MQ writes statistics to SMF for each Queue Manager Name. The record is populated throughout a predetermined interval based on an interval parameter specified in WebSphere MQ. The record is then cut at interval end.

The following sections describe the file's organization, list data elements maintained, and provide usage hints.

1 - MQSMMS File Organization
2 - MQSMMS Data Elements List
3 - MQSMMS Usage Considerations
4 - MQSMMS Retrieval Examples

5.2.3.1 MQSMMS File Organization

The table below identifies the sequence and summarization data elements for each time-span. N/A indicates that the file is not supported in a time-span. At the DETAIL level, data is sequenced but not summarized.

NOTE: The time-spans in which a file is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

Timespan	Level of Data Granularity
DETAIL	SYSID MQMSSI YEAR MONTH DAY HOUR ENDTS
DAYS	SYSID MQMSSI YEAR MONTH DAY HOUR
WEEKS	SYSID MQMSSI YEAR WEEK ZONE HOUR
MONTHS	SYSID MQMSSI YEAR MONTH ZONE
YEARS	N/A
TABLES	N/A

Generation Date: Tue, May 12, 2009

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.
NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-5. MQSMMS Sort Sequence and Data Granularity

5.2.3.2 MQSMMS Data Elements List

The table below identifies data elements contained in this file. The entries for each data element are:

TIMESPAN: Defines the timespans in which the data element is supported. The timespans are indicated by the letters "XDWMYT" as follows:

X - DETAIL
D - DAYS
W - WEEKS
M - MONTHS
Y - YEARS
T - TABLES AREA
. - File is not supported

The timespan field also indicates Essential Elements with the letter E, if applicable.

DATA ELEMENT: The data element name.

DATA ELEMENT DESCRIPTION: The data element's long name.

The timespans in which a data element is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

GENERATION DATE: Tue, May 12, 2009

Note: Essential data elements are identified by an "E" under the Timespan asterisk (*) column.

Time-Span *	Data Element	Data Element Description (LABEL)

Sequence/Summary Data Elements

XD....E	DAY	- Day of Month
XDW...E	HOUR	- Hour of Day
XD.M..E	MONTH	- Month of Year
XDWM..E	MQMSSI	- Queue Manager Name
XDWM..E	SYSID	- System Identifier
XDW...E	WEEK	- Week of Year

```
 XDWM..E  YEAR     - Year of Century
 XDWM..E  ZONE     - Time Zone

Common Data Elements

 XD....E  DAYNAME  - Name of Day of Week
 XDWM..E  DURATION - Recording Interval Time
 XDWM..E  ENDTS    - End Time Stamp
 XDWM..E  INTERVLS - Number of Recording Intervals
 XDWM..E  MICSVER  - CA MICS Version Number
 XDWM..E  STARTTS  - Start Time Stamp

Accumulated Data Elements

 XDWM..E  MMSCALH  - 'Close Handle' Calls
 XDWM..E  MMSCLOS  - MQCLOSE Calls
 XDWM..E  MMSGET   - MQGET Calls
 XDWM..E  MMSINQ   - MQINQ Calls
 XDWM..E  MMSOPEN  - MQOPEN Calls
 XDWM..E  MMSPUT   - MQPUT Calls
 XDWM..E  MMSPUT1  - MQPUT1 Calls
 XDWM..E  MMSSET   - MQSET Calls

Minimum Data Elements

 XDWM..E  MMSMNGET - Minimum MQGET Calls
 XDWM..E  MMSMNPUT - Minimum MQPUT Calls
 XDWM..E  MMSMNPU1 - Minimum MQPUT1 Calls

Maximum Data Elements

 XDWM..E  MMSMXGET - Maximum MQGET Calls
 XDWM..E  MMSMXPUT - Maximum MQPUT Calls
 XDWM..E  MMSMXPU1 - Maximum MQPUT1 Calls

Derived Data Elements

 XDWM..E  MMSAVCLH - Average Number 'Close Handle' Calls
 XDWM..E  MMSAVCLO - Average Number of MQCLOSE Calls
 XDWM..E  MMSAVGET - Average Number of MQGET Calls
 XDWM..E  MMSAVINQ - Average Number of MQINQ Calls
 XDWM..E  MMSAVOPN - Average Number of MQOPEN Calls
 XDWM..E  MMSAVPUT - Average Number of MQPUT Calls
 XDWM..E  MMSAVPU1 - Average Number of MQPUT1 Calls
 XDWM..E  MMSAVSET - Average Number of MQSET Calls
```

5.2.3.3 MQSMMS Usage Considerations

The MQSMMS file contains counts for all MQI calls processed by the Message Manager component. There are eight MQI calls tracked in this file. The MQI calls are MQOPEN, MQCLOSE, MQGET, MQPUT, MQPUT1, MQINQ, MQSET, and MQCALH.

The counts of the MQI calls described above give a general indication of the WebSphere MQ subsystem activity.

5.2.3.4 MQSMMS Retrieval Examples

This section presents typical MQSMMS retrieval examples.

1. Print the counts of MQI calls for a unique MQSeries subsystem ID.

```
DATA;
SET &pMQSX..MQSMMS01;
PROC PRINT;
VAR SYSID MQMSSI MMSOPEN MMSCLOS MMSGET MMSPUT MMSPUT1 MMSINQ
   MMSSET MMSCALH;
```

5.2.4 Log Manager Statistics File (MQSLMS)

The Log Manager Statistics File (MQSLMS) is derived from the Log Manager section of the SMF type 115 record (subtype 1). This section contains performance statistics data related to the WebSphere MQ Log Manager component. The Log Manager is the component of WebSphere MQ that manages the writing of log records, which are essential for maintaining the integrity of the system. The record is populated throughout a predetermined interval based on an interval parameter specified in WebSphere MQ. The record is then cut at the interval end.

The following sections describe the file's organization, list data elements maintained, and provide usage hints.

1 - MQSLMS File Organization
2 - MQSLMS Data Elements List
3 - MQSLMS Usage Considerations
4 - MQSLMS Retrieval Examples

5.2.4.1 MQSLMS File Organization

The table below identifies the sequence and summarization data elements for each timespan. N/A indicates that the file is not supported in a timespan. At the DETAIL level, data is sequenced but not summarized.

NOTE: The timespans in which a file is supported are defined by each data center when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your data center.

Timespan	Level of Data Granularity				
DETAIL	SYSID	MQMSSI	YEAR	MONTH	DAY
	HOUR	ENDTS			
DAYS	SYSID	MQMSSI	YEAR	MONTH	DAY
	HOUR				
WEEKS	SYSID	MQMSSI	YEAR	WEEK	ZONE
	HOUR				
MONTHS	SYSID	MQMSSI	YEAR	MONTH	ZONE
YEARS	N/A				
TABLES	N/A				

Generation Date: Tue, May 12, 2009

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.

NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-6. MQSLMS Sort Sequence and Data Granularity

5.2.4.2 MQSLMS Elements List

The table below identifies data elements contained in this file. The entries for each data element are:

TIMESPAN: Defines the timespans in which the data element is supported. The timespans are indicated by the letters "XDWMYT" as follows:

X - DETAIL
D - DAYS
W - WEEKS
M - MONTHS
Y - YEARS
T - TABLES AREA
. - File is not supported

The timespan field also indicates Essential Elements with the letter E, if applicable.

DATA ELEMENT: The data element name.

DATA ELEMENT DESCRIPTION: The data element's long name.

The timespans in which a data element is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

GENERATION DATE: Tue, May 12, 2009

Note: Essential data elements are identified by an "E" under the Timespan asterisk (*) column.

Time-Span *	Data Element	Data Element Description (LABEL)

Sequence/Summary Data Elements

XD....E	DAY	- Day of Month
XDW...E	HOUR	- Hour of Day
XD.M..E	MONTH	- Month of Year
XDWM..E	MQMSSI	- Queue Manager Name
XDWM..E	SYSID	- System Identifier
XDW...E	WEEK	- Week of Year

```
 XDWM..E  YEAR     - Year of Century
 XDWM..E  ZONE     - Time Zone

Common Data Elements

 XD....E  DAYNAME  - Name of Day of Week
 XDWM..E  DURATION - Recording Interval Time
 XDWM..E  ENDTS    - End Time Stamp
 XDWM..E  INTERVLS - Number of Recording Intervals
 XDWM..E  MICSVER  - CA MICS Version Number
 XDWM..E  STARTTS  - Start Time Stamp

Accumulated Data Elements

 XDWM..E  LMSALR   - Read Call Archive Log Data Set
 XDWM..E  LMSALW   - Write Call Archive Log Data Set
 XDWM..E  LMSBFFL  - Active Log Cntl. Intervals Created
 XDWM..E  LMSBFWR  - Calls Writing to Active Log Buf.
 XDWM..E  LMSBPAG  - Log-Write Buffer Page-In Count
 XDWM..E  LMSBSDS  - BSDS Access Calls
 XDWM..E  LMSCIOF  - CIs Off-Loaded to Archive
 XDWM..E  LMSCIWR  - Log Control Intervals (CIs) Written
 XDWM..E  LMSLAMA  - Look-Ahead Tape Vol Mount Attempts
 XDWM..E  LMSLAMS  - Look-Ahead Tape Vol Mounts
 XDWM..E  LMSLLCP  - Checkpoint Invoked Count
 XDWM..E  LMSLOGW  - Log Write I/O Calls
 XDWM..E  LMSLSUS  - Log Call Suspend Count
 XDWM..E  LMSRACT  - Read Log Call Active Log Data Set
 XDWM..E  LMSRARH  - Read Log Call Archive Log Data Set
 XDWM..E  LMSRBUF  - Read Log Call In-Storage Buffer
 XDWM..E  LMSSERW  - Dual Logging CI Serial Re-Write Calls
 XDWM..E  LMSTHRW  - Scheduled Log Write Calls
 XDWM..E  LMSTNLRR - Total Number of Log Read Calls
 XDWM..E  LMSTNLRW - Total Log Read and Log Write Calls
 XDWM..E  LMSTNLWR - Total Number of Log Write Calls
 XDWM..E  LMSWRF   - Write Call Count - Force
 XDWM..E  LMSWRNW  - Write Call Count - No Wait
 XDWM..E  LMSWRW   - Write Call Count - Wait
 XDWM..E  LMSWTB   - Wait Count For Unavailable Buffers
 XDWM..E  LMSWTL   - Read Log Call Delayed
 XDWM..E  LMSWUR   - Read Delayed Unavailable Resource

Derived Data Elements

 XDWM..E  LMSPCLRR - Log Read Percentage
 XDWM..E  LMSPCLWR - Log Write Percentage
 XDWM..E  LMSPCRAC - Percent Read Log Calls - Active Log
 XDWM..E  LMSPCRAR - Percent Read Log Calls - Archive Log
 XDWM..E  LMSPCRBU - Percent Read Log Calls - In-Storage
```

```
XDWM..E  LMSPCWRF - Percent Write Calls - Force
XDWM..E  LMSPCWRN - Percent Write Calls - No Wait
XDWM..E  LMSPCWRW - Percent Write Calls - Wait
XDWM..E  LMSPCWTL - Percent Read Log Calls Delayed
```

5.2.4.3 MQSLMS Usage Considerations

The MQSLMS file contains data to effectively manage the writing of log records, which are essential for maintaining the integrity of the system. It is especially important in situations involving a backout call, a need for recovery, or a system or media failure. The data contained in the Log Manager section consists of various counts of log statistics that can be used to examine problem symptoms.

Special considerations or techniques related to using the MQSLMS file are provided below.

Important calculations and indicators:

1. The total number of log write calls:

LMSTNLWR = LMSWRW + LMSWRNW + LMSWRF;

2. The total number of log read calls:

LMSTNLRR = LMSRBUF + LMSRACT + LMSRARH;

3. The total log read / log write calls:

LMSTNLRW = LMSTNLWR + LMSTNLRR;

4. The ratio between LMSTNLRR and LMSTNLWR indicates how much work has to be backed out.

Problem symptoms that may be examined:

1. LMSWTB is nonzero.

This is an indication that tasks are being suspended while the in-storage buffer is being written to the active log. There may be problems writing to the active log due to the possibility that the OUTBUFF parameter within WebSphere MQ (CSQ6LOGP) is too small.

2. The ratio: LMSRARH/LMSTNLRR is larger than normal.

Most log read calls should come from the output buffer or the active log. To satisfy calls for backout, unit-of-recovery records are read from the in-storage buffer, the active log, and the archived logs. A long running job unit of recovery,

extending over a period of many minutes, may have log records spread across several different logs. This degrades performance because extra work has to be done to recover the log records.

3. The ratio: LMSWTL/LMSTNLRR is greater than 1%.

This indicates that log reads were initiated that had to read from an archive log, but WebSphere MQ was not able to allocate a data set because MAXALLC data sets were already allocated.

5.2.4.4 MQSLMS Retrieval Examples

This section presents typical MQSLMS retrieval examples.

1. Print the total number of log read and write calls, along with the elements involved in the calculation of these elements.

```
DATA;
SET &pMQSX..MQSLMS01;
PROC PRINT;
VAR SYSID MQMSSI LMSTNLWR LMSTNLRR LMSWRW LMSWRNW
    LMSWRF LMSRBUF LMSRACT LMSRARH;
```

5.2.5 Coupling Facility Statistics File (MQSCMS)

The Coupling Facility Statistics File (MQSCMS) is derived from the Coupling Facility section of the SMF type 115 record (subtype 2). This section contains performance statistics data related to the WebSphere MQ Coupling Facility component and can contain up to 64 structures. Non-persistent messages are stored in the Coupling Facilities when shared queues are used. The Coupling Facility component of WebSphere MQ manages the interface with the Coupling Facility. The record is populated throughout a predetermined interval based on an interval parameter specified in WebSphere MQ. The record is then cut at the interval end.

The following sections describe the file's organization, list data elements maintained, and provide usage hints.

1 - MQSCMS File Organization
2 - MQSCMS Data Elements List
3 - MQSCMS Usage Considerations
4 - MQSCMS Retrieval Examples

5.2.5.1 MQSCMS File Organization

The table below identifies the sequence and summarization data elements for each timespan. N/A indicates that the file is not supported in a timespan. At the DETAIL level, data is sequenced but not summarized.

NOTE: The timespans in which a file is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

Timespan	Level of Data Granularity				
DETAIL	SYSID	CMSSTRNM	MQMSSI	YEAR	MONTH
	DAY	HOUR	ENDTS		
DAYS	SYSID	CMSSTRNM	MQMSSI	YEAR	MONTH
	DAY	HOUR			
WEEKS	SYSID	CMSSTRNM	MQMSSI	YEAR	WEEK
	HOUR	ZONE			
MONTHS	SYSID	CMSSTRNM	MQMSSI	YEAR	MONTH
	ZONE				
YEARS	N/A				
TABLES	N/A				

Generation Date: Tue, May 12, 2009

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.
NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-7. MQSCMS Sort Sequence and Data Granularity

5.2.5.2 MQSCMS Elements List

The table below identifies data elements contained in this
file. The entries for each data element are:

TIMESPAN: Defines the timespans in which the data element
is supported. The timespans are indicated by
the letters "XDWMYT" as follows:

X - DETAIL
D - DAYS
W - WEEKS
M - MONTHS
Y - YEARS
T - TABLES AREA
. - File is not supported

The timespan field also indicates Essential Elements with
the letter E, if applicable.

DATA ELEMENT: The data element name.

DATA ELEMENT DESCRIPTION: The data element's long name.

The timespans in which a data element is supported are
defined by each installation when CA MICS is installed.
Therefore, this table has been generated as part of the
installation process to accurately reflect the CA MICS
system at your installation.

GENERATION DATE: Tue, May 12, 2009

Note: Essential data elements are identified by an "E"
under the Timespan asterisk (*) column.

Time-Span *	Data Element	Data Element Description (LABEL)

Sequence/Summary Data Elements

XDWM..E CMSSTRNM - Structure Name
XD....E DAY   - Day of Month
XDW...E HOUR   - Hour of Day
XD.M..E MONTH   - Month of Year
XDWM..E MQMSSI   - Queue Manager Name

```
 XDWM..E  SYSID    - System Identifier
 XDW...E  WEEK     - Week of Year
 XDWM..E  YEAR     - Year of Century
 XDWM..E  ZONE     - Time Zone

Common Data Elements

 XD....E  DAYNAME  - Name of Day of Week
 XDWM..E  DURATION - Recording Interval Time
 XDWM..E  ENDTS    - End Time Stamp
 XDWM..E  INTERVLS - Number of Recording Intervals
 XDWM..E  MICSVER  - CA MICS Version Number
 XDWM..E  STARTTS  - Start Time Stamp

Retained Data Elements

 XDWM..E  CMSSTRNO - Structure Number

Accumulated Data Elements

 XDWM..E  CMSCMEC  - Mult Update Calls (IXLLSTM)
 XDWM..E  CMSCMTM  - Mult Update Call Time (IXLLSTM)
 XDWM..E  CMSCSEC  - Single Update Calls (IXLLSTE)
 XDWM..E  CMSCSTM  - Single Update Call Time (IXLLSTE)
 XDWM..E  CMSRMEC  - Mult Update Redrives (IXLLSTM)
 XDWM..E  CMSRSEC  - Single Update Redrives (IXLLSTE)
 XDWM..E  CMSSTFUL - Structure Full Count

Maximum Data Elements

 XDWM..E  CMSMXELE - Maximum Elements in Use
 XDWM..E  CMSMXENT - Maximum Entries in Use

Derived Data Elements

 XDWM..E  CMSAVMC  - Avg Multiple Calls (IXLLSTM)
 XDWM..E  CMSAVMR  - Avg Multiple Redrives (IXLLSTM)
 XDWM..E  CMSAVMTM - Avg Multiple Call Time (IXLLSTM)
 XDWM..E  CMSAVSC  - Avg Single Calls (IXLLSTE)
 XDWM..E  CMSAVSR  - Avg Single Redrives (IXLLSTE)
 XDWM..E  CMSAVSTM - Avg Single Call Time (IXLLSTE)
```

5.2.5.3 MQSCMS Usage Considerations

The MQSCMS file contains data to effectively manage the interface with the Coupling Facility. Messages are stored in the Coupling Facility when shared queues are used. The Coupling Facility is able to perform updates on multiple messages in one call. A call to update a single element is performed using the IXLLSTE call, and a call to update multiple elements is performed using the IXLLSTM call. Shared queue messages are non-persistent; therefore, they are not logged on the WebSphere MQ log. In the event of a Coupling Facility hardware or microcode failure, the shared queue messages are lost and cannot be retrieved.

Special considerations or techniques related to using the MQSCMS file are provided below.

If Structure Full Count (CMSSTFUL) is greater than zero, determine if this is due to a transient problem or an increasing trend. Based on this determination, you may want to increase the size of this structure.

5.2.5.4 MQSCMS Retrieval Examples

This section presents a typical MQSCMS retrieval example.

1. Print occurrences where Structure Full Count (CMSSTFUL) is greater than zero.

```
DATA;
SET &pMQSX..MQSCMS01;
IF CMSSTFUL GT 0;
PROC PRINT;
VAR SYSID MQMSSI CMSSTRNM CMSSTRNO CMSSTFUL CMSMXENT CMSMXELE
    CMSAVSC CMSAVSTM CMSAVSR CMSAVMC CMSAVMTM CMSAVMR;
```

5.2.6 DB2 Manager Statistics File (MQSDBS)

The DB2 Manager Statistics File (MQSDBS) is derived from the DB2 Manager section of the SMF type 115 record (subtype 2). This section contains measurements related to the WebSphere MQ DB2 Manager, which manages the interface with the DB2 database in support of shared queues, object definitions, and other information.

The following sections describe the file's organization, list data elements maintained, and provide usage hints.

1 - MQSDBS File Organization
2 - MQSDBS Data Elements List
3 - MQSDBS Usage Considerations
4 - MQSDBS Retrieval Examples

5.2.6.1 MQSDBS File Organization

The table below identifies the sequence and summarization data elements for each timespan. N/A indicates that the file is not supported in a timespan. At the DETAIL level, data is sequenced but not summarized.

NOTE: The timespans in which a file is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

Timespan	Level of Data Granularity				
DETAIL	SYSID	MQMSSI	YEAR	MONTH	DAY
	HOUR	ENDTS			
DAYS	SYSID	MQMSSI	YEAR	MONTH	DAY
	HOUR				
WEEKS	SYSID	MQMSSI	YEAR	WEEK	ZONE
	HOUR				
MONTHS	SYSID	MQMSSI	YEAR	MONTH	ZONE
YEARS	N/A				
TABLES	N/A				

Generation Date: Tue, May 12, 2009

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.
NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-8. MQSDBS Sort Sequence and Data Granularity

5.2.6.2 MQSDBS Elements List

The table below identifies data elements contained in this
file. The entries for each data element are:

TIMESPAN: Defines the timespans in which the data element
is supported. The timespans are indicated by
the letters "XDWMYT" as follows:

X - DETAIL
D - DAYS
W - WEEKS
M - MONTHS
Y - YEARS
T - TABLES AREA
. - File is not supported

The timespan field also indicates Essential Elements with
the letter E, if applicable.

DATA ELEMENT: The data element name.

DATA ELEMENT DESCRIPTION: The data element's long name.

The timespans in which a data element is supported are
defined by each installation when CA MICS is installed.
Therefore, this table has been generated as part of the
installation process to accurately reflect the CA MICS
system at your installation.

GENERATION DATE: Tue, May 12, 2009

Note: Essential data elements are identified by an "E"
under the Timespan asterisk (*) column.

Time-Span *	Data Element	Data Element Description (LABEL)

Sequence/Summary Data Elements

XD....E	DAY	- Day of Month
XDW...E	HOUR	- Hour of Day
XD.M..E	MONTH	- Month of Year
XDWM..E	MQMSSI	- Queue Manager Name
XDWM..E	SYSID	- System Identifier

```
 XDW...E  WEEK     - Week of Year
 XDWM..E  YEAR     - Year of Century
 XDWM..E  ZONE     - Time Zone

Common Data Elements

 XD....E  DAYNAME  - Name of Day of Week
 XDWM..E  DURATION - Recording Interval Time
 XDWM..E  ENDTS    - End Time Stamp
 XDWM..E  INTERVLS - Number of Recording Intervals
 XDWM..E  MICSVER  - CA MICS Version Number
 XDWM..E  STARTTS  - Start Time Stamp

Accumulated Data Elements

 XDWM..E  DBSABEND - Total DB2SRV Task Abends
 XDWM..E  DBSATASK - Total Active Server Tasks
 XDWM..E  DBSBDEL  - Total BLOB Delete Requests
 XDWM..E  DBSBDTM  - Total BLOB Delete Time
 XDWM..E  DBSBINS  - Total BLOB Insert Requests
 XDWM..E  DBSBLIST - Total BLOB List Requests
 XDWM..E  DBSBLTM  - Total BLOB List Time
 XDWM..E  DBSBREAD - Total BLOB Read Requests
 XDWM..E  DBSBRTM  - Total BLOB Read Time
 XDWM..E  DBSBSDTM - SQL BLOB Delete Time
 XDWM..E  DBSBSLTM - SQL BLOB List Time
 XDWM..E  DBSBSRTM - SQL BLOB Read Time
 XDWM..E  DBSBSUTM - SQL BLOB Update Time
 XDWM..E  DBSBSWTM - SQL BLOB Write Time
 XDWM..E  DBSBTDTM - Thread BLOB Delete Time
 XDWM..E  DBSBTLTM - Thread BLOB List Time
 XDWM..E  DBSBTRTM - Thread BLOB Read Time
 XDWM..E  DBSBTUTM - Thread BLOB Update Time
 XDWM..E  DBSBTWTM - Thread BLOB Write Time
 XDWM..E  DBSBUPD  - Total BLOB Update Requests
 XDWM..E  DBSBUTM  - Total BLOB Update Time
 XDWM..E  DBSBWTM  - Total BLOB Write Time
 XDWM..E  DBSCBUF  - SCST Buffer Too Small Count
 XDWM..E  DBSCDEL  - Total SCST Deletes
 XDWM..E  DBSCDTM  - Total SCST Delete Time
 XDWM..E  DBSCINS  - Total SCST Inserts
 XDWM..E  DBSCITM  - Total SCST Insert Time
 XDWM..E  DBSCONN  - Total Connect Requests
 XDWM..E  DBSCSDTM - SCST SQL Delete Time
 XDWM..E  DBSCSEL  - Total SCST Selects
 XDWM..E  DBSCSITM - SCST SQL Insert Time
 XDWM..E  DBSCSSTM - SCST SQL Select Time
 XDWM..E  DBSCSTM  - Total SCST Select Time
 XDWM..E  DBSCSUTM - SCST SQL Update Time
```

```
 XDWM..E  DBSCTDTM - SCST Thread Delete Time
 XDWM..E  DBSCTITM - SCST Thread Insert Time
 XDWM..E  DBSCTSTM - SCST Thread Select Time
 XDWM..E  DBSCTUTM - SCST Thread Update Time
 XDWM..E  DBSCUPD  - Total SCST Updates
 XDWM..E  DBSCUTM  - Total SCST Update Time
 XDWM..E  DBSDCONN - Total Disconnect Requests
 XDWM..E  DBSDEAD  - Total Deadlock Timeouts
 XDWM..E  DBSDEL   - Total Delete Requests
 XDWM..E  DBSDTM   - Total Delete Time
 XDWM..E  DBSKDEL  - Total SSKT Deletes
 XDWM..E  DBSKDTM  - Total SSKT Delete Time
 XDWM..E  DBSKINS  - Total SSKT Inserts
 XDWM..E  DBSKITM  - Total SSKT Insert Time
 XDWM..E  DBSKSDTM - SSKT SQL Delete Time
 XDWM..E  DBSKSEL  - Total SSKT Selects
 XDWM..E  DBSKSITM - SSKT SQL Insert Time
 XDWM..E  DBSKSSTM - SSKT SQL Select Time
 XDWM..E  DBSKSTM  - Total SSKT Select Time
 XDWM..E  DBSKTDTM - SSKT Thread Delete Time
 XDWM..E  DBSKTITM - SSKT Thread Insert Time
 XDWM..E  DBSKTSTM - SSKT Thread Select Time
 XDWM..E  DBSLIST  - Total List Requests
 XDWM..E  DBSLTM   - Total List Time
 XDWM..E  DBSREAD  - Total Read Requests
 XDWM..E  DBSREQUE - Total Requests Requeued
 XDWM..E  DBSRTM   - Total Read Time
 XDWM..E  DBSSDTM  - SQL Delete Time
 XDWM..E  DBSSLTM  - SQL List Time
 XDWM..E  DBSSRTM  - SQL Read Time
 XDWM..E  DBSSUTM  - SQL Update Time
 XDWM..E  DBSSWTM  - SQL Write Time
 XDWM..E  DBSTASK  - Total Server Tasks
 XDWM..E  DBSTDTM  - Thread Delete Time
 XDWM..E  DBSTLTM  - Thread List Time
 XDWM..E  DBSTRTM  - Thread Read Time
 XDWM..E  DBSTUTM  - Thread Update Time
 XDWM..E  DBSTWTM  - Thread Write Time
 XDWM..E  DBSUPD   - Total Update Requests
 XDWM..E  DBSUTM   - Total Update Time
 XDWM..E  DBSWRITE - Total Write Requests
 XDWM..E  DBSWTM   - Total Write Time

Maximum Data Elements

 XDWM..E  DBSMXBSD - Maximum SQL BLOB Delete Time
 XDWM..E  DBSMXBSL - Maximum SQL BLOB List Time
 XDWM..E  DBSMXBSR - Maximum SQL BLOB Read Time
 XDWM..E  DBSMXBSU - Maximum SQL BLOB Update Time
```

```
 XDWM..E  DBSMXBSW - Maximum SQL BLOB Write Time
 XDWM..E  DBSMXBTD - Maximum Thread BLOB Delete Time
 XDWM..E  DBSMXBTL - Maximum Thread BLOB List Time
 XDWM..E  DBSMXBTR - Maximum Thread BLOB Read Time
 XDWM..E  DBSMXBTU - Maximum Thread BLOB Update Time
 XDWM..E  DBSMXBTW - Maximum Thread BLOB Write Time
 XDWM..E  DBSMXCR  - Maximum SCST Rows on Query
 XDWM..E  DBSMXCSD - Maximum SCST SQL Delete Time
 XDWM..E  DBSMXCSI - Maximum SCST SQL Insert Time
 XDWM..E  DBSMXCSS - Maximum SCST SQL Select Time
 XDWM..E  DBSMXCSU - Maximum SCST SQL Update Time
 XDWM..E  DBSMXCTD - Maximum SCST Thread Delete Time
 XDWM..E  DBSMXCTI - Maximum SCST Thread Insert Time
 XDWM..E  DBSMXCTS - Maximum SCST Thread Select Time
 XDWM..E  DBSMXCTU - Maximum SCST Thread Update Time
 XDWM..E  DBSMXKSD - Maximum SSKT SQL Delete Time
 XDWM..E  DBSMXKSI - Maximum SSKT SQL Insert Time
 XDWM..E  DBSMXKSS - Maximum SSKT SQL Select Time
 XDWM..E  DBSMXKTD - Maximum SSKT Thread Delete Time
 XDWM..E  DBSMXKTI - Maximum SSKT Thread Insert Time
 XDWM..E  DBSMXKTS - Maximum SSKT Thread Select Time
 XDWM..E  DBSMXRQD - Maximum Request Queue Depth
 XDWM..E  DBSMXSDT - Maximum SQL Delete Time
 XDWM..E  DBSMXSLT - Maximum SQL List Time
 XDWM..E  DBSMXSRT - Maximum SQL Read Time
 XDWM..E  DBSMXSUT - Maximum SQL Update Time
 XDWM..E  DBSMXSWT - Maximum SQL Write Time
 XDWM..E  DBSMXTDT - Maximum Thread Delete Time
 XDWM..E  DBSMXTLT - Maximum Thread List Time
 XDWM..E  DBSMXTRT - Maximum Thread Read Time
 XDWM..E  DBSMXTUT - Maximum Thread Update Time
 XDWM..E  DBSMXTWT - Maximum Thread Write Time

Derived Data Elements

 XDWM..E  DBSAVBD  - Avg BLOB Delete Requests
 XDWM..E  DBSAVBDT - Avg BLOB Delete Time
 XDWM..E  DBSAVBI  - Avg BLOB Insert Requests
 XDWM..E  DBSAVBL  - Avg BLOB List Requests
 XDWM..E  DBSAVBLT - Avg BLOB List Time
 XDWM..E  DBSAVBR  - Avg BLOB Read Requests
 XDWM..E  DBSAVBRT - Avg BLOB Read Time
 XDWM..E  DBSAVBU  - Avg BLOB Update Requests
 XDWM..E  DBSAVBUT - Avg BLOB Update Time
 XDWM..E  DBSAVCD  - Avg SCST Delete Requests
 XDWM..E  DBSAVCDT - Avg SCST Delete Time
 XDWM..E  DBSAVCI  - Avg SCST Insert Requests
 XDWM..E  DBSAVCIT - Avg SCST Insert Time
 XDWM..E  DBSAVCS  - Avg SCST Select Requests
```

```
XDWM..E  DBSAVCST - Avg SCST Select Time
XDWM..E  DBSAVCU  - Avg SCST Update Requests
XDWM..E  DBSAVCUT - Avg SCST Update Time
XDWM..E  DBSAVD   - Avg Delete Requests
XDWM..E  DBSAVDTM - Avg Delete Time
XDWM..E  DBSAVKD  - Avg SSKT Delete Requests
XDWM..E  DBSAVKDT - Avg SSKT Delete Time
XDWM..E  DBSAVKI  - Avg SSKT Insert Requests
XDWM..E  DBSAVKIT - Avg SSKT Insert Time
XDWM..E  DBSAVKS  - Avg SSKT Select Requests
XDWM..E  DBSAVKST - Avg SSKT Select Time
XDWM..E  DBSAVL   - Avg List Requests
XDWM..E  DBSAVLTM - Avg List Time
XDWM..E  DBSAVR   - Avg Read Requests
XDWM..E  DBSAVRTM - Avg Read Time
XDWM..E  DBSAVU   - Avg Update Requests
XDWM..E  DBSAVUTM - Avg Update Time
XDWM..E  DBSAVW   - Avg Write Requests
XDWM..E  DBSAVWDT - Avg Wait Time - Delete
XDWM..E  DBSAVWLT - Avg Wait Time - List
XDWM..E  DBSAVWRT - Avg Wait Time - Read
XDWM..E  DBSAVWTM - Avg Write Time
XDWM..E  DBSAVWUT - Avg Wait Time - Update
XDWM..E  DBSAVWWT - Avg Wait Time - Write
```

5.2.6.3 MQSDBS Usage Considerations

The MQSDBS file contains statistics related to the WebSphere MQ DB2 manager, which manages the interface with the DB2 database. When shared queues are used, object definitions and other information are stored in DB2 tables.

Special considerations or techniques related to using the MQSDBS file are provided below.

The average time for server requests should be monitored. The typical response time for requests is between 5 and 10 milliseconds. If the average request time is greater than 5 to 10 milliseconds, then you should investigate the cause using the following data elements: DBSAVDTM, DBSAVLTM, DBSAVRTM, DBSAVUTM, DBSAVWTM.

The average difference between the wait time on the thread and the time on the server should be monitored using the following data elements: DBSAVWLT, DBSAVWRT, DBSAVWUT, DBSAVWDT. A response time greater than a millisecond indicates there was a delay before the server could process the request and that you should increase the number of server tasks.

DBSMXRQD contains the maximum number of requests queued waiting for a server. If this element's value is greater than ten, you may want to increase the number of servers.

5.2.6.4 MQSDBS Retrieval Examples

This section presents typical MQSDBS retrieval examples.

1. Print the total number of read, write, list, update, delete, connect, and disconnect requests by System Identifier and Queue Manager Name.

```
DATA;
SET &pMQSX..MQSDBS01;
PROC PRINT;
VAR DBSREAD DBSWRITE DBSLIST DBSUPD DBSDEL DBSCONN DBSDCONN;
BY SYSID MQMSSI;
```

5.2.7 MQSeries Suspend File (MQS_MQ)

FILENAME = MQS_MQ01

The MQS_MQ Suspend File maintains the last interval record produced by an MQS system. The suspend file records are used to obtain the true observation values of the first record processed during the next daily execution of CA MICS, only when the first record processed is not the first record produced by an MQS system.

The MQS_MQ File is a permanent file of the CA MICS MQSeries Analyzer. It is strictly for internal use and exists only at the DETAIL timespan.

5.3 Accounting Information Area (MQA) Files

This section identifies each file in the Accounting Information Area and defines its level of summarization and data sequencing as the file appears in the applicable timespan levels. Also, it presents the list of data elements contained in each file.

The files in the Accounting Information Area are:

1 - Message Manager Accounting File (MQAMMA)
2 - Task Accounting File (MQATAA)
3 - Queue Activity File (MQAQAA)

5.3.1 Message Manager Accounting File (MQAMMA)

The Message Manager Accounting file (MQAMMA) is derived from the SMF type 116 record (subtype 0). There are two self-defining sections, which make up the MQAMMA file. The QMAC section provides information about the CPU time spent processing WebSphere MQ calls and the number of MQPUT and MQGET calls for messages of different lengths. The QWHC section provides information about the user and the type of application associated with these calls. WebSphere MQ will cut an SMF type 116 accounting record each time an MQI call is issued (MQGET, MQPUT, MQCLOSE, etc.) or based on an interval parameter specified in WebSphere MQ.

The following sections describe the file's organization, list data elements maintained, and provide usage hints.

1 - MQAMMA File Organization
2 - MQAMMA Data Elements List
3 - MQAMMA Usage Considerations
4 - MQAMMA Retrieval Examples

5.3.1.1 MQAMMA File Organization

The table below identifies the sequence and summarization data elements for each timespan. N/A indicates that the file is not supported in a timespan. At the DETAIL level, data is sequenced but not summarized.

NOTE: The timespans in which a file is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

Timespan	Level of Data Granularity				
DETAIL	SYSID	MQMSSI	MQSACT1	MQSACT2	MQSACT3
	YEAR	MONTH	DAY	HOUR	ENDTS
DAYS	SYSID	MQMSSI	MQSACT1	MQSACT2	MQSACT3
	YEAR	MONTH	DAY	HOUR	
WEEKS	SYSID	MQMSSI	MQSACT1	MQSACT2	MQSACT3
	YEAR	WEEK	ZONE		
MONTHS	SYSID	MQMSSI	MQSACT1	MQSACT2	MQSACT3
	YEAR	MONTH	ZONE		
YEARS	N/A				
TABLES	N/A				

Generation Date: Tue, May 12, 2009

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.
NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-9. MQSMMA Sort Sequence and Data Granularity

5.3.1.2 MQAMMA Data Elements List

The table below identifies data elements contained in this
file. The entries for each data element are:

TIMESPAN: Defines the timespans in which the data element
is supported. The timespans are indicated by
the letters "XDWMYT" as follows:

X - DETAIL
D - DAYS
W - WEEKS
M - MONTHS
Y - YEARS
T - TABLES AREA
. - File is not supported

The timespan field also indicates Essential Elements with
the letter E, if applicable.

DATA ELEMENT: The data element name.

DATA ELEMENT DESCRIPTION: The data element's long name.

The timespans in which a data element is supported are
defined by each installation when CA MICS is installed.
Therefore, this table has been generated as part of the
installation process to accurately reflect the CA MICS
system at your installation.

GENERATION DATE: Tue, May 12, 2009

Note: Essential data elements are identified by an "E"
under the Timespan asterisk (*) column.

Time-Span *	Data Element	Data Element Description (LABEL)

Sequence/Summary Data Elements

XD.M..E	MONTH	- Month of Year
XDWM..E	MQMSSI	- Queue Manager Name
XDWM..E	MQSACT1	- CONNECTION TYPE
XDWM..E	MQSACT2	- CONNECTION NAME
XDWM..E	MQSACT3	- NAME

```
 XDWM..E  SYSID    - System Identifier
 XDW...E  WEEK     - Week of Year
 XDWM..E  YEAR     - Year of Century
 XDWM..E  ZONE     - Time Zone

Common Data Elements

 XDWM..E  DAY      - Day of Month
 XDWM..E  DAYNAME  - Name of Day of Week
 XDWM..E  ENDTS    - End Time Stamp
 XDWM..E  HOUR     - Hour of Day
 XDWM..E  INTERVLS - Number of Recording Intervals
 XDWM..E  MICSVER  - CA MICS Version Number
 XDWM..E  MQSATYP  - Type Of Connection
 XDWM..E  MQSCONNM - Connection Name
 X.....E  MQSCV    - Thread Cross Reference
 X.....E  MQSNETID - Network ID
 X.....E  MQSNETR  - Network ID Unit of Recovery
 X.....E  MQSOPID  - Transaction User ID
 X.....E  MQSPST   - IMS Partition Specification Table Id
 X.....E  MQSTASK  - CICS Task Number
 X.....E  MQSTNO   - CICS Thread Number
 X.....E  MQSTOKN  - Accounting Token
 X.....E  MQSUSID  - Job User ID
 X.....E  PSBNAME  - PSB Name
 X.....E  TRANCODE - CICS Transaction Code

Accumulated Data Elements

 XDWM..E  MMACOST  - Processing Charges
 XDWM..E  MMACPUNI - Job Instructions Executed
 XDWM..E  MMACPUTM - CPU Time Used
 XDWM..E  MMAGETA  - MQGET Calls For Messages 0-99 Bytes
 XDWM..E  MMAGETB  - MQGET Calls For Messages 100-999 Bytes
 XDWM..E  MMAGETC  - MQGET Calls For Messages 1000-9999
 XDWM..E  MMAGETD  - MQGET Calls For Messages >= 10000
 XDWM..E  MMAPUTA  - MQPUT Calls For Messages 0-99 Bytes
 XDWM..E  MMAPUTB  - MQPUT Calls For Messages 100-999 Bytes
 XDWM..E  MMAPUTC  - MQPUT Calls For Messages 1000-9999
 XDWM..E  MMAPUTD  - MQPUT Calls For Messages >= 10000
 XDWM..E  MMATMGET - Total Number of MQGET Messages
 XDWM..E  MMATMPUT - Total Number of MQPUT Messages
```

5.3.1.3 MQAMMA Usage Considerations

The MQAMMA file contains counts of the number of MQPUT and MQGET calls for messages of different sizes and the CPU time spent processing them. This file also gives you information about the user and the type of application associated with these calls.

Special considerations or techniques related to using the MQAMMA file are provided below.

The IBM WebSphere MQ default parameter for population of the account token field is set to (MQACT_NONE), which indicates that no accounting token is specified. The account token field will contain binary zeros for the length of the field. In order to set up this parameter for account token population, refer to the IBM manual "WebSphere MQ Application Programming Reference" and the "WebSphere MQ Application Programming Guide."

WebSphere MQ data is generated when applications issue requests for services. The field MQSATYP denotes the application types (TSO, IMS, CICS, and so on). The CPU time recorded by WebSphere MQ is also recorded in application measurements that may be collected and charged on the CA MICS system. Thus caution should be employed to ensure that duplicate billing is not incurred. You can, however, employ WebSphere MQ metrics from the MMA file in a surcharge (additional charge) mode.

The MMA file can be structured by the analyzer account code fields (MQSACT1-MQSACT9) that are derived from your definitions. For more information, see section 7.2.2.

5.3.1.4 MQAMMA Retrieval Examples

This section presents typical MQAMMA retrieval examples.

1. Print the subsystem name, connection name, type of connection, and the CPU time used.

```
DATA;
SET &pMQSX..MQAMMA01;
PROC PRINT; VAR SYSID MQMSSI MQSCONNM MQSATYP MMACPUTM;
```

5.3.2 Task Accounting File (MQATAA)

The Task Accounting file (MQATAA) is derived from the SMF type 116 record (subtype 1). The MQATAA file provides accounting information on individual application usage. There are two self-defining sections that make up this file, the WTID and the WTAS. The WTID section provides information on task identification including job name, user ID, transaction name, and channel name. The WTAS section contains information about commit and backout verbs, and other information that is not specific to a particular queue. WebSphere MQ will cut an SMF type 116 accounting record when an application ends or based on an interval parameter specified in WebSphere MQ.

The following sections describe the file's organization, list data elements maintained, and provide usage hints.

1 - MQATAA File Organization
2 - MQATAA Data Elements List
3 - MQATAA Usage Considerations
4 - MQATAA Retrieval Examples

5.3.2.1 MQATAA File Organization

The table below identifies the sequence and summarization data elements for each timespan. N/A indicates that the file is not supported in a timespan. At the DETAIL level, data is sequenced but not summarized.

NOTE: The timespans in which a file is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

Timespan	Level of Data Granularity				
DETAIL	N/A				
DAYS	SYSID	MQMSSI	MQSATYP	MQSACT1	MQSACT2
	MQSACT3	YEAR	MONTH	DAY	HOUR
WEEKS	SYSID	MQMSSI	MQSATYP	MQSACT1	MQSACT2
	MQSACT3	YEAR	WEEK	ZONE	HOUR
MONTHS	SYSID	MQMSSI	MQSATYP	MQSACT1	MQSACT2
	MQSACT3	YEAR	MONTH	ZONE	
YEARS	N/A				
TABLES	N/A				

Generation Date: Tue, May 12, 2009

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.
NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-10. MQATAA Sort Sequence and Data Granularity

5.3.2.2 MQATAA Elements List

The table below identifies data elements contained in this
file. The entries for each data element are:

TIMESPAN: Defines the timespans in which the data element
is supported. The timespans are indicated by
the letters "XDWMYT" as follows:

X - DETAIL
D - DAYS
W - WEEKS
M - MONTHS
Y - YEARS
T - TABLES AREA
. - File is not supported

The timespan field also indicates Essential Elements with
the letter E, if applicable.

DATA ELEMENT: The data element name.

DATA ELEMENT DESCRIPTION: The data element's long name.

The timespans in which a data element is supported are
defined by each installation when CA MICS is installed.
Therefore, this table has been generated as part of the
installation process to accurately reflect the CA MICS
system at your installation.

GENERATION DATE: Tue, May 12, 2009

Note: Essential data elements are identified by an "E"
under the Timespan asterisk (*) column.

Time-Span *	Data Element	Data Element Description (LABEL)

Sequence/Summary Data Elements

.D....E	DAY	- Day of Month
.DW...E	HOUR	- Hour of Day
.D.M..E	MONTH	- Month of Year
.DWM..E	MQMSSI	- Queue Manager Name

```
 .DWM..E  MQSACT1  - CONNECTION TYPE
 .DWM..E  MQSACT2  - CONNECTION NAME
 .DWM..E  MQSACT3  - NAME
 .DWM..E  MQSATYP  - Type Of Connection
 .DWM..E  SYSID    - System Identifier
 .DW...E  WEEK     - Week of Year
 .DWM..E  YEAR     - Year of Century
 .DWM..E  ZONE     - Time Zone

Common Data Elements

 .DWM..E  DAYNAME  - Name of Day of Week
 .DWM..E  ENDTS    - End Time Stamp
 .DWM..E  MICSVER  - CA MICS Version Number
 ......E  MQSCONNM - Connection Name
 ......E  MQSCORR  - Correlator to Link WTAS to Queue Records
 ......E  MQSCV    - Thread Cross Reference
 ......E  MQSNETID - Network ID
 ......E  MQSNETR  - Network ID Unit of Recovery
 ......E  MQSOPID  - Transaction User ID
 ......E  MQSPST   - IMS Partition Specification Table Id
 ......E  MQSTASK  - CICS Task Number
 ......E  MQSTNO   - CICS Thread Number
 ......E  MQSTOKN  - Accounting Token
 ......E  MQSUSID  - Job User ID
 ......E  PSBNAME  - PSB Name
 .DWM..E  STARTTS  - Start Time Stamp
 ......E  TRANCODE - CICS Transaction Code
 ......E  TRANETS  - Transaction End Time Stamp
 ......E  TRANSTS  - Transaction Start Time Stamp
 ......E  UOWID    - Unit of Work Id
 ......E  UOWIDSEQ - Unit of Work Id Sequence Number

Retained Data Elements

 .DWM..E  TAACHNL  - Channel Name
 .DWM..E  TAACHNLC - Channel Connection Name
 ......E  TAACTXT  - Current RRS Context Token
 ......E  TAAIETS  - Post Processing Interval End
 ......E  TAAISTS  - Post Processing Interval Start
 .DWM..E  TAAQCNT  - Queue Count
 ......E  TAAUOWI  - Logical Unit of Work Identifier
 .DWM..E  TAAVER   - Version Number

Accumulated Data Elements

 .DWM..E  TAABACTM - Backout CPU Time
 .DWM..E  TAABAETM - Backout Elapsed Time
 .DWM..E  TAABAN   - Backout Calls
```

```
.DWM..E  TAACCTM  - Total CPU Time Used MQCLOSE
.DWM..E  TAACETM  - Total Elapsed Time MQCLOSE
.DWM..E  TAACMCTM - Commit CPU Time
.DWM..E  TAACMEC  - Mult Update Calls (IXLLSTM)
.DWM..E  TAACMETM - Commit Elapsed Time
.DWM..E  TAACMN   - Commit Calls
.DWM..E  TAACMTM  - Mult Update Calls Time (IXLLSTM)
.DWM..E  TAACN    - MQCLOSE Calls
.DWM..E  TAACOST  - Processing Charges
.DWM..E  TAACOUNT - Task Count
.DWM..E  TAACPUTM - Total CPU Time
.DWM..E  TAACSEC  - Single Update Calls (IXLLSTE)
.DWM..E  TAACSTM  - Single Update Calls Time (IXLLSTE)
.DWM..E  TAADBCT  - DB2 Calls
.DWM..E  TAADBGN  - Bytes Read from DB2
.DWM..E  TAADBPN  - Bytes Written to DB2
.DWM..E  TAADBSTM - DB2 Server Elapsed Time
.DWM..E  TAADBTTM - DB2 Thread Elapsed Time
.DWM..E  TAAEXCTM - Task Execution Time
.DWM..E  TAAGBRWA - MQGET Browses Any
.DWM..E  TAAGBRWS - MQGET Browses Specific
.DWM..E  TAAGCTM  - CPU Time Used MQGET Calls
.DWM..E  TAAGERR  - Unaccountable MQGETs
.DWM..E  TAAGETA  - MQGET Calls Any
.DWM..E  TAAGETB  - Bytes Got
.DWM..E  TAAGETM  - Elapsed Time MQGET Calls
.DWM..E  TAAGETS  - MQGET Calls Specific
.DWM..E  TAAGETSD - Successful Destructive MQGET Calls
.DWM..E  TAAGFJWN - Force Journal (Log) Write Calls MQGET
.DWM..E  TAAGFWTM - Wait Time Force Jrnl (Log) Write MQGET
.DWM..E  TAAGJWN  - Journal (Log) Write Calls MQGET
.DWM..E  TAAGJWTM - Wait Time Journal (Log) Write MQGET
.DWM..E  TAAGN    - MQGET Calls
.DWM..E  TAAGPAGE - Empty Pages Skipped MQGET
.DWM..E  TAAGPN   - Get Pages New Count
.DWM..E  TAAGPO   - Get Pages Old Count
.DWM..E  TAAGPSN  - Page Set Reads
.DWM..E  TAAGPSTM - Wait Time for Page Set Read
.DWM..E  TAAGSMSG - Messages Skipped MQGET
.DWM..E  TAAGSUS  - Times Suspended MQGET
.DWM..E  TAAGSUTM - Total Suspend Time MQGET Calls
.DWM..E  TAAGXMSG - Expired Messages
.DWM..E  TAAICTM  - CPU Time Used MQINQ
.DWM..E  TAAIETM  - Total Elapsed Time MQINQ Calls
.DWM..E  TAAIN    - MQINQ Calls
.DWM..E  TAAJCETM - Log Force Elapsed Wait
.DWM..E  TAAJCN   - Log Forced Count
.DWM..E  TAAJWB   - Bytes Written to Log
.DWM..E  TAAJWETM - Log Write Elapsed Time
```

```
.DWM..E  TAAJWN   - Log Writes
.DWM..E  TAANCPTM - Total non-Queue CPU Time
.DWM..E  TAANGEN  - Messages Generated
.DWM..E  TAAOCTM  - Total CPU Time Used MQOPEN Calls
.DWM..E  TAAOETM  - Total Elapsed Time MQOPEN
.DWM..E  TAAON    - MQOPEN Calls
.DWM..E  TAAOTCTM - Other MQI Calls CPU Time
.DWM..E  TAAOTETM - Other MQI Calls Elapsed Time
.DWM..E  TAAOTN   - Other MQI Calls
.DWM..E  TAAPCTM  - CPU Time Used MQPUT Calls
.DWM..E  TAAPETM  - Total Elapsed Time MQPUT Calls
.DWM..E  TAAPFJWN - Force Journal (Log) Write Calls MQPUT
.DWM..E  TAAPFWTM - Wait Time Force Jrnl (Log) Write MQPUT
.DWM..E  TAAPJWN  - Journal (Log) Write Calls MQPUT
.DWM..E  TAAPJWTM - Wait Time Journal (Log) Write MQPUT
.DWM..E  TAAPN    - MQPUT Calls
.DWM..E  TAAPPSN  - Page Set Put Calls
.DWM..E  TAAPSETM - Time Read MQPUT Page Set
.DWM..E  TAAPSN0  - Logging Calls Page Set 0
.DWM..E  TAAPSUS  - Times Suspended MQPUT
.DWM..E  TAAPSUTM - Elapsed Time Task Suspended MQPUT
.DWM..E  TAAPS0TM - Elapsed Time Logging Page Set 0
.DWM..E  TAAPUTB  - Bytes Put
.DWM..E  TAAPWG   - MQPUT Calls Passed to Waiting Getter
.DWM..E  TAAP1CTM - CPU Time Used MQPUT1 Calls
.DWM..E  TAAP1ETM - Total Elapsed Time MQPUT1 Calls
.DWM..E  TAAP1FTM - Wait Time Force Jrnl (Log) Write MQPUT1
.DWM..E  TAAP1FWN - Force Journal (Log) Write Calls MQPUT1
.DWM..E  TAAP1JTM - Wait Time Journal (Log) Write MQPUT1
.DWM..E  TAAP1JWN - Journal (Log) Write Calls MQPUT1
.DWM..E  TAAP1N   - MQPUT1 Calls
.DWM..E  TAAP1PSN - Page Set MQPUT1 Calls
.DWM..E  TAAP1PTM - Time Read MQPUT1 Page Set
.DWM..E  TAAP1STM - Elapsed Time Task Suspended MQPUT1
.DWM..E  TAAP1SUS - Times Suspended MQPUT1
.DWM..E  TAAP1WG  - MQPUT1 Calls Passed to Waiting Getter
.DWM..E  TAAQCPTM - Total Queue CPU Time
.DWM..E  TAARECCT - Task Records Count
.DWM..E  TAARMEC  - Mult Update Redrives (IXLLSTM)
.DWM..E  TAARSEC  - Single Update Redrives (IXLLSTE)
.DWM..E  TAASCTM  - CPU Time Used MQSET Calls
.DWM..E  TAASETM  - Total Elapsed Time MQSET Calls
.DWM..E  TAASFJWN - Force Journal (Log) Write Calls MQSET
.DWM..E  TAASFWTM - Wait Time Force Jrnl (Log) Write MQSET
.DWM..E  TAASJWN  - Journal (Log) Write Calls MQSET
.DWM..E  TAASJWTM - Wait Time Journal (Log) Write MQSET
.DWM..E  TAASN    - MQSET Calls
.DWM..E  TAASUSN  - Task Suspended Count
.DWM..E  TAASUSTM - Total Suspend Time
```

```
 .DWM..E  TAATOETM - Total Task Elapsed Time
 .DWM..E  TAATOMTM - Total Time Message on Queue
 .DWM..E  TAATONET - Total Task Non-Queue Elapsed Time
 .DWM..E  TAATOQET - Total Task Queue Elapsed Time
 .DWM..E  TAATOUSE - Total Calls Using Queue
 .DWM..E  TAAUSE   - Use Count (+1 MQOPEN, -1 MQCLOSE)
 .DWM..E  TAAVGET  - MQGETs With Data
 .DWM..E  TAAVPUT  - MQPUTs Writing Data
 .DWM..E  TAAWQCT  - Total Queue Count

Minimum Data Elements

 .DWM..E  TAAMNETM - Minimum Task Elapsed Time
 .DWM..E  TAAMNGET - Minimum Get Message Size
 .DWM..E  TAAMNMTM - Minimum Time Message on Queue
 .DWM..E  TAAMNNET - Minimum Task Non-Queue Elapsed Time
 .DWM..E  TAAMNPUT - Minimum Put Message Size
 .DWM..E  TAAMNQET - Minimum Task Queue Elapsed Time

Maximum Data Elements

 .DWM..E  TAAMXETM - Maximum Task Elapsed Time
 .DWM..E  TAAMXGET - Maximum Get Message Size
 .DWM..E  TAAMXLTM - Maximum Latch Wait Time
 .DWM..E  TAAMXLWN - Maximum Latch Wait Number
 .DWM..E  TAAMXMTM - Maximum Time Message on Queue
 .DWM..E  TAAMXNET - Maximum Task Non-Queue Elapsed Time
 .DWM..E  TAAMXPUT - Maximum Put Message Size
 .DWM..E  TAAMXQET - Maximum Task Queue Elapsed Time
 .DWM..E  TAAMXSTM - Maximum DB2 Server Elapsed Time
 .DWM..E  TAAMXTTM - Maximum DB2 Thread Elapsed Time

Derived Data Elements

 .DWM..E  TAAAVCCT - Avg MQCLOSE CPU Time All Queues
 .DWM..E  TAAAVCTM - Avg MQCLOSE Time All Queues
 .DWM..E  TAAAVGCT - Avg MQGET CPU Time All Queues
 .DWM..E  TAAAVGTM - Avg MQGET Time All Queues
 .DWM..E  TAAAVICT - Avg MQINQ CPU Time All Queues
 .DWM..E  TAAAVITM - Avg MQINQ Time All Queues
 .DWM..E  TAAAVNET - Avg Task Non-Queue Elapse Time
 .DWM..E  TAAAVOCT - Avg MQOPEN CPU Time All Queues
 .DWM..E  TAAAVOTM - Avg MQOPEN Time All Queues
 .DWM..E  TAAAVPCT - Avg MQPUT CPU Time All Queues
 .DWM..E  TAAAVPTM - Avg MQPUT Time All Queues
 .DWM..E  TAAAVQET - Avg Task Queue Elapse Time
 .DWM..E  TAAAVQTM - Avg Time Message on Queues
 .DWM..E  TAAAVSCT - Avg MQSET CPU Time All Queues
 .DWM..E  TAAAVSTM - Avg MQSET Time All Queues
```

```
.DWM..E  TAAAVTET - Avg Task Elapse Time
.DWM..E  TAAAV1CT - Avg MQPUT1 CPU Time All Queues
.DWM..E  TAAAV1TM - Avg MQPUT1 Time All Queues
```

5.3.2.3 MQATAA Usage Considerations

The MQATAA file contains accounting information on individual application usage. This information can be used to analyze application activity and to charge users for their WebSphere MQ usage.

Special considerations or techniques related to using the MQATAA file are provided below.

The IBM WebSphere MQ default parameter for population of the account token field is set to (MQACT_NONE), which indicates that no accounting token is specified. The account token field will contain binary zeros for the length of the field. In order to set up this parameter for account token population, refer to the IBM manual "WebSphere MQ Application Programming Reference" and the "WebSphere MQ Application Programming Guide."

WebSphere MQ data is generated when applications issue requests for services. The field MQSATYP denotes the application types (TSO, IMS, CICS, and so on). The CPU time recorded by WebSphere MQ is also recorded in application measurements that may be collected and charged on the CA MICS system. Thus caution should be employed to ensure that duplicate billing is not incurred. You may, however, employ WebSphere MQ metrics from the TAA file in a surcharge (additional charge) mode.

The TAA file can be structured by analyzer account code fields (MQSACT1-MQSACT9) that are derived from your definitions. For more information, see section 7.2.2.

5.3.2.4 MQATAA Retrieval Examples

This section is intentionally left blank.

5.3.3 Queue Activity File (MQAQAA)

The Queue Activity file (MQAQAA) is derived from the SMF type 116 record (subtypes 1 and 2). The MQAQAA file provides statistics on processing within the queue manager. There are two self-defining sections that make up this file: the WTID and the WQ.

The WTID section provides information on task identification such as job name, user ID, transaction name, and channel name.

The WQ section provides information on queue activity and includes queue name, queue type, and statistics on MQOPEN, MQCLOSE, MQPUT, MQPUT1, MQGET, MQINQ, and MQSET calls. WebSphere MQ will cut an SMF type 116 queue-level accounting record for each queue that a task has used, either since the thread-level accounting record was last written or based on an interval parameter specified in WebSphere MQ.

The following sections describe the file's organization, list data elements maintained, and provide usage hints.

1 - MQAQAA File Organization
2 - MQAQAA Data Elements List
3 - MQAQAA Usage Considerations
4 - MQAQAA Retrieval Examples

5.3.3.1 MQAQAA File Organization

The table below identifies the sequence and summarization data elements for each timespan. N/A indicates that the file is not supported in a timespan. At the DETAIL level, data is sequenced but not summarized.

NOTE: The timespans in which a file is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

Timespan	Level of Data Granularity				
DETAIL	N/A				
DAYS	SYSID	MQMSSI	QAABASNM	QAAOBJNM	MQSATYP
	MQSACT1	MQSACT2	MQSACT3	YEAR	MONTH
	DAY	HOUR			
WEEKS	SYSID	MQMSSI	QAABASNM	QAAOBJNM	MQSATYP
	MQSACT1	MQSACT2	MQSACT3	YEAR	WEEK
	ZONE				
MONTHS	SYSID	MQMSSI	QAABASNM	QAAOBJNM	MQSATYP
	MQSACT1	MQSACT2	MQSACT3	YEAR	MONTH
	ZONE				
YEARS	N/A				
TABLES	N/A				

Generation Date: Tue, May 12, 2009

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.
NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-11. MQAQAA Sort Sequence and Data Granularity

5.3.3.2 MQAQAA Data Elements List

The table below identifies data elements contained in this file. The entries for each data element are:

TIMESPAN: Defines the timespans in which the data element is supported. The timespans are indicated by the letters "XDWMYT" as follows:

X - DETAIL
D - DAYS
W - WEEKS
M - MONTHS
Y - YEARS
T - TABLES AREA
. - File is not supported

The timespan field also indicates Essential Elements with the letter E, if applicable.

DATA ELEMENT: The data element name.

DATA ELEMENT DESCRIPTION: The data element's long name.

The timespans in which a data element is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

GENERATION DATE: Tue, May 12, 2009

Note: Essential data elements are identified by an "E" under the Timespan asterisk (*) column.

Time-Span *	Data Element	Data Element Description (LABEL)

Sequence/Summary Data Elements

.D.M..E	MONTH	- Month of Year
.DWM..E	MQMSSI	- Queue Manager Name
.DWM..E	MQSACT1	- CONNECTION TYPE
.DWM..E	MQSACT2	- CONNECTION NAME
.DWM..E	MQSACT3	- NAME
.DWM..E	MQSATYP	- Type Of Connection

```
 .DWM..E  QAABASNM - Base Queue Name
 .DWM..E  QAAOBJNM - Object Name as Opened
 .DWM..E  SYSID    - System Identifier
 .DW...E  WEEK     - Week of Year
 .DWM..E  YEAR     - Year of Century
 .DWM..E  ZONE     - Time Zone

Common Data Elements

 .DWM..E  DAY      - Day of Month
 .DWM..E  DAYNAME  - Name of Day of Week
 .DWM..E  ENDTS    - End Time Stamp
 .DWM..E  HOUR     - Hour of Day
 .DWM..E  MICSVER  - CA MICS Version Number
 ......E  MQSCONNM - Connection Name
 ......E  MQSCORR  - Correlator to Link WTAS to Queue Records
 ......E  MQSCV    - Thread Cross Reference
 ......E  MQSNETID - Network ID
 ......E  MQSNETR  - Network ID Unit of Recovery
 ......E  MQSOPID  - Transaction User ID
 ......E  MQSPST   - IMS Partition Specification Table Id
 ......E  MQSTASK  - CICS Task Number
 ......E  MQSTNO   - CICS Thread Number
 ......E  MQSTOKN  - Accounting Token
 ......E  MQSUSID  - Job User ID
 ......E  PSBNAME  - PSB Name
 .DWM..E  STARTTS  - Start Time Stamp
 ......E  TRANCODE - CICS Transaction Code

Retained Data Elements

 .DWM..E  QAABUFFP - Buffer Pool Number
 .DWM..E  QAACFSTR - Name of Coupling Facility Structure
 ......E  QAACLOTS - Time Queue Was Closed
 .DWM..E  QAAINDX  - Index Type of Queue
 .DWM..E  QAANPS   - Page Set Number
 ......E  QAAOPETS - Time Queue Was Opened
 .DWM..E  QAAQSG   - Queue Sharing Group
 .DWM..E  QAAQTYPE - Queue Type
 .DWM..E  QAAVER   - Version Number

Accumulated Data Elements

 .DWM..E  QAACCTM  - Total CPU Time Used MQCLOSE
 .DWM..E  QAACETM  - Total Elapsed Time MQCLOSE
 .DWM..E  QAACN    - MQCLOSE Calls
 .DWM..E  QAACOST  - Processing Charges
 .DWM..E  QAAGBRWA - MQGET Browses Any
 .DWM..E  QAAGBRWS - MQGET Browses Specific
```

```
.DWM..E  QAAGCTM  - CPU Time Used MQGET Calls
.DWM..E  QAAGERR  - Unaccountable MQGETs
.DWM..E  QAAGETA  - MQGET Calls Any
.DWM..E  QAAGETB  - Bytes Got
.DWM..E  QAAGETM  - Elapsed Time MQGET Calls
.DWM..E  QAAGETP  - MQGET Persistent Messages
.DWM..E  QAAGETS  - MQGET Calls Specific
.DWM..E  QAAGETSD - Successful Destructive MQGET Calls
.DWM..E  QAAGFJWN - Force Journal (Log) Write Calls MQGET
.DWM..E  QAAGFWTM - Wait Time Force Jrnl (Log) Write MQGET
.DWM..E  QAAGJWN  - Journal (Log) Write Calls MQGET
.DWM..E  QAAGJWTM - Wait Time Journal (Log) Write MQGET
.DWM..E  QAAGN    - MQGET Calls
.DWM..E  QAAGPAGE - Empty Pages Skipped MQGET
.DWM..E  QAAGPSN  - Page Set Reads
.DWM..E  QAAGPSTM - Wait Time for Page Set Read
.DWM..E  QAAGSMSG - Messages Skipped MQGET
.DWM..E  QAAGSUS  - Times Suspended MQGET
.DWM..E  QAAGSUTM - Total Suspend Time MQGET Calls
.DWM..E  QAAGXMSG - Expired Messages
.DWM..E  QAAICTM  - CPU Time Used MQINQ
.DWM..E  QAAIETM  - Total Elapsed Time MQINQ Calls
.DWM..E  QAAIN    - MQINQ Calls
.DWM..E  QAANGEN  - Messages Generated
.DWM..E  QAAOCTM  - Total CPU Time Used MQOPEN Calls
.DWM..E  QAAOETM  - Total Elapsed Time MQOPEN
.DWM..E  QAAON    - MQOPEN Calls
.DWM..E  QAAPCTM  - CPU Time Used MQPUT Calls
.DWM..E  QAAPETM  - Total Elapsed Time MQPUT Calls
.DWM..E  QAAPFJWN - Force Journal (Log) Write Calls MQPUT
.DWM..E  QAAPFWTM - Wait Time Force Jrnl (Log) Write MQPUT
.DWM..E  QAAPJWN  - Journal (Log) Write Calls MQPUT
.DWM..E  QAAPJWTM - Wait Time Journal (Log) Write MQPUT
.DWM..E  QAAPN    - MQPUT Calls
.DWM..E  QAAPPSN  - Page Set Put Calls
.DWM..E  QAAPSETM - Time Read MQPUT Page Set
.DWM..E  QAAPSUS  - Times Suspended MQPUT
.DWM..E  QAAPSUTM - Elapsed Time Task Suspended MQPUT
.DWM..E  QAAPUTB  - Bytes Put
.DWM..E  QAAPUTP  - MQPUT Persistent Messages
.DWM..E  QAAPUT1P - MQPUT1 Persistent Messages
.DWM..E  QAAPWG   - MQPUT Calls Passed to Waiting Getter
.DWM..E  QAAP1CTM - CPU Time Used MQPUT1 Calls
.DWM..E  QAAP1ETM - Total Elapsed Time MQPUT1 Calls
.DWM..E  QAAP1FTM - Wait Time Force Jrnl (Log) Write MQPUT1
.DWM..E  QAAP1FWN - Force Journal (Log) Write Calls MQPUT1
.DWM..E  QAAP1JTM - Wait Time Journal (Log) Write MQPUT1
.DWM..E  QAAP1JWN - Journal (Log) Write Calls MQPUT1
.DWM..E  QAAP1N   - MQPUT1 Calls
```

```
 .DWM..E  QAAP1PSN - Page Set MQPUT1 Calls
 .DWM..E  QAAP1PTM - Time Taken to Read MQPUT1 Page Set
 .DWM..E  QAAP1STM - Elapsed Time Task Suspended MQPUT1
 .DWM..E  QAAP1SUS - Times Suspended MQPUT1
 .DWM..E  QAAP1WG  - MQPUT1 Calls Passed to Waiting Getter
 .DWM..E  QAAQCPTM - Total Queue CPU Time
 .DWM..E  QAASCTM  - CPU Time Used MQSET Calls
 .DWM..E  QAASEG   - Queue Segment Count
 .DWM..E  QAASETM  - Total Elapsed Time MQSET Calls
 .DWM..E  QAASFJWN - Force Journal (Log) Write Calls MQSET
 .DWM..E  QAASFWTM - Wait Time Force Jrnl (Log) Write MQSET
 .DWM..E  QAASJWN  - Journal (Log) Write Calls MQSET
 .DWM..E  QAASJWTM - Wait Time Journal (Log) Write MQSET
 .DWM..E  QAASN    - MQSET Calls
 .DWM..E  QAATOMTM - Total Time Message on Queue
 .DWM..E  QAATOQET - Total Queue Elapsed Time
 .DWM..E  QAATOUSE - Total Calls Using Queue
 .DWM..E  QAAUSE   - Use Count (+1 MQOPEN, -1 MQCLOSE)
 .DWM..E  QAAVGET  - MQGETs With Data
 .DWM..E  QAAVPUT  - MQPUTs Writing Data

Minimum Data Elements

 .DWM..E  QAAMNGET - Minimum Get Message Size
 .DWM..E  QAAMNMTM - Minimum Time Message on Queue
 .DWM..E  QAAMNPUT - Minimum Put Message Size
 .DWM..E  QAAMNQET - Minimum Queue Elapsed Time

Maximum Data Elements

 .DWM..E  QAAMXGET - Maximum Get Message Size
 .DWM..E  QAAMXMTM - Maximum Time Message on Queue
 .DWM..E  QAAMXPUT - Maximum Put Message Size
 .DWM..E  QAAMXQD  - Maximum Queue Depth During Put/Get
 .DWM..E  QAAMXQET - Maximum Queue Elapsed Time

Derived Data Elements

 .DWM..E  QAAAVCCT - Avg MQCLOSE CPU Time
 .DWM..E  QAAAVCTM - Avg MQCLOSE Time
 .DWM..E  QAAAVGCT - Avg MQGET CPU Time
 .DWM..E  QAAAVGTM - Avg MQGET Time
 .DWM..E  QAAAVICT - Avg MQINQ CPU Time
 .DWM..E  QAAAVITM - Avg MQINQ Time
 .DWM..E  QAAAVOCT - Avg MQOPEN CPU Time
 .DWM..E  QAAAVOTM - Avg MQOPEN Time
 .DWM..E  QAAAVPCT - Avg MQPUT CPU Time
 .DWM..E  QAAAVPTM - Avg MQPUT Time
 .DWM..E  QAAAVQTM - Avg Time Message on Queue
```

```
.DWM..E  QAAAVSCT - Avg MQSET CPU Time
.DWM..E  QAAAVSTM - Avg MQSET Time
.DWM..E  QAAAV1CT - Avg MQPUT1 CPU Time
.DWM..E  QAAAV1TM - Avg MQPUT1 Time
```

5.3.3.3 MQAQAA Usage Considerations

The MQAQAA file contains statistics on processing within the queue manager. This file provides information on the counts and CPU time spent processing MQOPEN, MQCLOSE, MQPUT, MQPUT1, MQGET, and MQSET calls. This information can be used to identify high-use queues and to perform trend analysis.

5.3.3.4 MQAQAA Retrieval Examples

This section is intentionally left blank.

5.3.4 Channel Activity File (MQA_CH)

The Channel Activity (MQA_CH) file is derived from the Task Accounting (MQATAA) file, where Type Of Connection (MQSATYP) is equal to 6 (that is, Channel Initiator). The MQA_CH file provides information on individual application usage by channel.

The following sections describe the file's organization, list the data elements maintained, and provide usage hints.

1 - MQA_CH File Organization
2 - MQA_CH Data Elements List
3 - MQA_CH Usage Considerations
4 - MQA_CH Retrieval Examples

5.3.4.1 MQA_CH File Organization

The table below identifies the sequence and summarization data elements for each timespan. N/A indicates that the file is not supported in a timespan. At the DETAIL level, data is sequenced but not summarized.

NOTE: The timespans in which a file is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your data center.

Timespan	Level of Data Granularity				
DETAIL	SYSID	MQMSSI	MQSATYP	TAACHNL	MQSACT1
	MQSACT2	MQSACT3	YEAR	MONTH	DAY
	HOUR	ENDTS			
DAYS	SYSID	MQMSSI	MQSATYP	TAACHNL	MQSACT1
	MQSACT2	MQSACT3	YEAR	MONTH	DAY
	HOUR				
WEEKS	SYSID	MQMSSI	MQSATYP	TAACHNL	MQSACT1
	MQSACT2	MQSACT3	YEAR	WEEK	ZONE
	HOUR				
MONTHS	SYSID	MQMSSI	MQSATYP	TAACHNL	MQSACT1
	MQSACT2	MQSACT3	YEAR	MONTH	ZONE
YEARS	N/A				
TABLES	N/A				

Generation Date: Mon, Feb 28, 2011

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.

NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-11. MQA_CH Sort Sequence and Data Granularity

5.3.4.2 MQA_CH Elements List

The table below identifies data elements contained in this file. The entries for each data element are:

TIMESPAN: Defines the timespans in which the data element is supported. The timespans are indicated by the letters "XDWMYT" as follows:

X - DETAIL
D - DAYS
W - WEEKS
M - MONTHS
Y - YEARS
T - TABLES AREA
. - File is not supported

The timespan field also indicates Essential Elements with the letter E, if applicable.

DATA ELEMENT: The data element name.

DATA ELEMENT DESCRIPTION: The data element's long name.

The timespans in which a data element is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

GENERATION DATE: Mon, Feb 28, 2011

Note: Essential data elements are identified by an "E" under the Timespan asterisk (*) column.

Time-Span *	Data Element	Data Element Description (LABEL)

Sequence/Summary Data Elements

XD....E	DAY	- Day of Month
XDW...E	HOUR	- Hour of Day
XD.M..E	MONTH	- Month of Year
XDWM..E	MQMSSI	- Queue Manager Name
XDWM..E	MQSACT1	- CONNECTION TYPE

```
 XDWM..E  MQSACT2  - CONNECTION NAME
 XDWM..E  MQSACT3  - NAME
 XDWM..E  MQSATYP  - Type Of Connection
 XDWM..E  SYSID    - System Identifier
 XDWM..E  TAACHNL  - Channel Name
 XDW...E  WEEK     - Week of Year
 XDWM..E  YEAR     - Year of Century
 XDWM..E  ZONE     - Time Zone

Common Data Elements

 XDWM..E  DAYNAME  - Name of Day of Week
 XDWM..E  ENDTS    - End Time Stamp
 X.....E  MQSCONNM - Connection Name
 X.....E  MQSCORR  - Correlator to Link WTAS to Queue Records
 X.....E  MQSCV    - Thread Cross Reference
 X.....E  MQSNETID - Network ID
 X.....E  MQSNETR  - Network ID Unit of Recovery
 X.....E  MQSOPID  - Transaction User ID
 X.....E  MQSTOKN  - Accounting Token
 X.....E  MQSUSID  - Job User ID
 XDWM..E  STARTTS  - Start Time Stamp
 X.....E  TRANETS  - Transaction End Time Stamp
 X.....E  TRANSTS  - Transaction Start Time Stamp
 X.....E  UOWID    - Unit of Work Id
 X.....E  UOWIDSEQ - Unit of Work Id Sequence Number

Retained Data Elements

 XDWM..E  TAACHNLC - Channel Connection Name
 X.....E  TAACTXT  - Current RRS Context Token
 X.....E  TAAIETS  - Post Processing Interval End
 X.....E  TAAISTS  - Post Processing Interval Start
 XDWM..E  TAAQCNT  - Queue Count
 X.....E  TAAUOWI  - Logical Unit of Work Identifier
 XDWM..E  TAAVER   - Version Number

Accumulated Data Elements

 XDWM..E  TAABACTM - Backout CPU Time
 XDWM..E  TAABAETM - Backout Elapsed Time
 XDWM..E  TAABAN   - Backout Calls
 XDWM..E  TAACCTM  - Total CPU Time Used MQCLOSE
 XDWM..E  TAACETM  - Total Elapsed Time MQCLOSE
 XDWM..E  TAACMCTM - Commit CPU Time
 XDWM..E  TAACMEC  - Mult Update Calls (IXLLSTM)
 XDWM..E  TAACMETM - Commit Elapsed Time
 XDWM..E  TAACMN   - Commit Calls
 XDWM..E  TAACMTM  - Mult Update Calls Time (IXLLSTM)
```

```
XDWM..E  TAACN    - MQCLOSE Calls
XDWM..E  TAACOST  - Processing Charges
XDWM..E  TAACOUNT - Task Count
XDWM..E  TAACPUTM - Total CPU Time
XDWM..E  TAACSEC  - Single Update Calls (IXLLSTE)
XDWM..E  TAACSTM  - Single Update Calls Time (IXLLSTE)
XDWM..E  TAADBCT  - DB2 Calls
XDWM..E  TAADBGN  - Bytes Read from DB2
XDWM..E  TAADBPN  - Bytes Written to DB2
XDWM..E  TAADBSTM - DB2 Server Elapsed Time
XDWM..E  TAADBTTM - DB2 Thread Elapsed Time
XDWM..E  TAAEXCTM - Task Execution Time
XDWM..E  TAAGBRWA - MQGET Browses Any
XDWM..E  TAAGBRWS - MQGET Browses Specific
XDWM..E  TAAGCTM  - CPU Time Used MQGET Calls
XDWM..E  TAAGERR  - Unaccountable MQGETs
XDWM..E  TAAGETA  - MQGET Calls Any
XDWM..E  TAAGETB  - Bytes Got
XDWM..E  TAAGETM  - Elapsed Time MQGET Calls
XDWM..E  TAAGETS  - MQGET Calls Specific
XDWM..E  TAAGETSD - Successful Destructive MQGET Calls
XDWM..E  TAAGFJWN - Force Journal (Log) Write Calls MQGET
XDWM..E  TAAGFWTM - Wait Time Force Jrnl (Log) Write MQGET
XDWM..E  TAAGJWN  - Journal (Log) Write Calls MQGET
XDWM..E  TAAGJWTM - Wait Time Journal (Log) Write MQGET
XDWM..E  TAAGN    - MQGET Calls
XDWM..E  TAAGPAGE - Empty Pages Skipped MQGET
XDWM..E  TAAGPN   - Get Pages New Count
XDWM..E  TAAGPO   - Get Pages Old Count
XDWM..E  TAAGPSN  - Page Set Reads
XDWM..E  TAAGPSTM - Wait Time for Page Set Read
XDWM..E  TAAGSMSG - Messages Skipped MQGET
XDWM..E  TAAGSUS  - Times Suspended MQGET
XDWM..E  TAAGSUTM - Total Suspend Time MQGET Calls
XDWM..E  TAAGXMSG - Expired Messages
XDWM..E  TAAICTM  - CPU Time Used MQINQ
XDWM..E  TAAIETM  - Total Elapsed Time MQINQ Calls
XDWM..E  TAAIN    - MQINQ Calls
XDWM..E  TAAJCETM - Log Force Elapsed Wait
XDWM..E  TAAJCN   - Log Forced Count
XDWM..E  TAAJWB   - Bytes Written to Log
XDWM..E  TAAJWETM - Log Write Elapsed Time
XDWM..E  TAAJWN   - Log Writes
XDWM..E  TAANCPTM - Total non-Queue CPU Time
XDWM..E  TAANGEN  - Messages Generated
XDWM..E  TAAOCTM  - Total CPU Time Used MQOPEN Calls
XDWM..E  TAAOETM  - Total Elapsed Time MQOPEN
XDWM..E  TAAON    - MQOPEN Calls
XDWM..E  TAAOTCTM - Other MQI Calls CPU Time
```

```
XDWM..E  TAAOTETM - Other MQI Calls Elapsed Time
XDWM..E  TAAOTN   - Other MQI Calls
XDWM..E  TAAPCTM  - CPU Time Used MQPUT Calls
XDWM..E  TAAPETM  - Total Elapsed Time MQPUT Calls
XDWM..E  TAAPFJWN - Force Journal (Log) Write Calls MQPUT
XDWM..E  TAAPFWTM - Wait Time Force Jrnl (Log) Write MQPUT
XDWM..E  TAAPJWN  - Journal (Log) Write Calls MQPUT
XDWM..E  TAAPJWTM - Wait Time Journal (Log) Write MQPUT
XDWM..E  TAAPN    - MQPUT Calls
XDWM..E  TAAPPSN  - Page Set Put Calls
XDWM..E  TAAPSETM - Time Read MQPUT Page Set
XDWM..E  TAAPSN0  - Logging Calls Page Set 0
XDWM..E  TAAPSUS  - Times Suspended MQPUT
XDWM..E  TAAPSUTM - Elapsed Time Task Suspended MQPUT
XDWM..E  TAAPS0TM - Elapsed Time Logging Page Set 0
XDWM..E  TAAPUTB  - Bytes Put
XDWM..E  TAAPWG   - MQPUT Calls Passed to Waiting Getter
XDWM..E  TAAP1CTM - CPU Time Used MQPUT1 Calls
XDWM..E  TAAP1ETM - Total Elapsed Time MQPUT1 Calls
XDWM..E  TAAP1FTM - Wait Time Force Jrnl (Log) Write MQPUT1
XDWM..E  TAAP1FWN - Force Journal (Log) Write Calls MQPUT1
XDWM..E  TAAP1JTM - Wait Time Journal (Log) Write MQPUT1
XDWM..E  TAAP1JWN - Journal (Log) Write Calls MQPUT1
XDWM..E  TAAP1N   - MQPUT1 Calls
XDWM..E  TAAP1PSN - Page Set MQPUT1 Calls
XDWM..E  TAAP1PTM - Time Read MQPUT1 Page Set
XDWM..E  TAAP1STM - Elapsed Time Task Suspended MQPUT1
XDWM..E  TAAP1SUS - Times Suspended MQPUT1
XDWM..E  TAAP1WG  - MQPUT1 Calls Passed to Waiting Getter
XDWM..E  TAAQCPTM - Total Queue CPU Time
XDWM..E  TAARECCT - Task Records Count
XDWM..E  TAARMEC  - Mult Update Redrives (IXLLSTM)
XDWM..E  TAARSEC  - Single Update Redrives (IXLLSTE)
XDWM..E  TAASCTM  - CPU Time Used MQSET Calls
XDWM..E  TAASETM  - Total Elapsed Time MQSET Calls
XDWM..E  TAASFJWN - Force Journal (Log) Write Calls MQSET
XDWM..E  TAASFWTM - Wait Time Force Jrnl (Log) Write MQSET
XDWM..E  TAASJWN  - Journal (Log) Write Calls MQSET
XDWM..E  TAASJWTM - Wait Time Journal (Log) Write MQSET
XDWM..E  TAASN    - MQSET Calls
XDWM..E  TAASUSN  - Task Suspended Count
XDWM..E  TAASUSTM - Total Suspend Time
XDWM..E  TAATOETM - Total Task Elapsed Time
XDWM..E  TAATOMTM - Total Time Message on Queue
XDWM..E  TAATONET - Total Task Non-Queue Elapsed Time
XDWM..E  TAATOQET - Total Task Queue Elapsed Time
XDWM..E  TAATOUSE - Total Calls Using Queue
XDWM..E  TAAUSE   - Use Count (+1 MQOPEN, -1 MQCLOSE)
XDWM..E  TAAVGET  - MQGETs With Data
```

```
 XDWM..E  TAAVPUT  - MQPUTs Writing Data
 XDWM..E  TAAWQCT  - Total Queue Count

Minimum Data Elements

 XDWM..E  TAAMNETM - Minimum Task Elapsed Time
 XDWM..E  TAAMNGET - Minimum Get Message Size
 XDWM..E  TAAMNMTM - Minimum Time Message on Queue
 XDWM..E  TAAMNNET - Minimum Task Non-Queue Elapsed Time
 XDWM..E  TAAMNPUT - Minimum Put Message Size
 XDWM..E  TAAMNQET - Minimum Task Queue Elapsed Time

Maximum Data Elements

 XDWM..E  TAAMXETM - Maximum Task Elapsed Time
 XDWM..E  TAAMXGET - Maximum Get Message Size
 XDWM..E  TAAMXLTM - Maximum Latch Wait Time
 XDWM..E  TAAMXLWN - Maximum Latch Wait Number
 XDWM..E  TAAMXMTM - Maximum Time Message on Queue
 XDWM..E  TAAMXNET - Maximum Task Non-Queue Elapsed Time
 XDWM..E  TAAMXPUT - Maximum Put Message Size
 XDWM..E  TAAMXQET - Maximum Task Queue Elapsed Time
 XDWM..E  TAAMXSTM - Maximum DB2 Server Elapsed Time
 XDWM..E  TAAMXTTM - Maximum DB2 Thread Elapsed Time

Derived Data Elements

 XDWM..E  TAAAVCCT - Avg MQCLOSE CPU Time All Queues
 XDWM..E  TAAAVCTM - Avg MQCLOSE Time All Queues
 XDWM..E  TAAAVGCT - Avg MQGET CPU Time All Queues
 XDWM..E  TAAAVGTM - Avg MQGET Time All Queues
 XDWM..E  TAAAVICT - Avg MQINQ CPU Time All Queues
 XDWM..E  TAAAVITM - Avg MQINQ Time All Queues
 XDWM..E  TAAAVNET - Avg Task Non-Queue Elapse Time
 XDWM..E  TAAAVOCT - Avg MQOPEN CPU Time All Queues
 XDWM..E  TAAAVOTM - Avg MQOPEN Time All Queues
 XDWM..E  TAAAVPCT - Avg MQPUT CPU Time All Queues
 XDWM..E  TAAAVPTM - Avg MQPUT Time All Queues
 XDWM..E  TAAAVQET - Avg Task Queue Elapse Time
 XDWM..E  TAAAVQTM - Avg Time Message on Queues
 XDWM..E  TAAAVSCT - Avg MQSET CPU Time All Queues
 XDWM..E  TAAAVSTM - Avg MQSET Time All Queues
 XDWM..E  TAAAVTET - Avg Task Elapse Time
 XDWM..E  TAAAV1CT - Avg MQPUT1 CPU Time All Queues
 XDWM..E  TAAAV1TM - Avg MQPUT1 Time All Queues
```

5.3.4.3 MQA_CH Usage Considerations

The MQA_CH file contains accounting information on individual application usage. This information can be used to analyze channel activity.

Special considerations or techniques related to using the MQA_CH file are provided below.

The IBM WebSphere MQ default parameter for population of the account token field is set to (MQACT_NONE), which indicates that no accounting token is specified. The account token field will contain binary zeros for the length of the field. In order to set up this parameter for account token population, refer to the IBM manual "WebSphere MQ Application Programming Reference" and the "WebSphere MQ Application Programming Guide."

WebSphere MQ data is generated when applications issue requests for services. The field MQSATYP denotes the application types (TSO, IMS, CICS, and so on). The CPU time recorded by WebSphere MQ is also recorded in application measurements that may be collected and charged on the CA MICS system. Thus caution should be employed to ensure that duplicate billing is not incurred. You may, however, employ WebSphere MQ metrics from the TAA file in a surcharge (additional charge) mode.

The MQA_CH file can be structured by analyzer account code fields (MQSACT1-MQSACT9) that are derived from your definitions. For more information, see section 7.2.2.

5.3.4.4 MQA_CH Retrieval Examples

Analyze all observations where channel name is not defined.

```
PROC PRINT DATA=&MQAX..MQA_CH01;
  WHERE TAACHNL = ' ';
RUN;
```

5.4 Message Broker Information Area (MQB) Files

This section identifies each file in the Message Broker Information Area and defines its level of summarization and data sequencing as the file appears in the applicable timespan levels. Also, it presents the list of data elements contained in each file.

The files in the Message Broker Information Area are:

1 - Message Flow Accounting File (MQBMFA)
2 - Message Flow Node File (MQBMFN)

5.4.1 Message Flow Accounting File (MQBMFA)

The Message Flow Accounting (MQBMFA) file is derived from the SMF type 117 record (subtypes 1 and 2). The MQBMFA file provides Message Broker statistics on message flow execution.

The MQBMFA file provides information on the elapsed and CPU times spent processing message flows, the number and size of messages, and statistics on message errors. Message Broker writes an SMF type 117 message flow record for each message flow based on a specified recording interval.

The following sections describe the file's organization, list data elements maintained, and provide usage hints.

1 - MQBMFA File Organization
2 - MQBMFA Data Elements List
3 - MQBMFA Usage Considerations
4 - MQBMFA Retrieval Examples

5.4.1.1 MQBMFA File Organization

The table below identifies the sequence and summarization data elements for each timespan. N/A indicates that the file is not supported in a timespan. At the DETAIL level, data is sequenced but not summarized.

Note: The timespans in which a file is supported are defined by each site when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your site.

Timespan	Level of Data Granularity				
DETAIL	SYSID	MQBBKNM	MQBEXNM	MQBMSGNM	MQSACT1
	MQSACT2	MQSACT3	YEAR	MONTH	DAY
	HOUR	ENDTS			
DAYS	SYSID	MQBBKNM	MQBEXNM	MQBMSGNM	MQSACT1
	MQSACT2	MQSACT3	YEAR	MONTH	DAY
	HOUR				
WEEKS	SYSID	MQBBKNM	MQBEXNM	MQBMSGNM	MQSACT1
	MQSACT2	MQSACT3	YEAR	WEEK	ZONE
MONTHS	SYSID	MQBBKNM	MQBEXNM	MQBMSGNM	MQSACT1
	MQSACT2	MQSACT3	YEAR	MONTH	ZONE
YEARS	N/A				
TABLES	N/A				

Generation Date: Tue, May 12, 2009

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.
NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-12. MQBMFA Sort Sequence and Data Granularity

5.4.1.2 MQBMFA Data Elements List

The table below identifies data elements contained in this
file. The entries for each data element are:

TIMESPAN: Defines the timespans in which the data element
is supported. The timespans are indicated by
the letters "XDWMYT" as follows:

X - DETAIL
D - DAYS
W - WEEKS
M - MONTHS
Y - YEARS
T - TABLES AREA
. - File is not supported

The timespan field also indicates Essential Elements with
the letter E, if applicable.

DATA ELEMENT: The data element name.

DATA ELEMENT DESCRIPTION: The data element's long name.

The timespans in which a data element is supported are
defined by each installation when CA MICS is installed.
Therefore, this table has been generated as part of the
installation process to accurately reflect the CA MICS
system at your installation.

GENERATION DATE: Tue, May 12, 2009

Note: Essential data elements are identified by an "E"
under the Timespan asterisk (*) column.

Time-Span *	Data Element	Data Element Description (LABEL)

Sequence/Summary Data Elements

XD.M..E	MONTH	- Month of Year
XDWM..E	MQBBKNM	- Broker Name
XDWM..E	MQBEXNM	- Execution Group Name
XDWM..E	MQBMSGNM	- Message Flow Name

```
 XDWM..E  MQSACT1  - CONNECTION TYPE
 XDWM..E  MQSACT2  - CONNECTION NAME
 XDWM..E  MQSACT3  - NAME
 XDWM..E  SYSID    - System Identifier
 XDW...E  WEEK     - Week of Year
 XDWM..E  YEAR     - Year of Century
 XDWM..E  ZONE     - Time Zone

Common Data Elements

 XDWM..E  DAY      - Day of Month
 XDWM..E  DAYNAME  - Name of Day of Week
 XDWM..E  DURATION - Recording Interval Time
 XDWM..E  ENDTS    - End Time Stamp
 XDWM..E  HOUR     - Hour of Day
 XDWM..E  INTERVLS - Number of Recording Intervals
 XDWM..E  MICSVER  - CA MICS Version Number
 XDWM..E  MQBACCTO - Accounting Origin
 XDWM..E  MQBBKID  - Broker UUID
 XDWM..E  MQBEXID  - Execution Group UUID
 X.....E  MQBRCODE - Record Code
 XDWM..E  STARTTS  - Start Time Stamp

Accumulated Data Elements

 XDWM..E  MFABKOUT - Transaction Backouts
 XDWM..E  MFACMIT  - Transaction Commits
 XDWM..E  MFACOST  - Processing Charges
 XDWM..E  MFACTM   - Total CPU Time Input Messages
 XDWM..E  MFAERRS  - Total Errors Processing Message
 XDWM..E  MFAETM   - Total Elapsed Time Input Messages
 XDWM..E  MFAMQERR - MQGET or Web Services Errors
 XDWM..E  MFAMSGER - Messages Containing Errors
 XDWM..E  MFAMSGN  - Total Messages Processed
 XDWM..E  MFAMSGS  - Total Size of Input Messages
 XDWM..E  MFATHDN  - Threads in Pool
 XDWM..E  MFATHDXN - Times Maximum Threads Reached
 XDWM..E  MFATMOUT - Timeouts Processing Message
 XDWM..E  MFAWCTM  - Total CPU Time Wait Input Messages
 XDWM..E  MFAWETM  - Total Elapsed Time Wait Input Messages

Minimum Data Elements

 XDWM..E  MFAMNCTM - Minimum CPU Time Input Messages
 XDWM..E  MFAMNETM - Minimum Elapsed Time Input Messages
 XDWM..E  MFAMNMSG - Minimum Input Message Size

Maximum Data Elements
```

```
 XDWM..E  MFAMXCTM - Maximum CPU Time Input Messages
 XDWM..E  MFAMXETM - Maximum Elapsed Time Input Messages
 XDWM..E  MFAMXMSG - Maximum Input Message Size

Derived Data Elements

 XDWM..E  MFAAVCTM - Avg CPU Time Input Messages
 XDWM..E  MFAAVETM - Avg Elapsed Time Input Messages
 XDWM..E  MFAAVMSG - Avg Size of Input Messages
 XDWM..E  MFAAVWTM - Avg CPU Time Wait Input Messages
```

5.4.1.3 MQBMFA Usage Considerations

The MQBMFA file contains archive message broker data for long-term monitoring of message flow processing. The MQBMFA file provides the statistics required to monitor and improve the performance of message flow execution and to evaluate resource needs.

5.4.1.4 MQBMFA Retrieval Examples

This section presents a typical MQBMFA retrieval example.

1. Print the total CPU time and elapsed time spent processing input messages, the CPU time spent waiting for input messages, and the number of messages processed. The print is by Execution Group Name and is at the DAYS timespan summarization level.

```
DATA;
SET &pMQBD..MQBMFA01;
PROC PRINT;
VAR MFACTM MFAETM MFAWCTM MFAMSGN;
BY MQBEXNM;
```

5.4.2 Message Flow Node File (MQBMFN)

The Message Flow Node (MQBMFN) file is derived from the SMF type 117 record (subtype 2). The MQBMFN file provides Message Broker statistics on the steps within a message flow.

The MQBMFN file provides information on the type of node, the elapsed and CPU times spent processing message flows at the node level, and the number of messages processed by a node. Message Broker writes an SMF type 117 node record for each node in a message flow based on a specified recording interval.

The following sections describe the file's organization, list data elements maintained, and provide usage hints.

5.4.2.1 MQBMFN File Organization

The table below identifies the sequence and summarization data elements for each timespan. N/A indicates that the file is not supported in a timespan. At the DETAIL level, data is sequenced but not summarized.

Note: The timespans in which a file is supported are defined by each site when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your site.

Timespan	Level of Data Granularity				
DETAIL	SYSID	MQBBKNM	MQBEXNM	MQBMSGNM	MFNNODNM
	YEAR	MONTH	DAY	HOUR	ENDTS
DAYS	SYSID	MQBBKNM	MQBEXNM	MQBMSGNM	MFNNODNM
	YEAR	MONTH	DAY	HOUR	
WEEKS	SYSID	MQBBKNM	MQBEXNM	MQBMSGNM	MFNNODNM
	YEAR	WEEK	ZONE		
MONTHS	SYSID	MQBBKNM	MQBEXNM	MQBMSGNM	MFNNODNM
	YEAR	MONTH	ZONE		
YEARS	N/A				
TABLES	N/A				

Generation Date: Tue, May 12, 2009

NOTE: This file was generated with ESSENTIAL=ALL option in effect. All data elements defined in the file are generated.
NOTE: This file was generated with DERIVED=DEFault option in effect. Whether data elements are kept on the file on auxiliary storage or not is controlled by the complex definition of the DERIVED option.

Figure 5-13. MQBMFN Sort Sequence and Data Granularity

5.4.2.2 MQBMFN Data Elements List

The table below identifies data elements contained in this file. The entries for each data element are:

TIMESPAN: Defines the timespans in which the data element is supported. The timespans are indicated by the letters "XDWMYT" as follows:

X - DETAIL
D - DAYS
W - WEEKS
M - MONTHS
Y - YEARS
T - TABLES AREA
. - File is not supported

The timespan field also indicates Essential Elements with the letter E, if applicable.

DATA ELEMENT: The data element name.

DATA ELEMENT DESCRIPTION: The data element's long name.

The timespans in which a data element is supported are defined by each installation when CA MICS is installed. Therefore, this table has been generated as part of the installation process to accurately reflect the CA MICS system at your installation.

GENERATION DATE: Tue, May 12, 2009

Note: Essential data elements are identified by an "E" under the Timespan asterisk (*) column.

Time-Span *	Data Element	Data Element Description (LABEL)

Sequence/Summary Data Elements

XDWM..E	MFNNODNM	- Node Name
XD.M..E	MONTH	- Month of Year
XDWM..E	MQBBKNM	- Broker Name

```
 XDWM..E  MQBEXNM  - Execution Group Name
 XDWM..E  MQBMSGNM - Message Flow Name
 XDWM..E  SYSID    - System Identifier
 XDW...E  WEEK     - Week of Year
 XDWM..E  YEAR     - Year of Century
 XDWM..E  ZONE     - Time Zone

Common Data Elements

 XDWM..E  DAY      - Day of Month
 XDWM..E  DAYNAME  - Name of Day of Week
 XDWM..E  DURATION - Recording Interval Time
 XDWM..E  ENDTS    - End Time Stamp
 XDWM..E  HOUR     - Hour of Day
 XDWM..E  INTERVLS - Number of Recording Intervals
 XDWM..E  MICSVER  - CA MICS Version Number
 XDWM..E  MQBBKID  - Broker UUID
 XDWM..E  MQBEXID  - Execution Group UUID
 X.....E  MQBRCODE - Record Code
 XDWM..E  STARTTS  - Start Time Stamp

Retained Data Elements

 XDWM..E  MFNNTYPE - Type of Node

Accumulated Data Elements

 XDWM..E  MFNCTM   - Node CPU Time Input Messages
 XDWM..E  MFNETM   - Node Elapsed Time Input Messages
 XDWM..E  MFNITRMN - Input Terminals
 XDWM..E  MFNMSGN  - Total Messages Processed by Node
 XDWM..E  MFNOTRMN - Output Terminals

Minimum Data Elements

 XDWM..E  MFNMNCTM - Node Minimum CPU Time Input Msgs
 XDWM..E  MFNMNETM - Node Minimum Elapsed Time Input Msgs

Maximum Data Elements

 XDWM..E  MFNMXCTM - Node Maximum CPU Time Input Msgs
 XDWM..E  MFNMXETM - Node Maximum Elapsed Time Input Msgs

Derived Data Elements

 XDWM..E  MFNAVCTM - Node Avg CPU Time Input Msgs
 XDWM..E  MFNAVETM - Node Avg Elapsed Time Input Msgs
```

5.4.2.3 MQBMFN Usage Considerations

The MQBMFN file contains archive message broker data for long-term monitoring of message flow processing at the node level. The MQBMFN file provides the statistics required to monitor and improve the performance of the steps within a message flow.

5.4.2.4 MQBMFN Retrieval Examples

This section presents a typical MQBMFN retrieval example.

1. Print the node type, total CPU time and elapsed time spent processing input messages at the node level, and the number of messages processed for each node in a message flow. The print is by Execution Group Name and is at the DAYS timespan summarization level.

```
DATA;
SET &pMQBD..MQBMFN01;
PROC PRINT;
VAR MFNNTYPE MFNCTM MFNETM MFNMSGN;
BY MQBEXNM;
```

Chapter 6: DATA SOURCES

The CA MICS MQSeries Analyzer uses SMF type 115 and 116 records generated by IBM's WebSphere MQ and SMF type 117 records generated by WebSphere Message Broker (WMB) to produce CA MICS database files. To collect thread-level and queue-level accounting information (SMF type 116 records), trace class 3 must be started. To collect archive Message Broker data (SMF type 117 records), parameters must be set using the mqsichangeflowstats command. Consult with your organization's WebSphere MQ System Administrator to ensure that these records are available from your system.

Details about records used by this CA MICS product are discussed later in this chapter. For additional information about data sources, refer to IBM's SupportPacs "WebSphere MQ for z/OS Interpreting Accounting and Statistics Data" and "Interpreting WBI Statistics and Accounting."

The three types of WebSphere records shown in Figure 6-1 are used by the CA MICS MQSeries Analyzer. The figure shows when each record is written and what each record contains.

Record Type	Written	Record Contents
(115) MQ Performance Statistics Records	For every MQ recording interval (user controlled)	Message Manager Statistics Data Manager Statistics Buffer Manager Statistics Log Manager Statistics Coupling Facility Manager Statistics DB2 Manager Statistics
(116) MQ Accounting Data Records	When application or jobs ends or for every MQ recording interval (user controlled)	Message Manager Accounting Data Queue Activity Data Task Accounting Data
(117) WMB Accounting & Statistics Records	When the broker shuts down or is redeployed or for every WMB recording interval (user controlled)	Message Flow and Node Accounting and Statistics Data

Figure 6-1. WebSphere MQ Record Descriptions

This section contains the following topics:

6.1 MQ Performance Statistics Record (115)

The performance statistics data contain information on processing within the queue manager. The data are provided from the SMF type 115 subtype 1 and 2 records.

Subtype 1	
Log Manager	Manages the logging of log records, which are essential for maintaining the integrity of the system. It is especially important in situations involving a backout call, if a recovery is needed, or if there is a system or media failure. The data contained in the Log Manager section gives various counts of log statistics used to examine problem symptoms.
Subtype 2	
Message Manager	Processes all MQI (Message Queue Interface for specific workload types such as CICS, IMS, TSO, and so on) calls. The data contained in the Message Manager section gives counts of various MQI calls.
Data Manager	Manages the links between messages and queues. It calls the buffer manager to process pages with messages. The data contained in the Data Manager section gives counts of various object requests.
Buffer Manager	Manages the buffer pools in virtual storage and the writing of pages to page sets as the buffer pool gets full. The data contained in the Buffer Manager section gives counts of various ways message data was handled between DASD and virtual storage.
Coupling Facility Manager	Manages the interface with the Coupling Facility. Non-persistent messages are stored in the Coupling Facility when shared queues are used.
DB2 Manager	Manages the interface with the DB2 database in support of shared queues. Contains information about DB2 requests that are made to the queue manager.

6.2 MQ Accounting Data Record (116)

The accounting data contains information on the activities and resources used by applications and channels. This information is obtained from the SMF type 116 subtype 0, 1, and 2 records.

Subtype 0	
Message Manager	Provides information about the user and the type of application associated with the MQ calls. Includes information regarding the CPU time spent processing MQ calls for specific workload types such as CICS, IMS, TSO, and so on, and counts of the number of MQPUT and MQGET calls for messages of different sizes.
Subtype 1	
Task Accounting	Provides information on commit, backout, journal and logging, page sets, and CF manager calls and DB2 manager requests.
Subtype 1 & 2	
Task Identification	Provides information on task identification including job name, user ID, transaction name, and channel name.
Queue Records	Provides information on queue activity including data on MQOPEN, MQCLOSE, MQPUT, MQSPUT1, MQGET, MQINQ, and MQSET calls.

6.3 Message Broker Record (117)

The Message Broker record contains information on the performance and operating details of message flow execution. The information is obtained from the SMF type 117 subtype 1 and 2 records.

Subtype 1 & 2 Message Flow	Provides information on message flow execution. Includes information on CPU and elapsed times spent processing messages, number and size of messages, and message errors.
Subtype 2 Node	Provides information on the steps within a message flow. Includes information on the type of node, the elapsed and CPU times spent processing message flows at the node level, and the number of messages processed by a node.

6.4 CA MICS and CA SMF Director Interface

CA SMF Director is an SMF management product with special features that can be used to optimize CA MICS processing. CA SMF Director can significantly reduce operational overhead by creating content specific files while simultaneously creating an SMF historical archive during the SMF dump process.

CA MICS DAILY and incremental update operational jobs can be modified to take advantage of this product, provided your site is licensed for and has CA SMF Director installed in your environment.

CA SMF Director provides functions that extract SMF data at dump time or from previously archived SMF files. These functions eliminate the need for any external utilities used for preprocessing of the SMF dump tape for data extraction prior to execution of the DAILY job. In addition, the DAYSMF step of the CA MICS DAILY job may no longer be required. For details on how to eliminate the DAYSMF step, see section 5.10, Removing the DAYSMF Step from the DAILY Job of the PIOM guide.

CA SMF Director SPLIT and EXTRACT statement operands provide a way for you to create content specific files to meet your requirements. The main functions of the operands include the ability to:

- Select system identifiers
- Select or exclude SMF record types and subtypes
- Use conditional statements for granularity
- Define time boundaries for SMF data

To use the SPLIT function of CA SMF Director for CA MICS components, one or more SPLIT statements must be coded. The split is performed at SMF dump time and the files can then be used as input to products in one or more units. The same results can be accomplished by using the EXTRACT function of CA SMF Director, which retrieves data from the previously created history files. For more information on the SPLIT and EXTRACT functions, see the CA SMF Director User Guide at http://ca.com/support.

A complete set of SMF record types and subtypes, for each CA MICS component that inputs SMF data, can be found in sharedprefix.MICS.PARMS(cccSMFD), where ccc is the three-character product identifier. Each PARMS member lists the available SMF record types and subtypes for that component in a format suitable for use in CA SMF Director SPLIT and EXTRACT statements. These members are provided as examples only; the CA SMF Director JCL should not reference sharedprefix.MICS.PARMS(cccSMFD).

Chapter 7: PARAMETERS

Defining product parameters requires that you gain the necessary understanding of your installation and its needs and to translate that understanding into CA MICS parameters.

This chapter requests that you:

- Make several policy decisions
- Complete various worksheets
- Translate the worksheet entries into the corresponding CA MICS parameter library entries

These activities represent the major portion of the product installation process.

The CA MICS System Administrator should use this chapter as a detailed reference when installing or modifying the product in conjunction with the CA MICS Planning, Installation, Operation, and Maintenance Guide (PIOM). Chapters 2 and 3 of the CA MICS PIOM document the mechanics of the CA MICS installation process and include checklists that describe each installation step.

If you have a question at any time during your review of the material presented here, please contact the CA MICS Product Support Group.

This section contains the following topics:

7.1 Environmental Considerations

Prior to coding product parameters, you need to know about the MVS environment(s) at your installation. Before you specify parameters for the product:

- Examine existing user groups, account codes, and job control information used on the system. This information helps to code appropriate values for account codes.

- Review the default options for the parameters to determine their applicability to your site.

- Review current CA MICS parameter specifications:

  - Review database unit specifications to determine which unit or units should include SMF data.

  - Review the SYSID parameter to determine whether it correlates with the SMF data. Your site's SYSID definition is located in the prefix.MICS.PARMS data set associated with each database unit.

  - Review the CA MICS ZONE parameter to ensure that it reflects the variations in SMF data. This parameter is located in the prefix.MICS.PARMS data set associated with each database unit.

  - Examine existing accounting standards for other CA MICS products, if applicable, to ensure that CA MICS Accounting and Chargeback aggregates information consistently.

The CA MICS MQSeries Analyzer processes input data from more than one SMF type record. All input data is processed by the DAY051 step in the CA MICS DAILY job as part of the same process. By reviewing the MICSLOG output of the DAY051 step of the CA MICS DAILY job, you can determine exactly what SMF record types were present in the input data stream for each MVS host.

Following CA MICS standards, if an installation fails to provide input from ANY source, the DAY051 step will fail with a U300 ABEND. When you expect this problem, but must run the DAILY job anyway, code SYSPARM=NODATA on the EXEC statement of the DAY051 step to prevent the ABEND.

There is no parameterized provision in CA MICS to cause a

similar ABEND when data from one of the required sources is missing but data from other sources is present. If this occurs at your installation, consider coding the _USRIHL exit to examine the Input History Log File from the DETAIL time-span at the end of DAILY processing. This routine, and a sample exit which provides this function, are documented in Chapter 10 of this document.

7.2 Complex-level Parameters

Complex level parameters describe the CA MICS MQSeries Analyzer to the CA MICS system. These parameters are discussed in the following subsections:

1 - Analyzer Definition Statements (MQSGENIN)
2 - Account Code Definition (MQSACCT)
3 - Account Code Exit Routine Definition (MQSACRT)

7.2.1 Analyzer Definition Statements (MQSGENIN)

A generation definition statement member is provided for the CA MICS MQSeries Analyzer in sharedprefix.MICS.GENLIB(MQSGENIN). Chapter 4 of the CA MICS System Modification Guide describes the contents of GENIN members.

Remember that you need to run MQSCGEN (in sharedprefix.MICS.CNTL) after tailoring MQSGENIN.

7.2.2 Account Code Definition (MQSACCT)

In the CA MICS Analyzer for MQSeries, user-defined account codes are available to supplement the default sort/summarization data elements for the files defined in the MQA Information Area and the MQB Information Area:

File	File Label
MQAMMA	Message Manager Accounting File
MQATAA	Task Accounting File
MQAQAA	Queue Activity File
MQBMFA	Message Flow Accounting File

The parameters you specify in sharedprefix.MICS.PARMS(MQSACCT) define the number of account files, the code fields that will be carried in these files, the length of each field, and the SAS long names that are associated with each field. Once the fields are defined, you must provide a routine that assigns them values (the MQSACRT routine in Section 7.2.3).

Preparing to Define Account Codes

Each site has its own method for associating its MQ work with the responsible users, projects, or departments. Before defining CA MICS Analyzer for MQSeries account codes, it is important that you investigate your site's accounting standards to do the following:

- Identify the current organizational coding system (for example, cost center coding system identifying the division, department, project, and employee) and determine how the account codes are specified.

- Identify the naming conventions for physical and logical entities such as databases, user IDs, connections, thread cross references, brokers, and so on.

- Identify if, and how, the codes are verified to ensure that they correspond to valid definitions. You should always validate account codes and assign unidentified or invalid account codes to a special site overhead account code. This approach provides you with two benefits. First, it groups all invalid codes under the same category and, therefore, requires less DASD space for storing the MQSeries Analyzer's file. Second, it enables

```
  you to easily determine how much of this overhead
  activity is taking place.

Consider the following suggestions in determining the number
of account codes required to meet your site's reporting and
analysis needs:

o Account codes are part of the summarization keys for the
  files that support them.  As such, at least one record is
  generated for each combination of values.  Therefore, the
  higher the number of account codes, the more DASD space
  the database will require.  At the same time, a higher
  number of account codes also supports data analysis at a
  greater level of detail.

o If you anticipate needing to expand the account code
  structure in the future, establish an extra account code
  now in order to eliminate the need to retrofit the
  database later.

The default sort/summarization data elements defined for the
MQA information area files result in a tremendous reduction
of data volume at the DAYS and higher timespans.

The default MQSACCT field definitions provided for this
component provide three additional key data elements to
provide more granular data at the DAYS and higher timespans:

  MQSACT1 - 'CONNECTION TYPE'
  MQSACT2 - 'CONNECTION NAME'
  MQSACT3 - 'NAME'

You should consider using these three additional
sort/summarization keys for the MQA information area files if
you are interested in reporting on, or charging for,
WebSphere MQ activity based on the type of connecting address
space (CICS, IMS, Batch, and so on), the specific name of the
connecting address space, and the actual transaction name or
USERID.

For the MQB information area file MQBMFA, other choices must
be made.  See 'Override Global MQSACTn Values for MQBMFA File'
in section 7.2.3 below.


Defining Account Codes
----------------------

Account code field names are in the form MQSACTx, where x is
```

the sequential number of the account code field. If three fields are defined, they will be MQSACT1, MQSACT2, and MQSACT3. In your accounting structure for the MQA information area files, these might identify the User ID Associated With the Transaction, Connection Type, and Transaction Name. The sequential number is called the account code field "level" number. You can have a maximum of nine levels. A sample account code structure is provided in sharedprefix.MICS.PARMS(MQSACCT).

Figure 7-1 provides a worksheet for collecting the data. The fields on the worksheet are:

LEVEL: ----- The level of importance of each account code, with level 1 as the most important and the highest level number as the least important. The levels are defined sequentially starting with 1. You can define up to nine levels. This parameter is required.

MASK: ---- An optional parameter that deactivates account codes in specified timespans. Specifying a timespan mask requires coding T(......) as the second parameter in a statement, where each "." represents a file timespan, in the order of DETAIL, DAYS, WEEKS, MONTHS, YEARS, and TABLES. For each timespan, specify a Y to indicate that the account code is active or an N to indicate that it is inactive.

If you do not code the mask, it has a default value of T(YYYYYY).

The following rules apply if you code the mask:

- DETAIL must always be Y. Account codes cannot be deactivated in this timespan.
- If DAYS is N, then WEEKS, MONTHS, and YEARS must also be N. If the account code is inactive in the DAYS timespan, it cannot be active in higher timespans.
- If MONTHS is N, then YEARS must be N. If the account code is inactive in the MONTHS timespan, it cannot be active in the YEARS timespan.

LENGTH: The length of the account code. The length can

```
------       range from 1 to 30.  This parameter is required.

TITLE:       The title that describes the account code.  The
-----        length of the title is 1 to 40 characters.  The
             title is embedded in quotes (').  This is a
             required parameter.
```

```
+-------------------------------------------------------------------------+
| INSTALLATION PREPARATION WORKSHEET:  MQS Account Code Level Definition  |
|                                                                         |
| PARMS Library Member is MQSACCT                                         |
| Reference Section:  7.2.2  CA MICS Analyzer for MQSeries Guide          |
+-------------------------------------------------------------------------+
|  ACCOUNT   (Optional)                                                   |
| CODE LEVEL TIMESPAN   FIELD                                             |
|   (1-9)      MASK     LENGTH          ACCOUNT CODE LEVEL TITLE          |
|                                                                         |
|     _      T(______)    __     '_____________________________________'|
|                                                                         |
|     _      T(______)    __     '_____________________________________'|
|                                                                         |
|     _      T(______)    __     '_____________________________________'|
|                                                                         |
|     _      T(______)    __     '_____________________________________'|
|                                                                         |
|     _      T(______)    __     '_____________________________________'|
|                                                                         |
|     _      T(______)    __     '_____________________________________'|
|                                                                         |
|     _      T(______)    __     '_____________________________________'|
|                                                                         |
|     _      T(______)    __     '_____________________________________'|
|                                                                         |
+-------------------------------------------------------------------------+
```

Figure 7-1. MQS Account Code Level Definition Worksheet

When you complete the worksheet, use it to code sharedprefix.MICS.PARMS(MQSACCT). These general rules apply when coding MQSACCT:

- Code a separate statement for each account code level.
- Blank statements are permitted. Comments are coded by beginning the statement with an '*'.

```
o Account levels are provided in order, starting with '1'.

o Up to nine levels are permitted, with no gaps between the
  numbers permitted.

o The format of the statement is free-form but positional.
  The statement format is one of these:

  level length 'descriptive title'
  level (optional)mask length 'descriptive title'

Example
-------
1 T(YYYYYY) 12 'CONNECTION TYPE'
2 T(YYYYYY)  8 'CONNECTION NAME'
3 T(YYYYYY) 20 'NAME'
```

7.2.3 Account Code Exit Routine Definition (MQSACRT)

This section explains how to code an account code exit for the CA MICS Analyzer Option for MQSeries. The account code exit is complex-level, and the code and values assigned are used for every database unit that contains this analyzer. The process to define the MQSACTn data element values differently for each file is described below.

You are responsible for testing the accuracy of the exit routine. The worksheet for coding the MQSACRT exit is shown in Figure 7-2.

After you define the number of account codes in MQSACCT that you want in your files, you need to code the Account Code Exit Routine (MQSACRT) in sharedprefix.MICS.PARMS. MQSACRT is a SAS routine that derives the account code data elements during the DAY051 step. For example, if you define three account codes in MQSACCT, then your MQSACRT exit must contain SAS code to derive the data elements MQSACT1, MQSACT2, and MQSACT3.

The SAS code used to populate the MQSACTn data elements in your MQSACRT exit is invoked while building the DETAIL level database observations for the following files:

File	File Label
MQAMMA	Message Manager Accounting File
MQATAA	Task Accounting File
MQAQAA	Queue Activity File
MQBMFA	Message Flow Accounting File

Override Global MQSACTn Values for MQAMMA and MQATAA Files

The MQAMMA file is populated when the raw data source for accounting information is the SMF type 116 subtype 0 record, activated by starting trace class 1 in WebSphere MQ.

The MQATAA file is populated when the raw data source for accounting information is the SMF type 116 subtype 1 record, activated by starting trace class 3 in WebSphere MQ.

Most sites input only one of these record types, but if you have raw data coming from different systems, you can test the special FILEID data element in order to execute the code that assigns account values according to the raw data record currently being processed. FILEID is a three-character field

containing either MMA or TAA (or MFA).

Note that in the MQSACRT exit, FILEID does not identify the MQAQAA file. This is because the MQSACRT routine is invoked only once for a WebSphere MQ generated SMF type 116 subtype 1 record. The type 116 record is the source for both the MQATAA file record and one or more MQAQAA file records (one for each queue segment in the SMF record).

The MQSACTn values you assign in the MQSACRT routine when FILEID='TAA' are, by default, passed to each MQAQAA file record generated for that task or channel.

Note that the process to define the MQSACTn data element values differently for MQAQAA file observations is described below.

Override Global MQSACTn Values for MQAQAA File Observations

If your summarization needs for the MQAQAA file are different than those for the MQATAA file, you have the opportunity to override the MQSACTn values in the USRSQAA exit just prior to the output of each record to the MQAQAA work file. For example, if you do not need MQSACT3 granularity in the MQAQAA file, you could simply assign a value of blanks (' ') to the MQSACT3 field in the USRSQAA exit, eliminating any summarization impact of MQSACT3 on the MQAQAA file.

Override Global MQSACTn Values for MQBMFA File

The MQBMFA file is generated when the raw data source for accounting information is the SMF type 117 subtype 1 and 2 records generated by WebSphere Message Broker.

The special FILEID data element can be used in order to execute the code that assigns the account values according to the raw data record currently being processed. To assign account field (MQSACTn) values for the MQBMFA file, you can test FILEID for MFA, so that some of the MQSACRT exit code executes only for the SMF type 117 records.

The need and values for MQBMFA file account fields is rather obscure. If they are to be used by the CA MICS Analyzer Option for MQSeries for a particular WebSphere MQ installation, then the values assigned to the account fields

must be determined by the local staff involved. If not to be used, you can simply assign a value of blanks (' ') to all the MQSACTn fields in the USRSMFA exit, eliminating any summarization impact on the MQBMFA file.

```
+-------------------------------------------------------------------------+
| INSTALLATION PREPARATION WORKSHEET:  MQS Account Code Routine Definition |
|                                                                         |
| PARMS Library Member is MQSACRT                                         |
| Reference Sections: 7.2.2  CA MICS Analyzer Option for MQSeries Guide   |
+-------------------------------------------------------------------------+
| * VALIDATE ACCOUNT CODES                                                |
|                                                                         |
| IF { account data is valid } THEN DO;                                   |
|                                                                         |
| * POPULATE ACCOUNT CODE FIELDS                                          |
|                                                                         |
|     MQSACT1=field source 1 ;                                            |
|     MQSACTn=field source n ;                                            |
|     _____________________________________________________________       |
|     _____________________________________________________________       |
|     _____________________________________________________________       |
|     _____________________________________________________________       |
|     _____________________________________________________________       |
| END;                                                                    |
| ELSE DO;                                                                |
|                                                                         |
| * ASSIGN TO OVERHEAD ACCOUNT                                            |
|                                                                         |
|     MQSACT1='overhead category' ;                                       |
|     MQSACTn='overhead category' ;                                       |
|     _____________________________________________________________       |
|     _____________________________________________________________       |
|     _____________________________________________________________       |
|     _____________________________________________________________       |
|     _____________________________________________________________       |
|                                                                         |
| END;                                                                    |
+-------------------------------------------------------------------------+
```

Figure 7-2. MQS Account Code Routine Definition Worksheet

A sample MQSACRT member is shown below:

```
   /* ******************************************** */
   /*    SAMPLE MQS ACCOUNT CODE DERIVATION EXIT    */
   /* ******************************************** */
   /*                                              */
   /*  THIS SAMPLE ACCOUNT ROUTINE EXIT CODE IS     */
```

```
/*  INVOKED FOR THE TAA, MMA, AND QAA FILES TO   */
/*  POPULATE 3 ACCOUNT CODES.                    */
/*                                               */
/*  THE THREE ACCOUNT CODES ARE DEFINED IN       */
/*  SHAREDPREFIX.MICS.PARMS(MQSACCT) AS FOLLOWS: */
/*                                               */
/*      ACCOUNT CODE STRUCTURE                   */
/*                                               */
/*      MQSACT1 12 'CONNECTION TYPE'             */
/*      MQSACT2 8  'CONNECTION NAME'             */
/*      MQSACT3 20 'NAME'                        */
/*                                               */
/*  MQSACT1 CONTAINS THE CONNECTION TYPE, A 12   */
/*          BYTE FIELD. THE MQSACRT POPULATES    */
/*          MQSACT1 WITH A CHARACTER FIELD BASED */
/*          ON THE VALUE OF THE NUMERIC FIELD    */
/*          MQSATYP ("TYPE OF CONNECTION").      */
/*  MQSACT2 CONTAINS THE CONNECTION NAME, THE    */
/*          NAME OF THE ADDRESS SPACE THAT HAS   */
/*          CONNECTED TO THE MQ QUEUE MANAGER.   */
/*          IN THE MQSACRT CODE, MQSACT2 IS      */
/*          SET DIRECTLY TO MQSCONNM             */
/*          ("CONNECTION NAME").                 */
/*  MQSACT3 IS THE ACTUAL TASK, TRANSACTION      */
/*          NAME, CHANNEL NAME, ETC. THAT        */
/*          INTERFACED THROUGH THE CONNECTION    */
/*          TO INTERACT WITH MQ. IT IS SET       */
/*          DIFFERENTLY BASED ON CONNECTION      */
/*          TYPE. FOR EXAMPLE, WHEN MQSATYP=1    */
/*          (CICS), MQSACT3 IS SET TO ELEMENT    */
/*          TRANCODE ("CICS TRANSACTION CODE").  */
/*                                               */
/***********************************************/
/****    SAMPLE ACCOUNT ROUTINE EXIT CODE     ****/
/****                                         ****/
       IF MQSATYP=1 THEN DO ;
         MQSACT1='CICS        ' ;
         MQSACT2=MQSCONNM ;
         MQSACT3=TRANCODE ;
       END ;
       ELSE IF MQSATYP=2 THEN DO ;
         MQSACT1='BATCH/TSO   ' ;
         MQSACT2=MQSCONNM ;
         MQSACT3=MQSUSID     ;
       END ;
       ELSE IF MQSATYP=3 THEN DO ;
         MQSACT1='IMS CONTROL ' ;
         MQSACT2=MQSCONNM ;
         MQSACT3='IMSCNTRL' ;
```

```
        END ;
        ELSE IF MQSATYP=4 THEN DO ;
          MQSACT1='IMS MPP/BMP ' ;
          MQSACT2=MQSCONNM ;
          MQSACT3=PSBNAME    ;
        END ;
        ELSE IF MQSATYP=5 THEN DO ;
          MQSACT1='CMD SERVER  ' ;
          MQSACT2=MQSCONNM ;
          MQSACT3='CMD/SERV' ;
        END ;
        ELSE IF MQSATYP=6 THEN DO ;
          MQSACT1='CHAN INIT   ' ;
          MQSACT2=MQSCONNM ;
          MQSACT3=TAACHNL    ;
        END ;
        ELSE IF MQSATYP=7 THEN DO ;
          MQSACT1='RRS BATCH   ' ;
          MQSACT2=MQSCONNM ;
          MQSACT3=MQSUSID    ;
        END ;
        ELSE DO ;
          MQSACT1='UNKNOWN ' !! PUT(MQSATYP,2.) ;
          MQSACT2=MQSCONNM ;
          MQSACT3='UNKNOWN ' ;
        END ;
/****                                          ****/
```

7.3 Unit-Level Parameters

This section shows you how to define the unit-level parameters for the CA MICS MQSeries Analyzer. These parameter definitions exist for each CA MICS database unit in which the MQSeries Analyzer is installed.

The following topics are presented:

1 - MQSeries Parameter Generation (MQSPGEN)
2 - MQSeries Processing Options (MQSOPS)
3 - INPUTRDR and INPUTMQS PARMS Members
4 - Database Space Modeling (DBMODEL)

7.3.1 MQSeries Parameter Generation (MQSPGEN)

The MQSeries Parameter Generation (MQSPGEN) inputs the unit level parameter MQSOPS and generates SAS macros which are stored in prefix.MICS.USER.SOURCE(#MQSMSTR) and skeleton JCL in prefix.MICS.PARMS(WORKMQS). Currently, only the number of SAS work file pairs is controlled by this process. The JCL for MQSPGEN resides in prefix.MICS.CNTL.

7.3.2 MQSeries Processing Options (MQSOPS)

```
This section shows you how to specify the operational
statements that control processing of the CA MICS MQSeries
Analyzer.

Operational statements are stored in the prefix.MICS.PARMS
cccOPS member, where ccc is the component identifier, and are
incorporated into the CA MICS system by running the
prefix.MICS.CNTL(cccPGEN) job.

************************************************************
*                                                          *
*  NOTE:  CHANGES to prefix.MICS.PARMS(cccOPS) members     *
*         REQUIRE EXECUTION of prefix.MICS.CNTL(cccPGEN)   *
*         to take effect.                                  *
*                                                          *
*         In addition, any change to parameters that       *
*         impact the DAILY operational job JCL such as,    *
*                                                          *
*         o  changing RESTART NO to RESTART YES,           *
*                                                          *
*         o  WORK parameter changes when RESTART NO is in  *
*            effect,                                       *
*                                                          *
*         o  Specifying TAPEfff (if this product supports  *
*            a DETAIL level TAPE option),                  *
*                                                          *
*         o  or changes to prefix.MICS.PARMS(INPUTccc),    *
*                                                          *
*         will require regeneration of the DAILY job by    *
*         executing prefix.MICS.CNTL(JCLGEND) or by        *
*         specifying DAILY in prefix.MICS.PARMS(JCLGENU)   *
*         and executing prefix.MICS.CNTL(JCLGENU).         *
*                                                          *
*         Refer to the checklist (if provided) for updating *
*         cccOPS parameters and running required generation *
*         jobs.                                            *
************************************************************The following
sections explain each of the option statements
specified in prefix.MICS.PARMS(MQSOPS).

WORK, MULTWORK, and NOMULT Statements
Internal Step RESTART Statements
Incremental Update Statements
DETAIL Tape Processing Statements
```

These optional statements are described in detail below. After being defined and coded, implementation of specified parameter values occurs with the successful execution of the parameter generation routine, prefix.MICS.CNTL(MQSPGEN), in each unit containing the CA MICS MQSeries Analyzer product. The MQSPGEN job builds unit-level macros representing the coded statements. These macros direct certain aspects of the DAY051 step execution. Changes made to the MQSOPS member do not take effect until after successful execution of the MQSPGEN job.

7.3.2.1 WORK, MULTWORK, and NOMULT Statements

```
WORK
----

This statement is optional.  It enables sites experiencing
either SAS WORK space allocation problems or out of work
space conditions during DAYnnn or INCRnnn (where nnn is the
job step number), daily or incremental update processing, to
allocate multiple WORK files.

You can allocate multiple WORK files for use during the daily
and/or incremental update job step.  The maximum number of
WORK files you can allocate varies by product.  These
additional work files are used in conjunction with the single
work data set allocated by default using the JCLDEF
parameters WORKUNIT and WORKSPACE.

Because the individual space allocation requirement for each
WORK file is typically much smaller, it is more likely to be
satisfied.

To take advantage of multiple WORK files support, edit
prefix.MICS.PARMS(cccOPS) and insert a WORK statement as
shown below:

WORK n data_set_allocation_parameters

where n is the number of WORK data sets

        NOTE:  The default is one (1).
               The maximum is nine (9).

        data_set_allocation_parameters is one or more data
        set allocation parameters (for example, STORCLAS or
        SPACE) separated by spaces.

You can also specify the WORK parameter as the following:

WORK n XXX pppp ssss

where:

  n    is the number of WORK data sets
  XXX  is TRK or CYL
  pppp is the primary allocation
  ssss is the secondary allocation

Note:  When allocating any number of SAS WORK data sets, be
```

aware that one additional SAS WORK data set is automatically allocated to facilitate sorting. For example, if you allocate six SAS WORK data sets, you will actually get seven.

If you omit the data_set_allocation_parameters or the WORK parameter, the work data sets are allocated according to the values you specified for the WORKUNIT and WORKSPACE parameters in prefix.MICS.PARMS(JCLDEF). Use the data_set_allocation_parameters to override this default, either to alter the space allocation or to use System Managed Storage (SMS) parameters to control data set placement and characteristics.

Note: If you allocate insufficient space for the WORK data sets, DAYnnn and/or INCRnnn processing will fail and can only be restarted from the beginning.

Note: If internal step restart is active, you can override the WORK data set allocation parameters at execution-time using the //PARMOVRD facility. For more information about execution-time override of dynamic data set allocation parameters, see the PIOM, section 2.3.6.

Specify data set allocation parameters, separated by blanks, according to SAS LIBNAME statement syntax. If you need multiple lines, repeat the WORK keyword on the continuation line.

WORK accepts the engine/host options documented in the SAS Companion for the z/OS environment, including STORCLAS, UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and VOLSER.

Important! Do not specify the DISP parameter.

Example 1:

```
WORK n STORCLAS=MICSTEMP SPACE=(XXX,(pppp,ssss),RLSE)
```

where:

```
  n        - is the number of WORK data sets.
  STORCLAS - specifies a storage class for a new data set.
             The name can have up to 8 characters.
  SPACE    - specifies how much disk space to provide for
             a new data set being allocated.
  XXX      - is TRK or CYL.
  pppp     - is the primary allocation.
  ssss     - is the secondary allocation.
  RLSE     - specifies that free-space should be released
```

```
            when the data set is closed.

Example 2:

WORK n XXX pppp ssss

where:

  n        - is the number of WORK data sets.
  XXX      - is TRK or CYL.
  pppp     - is the primary allocation.
  ssss     - is the secondary allocation.

Example 3 (multiple lines):

WORK n STORCLAS=MICSTEMP UNIT=SYSDA
WORK   SPACE=(xxxx,(pppp,ssss),,,ROUND))

where:

  n        - is the number of WORK data sets.
  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.
  UNIT     - specifies the generic unit for a new data set.
             The name can have up to eight characters.
  SPACE    - specifies how much disk space to provide for
             a new data set being allocated.
  XXX      - is TRK or CYL.
  pppp     - is the primary allocation.
  ssss     - is the secondary allocation.

Note:  Since there is some performance impact when using
multiple WORK files, you should specify the minimum number of
WORK data sets to meet your work space requirements.  As a
start, try incrementing the number gradually beginning from
the default.


WORK Considerations
--------------------

How Much Space Should You Allocate?

o  First Time Implementation of Multiple Work Files

   If this is the first time you are implementing multiple
   work files for this product in this unit, review
   prefix.MICS.PARMS(JCLDEF) and find the WORKSPACE
   parameter.  It will resemble this sample statement:
```

```
WORKSPACE      TRK 500 250
```

The value shows the current SAS WORK space allocation for the unit as a single data set. It also serves as the default value used in the unit's DAYnnn daily update (and/or INCRnnn incremental update) step unless you provide a WORK parameter.

To achieve the equivalent work space allocation of WORKSPACE TRK 500 250 using multiple WORK data sets that will collectively share the work space requirements of the daily and/or incremental update step, you could code either one of these:

```
WORK 2 SPACE=(TRK,(250,125))
```

```
WORK 5 SPACE=(TRK,(100,50))
```

To determine the total work space, multiply the number of WORK files (n) by the primary (pppp) and secondary (ssss) values specified.

Note: To simplify the example, only the SPACE parameter is shown above. You can follow either with data set allocation parameters like UNIT or STORCLAS as required for your site.

o Adjusting Allocation for Existing Multiple WORK Files

If you have previously implemented multiple WORK file support for this product in this unit, and you want to change either the number of WORK files or the space allocations, examine prefix.MICS.PARMS(cccOPS) and find the existing WORK statement.

- If the existing WORK statement only specifies the number of WORK files but does not contain space allocation information as shown below:

  ```
  WORK 5
  ```

  Then each of the multiple WORK files is allocated using the values from the WORKSPACE parameter of prefix.MICS.PARMS(JCLDEF), as described earlier under First Time Implementation of Multiple Work Files.

  To increase workspace, you can increase the number of WORK files (for example, change WORK 5 to WORK 6,7,8,

or 9), increase the space allocation in the WORKSPACE parameter, or do both.

To decrease workspace, you can decrease the number of WORK files (for example, change WORK 5 to WORK 4,3,2, or 1), decrease the space allocation in the WORKSPACE parameter, or do both.

You can also elect to explicitly specify the multiple WORK file space allocation by adding the space allocation values directly to the WORK statement. This will remove the link to the prefix.MICS.PARMS(JCLDEF) WORKSPACE parameter for multiple WORK file space allocation. This is recommended as it serves to clearly document, in one place, how multiple WORK files are allocated.

- If the existing WORK statement does include space allocation as shown in the examples below:

  WORK 5 TRK 200 100

  or

  WORK 5 SPACE=(TRK,(200,100)) STORCLAS=MICSTEMP

  Simply change the values to meet your needs.

  If you need more work space, you can increase the number of WORK files (for example, change WORK 5 to WORK 6,7,8, or 9), increase the space allocation (for example, change TRK 200 100 to TRK 250 120), or do both.

  To decrease work space, you can decrease the number of WORK files (for example, change WORK 5 to WORK 4,3,2, or 1), decrease the space allocation (for example, change TRK 200 100 to TRK 150 80), or do both.

Note: If internal step restart is NOT active (RESTART NO) and you change the WORK parameter, you must:

o Run cccPGEN
o Run JCLGENU for DAILY (to regenerate DAILY) and, if incremental update is enabled, INCRccc

When internal step restart is active, (RESTART YES), then, when you change WORK and run cccPGEN, changes take effect immediately. There is no need to run JCLGENU.

```
SASWORK
-------

This statement is optional.

The WORK DD statement in the CA MICS procedures allocates
a temporary data set where SAS keeps its temporary data
files and other items that SAS uses during processing of
the current job.

By default, the space allocated is defined in the member
prefix.MICS.PARMS(JCLDEF) with the WORKSPACE and WORKUNIT
parameters, then generated into all the JCL procedures for
a given unit.

With the SASWORK statement you have the option to override
this unit-wide definition to specify the space allocation
individually for the current step.

The format of the SASWORK statement is:

SASWORK data_set_allocation_parameters

where data_set_allocation_parameters is one or more data set
allocation parameters (for example, STORCLAS or SPACE)
separated by spaces.

You can also specify the SASWORK parameter as the following:

SASWORK XXX pppp ssss

where:

  XXX  is TRK or CYL
  pppp is the primary allocation
  ssss is the secondary allocation

If you omit the data_set_allocation_parameters or the SASWORK
statement, the WORK data set is allocated according to the
values you specified for the WORKUNIT and WORKSPACE
parameters in prefix.MICS.PARMS(JCLDEF).  Use the
data_set_allocation_parameters to override this default,
either to alter the space allocation or to use System Managed
Storage (SMS) parameters to control data set placement and
characteristics.

Specify data set allocation parameters, separated by blanks,
```

```
according to SAS LIBNAME statement syntax.  If you need
multiple lines, repeat the SASWORK keyword on the
continuation line.

Example:

SASWORK STORCLAS=MICSTEMP SPACE=(XXX,(pppp,ssss))

where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to 8 characters.
  SPACE    - specifies how much disk space to provide for
             a new data set being allocated.
  XXX      - is TRK or CYL.
  pppp     - is the primary allocation.
  ssss     - is the secondary allocation.


Note:  If you change the SASWORK parameter, you must:

o  Run cccPGEN
o  Run JCLGENU for DAILY (to regenerate DAILY) and, if
   incremental update is enabled, INCRccc

MULTWORK|NOMULT fff fff ... fff
-------------------------------

Since multiple work files usage impacts performance, this
product provides these optional parameters so you can
restrict multiple work files usage to only those files having
excessive space requirements.

Note:  You can only use one of these optional parameters with
the WORK statement, NOT both.

The MULTWORK parameter restricts the use of multiple WORK
files to ONLY those listed after the MULTWORK keyword.

MULTWORK fff fff ... fff

where fff is the unique three character identifier

If you need multiple lines, repeat the MULTWORK on the
continuation line.

The NOMULT parameter forces the use of multiple WORK files
for all files EXCEPT those specified after the NOMULT
keyword.
```

```
NOMULT fff fff ... fff

where fff is the unique three character identifier

If you need multiple lines, repeat the NOMULT on the
continuation line.

The default is as follows if neither MULTWORK nor NOMULT
parameter is specified:

MULTWORK BMS LMS DMS MMS CMS MMA TAA QAA MFA MFN QA1 TA1 TAQ
         QA2


The following files are eligible for multiple WORK support:

  o BMS   Buffer Manager Statistics File
  o CMS   Coupling Facility Statistics File
  o LMS   Log Manager Statistics File
  o MMS   Message Manager Statistics File
  o DMS   Data Manager Statistics File
  o MMA   Message Manager Accounting File
  o TAA   Task Accounting File
  o QAA   Queue Activity File
  o MFA   Message Flow Accounting File
  o MFN   Message Flow Node File
  o QA1   (Intermediate Work) Queue Activity File
  o QA2   (Intermediate Work) Queue Activity File
  o TA1   (Intermediate Work) Task Accounting File
  o TAQ   (Intermediate Work) Task Accounting File

The following section discusses changing the WORK option:

    1 - Change the Number of Work Files
```

7.3.2.1.1 Change the Number of Work Files

```
To change the number of work files used in the CA MICS
MQSeries Analyzer processing in Step DAY051, follow the
checklist provided below for each unit.

   ************************************************
   *                                              *
   *           CHANGE NUMBER OF WORK FILES        *
   *                                              *
   ************************************************

___ 1.  Update the WORK statement in
        prefix.MICS.PARMS(cccOPS), where (ccc) is the
        component identifier, to specify the number of work
        data sets required.  Below is an example:

        WORK n STORCLAS=MICSTEMP SPACE=(XXX,(pppp,ssss))

        where:

        n        - is the number of WORK data sets.
        STORCLAS - specifies a storage class for a new data
                   set.  The name can have up to eight
                   characters.
        SPACE    - specifies how much disk space to provide
                   for a new data set being allocated.
        XXX      - is TRK or CYL.
        pppp     - is the primary allocation.
        ssss     - is the secondary allocation.

        You should specify the minimum number of WORK data
        sets to meet your work space requirements.  As a
        start, try incrementing the number gradually
        beginning from the default.

___ 2.  If this is the first time you are implementing
        multiple work files for this product, then continue
        with Step 2.  If you are just changing the number
        currently in use, or simply the space definitions,
        then proceed to Step 3 of this checklist.

        Browse sharedprefix.MICS.PROTOLIB(DYcccnnn) and
        sharedprefix.MICS.PROTOLIB(cccINCR), where (nnn) is
        the job step number and (ccc) is the product ID for
        this product, checking for the presence of the WORK
        symbolic on the EXEC statement to determine if you
        have previously modified this product to increase the
        allocation of SAS WORK space.
```

```
___ 2a. If you find a WORK symbolic, simply divide the
        primary and secondary allocation values from the WORK
        symbolic by the number of work files specified above
        (value of n on the WORK statement coded in Step 1).

        Coding the resulting values will yield the same
        aggregate space allocation you have been using with a
        single WORK file.  To double your available WORK
        space, carry out the division, double the results and
        use the values in the WORK definition above.

___ 2b. If you did not find a WORK symbolic in PROTOLIB,
        examine prefix.MICS.PARMS(JCLDEF) for each CA MICS
        unit containing this product.  Find the WORKSPACE
        keyword.  The space allocation specified is used for
        a single SAS WORK file.  Perform the same division as
        described in the previous paragraph to determine the
        quantity that will yield equivalent total allocation
        with multiple WORK files.  Then adjust the values
        upward to meet your needs.

___ 3.  Submit the job in prefix.MICS.CNTL(cccPGEN).

___ 4.  If you specified RESTART YES in the product's cccOPS,
        you are done.  Otherwise, you must do Steps 5, 6, and
        7.

___ 5.  Edit prefix.MICS.PARMS(JCLGENU) so that it contains a
        single line that reads:

        DAILY

        or, if incremental update is enabled for this product
        in this unit database, specify:

        DAILY INCRccc

        where ccc is the product ID.

___ 6.  Submit the job in prefix.MICS.CNTL(JCLGENU).  Ensure
        that there are no error messages in MICSLOG or
        SYSTSPRT, that the MICSLOG contains the normal
        termination message, BAS10999I, and that the job
        completes with a condition code of zero.

___ 7.  The following operational job(s) have changed:

        DAILY
```

INCRccc (if incremental update is enabled)

If your site has implemented the operational CA MICS processes in a scheduling product, the JCL may have to be refreshed in that product. See the scheduling product's administrator for the exact processes involved in updating that product's representation of the CA MICS jobs.

7.3.2.2 Internal Step Restart Statements

```
RESTART YES/NO
--------------

This statement is optional.  Specify this to activate
internal step restart for this product's DAILY and/or INCRccc
database update job steps:

RESTART YES


If you do not specify or enable the RESTART parameter, then
this option defaults to the following and internal step
restart is disabled:

RESTART NO


************************************************************
*                                                          *
*  Note:  Changing the RESTART parameter (either from NO   *
*         to YES or from YES to NO) requires regeneration  *
*         of the DAILY operational job by executing        *
*         prefix.MICS.CNTL(JCLGEND) or by specifying       *
*         DAILY in prefix.MICS.PARMS(JCLGENU) and          *
*         executing prefix.MICS.CNTL(JCLGENU).             *
*                                                          *
*         If incremental update is active for this product, *
*         you must also regenerate the INCRccc job.        *
*                                                          *
************************************************************

Internal step restart can significantly reduce time and
resource usage to recover from daily and/or incremental
update processing failures.  CA MICS uses a
checkpoint/restart technique.

o  When internal step restart is activated, the database
   update job step "checkpoints" (or saves) intermediate
   results (work file contents) and the operational
   environment at the end of each processing phase.

o  Then, if required, the database update step can resume
   execution at the beginning of the processing phase in
   which the failure occurred.

o  Restart is accomplished by restoring the operational
   environment from the last checkpoint, bypassing completed
```

```
   processing phases, and resuming execution using
   intermediate results (work files) from the last
   checkpoint.

Note:  When you activate internal step restart (RESTART YES),
       the following optional restart parameters are enabled.
       These parameters have no effect if restart is disabled
       (RESTART NO).  For more details, see the individual
       parameter descriptions later in this section.

       o  RESTARTCKPT data_set_allocation_parameters

       o  RESTARTWORK data_set_allocation_parameters

       o  DYNAMWAIT minutes


Processing Phases:
------------------

This product employs two database update processing phases
followed by the two common roll-up phases.

       Phase                    Description
    -------------  ----------------------------------------

    FORMAT         Read raw input data, convert to SAS
                   format, and output to intermediate work
                   files.

    DBUPDATE       Sort intermediate work file contents,
                   eliminate duplicate input data, merge data
                   across optional multiple work files,
                   enhance data content, and create the new
                   DETAIL cycle.

    DYSUM          Summarize DETAIL data to create new DAYS
                   cycles and to update current week-to-date
                   and month-to-date cycles.

    DYAGE          Cutover new database cycles to production
                   and "age" existing cycles.

RESTART Considerations
----------------------

  o Overhead

    Enabling internal step restart adds some overhead to the
```

database update job step -- the cost of taking checkpoints and managing saved materials. Since this overhead is relatively constant and independent of input data volume, you may find that costs outweigh potential savings when input data volume is low, for example in a test unit. For high volume, production units, internal step restart support overhead should be a minor portion of total resource usage.

o Cataloged Work Files

When internal step restart is enabled, the SAS work data set, internal step restart control data set, and multiple work file data sets are allocated and cataloged with permanent dataset names so they will be retained for use in restart if the step abends. These data sets are deleted when the step completes successfully.

Prior to enabling internal step restart support, these data sets were probably allocated on system "scratch" space with a temporary, system assigned data set names. If your installation standards do not allow "permanent" data sets on DASD volumes used for temporary work space, you may need to use the WORK, RESTARTCKPT, and RESTARTWORK parameters to direct the internal step restart data sets to a generic unit or storage class that allows cataloged data sets.

o Dynamic Allocation

When internal step restart is active, dynamic allocation is employed for the work data sets. If your installation restricts dynamic allocation of large, cataloged data sets, you may need to use the WORK, RESTARTCKPT, and RESTARTWORK parameters to direct work data set allocation to a generic unit or storage class where dynamic allocation is allowed.

o Data Set Names

The SAS work data set, internal step restart control data set, and multiple work file data sets are allocated and cataloged according to the standard CA MICS unit database data set name conventions. The default DDNAME and data set names are:

  o SAS work data set,
    //cccXWORK DD DSN=prefix.MICS.cccXWORK,.....

```
      o Internal step restart control data set,
             //cccXCKPT DD DSN=prefix.MICS.cccXCKPT,.....

      o Multiple work file data sets,
             //WORKnn   DD DSN=prefix.MICS.cccWRKnn,.....

    Since these data sets conform to the same data set name
    conventions as your existing CA MICS data sets, there
    should be few, if any, data set name related allocation
    issues.  However, it is possible to override the data set
    names if required.  Please contact CA MICS Product
    Support for assistance if you must alter data set names.



RESTARTCKPT
-----------

This statement is optional.  Specify the following to
override default data set allocation parameters for the
internal step restart checkpoint data set:

RESTARTCKPT   data_set_allocation_parameters

Note:  RESTARTCKPT is ignored when you specify RESTART NO.

The internal step restart checkpoint data set (or cccXCKPT
data set) contains processing status, control, and SAS
environmental information for internal step restart
processing checkpoints.  This includes a copy of the SAS WORK
format and macro catalogs, current macro variable values, and
a description of work files that may be needed to restart
DAYnnn processing.

By default, the cccXCKPT data set is allocated according to
the values you specified for the WORKUNIT and WORKSPACE
parameters in prefix.MICS.PARMS(JCLDEF).  Specify RESTARTCKPT
to override this default, either to alter the space
allocation or to use System Managed Storage (SMS) parameters
to control data set placement and characteristics.

Note:  If you allocate insufficient space for the cccXCKPT
data set, DAYnnn processing will fail and can only be
restarted from the beginning.

Note:  You can override the RESTARTCKPT data set allocation
parameters at execution-time using the //PARMOVRD facility.
For more information about execution-time override of dynamic
data set allocation parameters, see the PIOM, section 2.3.6.
```

```
Specify data set allocation parameters, separated by blanks,
according to SAS LIBNAME statement syntax.  If you need
multiple lines, repeat the RESTARTCKPT keyword on the
continuation line.

RESTARTCKPT accepts the engine/host options documented in the
SAS Companion for the z/OS Environment, including STORCLAS,
UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and VOLSER.

Important!  DO NOT SPECIFY THE DISP PARAMETER.

Example 1:

RESTARTCKPT  STORCLAS=MICSTEMP SPACE=(xxxx,(pp,ss),,,ROUND)

where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated, where:

             xxxx is TRK, CYL, or blklen
             pp is the primary allocation
             ss is the secondary allocation

             and ROUND specifies that the allocated space be
             "rounded" to a cylinder boundary when the unit
             specified was a block length.  ROUND is ignored
             with the TRK or CYL options.

Example 2 (multiple lines):

RESTARTCKPT  STORCLAS=MICSTEMP UNIT=SYSDA
RESTARTCKPT  SPACE=(xxxx,(pp,ss),,,ROUND)

where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  UNIT     - specifies the generic unit for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated.
```

```
RESTARTWORK
-----------

This statement is optional.  Specify the following to
override default data set allocation parameters for the
internal step restart WORK data set:

RESTARTWORK   data_set_allocation_parameters

Note:  RESTARTWORK is ignored when you specify RESTART NO.

The internal step restart WORK data set (or cccXWORK data
set) contains the intermediate work files that are not
enabled to multiple work file support, including those files
you may have specified on the optional NOMULT statement.

By default, the cccXWORK data set is allocated according to
the values you specified for the WORKUNIT and WORKSPACE
parameters in prefix.MICS.PARMS(JCLDEF).  Specify RESTARTWORK
to override this default, either to alter the space
allocation or to use System Managed Storage (SMS) parameters
to control data set placement and characteristics.

Note:  If you allocate insufficient space for the cccXWORK
data set, DAYnnn processing will fail and can only be
restarted from the beginning.

Note:  You can override the RESTARTWORK data set allocation
parameters at execution-time using the //PARMOVRD facility.
For more information about execution-time override of dynamic
data set allocation parameters, see the PIOM, section 2.3.6.

Specify data set allocation parameters, separated by blanks,
according to SAS LIBNAME statement syntax.  If you need
multiple lines, repeat the RESTARTWORK keyword on the
continuation line.

RESTARTWORK accepts the engine/host options documented in
"SAS Companion for the z/OS Environment", including STORCLAS,
UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and VOLSER.

Important!  DO NOT SPECIFY THE DISP PARAMETER.

Example 1:

  RESTARTWORK  STORCLAS=MICSTEMP SPACE=(xxxx,(pp,ss),,,ROUND)

where:
```

```
  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated, where:

             xxxx is TRK, CYL, or blklen
             pp is the primary allocation
             ss is the secondary allocation

             and ROUND specifies that the allocated space be
             "rounded" to a cylinder boundary when the unit
             specified was a block length.  ROUND is ignored
             with the TRK or CYL options.

Example 2 (multiple lines):

  RESTARTWORK  STORCLAS=MICSTEMP UNIT=SYSDA
  RESTARTWORK  SPACE=(xxxx,(pp,ss),,,ROUND)

where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  UNIT     - specifies the generic unit for a new data set.
             The name can have up to 8 characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated.
The following section discusses enabling this option:

    1 - Enable Internal Step Restart
```

7.3.2.2.1 Enable Internal Step Restart

To enable the internal step restart in the CA MICS MQSeries Analyzer, follow the checklist provided below:

```
   ************************************************
   *                                              *
   *          ENABLE INTERNAL STEP RESTART        *
   *                                              *
   ************************************************
```

___ 1. Edit prefix.MICS.PARMS(cccOPS), where (ccc) is the component identifier, and specify:

RESTART YES

For additional information on related topic, review the documentation for this product on WORK, RESTARTWORK, and RESTARTCKPT parameters to override default data set allocation parameters.

___ 2. Submit the job in prefix.MICS.CNTL(cccPGEN).

___ 3. Edit prefix.MICS.PARMS(JCLGENU) so that it contains a single line that reads:

DAILY

or, if incremental update is enabled for this product in this unit database, specify:

DAILY INCRccc

where ccc is the product ID.

___ 4. Submit the job in prefix.MICS.CNTL(JCLGENU). Ensure that there are no error messages in MICSLOG or SYSTSPRT, that the MICSLOG contains the normal termination message, BAS10999I, and that the job completes with a condition code of zero.

___ 5. The following operational job(s) have changed:

DAILY

INCRccc (if incremental update is enabled)

If your site has implemented the operational CA MICS processes in a scheduling product, the JCL may have

```
to be refreshed in that product.  See the scheduling
product's administrator for the exact processes
involved in updating that product's representation of
the CA MICS jobs.
```

7.3.2.3 Incremental Update Statements

```
INCRUPDATE
----------

This statement is optional.  Specify this to enable
incremental update for this product:

INCRUPDATE YES

If you do not specify or enable the INCRUPDATE parameter,
then this option defaults to this and incremental update is
disabled:

INCRUPDATE NO

************************************************************
*                                                          *
*  Note:  Changing the INCRUPDATE parameter (either from NO *
*         to YES or from YES to NO) requires regeneration   *
*         of the DAILY operational job by executing         *
*         prefix.MICS.CNTL(JCLGEND) or by specifying        *
*         DAILY in prefix.MICS.PARMS(JCLGENU) and           *
*         executing prefix.MICS.CNTL(JCLGENU).              *
*                                                          *
*         If you specify INCRUPDATE YES, you must also      *
*         generate the INCRccc, cccIUALC, and cccIUGDG jobs *
*         (where ccc is the 3 character product ID).        *
*         Depending on the options you select, you may also *
*         need to execute the cccIUALC and/or cccIUGDG      *
*         jobs.                                             *
*                                                          *
************************************************************

Incremental update can significantly reduce time and resource
usage in the DAILY job by letting you split out a major
portion of daily database update processing into multiple,
smaller, incremental updates executed throughout the day.

o  Standard CA MICS database update processing involves (1)
   reading and processing raw input data to generate DETAIL
   and DAYS level CA MICS database files, followed by (2)
   summarization of DETAIL/DAYS level data to update
   week-to-date and month-to-date database files.

o  When you activate incremental update:

   -  You can execute the first-stage processing (raw data
```

```
      input to create DETAIL/DAYS files) multiple times
      throughout the day, each time processing a subset of
      the total day's input data.

   -  Then, during the final update of the day (in the
      DAILY job), the incremental DETAIL/DAYS files are
      "rolled-up" to the database DETAIL and DAYS
      timespans, and then summarized to update the
      week-to-date and month-to-date files.

o  Incremental update is independent of your internal step
   restart or DBSPLIT specifications.  You have the option
   to perform incremental updates with or without internal
   step restart support.

o  Incremental update is activated and operates
   independently by product.  The incremental update job
   for this product, INCRccc (where ccc is the product ID),
   can execute concurrently with the incremental update job
   for another product in the same unit database.

o  The CA MICS database remains available for reporting and
   analysis during INCRccc job execution.

************************************************************
*                                                          *
*  Note:  CA MICS is a highly configurable system          *
*         supporting up to 36 unit databases, each of which *
*         can be configured and updated independently.     *
*         Incremental update is just one of the options you *
*         can use to configure your CA MICS complex.       *
*                                                          *
*         All efforts should be made to employ CA MICS     *
*         configuration capabilities to minimize issues    *
*         prior to activating incremental update.  For     *
*         example:                                         *
*                                                          *
*         o  Splitting work to multiple units is an        *
*            effective way to enable parallel database     *
*            update processing                             *
*                                                          *
*         o  Adjusting account code definitions to ensure  *
*            adequate data granularity while minimizing    *
*            total database space and processing time      *
*                                                          *
*         o  Tailoring the database to drop measurements   *
*            and metrics of lesser value to your           *
*            data center, thereby reducing database update *
*            processing and resource consumption           *
```

```
*                                                             *
*        While incremental update is intended to reduce       *
*        DAILY job elapsed time, total resource usage of      *
*        the combined INCRccc and DAILY jobs steps can        *
*        increase due to the additional processing            *
*        required to maintain the incremental update          *
*        "to-date" files and for roll-up to the unit          *
*        database.  The increased total resource usage        *
*        will be more noticeable with small data volumes,     *
*        where processing code compile time is a greater      *
*        percentage of total processing cost.                 *
*                                                             *
***************************************************************
```

Note: When you activate incremental update (INCRUPDATE YES), the following optional incremental update parameters are enabled. These parameters have no effect if incremental update is disabled (INCRUPDATE NO). For more details, see the individual parameter descriptions later in this section.

o INCRDB   PERM/TAPE/DYNAM

o INCRDETAIL data_set_allocation_parameters

o INCRDAYS   data_set_allocation_parameters

o INCRCKPT   data_set_allocation_parameters

o INCRSPLIT USE/IGNORE data_set_allocation_parameters

Incremental update processing reads and processes raw measurement data to create and maintain DETAIL and DAYS level "to-date" files for the current day.

- These incremental update database files are maintained on unique z/OS data sets, independent of the standard CA MICS database files, and independent of any other product's incremental update database files. There is one data set each for DETAIL and DAYS level "to-date" data and a single incremental update checkpoint data set for this product in this unit.

- The incremental update DETAIL and DAYS files can be permanent DASD data sets, or they can be allocated dynamically as needed and deleted after DAILY job processing completes. Optionally, you can keep the incremental update DETAIL and DAYS files on tape, with the data being loaded onto temporary DASD space as needed for incremental update or DAILY job processing.

```
   See the INCRDB PERM/TAPE/DYNAM option for more
   information.

After activating incremental update, you will use three
incremental update facility jobs found in prefix.MICS.CNTL
(Note that ccc is the product ID):

o  cccIUALC

   You execute this job to allocate and initialize the
   incremental update checkpoint file, and optionally the
   incremental update DETAIL and DAYS database files.
   cccIUALC is generally executed just ONE time.

o  cccIUGDG

   You execute this job to add generation data group (GDG)
   index definitions to your system catalog in support of
   the INCRDB TAPE option.  cccIUGDG is generally executed
   just ONE time.

o  INCRccc

   This is the job you execute for each incremental update.
   You will integrate this job into your database update
   procedures for execution one or more times per day
   to process portions of the total day's measurement data.

   Note:  The DAILY job is run once at the end of the day.
   It will perform the final incremental update for the day's
   data, and then roll-up the incremental DETAIL/DAYS files
   to the database DETAIL and DAYS timespans and update the
   week-to-date and month-to-date files.


INCRUPDATE Considerations
-------------------------

o  Overhead

   Incremental update is intended to reduce DAILY job
   resource consumption and elapsed time by offloading a
   major portion of database update processing to one or
   more executions of the INCRccc job.  In meeting this
   objective, incremental update adds processing in the
   INCRccc and DAILY jobs to accumulate data from each
   incremental update execution into the composite "to-date"
   DETAIL and DAYS incremental update files, and also adds
   processing in the DAILY job to copy the incremental
```

update files to the unit database DETAIL and DAYS timespans. The amount of this overhead and the savings in the DAILY job are site-dependent, and will vary based on input data volume and on the number of times INCRccc is executed each day.

In addition, activating incremental update will cause additional compile-based CPU time to be consumed in the DAYnnn DAILY job step. The increase in compile time is due to additional code included for each file structure in support of the feature. This increase should be static based on the scope of the CA MICS data integration product in terms of files. This compile-time increase does not imply an increase in elapsed or execution time. Incremental update allows I/O bound, intensive processing (raw data inputting, initial CA MICS transformation, etc.) to be distributed outside of the DAILY job. I/O processing is the largest contributor to elapsed time in large volume applications. Thus, the expected overall impact is a decrease in the actual runtime of the DAYnnn job step.

- Increased "Prime Time" Workload

  By offloading work from the DAILY job to one or more INCRccc executions throughout the day, you are potentially moving system workload and DASD work space usage from the "off-hours," (when the DAILY job is normally executed) to periods of the day where your system resources are in highest demand. You should schedule INCRccc executions carefully to avoid adverse impact to batch or online workloads. For example, if your site's "prime shift" is 8:00 AM to 5:00 PM, you might choose to schedule incremental updates for 7:00 AM (just before "prime shift") and 6:00 PM (just after "prime shift"), with the DAILY job executing just after midnight.

- Increased DASD Usage

  The DASD space required for the incremental update DETAIL and DAYS database files is in addition to the DASD space already reserved for the CA MICS database. By default, the incremental update database files are permanently allocated, making this DASD space unavailable for other applications. In general, you can assume that the incremental update database files will require space equivalent to two cycles of this product's DETAIL and DAYS timespan files.

Alternatively, the incremental update database files can be allocated in the first incremental update of the day and deleted by the DAILY job (see the INCRDB DYNAM option later in this section). This approach reduces the amount of time that the DASD space is dedicated to incremental update, and lets the amount of DASD space consumed increase through the day as you execute each incremental update.

A third option is to store the incremental update database files on tape (see the INCRDB TAPE option). With this approach, the DASD space is required just for the time that each incremental update or DAILY job step is executing. Note that while this alternative reduces the "permanent" DASD space requirement, the total amount of DASD space required while the incremental update or DAILY jobs are executing is unchanged. In addition, the TAPE option adds processing to copy the incremental update files to tape, and to reload the files from tape to disk.

Note: The incremental update checkpoint file is always a permanently allocated disk data set. This is a small data set and should not be an issue.

- Operational Complexity

  Incremental update expands your measurement data management and job scheduling issues. You must ensure that each incremental update and the DAILY job processes your measurement data chronologically; that is, each job must see data that is newer than the data processed by the prior job. By incrementally updating the database, you have more opportunities to miss a log file, or to process a log out of order.

- Interval End Effects

  Each incremental update processes a subset of the day's measurement data, taking advantage of early availability of some of the day's data, for example, when a measurement log fills and switches to a new volume. This can cause a problem if the measurement log split occurs while the data source is logging records for the end of a measurement interval, thus splitting the data for a single measurement interval across two log files. When an incremental update processes the first log file, the checkpoint high end timestamp is set to indicate that this split measurement interval has been processed.

Then, when the rest of the measurement interval's data is encountered in a later update, it can be dropped as duplicate data (because data for this measurement interval end timestamp has already been processed).

Appropriate scheduling of log dumps and incremental updates can avoid this problem. For example, if you plan to run incremental updates at 7:00 AM and 6:00 PM, you could force a log dump in the middle of the measurement interval just prior to the scheduled incremental update executions. This is an extension of the procedure you may already be using for end-of-day measurement log processing. The objective is to ensure that all records for each monitor interval are processed in the same incremental update.

- Dynamic Allocation

  When you activate incremental update and specify TAPE or DYNAM for the INCRDB parameter, dynamic allocation is employed for the incremental update database files. If your site restricts dynamic allocation of large, cataloged data sets, you must use the INCRDETAIL and INCRDAYS parameters to direct incremental update data set allocation to a generic unit or storage class where dynamic allocation is allowed.

- Data Set Names

  The incremental update database files are allocated and cataloged according to standard CA MICS unit database data set name conventions. The DDNAME and default data set names are (where ccc is the product ID):

  - Incremental update checkpoint file,
    ```
    //IUCKPT   DD DSN=prefix.MICS.ccc.IUCKPT,.....
    ```
  - Incremental update DETAIL
    ```
    //IUDETAIL DD DSN=prefix.MICS.ccc.IUDETAIL,.....
    ```
  - Incremental update DAYS
    ```
    //IUDAYS   DD DSN=prefix.MICS.ccc.IUDAYS,....
    ```

  Since these data sets conform to the same data set name conventions as your existing CA MICS data sets, there should be few, if any, data-set-name-related allocation issues. However, it is possible to override the data set names if required. Contact Technical Support at http://ca.com/support for assistance if you must change

```
  data set names.


INCRDB
------

This statement is optional.  The default is this:

INCRDB PERM

Note:  INCRDB is ignored when you specify INCRUPDATE NO.

Specify this statement or take the default, to keep the incremental
update database DETAIL and DAYS files on permanently
allocated DASD data sets:

INCRDB PERM

Execute the prefix.MICS.CNTL(cccIUALC) job to allocate the
incremental update database files.

************************************************************
*                                                          *
*  Note:  The incremental update checkpoint file is always  *
*         a permanently allocated DASD data set.           *
*                                                          *
************************************************************


Specify this to offload the incremental update DETAIL and
DAYS files to tape between incremental update executions:

INCRDB TAPE #gdgs UNIT=name

With the TAPE option, the incremental update DETAIL and DAYS
DASD data sets are dynamically allocated at the beginning of
the incremental update job or DAILY job step, and then are
deleted after the job step completes.

o  The first incremental update job of the day allocates
   and initializes the incremental update database files.
   At the end of the job, the DETAIL and DAYS files are
   copied to a new (+1) generation of the incremental
   update tape data sets.  Then the DASD files are deleted.

o  Subsequent incremental update jobs restore the DASD
   incremental update database files from the current, (0)
   generation, incremental update tape data sets before
   processing the input measurement data.  At the end of
```

the job, the DETAIL and DAYS files are copied to a new (+1) generation of the incremental update tape data sets. Then the DASD files are deleted.

- The DAILY job step also restores the DASD incremental update database files from the (0) generation tape files before processing the input data, but does NOT copy the incremental update database files to tape. Thus, the DAILY job actually creates a new, null (+1) generation.

- Use the #gdgs parameter to specify the maximum number of incremental update tape generations. The minimum is 2 and the maximum is 99, with a default of 5.
  Set the number of generations equal to or greater than the number of incremental updates, including the DAILY job you plan to execute each day. This facilitates restart and recovery if you encounter problems requiring you to reprocess portions of the daily measurement data.

- Use the optional UNIT=name parameter to specify a tape unit name for the incremental update database output tapes. The default is to use the same tape unit as the input tapes.

- A special index must be created in your system catalog for each of the incremental update tape data set generation data groups. The prefix.MICS.CNTL(cccIUGDG) job will generate the statements to create the incremental update GDG index definitions.

  - Before each index is built, it is deleted. These DLTX (or DELETE) statements causes an error message if no entry exists. This is done so that you can change the number of entries without having to delete each of the index entries.

  - DLTX and BLDG (or DELETE and DEFINE) fail if there is a cataloged data set with the same index. IDCAMS (or IEHPROGM) issues a message and gives a return code of 8. This issue is not a problem for non-GDG entries or if the GDG already has the desired number of entries.

  - If you want to change the number of entries kept in a GDG with cataloged data sets, do the following:

    1. Uncatalog any existing entries in the GDG.
    2. Delete the index with a DLTX (or DELETE).

```
      3. Create the index with a BLDG (or DEFINE).
      4. Catalog any entries that are uncataloged in step 1.

o  The incremental update tape data set names are as follows,
   where ccc is the product ID:

   -  Incremental update tape DETAIL file
         tapeprefix.MICS.ccc.IUXTAPE.GnnnnV00

   -  Incremental update tape DAYS file
         tapeprefix.MICS.ccc.IUDTAPE.GnnnnV00

************************************************************
*                                                          *
*  Note:  The INCRDETAIL and INCRDAYS parameters are       *
*         required when you specify INCRDB TAPE.           *
*                                                          *
************************************************************


Specify this parameter to allocate dynamically the
incremental update  DETAIL and DAYS DASD data sets in the first
incremental update of the day, and then delete these data sets
at the end of the DAILY job step:

INCRDB DYNAM


o  With this option, no space is used for the incremental
   update database files during the time between the end of
   the DAILY job step and the beginning of the next day's
   first incremental update.

o  With this approach, you can set the data set allocation
   parameters so that the incremental update DETAIL and DAYS
   data sets start out with a minimum allocation and then
   grow through secondary allocations as more space is
   required for subsequent incremental updates. For
   example, enough space for one incremental update.

************************************************************
*                                                          *
*  Note:  The INCRDETAIL and INCRDAYS parameters are       *
*         required when you specify INCRDB DYNAM.          *
*                                                          *
************************************************************
```

```
INCRDETAIL
----------

This statement is required if you specify either of these:

INCRDB TAPE

INCRDB DYNAM

Otherwise, this statement is optional.  There is no default.


Specify this to define data set allocation parameters for the
incremental update DETAIL data set (IUDETAIL):

INCRDETAIL    data_set_allocation_parameters

Note:  INCRDETAIL is ignored when you specify INCRUPDATE NO.

The incremental update DETAIL data set (IUDETAIL) contains
the current incremental update detail-level database files,
and the DETAIL "to-date" data for the current daily update
cycle.  You should allocate DASD space equivalent to two
cycles of this product's DETAIL timespan data.

If you specified INCRDB PERM (the default), your INCRDETAIL
parameter specifications are used in generating the cccIUALC
job (where ccc is the product ID).

o  You will execute the cccIUALC job to allocate and
   initialize the incremental update database and checkpoint
   files.

o  Omit the INCRDETAIL parameter if you prefer to specify
   data set allocation parameters directly in the generated
   prefix.MICS.CNTL(cccIUALC) job.

If you specified INCRDB TAPE or INCRDB DYNAM, your INCRDETAIL
parameter specifications are used in incremental update
DETAIL data set dynamic allocation during incremental update
or DAILY job step execution.

o  The INCRDETAIL parameter is required for the TAPE or
   DYNAM option.

o  Specify data set allocation parameters, separated by
   blanks, according to SAS LIBNAME statement syntax.  If
   you need multiple lines, repeat the INCRDETAIL keyword
```

```
   on the continuation line.

o  INCRDETAIL accepts the engine/host options documented in
   the SAS Companion for the z/OS Environment, including
   STORCLAS, UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and
   VOLSER.

   Important!  DO NOT SPECIFY THE DISP PARAMETER.

o  You can override the INCRDETAIL data set allocation
   parameters at execution-time using the //PARMOVRD
   facility.  For more information about execution-time
   override of dynamic data set allocation parameters, see
   the PIOM, section 2.3.6.

Example 1:

INCRDETAIL   STORCLAS=MICSTEMP SPACE=(xxxx,(pp,ss),,,ROUND)

where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated, where:

             xxxx is TRK, CYL, or blklen
             pp   is the primary allocation
             ss   is the secondary allocation

             and ROUND specifies that the allocated space be
             "rounded" to a cylinder boundary when the unit
             specified was a block length.  ROUND is ignored
             with the TRK or CYL options.

Example 2 (multiple lines):

INCRDETAIL   STORCLAS=MICSTEMP UNIT=SYSDA
INCRDETAIL   SPACE=(xxxx,(pp,ss),,,ROUND)

where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  UNIT     - specifies the generic unit for a new data set.
             The name can have up to eight characters.
```

```
  SPACE    - specifies how much disk space to provide for
             a new data set being allocated.



INCRDAYS
--------

This statement is required if you specify either of these:

INCRDB TAPE

INCRDB DYNAM

Otherwise, this statement is optional.  There is no default.


Specify this to define data set allocation parameters for the
incremental update DAYS data set (IUDAYS):

INCRDAYS      data_set_allocation_parameters

Note:  INCRDAYS is ignored when you specify INCRUPDATE NO.

The incremental update DAYS data set (IUDAYS) contains the
current incremental update days-level database files, and the
DAYS "to-date" data for the current daily update cycle.  You
should allocate DASD space equivalent to two cycles of this
product's DAYS timespan data.

If you specified INCRDB PERM (the default), your INCRDAYS
parameter specifications are used in generating the cccIUALC
job (where ccc is the product ID).

o  You will execute the cccIUALC job to allocate and
   initialize the incremental update database and checkpoint
   files.

o  Omit the INCRDAYS parameter if you prefer to specify
   data set allocation parameters directly in the generated
   prefix.MICS.CNTL(cccIUALC) job.

If you specified INCRDB TAPE or INCRDB DYNAM, your INCRDAYS
parameter specifications are used in incremental update DAYS
data set dynamic allocation during incremental update or
DAILY job step execution.

o  The INCRDAYS parameter is required for the TAPE or DYNAM
```

```
   option.

o  Specify data set allocation parameters, separated by
   blanks, according to SAS LIBNAME statement syntax.  If
   you need multiple lines, repeat the INCRDAYS keyword on
   the continuation line.

o  INCRDAYS accepts the engine/host options documented in the
   SAS Companion for the z/OS Environment, including
   STORCLAS, UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and
   VOLSER.

   Important!  DO NOT SPECIFY THE DISP PARAMETER.

o  You can override the INCRDAYS data set allocation
   parameters at execution-time using the //PARMOVRD
   facility.  For more information about execution-time
   override of dynamic data set allocation parameters, see
   the PIOM, Section 2.3.6.

Example 1:

INCRDAYS     STORCLAS=MICSTEMP SPACE=(xxxx,(pp,ss),,,ROUND)

where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated, where:

             xxxx is TRK, CYL, or blklen
             pp   is the primary allocation
             ss   is the secondary allocation

             and ROUND specifies that the allocated space be
             "rounded" to a cylinder boundary when the unit
             specified was a block length.  ROUND is ignored
             with the TRK or CYL options.

Example 2 (multiple lines):

INCRDAYS     STORCLAS=MICSTEMP UNIT=SYSDA
INCRDAYS     SPACE=(xxxx,(pp,ss),,,ROUND)

where:

  STORCLAS - specifies a storage class for a new data set.
```

```
            The name can have up to eight characters.

 UNIT     - specifies the generic unit for a new data set.
            The name can have up to eight characters.

 SPACE    - specifies how much disk space to provide for
            a new data set being allocated.
```

INCRCKPT

This statement is optional. Specify this to override default data set allocation parameters for the incremental update checkpoint data set:

```
INCRCKPT      data_set_allocation_parameters
```

Note: INCRCKPT is ignored when you specify INCRUPDATE NO.

The incremental update checkpoint data set tracks incremental update job status and the data that has been processed during the current daily update cycle. The incremental update checkpoint is used to detect and block the input of duplicate data during incremental update processing. This data set will be exactly the same size as prefix.MICS.CHECKPT.DATA (the unit checkpoint data set), usually 20K to 200K depending on the prefix.MICS.PARMS(SITE) CKPTCNT parameter (100-9999).

Your INCRCKPT parameter specifications are used in generating the cccIUALC job (where ccc is the product ID).

- You will execute the cccIUALC job to allocate and initialize the incremental update checkpoint file. If you specified INCRDB PERM, then the cccIUALC job will also allocate the incremental update DETAIL and DAYS database files.

- By default the incremental update checkpoint data set is allocated as SPACE=(TRK,(5,2)) using the value you specified for the prefix.MICS.PARMS(JCLDEF) DASDUNIT parameter.

- Omit the INCRCKPT parameter if you prefer to override data set allocation parameters directly in the generated prefix.MICS.CNTL(cccIUALC) job.

```
Specify data set allocation parameters, separated by blanks,
according to SAS LIBNAME statement syntax.  If you need
multiple lines, repeat the INCRCKPT keyword on the
continuation line.

INCRCKPT accepts the engine/host options documented in the
SAS Companion for the MVS Environment, including STORCLAS,
UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and VOLSER.

Important!  DO NOT SPECIFY THE DISP PARAMETER.


Example 1:

INCRCKPT     STORCLAS=MICSTEMP SPACE=(xxxx,(pp,ss),,,ROUND)


where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated, where:

             xxxx is TRK, CYL, or blklen
             pp   is the primary allocation
             ss   is the secondary allocation

             and ROUND specifies that the allocated space be
             "rounded" to a cylinder boundary when the unit
             specified was a block length.  ROUND is ignored
             with the TRK or CYL options.


Example 2 (multiple lines):

INCRCKPT     STORCLAS=MICSTEMP UNIT=SYSDA
INCRCKPT     SPACE=(xxxx,(pp,ss),,,ROUND)


where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  UNIT     - specifies the generic unit for a new data set.
             The name can have up to eight characters.
```

```
   SPACE    - specifies how much disk space to provide for
              a new data set being allocated.
```

```
INCRSPLIT
---------

This statement is optional and defaults to this:

INCRSPLIT IGNORE

Specify the following if you want the incremental update job
for this product to get input measurement data from the
output of the SPLITSMF job.  The optional
data_set_allocation_parameters are used by the SPLITSMF job
when creating the measurement data file for this product.

INCRSPLIT  USE  data_set_allocation_parameters

Note:  INCRSPLIT is ignored when you specify INCRUPDATE NO.

This option would be used when multiple products in a
single unit database are enabled to incremental update.  The
SPLITSMF job performs the same function for incremental
update jobs as the DAILY job DAYSMF step performs for the
DAYnnn database update steps.

o  The SPLITSMF job dynamically allocates, catalogs, and
   populates prefix.MICS.ccc.IUSPLTDS data sets for each
   product in the unit database for which you specified both
   the INCRUPDATE YES and INCRSPLIT USE parameters.  These
   data sets are then deleted after processing by the
   appropriate INCRccc job.

o  Specify data set allocation parameters, separated by
   blanks, according to SAS LIBNAME statement syntax.  If you
   need multiple lines, repeat the INCRSPLIT keyword on each
   continuation line.

o  INCRSPLIT accepts the engine/host options documented in
   the SAS Companion for the MVS Environment, including
   STORCLAS, UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and
   VOLSER.

   Important!  DO NOT SPECIFY THE DISP PARAMETER.
```

```
Specify the following or accept the default if you want the
incremental update jobs for this product to get their input
measurement data from the data sets specified in the INPUTccc
(or INPUTSMF) member of prefix.MICS.PARMS:

INCRSPLIT  IGNORE

When you specify INCRSPLIT IGNORE, this product will NOT
participate in SPLITSMF job processing.


Example 1:

INCRSPLIT USE  STORCLAS=MICSTEMP SPACE=(xxxx,(pp,ss),,,ROUND)


where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated, where:

             xxxx is TRK, CYL, or blklen
             pp   is the primary allocation
             ss   is the secondary allocation

             and ROUND specifies that the allocated space be
             "rounded" to a cylinder boundary when the unit
             specified was a block length.  ROUND is ignored
             with the TRK or CYL options.


Example 2 (multiple lines):

INCRSPLIT  USE  STORCLAS=MICSTEMP UNIT=SYSDA
INCRSPLIT       SPACE=(xxxx,(pp,ss),,,ROUND)


where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  UNIT     - specifies the generic unit for a new data set.
             The name can have up to eight characters.
```

```
  SPACE    - specifies how much disk space to provide for
             a new data set being allocated.
```

```
DYNAMWAIT
---------

This statement is optional.  Specify the following:

     DYNAMWAIT   minutes

to override the default amount of time, in minutes, the DAILY
and/or INCRccc job will wait for an unavailable data set.

Note:  This optional parameter is not normally specified.
       The system default is adequate for most data centers.

Internal Step Restart and Incremental Update facilities use
z/OS dynamic allocation services to create new data sets and
to access existing data sets.  Data set naming conventions
and internal program structure are designed to minimize data
set contention.  However, if data set allocation does fail
because another batch job or online user is already using a
data set, DAILY and/or INCRccc processing will wait 15
seconds and then try the allocation again.  By default, the
allocation will be attempted every 15 seconds for up to 15
minutes.  After 15 minutes, the DAILY or INCRccc job will
abort.

If data set contention in your data center does cause
frequent DAILY or INCRccc job failures, and you are unable to
resolve the contention through scheduling changes, you may
want to use the DYNAMWAIT parameter to increase the maximum
number of minutes the DAILY and/or INCRccc jobs will wait for
the data set to become available.

On the other hand, if your data center standards require
that the DAILY and/or INCRccc jobs fail immediately if
required data sets are unavailable, specify the following:

     DYNAMWAIT 0

Note:  You can override the DYNAMWAIT parameter at
       execution-time using the //PARMOVRD facility.  For
       more information about execution-time override of
       dynamic data set allocation parameters, see the PIOM,
       section 2.3.6.
```

The following section discusses enabling this option:

1 - Implement Incremental Update

7.3.2.3.1 Implement Incremental Update

To implement incremental update in the CA MICS MQS Analyzer, follow the checklist provided below:

```
   ************************************************
   *                                              *
   *          IMPLEMENT INCREMENTAL UPDATE        *
   *                                              *
   ************************************************
```

___ 1. Edit prefix.MICS.PARMS(cccOPS), where (ccc) is the component identifier:

- Specify the following:

  ```
  INCRUPDATE  YES
  ```

- If you want to store the incremental update database files on tape between incremental updates, specify this:

  ```
  INCRDB  TAPE  #gdgs
  ```

- If you want to allocate the incremental update database files during the first incremental update of the day and delete these data sets at the end of the DAILY job step, specify this:

  ```
  INCRDB  DYNAM
  ```

- If you specified INCRDB TAPE or INCRDB DYNAM, then you must also specify this:

  ```
  INCRDETAIL  data_set_allocation_parameters
  INCRDAYS    data_set_allocation_parameters
  ```

- If you want the incremental update job for this product to get input measurement data from the output of the SPLITSMF job, specify this:

  ```
  INCRSPLIT  USE  data_set_allocation_parameters
  ```

- For additional information on related topic, review the documentation for this product on INCRCKPT, INCRDETAIL, INCRDAYS, or INCRSPLIT parameters to override default data set allocation parameters.

___ 2. Submit the job in prefix.MICS.CNTL(cccPGEN).

___ 3. Edit prefix.MICS.PARMS(JCLGENU) so that it contains two or more lines reading:

```
DAILY
INCRccc cccIUALC cccIUGDG
```

___ 4. Submit the job in prefix.MICS.CNTL(JCLGENU). Ensure that there are no error messages in MICSLOG or SYSTSPRT, that the MICSLOG contains the normal termination message, BAS10999I, and that the job completes with a condition code of zero.

___ 5. Edit the job in prefix.MICS.CNTL(cccIUALC).

- Inspect and/or specify data set allocation parameters for the incremental update database and checkpoint files. If you specified INCRDB TAPE or INCRDB DYNAM, the cccIUALC job will only allocate the incremental update checkpoint data set.
- Submit the job. Ensure that there are no error messages in MICSLOG or SASLOG, and that the job completes with a condition code of zero.

___ 6. If you specified INCRDB TAPE, submit the job in prefix.MICS.CNTL(cccIUGDG) to define generation group indexes for the incremental update DETAIL and DAYS tape data sets. Examine SASLOG, MICSLOG, and SYSPRINT to verify that the generation group indexes were correctly defined.

Note: You may see error messages for the DLTX (or DELETE) statements. This is not a problem. cccIUGDG deletes each index prior to defining it, and an error message is issued if the index does not yet exist (e.g., if this is the first time you ran the cccIUGDG job).

___ 7. The following operational job(s) have changed:

```
DAILY  INCRccc
```

If your site has implemented the operational CA MICS processes in a scheduling product, the JCL may have to be refreshed in that product. See the scheduling product's administrator for the exact processes involved in updating that product's representation of

```
        the CA MICS jobs.

___ 8.  Implement operational procedures for gathering input
        measurement data and executing incremental updates
        (INCRccc) during the day.

        You may also need to modify operational procedures
        for the DAILY job to ensure that processing is
        limited to input measurement data that has not been
        input to one of the day's incremental update
        executions.
```

7.3.2.4 DETAIL Tape Processing Overview

For certain high volume files, the CA MICS architecture provides the ability to create optional DETAIL timespan data sets. These optional data sets are separate from the normal CA MICS database and have the following characteristics:

- They are created during the component step execution: during either an incremental update or the DAILY update run. Each DETAIL tape file has a separate DD statement in the DAILY or incremental update job that specifies the data set name and other data set characteristics.

- The data set name (DSN) for each DETAIL tape in a component step is:

  tapeprefix.tmics.DETAIL.iiifff(+1)

  where:

  - tapeprefix is the tape prefix value specified with the TAPEPREFIX statement in prefix.MICS.PARMS(JCLDEF)

  - tmics is either null when NOMICSLEVEL is specified, or MICS if MICSLEVEL is specified with the TAPEPREFIX statement in prefix.MICS.PARMS(JCLDEF)

  - iii is the three character CA MICS information area associated with the file

  - fff is the three character CA MICS file identifier

  Example: For the CA MICS DB2 Analyzer, if DETAIL tape processing were activated for the DB2DSU file, the following prefix.MICS.PARMS(JCLDEF) statement:

  TAPEPREFIX CPLXA.U1T NOMICSLEVEL

  yields the following DETAIL tape DSN:

  CPLXA.U1T.DETAIL.DB2DSU(+1)

- There is no cycle aging associated with these data sets. Instead, each DETAIL tape data set created is an 01 cycle (for example, DB2DSU01), and multiple instances are managed using Generation Data Groups (GDGs).

- The creation of DETAIL tape data sets is independent of any sharedprefix.MICS.GENLIB customization choices. You can have one or more cycles of a file written to and managed in the unit DETAIL timespan database, and also use the DETAIL tape feature to create independent data sets for that same file.

- The decision to create DETAIL tape data sets is made at the unit level. You can choose to create DETAIL tape data sets for a component file in unit A, but not in unit B.

- While the expectation is that these files will be written to tape, you can make JCL choices to target other media such as DASD. Note that the SAS sequential tape engine will be used to write these files for both DASD and tape data sets.

- Unique output exits are provided to permit manipulation and subsetting of the records written to the DETAIL tape data sets. This manipulation and subsetting, however, has no impact on files written to the standard CA MICS database.

The activation of DETAIL tape data sets is accomplished by specifying a TAPEfff statement in prefix.MICS.PARMS(cccOPS).

Customization of the JCL used to create each data set is accomplished using a cascading hierarchy of parameters beginning with choices made with the TAPEPARM statement in prefix.PARMS(JCLDEF).

The following sections provide the information required to activate DETAIL tape processing:

1 - Component Files Supporting DETAIL Tape Activation
2 - DETAIL Tape JCL Customization Overview
3 - The TAPEfff Statement
4 - The DETAILTAPEPARM Statement
5 - DETAILTAPESMSPARM and TAPEfffSMS Statements
6 - DETAIL Tape User Exits
7 - Activating DETAIL Tape Checklist
8 - Deactivating DETAIL Tape Checklist

7.3.2.4.1 MQS DETAIL Tape Supported Files

The CA MICS MQSeries Analyzer supports DETAIL tape processing for the following files:

- MQATAA - Task Accounting file
- MQAQAA - Queue Activity file

7.3.2.4.2 Overview of JCL Customization Parameters

The JCL for DETAIL tape data sets is constructed using tape-related parameters that are specified in prefix.MICS.PARMS(JCLDEF) and prefix.MICS.PARMS(cccOPS).

Each DETAIL tape data set has a unique DD in the component step. The JCL for each DETAIL tape data set is customized according to user-specified JCL parameters such as the number of generation data group (GDG) entries that are maintained, unit names, volume count, retention, and expiration dates, and System Managed Storage (SMS) keywords.For example, STORCLAS=storclas.

CA MICS provides a hierarchical means to specify tape-related JCL parameters suitable for each data center.

The hierarchy, as it applies to DETAIL tape specification, is described:

o Unit Level - TAPEPARM and TAPESMSPARM

  Used for all tape data sets created by all components in the unit. Specified in prefix.MICS.PARMS(JCLDEF)

o Unit DETAIL Tape Level - DETAILTAPEPARM and DETAILTAPESMSPARM

  Used for all DETAIL tape data sets created by all components in the unit. Overrides choices that were made in TAPEPARM and TAPESMSPARM. Specified in prefix.MICS.PARMS(JCLDEF).

o Component Level - DETAILTAPEPARM and DETAILTAPESMSPARM

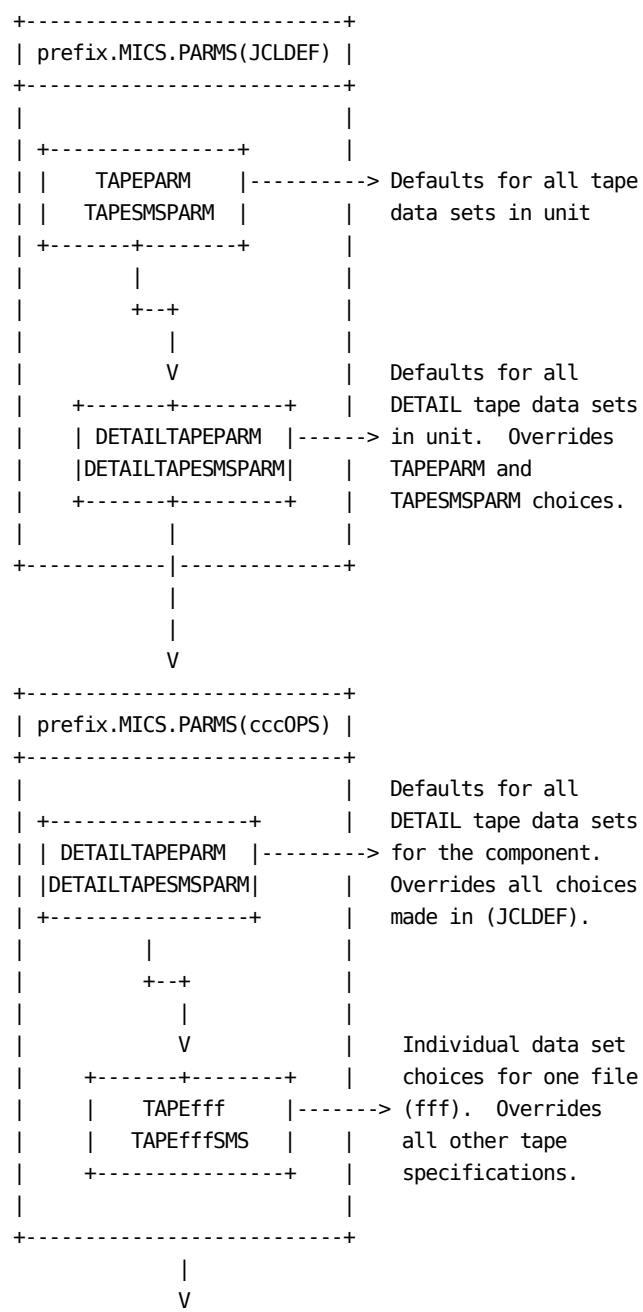
  Used for all DETAIL tape data sets created by a particular component. Overrides all choices that were made in JCLDEF. Specified in prefix.MICS.PARMS(cccOPS), where ccc represents the component.

o File Level - TAPEfff and TAPEfffSMS

  Used for a particular DETAIL tape data set. The fff identifies the specific DETAIL file. Overrides all choices made in JCLDEF and choices that were made with DETAILTAPEPARM and DETAILTAPESMSPARM in prefix.MICS.PARMS(cccOPS). Specified in prefix.MICS.PARMS(cccOPS), where ccc represents the component.

The JCL parameter specification hierarchy that is used for DETAIL tape customization is shown graphically in the following diagram:

DETAIL Tape JCL Parameter Hierarchy



```
// DD statements and GDG generation
```

7.3.2.4.3 The TAPEfff Statement

```
The TAPEfff statement is used to:

o Activate DETAIL tape data set creation for the file
  indicated by fff.  The component files eligible for DETAIL
  tape processing are listed in a previous section.

o Override, for the indicated file, any JCL-related
  tape specifications made in prefix.MICS.PARMS(JCLDEF)
  and prefix.MICS.PARMS(cccOPS) with TAPEPARM or
  DETAILTAPEPARM statements.

The syntax is as follows:

TAPEfff <optional parameters>

where fff is the unique 3-character file identifier

The optional parameters include both keyword parameters and
keyword=value specifications.  You can include multiple
TAPEfff statements if required in order to specify the
desired optional parameters.  If you specify a parameter
multiple times, the last instance defines the value in
effect.

You can specify as many parameters as you want on each
statement, but each TAPEfff statement must end by column 72.
You may also choose to specify only one parameter per TAPEfff
statement.  Either approach is acceptable.

The optional parameters available for the TAPEfff statement
are listed below:

TAPEfff GDG=nnn UNIT=unitname VOLCOUNT=n
TAPEfff EXPDT=expdt / RETPD=nnn / NOEXPDT
TAPEfff COMP/NOCOMP
TAPEfff STACK/NOSTACK AFF/NOAFF
TAPEfff MODEL='modeldsn' / MODEL=NOMODEL
TAPEfff DISK / TAPE  SPACE=spacedef
TAPEfff VOLSER=volser

The following is a sample TAPEfff statement:

TAPEfff GDG=3 VOLCOUNT=7

In this sample, only the number of generation data groups
(GDGs) and VOLCOUNT parameters are explicitly specified for
the file fff.  All other JCL related parameters for the data
```

set will be set according to specifications made with TAPEPARM and DETAILTAPEPARM statements according to the hierarchy described in a previous section.

The optional parameters for the TAPEfff statement are identical to those supported by the DETAILTAPEPARM statement. A detailed description of the optional parameters is presented immediately following the DETAILTAPEPARM statement description.

7.3.2.4.4 The DETAILTAPEPARM Statement

In prefix.MICS.PARMS(cccOPS), the optional DETAILTAPEPARM statement is used to specify parameters defining processing options for CA MICS DETAIL tape data sets at the component (ccc) level.

When specified in prefix.MICS.PARMS(cccOPS), the DETAILTAPEPARM parameter specifications override unit level tape data set defaults established by TAPEPARM and DETAILTAPEPARM statements in prefix.MICS.PARMS(JCLDEF).

Refer to chapter 2 of the CA MICS Planning, Installation, Operations, and Maintenance Guide for unit level TAPEPARM and DETAILTAPEPARM statements in prefix.MICS.PARMS(JCLDEF).

The primary reason to include a DETAILTAPEPARM statement in prefix.MICS.PARMS(cccOPS) is to specify unique parameters for the DETAIL tapes created for a particular component (ccc).

For example, your site may want to direct the CA MICS DETAIL tapes for a particular component (ccc) to a unique tape volume pool, or to a tape device type such as a virtual tape unit, or to a DASD pool backed by an archive facility. If so, this could be accomplished by including the appropriate DETAILTAPEPARM statements in prefix.MICS.PARMS(cccOPS).

DETAILTAPEPARM <parameters>

Note: In prefix.MICS.PARMS(cccOPS), all DETAILTAPEPARM statements must precede any TAPEfff or TAPEfffSMS statements.

The general form of the DETAILTAPEPARM statement is the keyword DETAILTAPEPARM, followed by one or more DETAILTAPEPARM parameters. DETAILTAPEPARM parameters include both keyword parameters and keyword=value specifications. You can specify the DETAILTAPEPARM statement as many times as you want in order to specify all of the tape data set definitions you require. If you specify a parameter multiple times, the last instance defines the value in effect.

The following summarizes the DETAILTAPEPARM parameters:

- Each parameter is described in detail below.
- While the following syntax sample shows only one or two parameters per statement (line), you have the option to specify as many parameters as you want on

```
   each statement (limited only by the 72-character-
   maximum line length).

   DETAILTAPEPARM GDG=nnn UNIT=unitname VOLCOUNT=n
   DETAILTAPEPARM EXPDT=expdt / RETPD=nnn / NOEXPDT
   DETAILTAPEPARM COMP/NOCOMP
   DETAILTAPEPARM STACK/NOSTACK AFF/NOAFF
   DETAILTAPEPARM MODEL='modeldsn' / MODEL=NOMODEL
   DETAILTAPEPARM DISK / TAPE  SPACE=spacedef
   DETAILTAPEPARM VOLSER=volser

The following is a sample DETAILTAPEPARM statement:

DETAILTAPEPARM GDG=3 VOLCOUNT=7

In this example, the default parameter values are used
for most of the DETAILTAPEPARM parameters.

The following describes each of the DETAILTAPEPARM
parameters:

  o  GDG=nnn

     Defaults to 7.

     The number of entries to be created in the GDG for
     each DETAIL tape data set.

     Overrides the TAPEPARM statement GDG=nnn.

  o  UNIT=unitname

     Defaults to the value specified on the TAPEPARM
     statement or to UNIT=3490 if UNIT=unitname is not
     specified on the TAPEPARM statement.

     The generic unit name for tape file allocation.
     The parameter value (unitname) must be a valid 1 to
     8 character generic unit name for your
     installation.  The value will be used in generated
     tape data set JCL DD statement UNIT parameters.
     CA MICS does not validate the unitname value except
     to verify that it is non-blank and no more than 8
     characters in length.


      Overrides the TAPEPARM statement UNIT=unitname
      Value, the old-style TAPEUNIT statement, or both.
```

- VOLCOUNT=n

  Defaults to the value specified on the TAPEPARM statement. If no VOLCOUNT is specified, the z/OS default volume count of 5 applies.

  The volume count JCL parameter for CA MICS tape data sets. Specify a decimal number from 1 to 255.

  Overrides the TAPEPARM statement VOLCOUNT=nnn parameter or the old-style VOLCOUNT statement.

- EXPDT=expdt

  Defaults to the value specified on the TAPEPARM statement. If no expiration date or retention period is specified, a default retention period is used which equals the GDG=nnn value.

  Specify an expiration date definition which replaces the derived default retention period (RETPD) specifications. This facility is specifically intended for use by installations with tape management systems which require specific EXPDT definitions.

  Note: For some tape management systems, certain EXPDT values makes the tape available for scratching immediately. Such values are NOT suitable for CA MICS tapes.

  The EXPDT=expdt parameter is optional, and, if omitted, CA MICS derives a RETPD=nnn specification as appropriate for the specific CA MICS tape data set being created and the number of GDG entries defined.

  Overrides the TAPEPARM statement EXPDT=expdt or NOEXPDT parameter, or the old-style EXPDT statement.

  Note: The EXPDT=expdt, RETPD=nnn, and NOEXPDT parameters are mutually exclusive.

- NOEXPDT

Defaults to the value specified on the TAPEPARM statement.

Specify NOEXPDT if you want CA MICS to omit both the EXPDT=date and RETPD=days JCL parameters from generated JCL statements for new tape data set creation. This option is provided for those installations where the tape management system or SMS specifications automatically control tape expiration dates, retention periods, or both.

Overrides the TAPEPARM statement EXPDT=expdt or NOEXPDT parameters, or the old-style EXPDT statement.

Note: The NOEXPDT, EXPDT=expdt, and RETPD=nnn parameters are mutually exclusive.

- COMP / NOCOMP

  Defaults to the value specified on the TAPEPARM statement. If COMP or NOCOMP is not specified, the z/OS default for the selected tape unit type applies.

  This parameter specifies data compaction (COMP) or no data compaction (NOCOMP) for a tape device enabled for hardware compaction. Data compaction is only supported for IBM standard labels. If specified, the value will be coded in the TRTCH subparameter of the DCB JCL parameter. If not specified, no TRTCH subparameter will be generated.

  Overrides the TAPEPARM statement COMP/NOCOMP parameter or the old-style IDRC statement.

- STACK / NOSTACK

  Defaults to NOSTACK for DETAIL tapes.

  Specify STACK to place multiple CA MICS tape files on a single tape volume. This mode of operation uses a minimum number of tape volumes and tape mounts are minimized. CA MICS JCL statements are generated with the VOL=REF=ddname construct and unit affinity is enforced (that is, STACK also means AFF).

Specify NOSTACK (the default) to place exactly one CA MICS tape file on a tape volume. With this option the generated CA MICS JCL statements will NOT contain the VOL=REF=ddname construct. This option is useful if your implementation of a virtual tape system prohibits "stacked" tape volumes, or if you are directing CA MICS tape files to a DASD pool backed with an archival facility.

Overrides the TAPEPARM statement STACK/NOSTACK parameter.

- AFF / NOAFF

  Defaults to the value specified on the TAPEPARM statement or to AFF.

  Specify AFF to use a single tape unit for all related tape files. This is the normal mode of operation where a minimum number of tape units are used and tape mounts are minimized. CA MICS JCL statements are generated with the UNIT=AFF=ddname construct. AFF is required for the STACK option.

  Specify NOAFF to enable allocation of different tape units for each CA MICS tape data set. With this option the generated CA MICS JCL statements will NOT contain the UNIT=AFF=ddname construct. You may find this option useful with certain virtual tape system implementations, or where you are directing CA MICS tape files to a DASD pool backed with an archival facility.

  Note, if you specify NOAFF, then NOSTACK is automatically set.

  Overrides the TAPEPARM statement AFF/NOAFF parameter.

- MODEL='modeldsn' / MODEL=NOMODEL

  Defaults to the value specified on the TAPEPARM statement.

  The fully qualified name of a cataloged data set to be used when defining or extending GDG entries. Ensure that the data set's DCB characteristics are

LRECL=0 and BLKSIZE=0. Coding BLKSIZE=0 causes SAS to use the blocksize defined by the BLKSIZE(TAPE) option defined in the configuration member(s) referenced by the CONFIG DD statement. If this parameter is omitted, a CA MICS generation job will allocate a default model GDG data set.

If NOMODEL is specified as the model dataset name, the use of the model dataset in the DCB specification will be bypassed.

Overrides the TAPEPARM statement MODEL='modeldsn' parameter or the old-style SYSTEMMODEL statement.

- DISK / TAPE

  Defaults to TAPE.

  Specify DISK if you want to write the dataset to a disk instead of a tape. Specify TAPE to write the dataset to a tape.

  When you specify DISK, make sure that you have both a UNIT parameter with a generic unit name of a disk device and a SPACE parameter defining disk space. You can also define a VOLSER parameter to direct the data to a specific disk.

  Overrides the TAPEPARM statement DISK/TAPE parameter.

- SPACE=spacedef

  No default.

  Defines the space allocation parameter for a data set defined with the DISK parameter. Specify this parameter according to JCL language syntax.

  Overrides the TAPEPARM statement SPACE= parameter.

- VOLSER=volser

  No default.

  Defines the volume serial number of a disk for a data set defined with the DISK parameter. Specify this parameter according to JCL language syntax.

```
                    Overrides the TAPEPARM statement VOLSER= parameter.
```

7.3.2.4.5 DETAILTAPESMSPARM and TAPEfffSMS Statements

In prefix.MICS.PARMS(cccOPS), the optional DETAILTAPESMSPARM and TAPEfffSMS statements allow you to specify System Managed Storage (SMS) keywords (for example,STORCLAS=storclass) for DETAIL tape data sets at the component and individual file level, respectively.

DETAILTAPESMSPARM

When specified in prefix.MICS.PARMS(cccOPS), the DETAILTAPESMSPARM parameter specifications override unit level tape data set SMS defaults established by TAPESMSPARM and DETAILTAPESMSPARM statements in prefix.MICS.PARMS(JCLDEF).

Refer to chapter 2 of the CA MICS Planning, Installation, Operations, and Maintenance Guide for unit level TAPESMSPARM and DETAILTAPESMSPARM statements in prefix.MICS.PARMS(JCLDEF).

The primary reason to include a DETAILTAPESMSPARM statement in prefix.MICS.PARMS(cccOPS) is to specify unique SMS parameters for the DETAIL tapes created for a particular component (ccc).

For example, your site may want to direct the CA MICS DETAIL tapes for a particular component (ccc) to a unique storage class.

Sample DETAILTAPESMSPARM statement:

```
DETAILTAPESMSPARM STORCLAS=DTPCLASS
```

In this example, the JCL for all DETAIL tape data sets for the component will include the SMS STORCLAS=DTPCLASS assignment.

TAPEfffSMS

The TAPEfffSMS statement is only permitted in prefix.MICS.PARMS(cccOPS). It is not supported in prefix.MICS.PARMS(JCLDEF). TAPEfffSMS keyword specifications override, for the indicated file, any SMS related tape specifications made in prefix.MICS.PARMS(JCLDEF) and prefix.MICS.PARMS(cccOPS) with TAPESMSPARM or DETAILTAPESMSPARM statements.

The primary reason to include a TAPEfffSMS statement in

prefix.MICS.PARMS(cccOPS) is to specify unique SMS parameters for a specific DETAIL tape file (fff).

Sample TAPEfffSMS statement:

```
TAPEfffSMS STORCLAS=fffCLASS
```

In this example, the JCL for the DETAIL tape data set for file ffft will include the SMS STORCLAS=fffCLASS assignment.

7.3.2.4.6 DETAIL Tape User Exits

A user exit is invoked just prior to the output of each record to a DETAIL tape file. The exits are named _USRTfff, where fff matches the file identifier for the DETAIL tape file.

Refer to chapter 10 of this guide for a complete description of the DETAIL tape user exits.

7.3.2.4.7 Activating DETAIL Tape Checklist

___ 1. Add or modify the desired TAPEfff and TAPEfffSMS statements in prefix.MICS.PARMS(cccOPS), where fff is the three-character file identifier for the file to be written to tape.

___ 2. Submit prefix.MICS.CNTL(cccPGEN).

___ 3. Edit prefix.MICS.PARMS(JCLGENU) so that it reads:

cccGDGGN DAILY

If Incremental Update is active, add this:

INCRccc

___ 4. Submit prefix.MICS.CNTL(JCLGENU) to regenerate the JCL for DAILY and cccGDGGN.

Note: If you want to use specific JCL and SMS parameter values for your DETAIL tape data sets, make sure you have coded the appropriate DETAILTAPEPARM and/or DETAILTAPESMSPARM statements in prefix.MICS.PARMS(JCLDEF) for unit level, or prefix.MICS.PARMS(cccOPS) for component level DETAIL tape JCL parameters. Refer to the previous sections for a detailed discussion on JCL parameters available for DETAIL tape data sets.

___ 5. Submit prefix.MICS.CNTL(cccGDGGN) to define the tape GDG.

Note: If you want to override the number of entries kept in a GDG with cataloged data sets for a TAPEfff file, you must delete and redefine the index with the new limit for GDG entries. Follow the checklist in section 3.5.6.3 of the PIOM.

___ 6. You have just activated DETAIL tape for one or more database files. As mentioned in the DETAIL Tape Processing Overview section, the choice to create DETAIL tape files is independent of, and does not affect the creation of DETAIL files in the unit database.

If you are currently creating one or more cycles of the files you just activated for DETAIL tape in your unit prefix.MICS.DETAIL timespan, your DAILY update

```
job will continue to do so.

Now that you are creating DETAIL tape cycles for the
files, you may want to deactivate, or limit the
number of DETAIL cycles written to the unit DETAIL
timespan database.

The CA MICS System Modification Guide contains
instructions for changing the number of cycles of a
file as well as instructions for deactivation of the
DETAIL timespan of a file.

If you deactivate the files in the DETAIL timespan,
make sure you delete the existing cycles to free up
space in the prefix.MICS.DETAIL database.  If you
reduce the number of cycles, make sure you delete any
existing cycles in prefix.MICS.DETAIL beyond the new
cycle limit.

The following JCL can be used to delete specific
cycles of a file from the DETAIL timespan.  Make sure
to replace 'x' with the unit identifier:

a) Delete all cycles for file fff (01-nn)

//DELETE  EXEC MICSDBx
//SYSIN   DD *
 PROC DATASETS DDNAME=%DDNx(TS=DETAIL);
   DELETE cccfff01 cccfff02 ... cccfffnn ;
   RUN;

b) Delete cycles 02, 03, and 04 for file fff:

//DELETE  EXEC MICSDBx
//SYSIN   DD *
 PROC DATASETS DDNAME=%DDNx(TS=DETAIL);
   DELETE cccfff02 cccfff03 cccfff04 ;
   RUN;
```

7.3.2.4.8 Deactivating DETAIL Tape Checklist

___ 1. Delete the desired TAPEfff and TAPEfffSMS statements from prefix.MICS.PARMS(cccOPS).

___ 2. If there are no longer any TAPEfff statements in prefix.MICS.PARMS(cccOPS), delete any DETAILTAPEPARM and DETAILTAPESMSPARM statements.

___ 3. Submit prefix.MICS.CNTL(cccPGEN).

___ 4. Edit prefix.MICS.PARMS(JCLGENU) so that it reads:

DAILY

If Incremental Update is active, add this:

INCRccc

___ 5. Submit prefix.MICS.CNTL(JCLGENU) to regenerate the JCL for the DAILY job.

___ 6. (Optional) Delete the index and the cataloged datasets for each TAPEfff statements deleted in step 1.

7.3.3 INPUTRDR and INPUTMQS PARMS Members

The prefix.MICS.PARMS members INPUTRDR and INPUTccc are used to specify the input data for the Data Integration Application component step.

To determine whether INPUTccc or INPUTRDR or both are used, review the DAYSMF, SMFRECORDING, and SMFDRCTR specifications in prefix.MICS.PARMS(JCLDEF). Consider the following table and comments for the row:

ROW	PARAMETER IN JCLDEF	INPUTRDR WHERE USED	INPUTccc WHERE USED
1	DAYSMF OFF	Not Used	Each Comp Step
2	DAYSMF FILE(S) ...	DAYSMF Step	Not Used
3	Only 1 SMF Comp	Comp Step	Not Used
4	SMFDIRECTOR	Not Used	Comp Step
5	DAYSMF EXCLUDE ccc	Not Used	Comp ccc Step
6	SMFRECORDING ccc	It depends	Comp ccc Step

Row 1: When DAYSMF OFF is specified in JCLDEF, then the prefix.MICS.PARMS(INPUTccc) member is used for each component step.

Row 2: When DAYSMF FILES PERMANENT or TEMPORARY is specified in JCLDEF, the prefix.MICS.PARMS(INPUTRDR) member is used in DAYSMF.

Row 3: If there is only one SMF recording component in this unit, DAYSMF will not be generated and the component step with SMF input data will use the prefix.MICS.PARMS(INPUTRDR) member.

Row 5: If the use of DAYSMF EXCLUDE ccc results in only one component remaining as DAYSMF eligible, DAYSMF will automatically be deactivated, and row 1 applies.

Row 6: Some components accept data from both SMF and non-SMF sources, such as CIC and VCA. In this case, the component may optionally input data from the INPUTRDR member, but will always include the INPUTccc member. Refer to the component's guide.

For details on the DAYSMF parameters, see PIOM section 2.3.3.2.1, JCL Option Definitions (JCLDEF).

For details on deactivating DAYSMF, see PIOM section 5.10, Removing the DAYSMF Step from the DAILY Job.

The following sections describe how to specify the input data set JCL definitions.

1 - INPUTRDR PARMS Member JCL Definition
2 - INPUTMQS PARMS Member JCL Definition

7.3.3.1 INPUTRDR PARMS Member JCL Definition

The INPUTRDR member of prefix.MICS.PARMS defines the DD statements that specify the SMF input data for all products in the units that use SMF data. The INPUTSMF DD statements are used by the DAYSMF step, which reads and splits the SMF data into separate files, one for each CA MICS product.

The INPUTRDR member defines the input SMF data sets when DAYSMF FILES PERMANENT or TEMPORARY is specified in the prefix.MICS.PARMS(JCLDEF) member.

An INPUTSMF DD statement is required for each SMF data source. A worksheet for preparing the INPUTRDR member is provided below. If you change the contents of the INPUTRDR member, you must regenerate the CA MICS DAILY job using either JCLGENU or JCLGEND in prefix.MICS.CNTL.

For example, if you want to read your SMF data from a data set named SMF.DAILY.DATA, you would change the INPUTRDR member to contain the name of the SMF data set as follows:

```
//INPUTSMF DD DISP=SHR,DSN=SMF.DAILY.DATA
```

If there is only one SMF recording component in this unit, DAYSMF will not be generated and the component step with SMF input data will use the prefix.MICS.PARMS(INPUTRDR) member directly.

If DAYSMF has been deactivated by the DAYSMF OFF statement specified in the prefix.MICS.PARMS(JCLDEF) member, then each component step will read its input from their corresponding prefix.MICS.PARMS(INPUTccc) member.

```
+--------------------------------------------------------------------+
| INSTALLATION PREPARATION WORKSHEET:  SMF Input DD Statements       |
|                                                                    |
| PARMS Library Member is INPUTRDR                                   |
+--------------------------------------------------------------------+
|                                                                    |
|This definition is required to specify the DD statement for SMF data|
|which will be read by the DAILY CA MICS job.                        |
|                                                                    |
|   //@                                                             |
|   //@ WARNING: ALWAYS MAKE CHANGES IN PARMS(INPUTRDR) AND NOT      |
|   //@          &CNTL(DAILY).                                       |
|   //@          CHANGES MADE TO &CNTL(DAILY)                        |
|   //@          WILL BE GONE WHEN DAILY REGENERATED BY JCLGEN.      |
|   //@                                                             |
|   //INPUTSMF DD DISP=SHR,DCB=BUFNO=3,DSN=_________________________ |
|   //         DD DISP=SHR,DCB=BUFNO=3,DSN=_________________________ |
|                                                                    |
|                                                                    |
+--------------------------------------------------------------------+
```

Figure 7-3. INPUTRDR JCL Definition Worksheet

7.3.3.2 INPUTMQS PARMS Member JCL Definition

The INPUTMQS member of prefix.MICS.PARMS contains the DD statements to specify the input data for the CA MICS Analyzer for MQSeries. The //INPUTSMF DD and, optionally, the //SMFDRCTR DD statements are used by the DAY051 step of the DAILY job.

The INPUTMQS member contains the input SMF data sets when ANY of the following JCLDEF options is used:

- DAYSMF OFF is specified
- SMFDRCTR/SMFDIRECTOR MQS is specified
- DAYSMF EXCLUDE MQS is specified

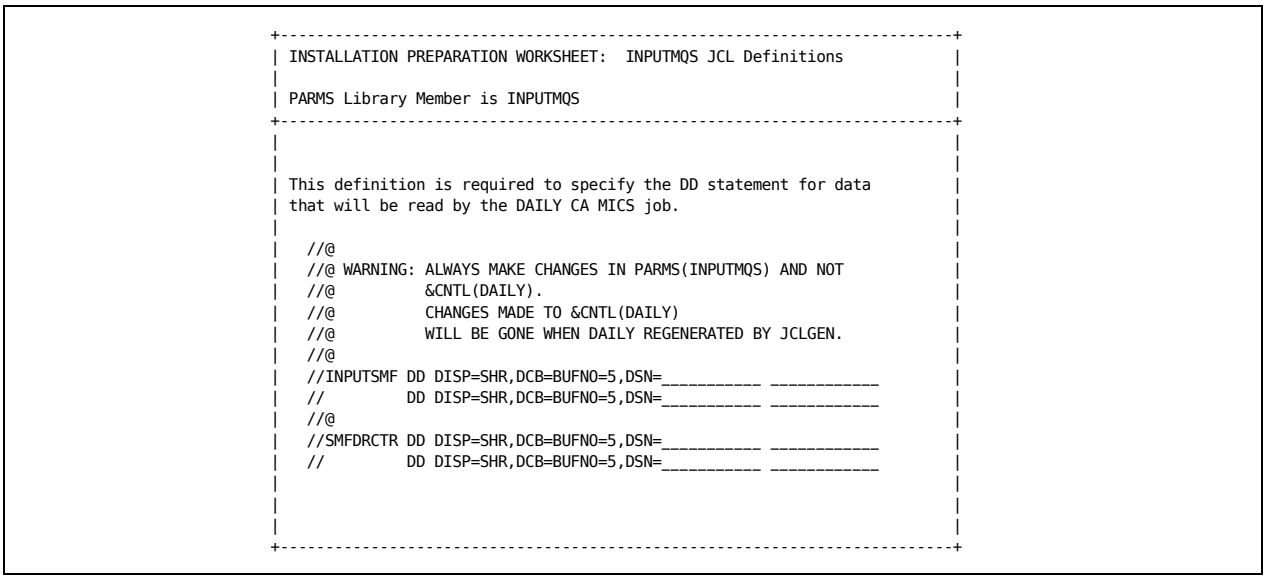
A //INPUTSMF DD statement is required for each SMF data source.

A //SMFDRCTR DD statement is only required when CA SMF Director split indices are used.

A worksheet for preparing the INPUTMQS member is provided below in Figure 7-4.

If you change the contents of the INPUTMQS member, you must regenerate the CA MICS DAILY job using either JCLGENU or JCLGEND in prefix.MICS.CNTL.

NOTE: If your site has CA SMF Director installed, you can use it to extract specific SMF record types and subtypes at SMF dump time. For more details on this product feature see section 6.4, CA MICS and CA SMF Director Interface, of this guide.



```
+-------------------------------------------------------------------------+
| INSTALLATION PREPARATION WORKSHEET:  INPUTMQS JCL Definitions            |
|                                                                         |
| PARMS Library Member is INPUTMQS                                        |
+-------------------------------------------------------------------------+
|                                                                         |
|                                                                         |
| This definition is required to specify the DD statement for data        |
| that will be read by the DAILY CA MICS job.                             |
|                                                                         |
|   //@                                                                   |
|   //@ WARNING: ALWAYS MAKE CHANGES IN PARMS(INPUTMQS) AND NOT           |
|   //@          &CNTL(DAILY).                                            |
|   //@          CHANGES MADE TO &CNTL(DAILY)                             |
|   //@          WILL BE GONE WHEN DAILY REGENERATED BY JCLGEN.           |
|   //@                                                                   |
|   //INPUTSMF DD DISP=SHR,DCB=BUFNO=5,DSN=___________ ____________       |
|   //         DD DISP=SHR,DCB=BUFNO=5,DSN=___________ ____________       |
|   //@                                                                   |
|   //SMFDRCTR DD DISP=SHR,DCB=BUFNO=5,DSN=___________ ____________       |
|   //         DD DISP=SHR,DCB=BUFNO=5,DSN=___________ ____________       |
|                                                                         |
|                                                                         |
|                                                                         |
+-------------------------------------------------------------------------+
```

Figure 7-4. INPUTMQS JCL Definition Worksheet

7.3.4 Database Space Modeling (DBMODEL)

This section describes the information required to define the Analyzer to the Database Space Modeling Facility. Specifically, the user must provide values for the cycle (data retention) definitions. The special considerations for defining the FILE input statements to the Database Space Modeling facility are discussed.

Section 2.3.4 of the PIOM, Database Space Modeling Facility, explains how these values are used in estimating the DASD requirements of the database, and how the user can input these values to the modeling facility.

This section covers the following topics:

1 - Data Retention Specifications (FILE Statements)

7.3.4.1 Data Retention Specifications (FILE Statements)

This section describes cycle (data retention) definitions required for the CA MICS MQSeries Analyzer, discusses how to determine the MQS data cycles required, and provides instructions for completing the FILE statements in the PARMS member DBMODEL.

Database Data Retention Definitions Worksheet

Figure 7-5 provides a worksheet to define the different retention limits for the online and archive database files. The numbers shown on the worksheet reflect the default retention values in prefix.MICS.PARMS(DBMODEL).

Use the worksheet to define your retention specifications, which in turn will allow you to determine the appropriate values for the modeling process.

Note that the DBMODEL worksheet shown here contains values for this product only. See Section 2.3.4.1, Preparing the Modeling Input, in the PIOM for additional information.

The worksheet is organized by information area. Each file in the area is listed by name. For each file, a line is formatted to allow six definitions in the online database and two in the archive database:

- The online database files quantify the number of cycles of data that is maintained in the DETAIL, DAYS, WEEKS, MONTHS, and YEARS timespans and the TABLES data area.

- The two definitions for the archive database files quantify the number of cycles of data to be retained, up to the cutoff limit defined. The archive definitions have no impact on the size of the database and can be specified whethert the weekly and/or monthly archive history files have actually been activated (see Section 2.3.3, CA MICS JCL Planning and Parameters, of the PIOM).

The worksheet formats provide an underscored area for the user's definition, followed by the recommended value, shown within parentheses. If the underscored area contains a value of 00, the file is not supported for the indicated timespan. To add support, perform database tailoring as described in Section 6.2, Tailoring the Database, of the System Modification Guide (SMG).

When specifying a retention limit, remember that the number may never be zero if the file has been defined to be active in the timespan.

MQSeries Data Retention Definition

The CA MICS MQSeries Analyzer is comprised of the MQS, MQA, and MQB Information Areas. The FILE statements shown below specify the default online and archive history retention limits for each file. A complete description of the FILE statement is provided in the PIOM, Section 2.3.4.1, Preparing the Modeling Input.

INSTALLATION PREPARATION WORKSHEET: Data Retention Specifications

PARMS Library Member is MQSeries

Reference Sections: 7.3.4.1 CA MICS MQSeries Analyzer Guide

File Name	Online Database Retention DETAIL DAYS	WEEKS	MONTHS	YEARS	TABLES	Archive Cut-Off WEEKS	MONTHS
MQAMMA	__(03)	__(10)	__(06)	__(06)	_(0)	00(00)	___(053)	___(024)
MQAQAA	__(00)	__(10)	__(06)	__(06)	_(0)	00(00)	___(053)	___(024)
MQATAA	__(00)	__(10)	__(06)	__(06)	_(0)	00(00)	___(053)	___(024)
MQA_CH	__(07)	__(10)	__(06)	__(06)	_(0)	00(00)	___(053)	___(024)
MQS_MQ	__(01)	__(00)	__(00)	__(00)	_(0)	00(00)	___(000)	___(000)
MQSBMS	__(03)	__(10)	__(06)	__(06)	_(0)	00(00)	___(053)	___(024)
MQSCMS	__(03)	__(10)	__(06)	__(06)	_(0)	00(00)	___(053)	___(024)
MQSDMS	__(03)	__(10)	__(06)	__(06)	_(0)	00(00)	___(053)	___(024)
MQSDBS	__(03)	__(10)	__(06)	__(06)	_(0)	00(00)	___(053)	___(024)
MQSLMS	__(03)	__(10)	__(06)	__(06)	_(0)	00(00)	___(053)	___(024)
MQSMMS	__(03)	__(10)	__(06)	__(06)	_(0)	00(00)	___(053)	___(024)
MQBMFA	__(03)	__(10)	__(06)	__(06)	_(0)	00(00)	___(053)	___(024)
MQBMFN	__(03)	__(10)	__(06)	__(06)	_(0)	00(00)	___(053)	___(024)

....5...10...15...20...25...30...35...40...45...50...55...60...65...70..

Chapter 8: INSTALLATION

After specifying the parameters documented in Chapter 7 of this guide, you can install the MQSeries Analyzer by using the checklists in Section 3.8 of the CA MICS Planning, Installation, Operation and Maintenance Guide (PIOM).

Chapter 9: PROCESSING

The processing information in this chapter provides an overview of how data from the CA MICS MQSeries Analyzer becomes part of the CA MICS database.

This section contains the following topics:

9.1 Processing Overview

The CA MICS MQSeries Analyzer makes use of the standard data base update and summarization facilities of CA MICS to maintain its data in the online and offline databases. The SMF data is supplied to CA MICS in the DAY051 step of the DAILY database update job.

The daily update step:

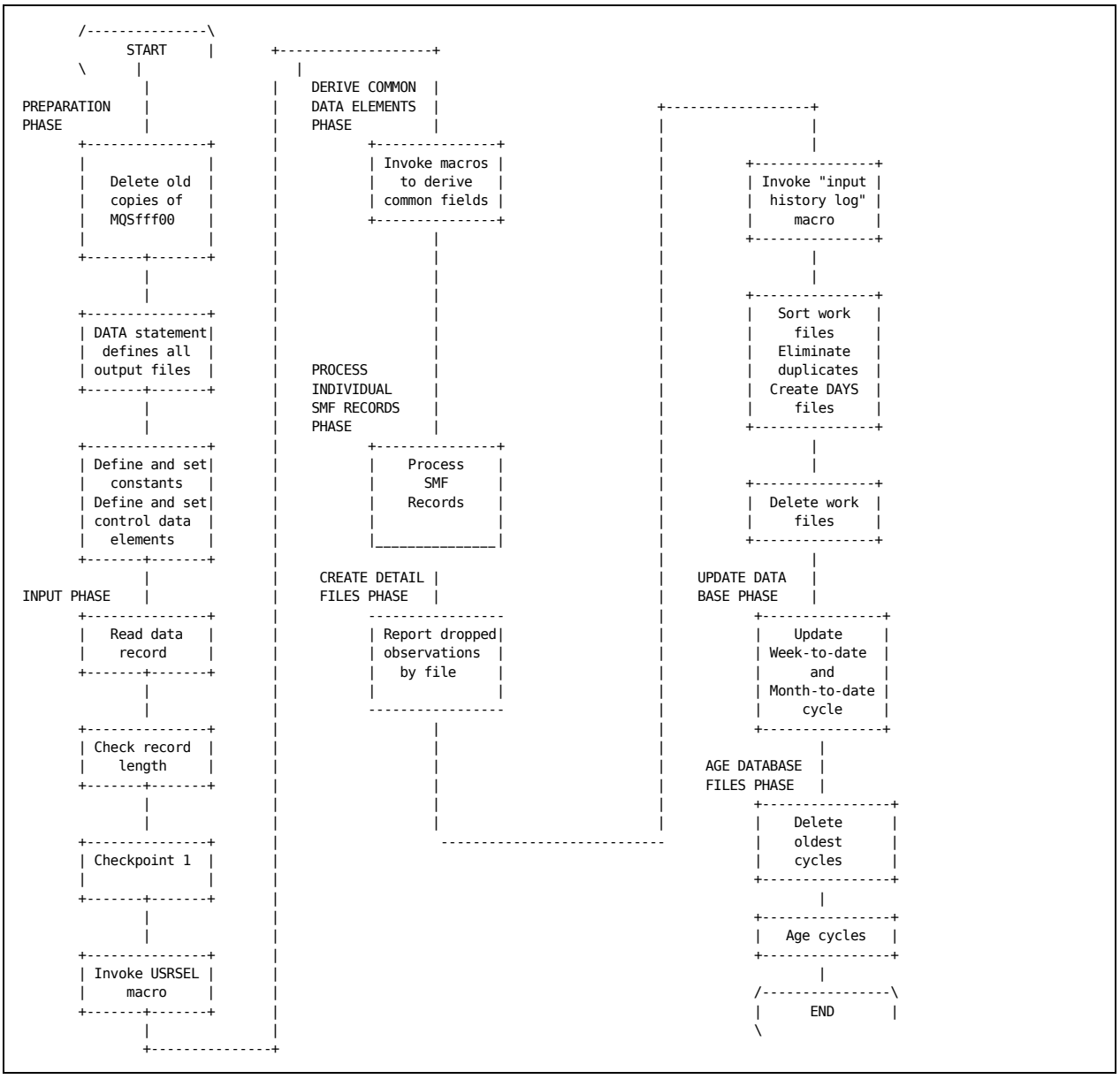
- Reads and formats the raw data
- Maintains data integrity by eliminating duplicate data
- Summarizes activity
- Adds new cycles to the DETAIL and DAYS time-spans
- Updates the week-to-date and month-to-date cycles

A more detailed description of DAY051 processing is presented in the next section.

Weekly processing is performed by the WEEK051 and WEEK300 steps. The WEEK051 step splits the week-to-date files into a new week-to-date and a new weekly '01' cycle. The WEEK300 step creates the weekly offline database files.

Monthly processing is performed by the MONTH051 and MONTH300 steps. The MONTH051 step splits the month-to-date file into a new month-to-date and a new monthly '01' cycle. It also appends the data to the year-to-date file. The MONTH300 step creates the monthly offline database files.

The optional yearly processing is performed by the YEAR051 step which splits the year-to-date files into a new year-to-date and a new yearly '01' cycle.


START
PREPARATION PHASE
Delete old copies of MQSfff00
DATA statement defines all output files
Define and set constants
Define and set control data elements
INPUT PHASE
Read data record
Check record length
Checkpoint 1
Invoke USRSEL macro
DERIVE COMMON DATA ELEMENTS PHASE
Invoke macros to derive common fields
PROCESS INDIVIDUAL SMF RECORDS PHASE
Process SMF Records
CREATE DETAIL FILES PHASE
Report dropped observations by file
UPDATE DATA BASE PHASE
Invoke "input history log" macro
Sort work files Eliminate duplicates Create DAYS files
Delete work files
Update Week-to-date and Month-to-date cycle
AGE DATABASE FILES PHASE
Delete oldest cycles
Age cycles
END

9.2 Daily Update Processing Flow

The DAY051 step of the DAILY job processes SMF type 115, 116, and 117 records. The SMF type 115 records contain WebSphere MQ performance statistics, the SMF type 116 records contain WebSphere MQ accounting data, and the SMF type 117 records contain Message Broker data.

Step DAY051 consists of the following phases:

1 - Preparation Phase
2 - Input Phase
3 - Decoding Phase
4 - Data Input Phase
5 - Data Summarization Phase
6 - File Aging

9.2.1 Preparation Phase

During the Preparation Phase the CA MICS MQSeries Analyzer defines its output files with a DATA statement. Constants are defined and set to their initial values along with data elements and formats.

9.2.2 Input Phase

During the Input Phase, the CA MICS Analyzer Option for MQSeries reads the SMF data. At End-of-File, a count of statistics is printed. The counts will indicate the total records kept, for both the Performance Information and the Accounting Information Areas. The input phase will also give the total short records deleted, total records options deleted, and total records data ranges deleted.

Part of the statistics report has the following sample appearance:

```
  10.33.07 BAS00331I   SYSTEM COMPONENT
  10.33.07 BAS00331I
  10.33.07 BAS00343I    SYA6  MQS MQTA
  10.33.07 BAS00343I    SYA6  MQS MQPA
  10.33.07 BAS00343I    SYD1  MQS
  10.33.07 BAS00343I    SYD2  MQS MQPD
```

The entries in the System column are drawn from the System Identification (SYSID) data element.

The entries in the component column are composed of the CA MICS Analyzer Option for MQSeries product ID 'MQS' and the Queue Manager Name (MQMSSI) supplied by the incoming SMF data.

It must be noted that the absence of a queue manager name in the row above for system SYD1 is not an error. Rather, the MQMSSI data element is not available when the input is Message Broker SMF records so that blanks are substituted.

9.2.3 Decoding Phase

During the Decoding Phase, the CA MICS MQSeries Analyzer checks the record type and subtype and transfers control to the appropriate processing code.

9.2.4 Data Input Phase

During the Data Input Phase, the CA MICS MQSeries Analyzer reads the data elements from the various record types and performs computations to scale and accumulate data.

9.2.5 Data Summarization Phase

The DAY051 step creates current cycles for both the DETAIL and DAYS files. It also appends data to both the week-to-date and month-to-date files.

9.2.6 File Aging

File Aging

CA MICS MQSeries Analyzer files are aged to delete the oldest cycles and rename work files to current cycles. There are no exit points provided in this phase.

Chapter 10: MODIFICATION

At times, additional system customization is needed to tailor CA MICS to meet your data center's needs. There are many user exit points provided within CA MICS. Each of these points corresponds to a position in the CA MICS logic where user modification:

o Is likely to occur, based on our experience

o Presents only a slight possibility of compromising CA MICS database or operational integrity

o Is relatively easy to document and understand

Using the exit facilities is the safest way to change the system.

The system administrator has four way to augment, change, and enhance CA MICS:

o Standard Option and Parameter Definitions

   The diverse installation and definition options provide most users with adequate provisions for customizing CA MICS.

o Modification through User Exit Points

   There can be site-dependent requirements that are not adequately addressed through standard options and parameters. If so, one or more user exit points can be used to code user-written routines to satisfy these extended requirements.

o Extension through Field Developed Applications

  Although most users do not initially consider this a way of modifying CA MICS, the development of field-developed applications can be the most advantageous method of customization. For example, it may be better to write an application to handle additional SMF data than to attempt to modify the logic of the CA MICS MQSeries Analyzer.

o System Code Modification

  As a last resort, you may be able to satisfy your data center's requirements by implementing a source code change.

This chapter explains the user exit points that are provided with the MQSeries Analyzer. You must carefully explore whether it is necessary to develop any user exit routines. To this end, first ensure that the requirement cannot be satisfied through one of the standard options or definitions. This process can be greatly facilitated by discussing the requirement with CA Technical Support.

Before attempting to activate an exit, you should read and fully understand the information contained in Section 4.3 of the System Modification Guide, User Exit Facilities. The following material is intended to supplement, not replace, that discussion.

The design, coding, testing, and implementation of user exit routines should be approached with caution as errors can result, causing the corruption of data. You must be meticulous in the definition and validation of the exit routines to ensure that system integrity and performance are not affected.

The following sections identify the user exit points that are available for MQSeries Analyzer processing, and describe each of the user exit points:

This section contains the following topics:

10.1 Available User Exits

There are two types of user exits that can be used to modify CA MICS logic: general exits, which apply to all the installed products, and product exits, which apply only to the product for which they are provided.

General exits allow user routines to be used for all products that process the raw SMF data. General exits are briefly described in this guide, whereas a more detailed description can be found in Chapter 4 of the CA MICS System Modification Guide.

Product exits are classified according to their purpose and include input, work file, output, parameter-related, and accounting exits.

- Input exits are invoked as the raw input records are read. Output exits are invoked just before CA MICS writes an observation to the CA MICS database.

- The CA MICS Analyzer for MQSeries provides the general input exit _USRSEL, which can be used to select or exclude data meeting special site-defined criteria, to add data elements, or to modify record fields as they are read. In addition, the general exit, _USRIHL, is provided at the end of input processing to permit examination of the CA MICS Input History Log SAS file so that the user can terminate the DAILY run if critical data is missing.

- An output exit routine is provided for each file and can be used to selectively block the writing of specified records, alter data elements in the records, or produce additional records for the target file or a user-defined file.

- Parameter-related exits are also user exits, but are defined as part of the standard CA MICS installation process. They are normally associated with other parameters or options. For example, the Account Code Derivation Routine is a user exit routine for completing values for account codes that were defined in a separate but related member of sharedprefix.MICS.PARMS, MQSACRT, the Account Code Definition parameter member. These exits are identified here but described in Chapter 7.

- Accounting exits are identified here but described in the CA MICS Accounting and Chargeback Guide.

```
The user exits for the CA MICS Analyzer for MQSeries are
identified below:

o  Product Input Exits

   _USRSEL  - File Processing Selection
   _USRIHL  - Examine Input History Log

o  Product Output Exits

   USRSBMS - Buffer Manager Statistics File Exit
   USRSCMS - Coupling Facility Statistics File Exit
   USRSDBS - DB2 Manager Statistics File Exit
   USRSDMS - Data Manager Statistics File Exit
   USRSLMS - Log Manager Statistics File Exit
   USRSMMS - Message Manager Statistics File Exit
   USRSMMA - Message Manager Accounting File Exit
   USRSQAA - Queue Activity File Exit
   USRSMFA - Message Flow Accounting File Exit
   USRSMFN - Message Flow Node File Exit
   USRSTAA - Task Accounting File Exit
   USRDQAA - DAYS Queue Activity File Exit
   USRDTAA - DAYS Task Accounting File Exit
   USRTfff - DETAIL Tape Data Selection Exit

   DETAIL Only Product Output Exits

   USRXQAA - DETAIL Queue Activity File Exit (see note below)
   USRXTAA - DETAIL Task Accounting File Exit (see note
             below)

o  Product Parameter-Related Exits

   MQSACRT - MQSeries Account Code Derivation Exit

o  Accounting Exits

   USRAMMA - Message Manager Accounting File Exit
   USRATAA - Task Accounting File Exit
   USRAQAA - Queue Activity File Exit
   USRAMFA - Message Flow Accounting File Exit

Note:  The USRXQAA and USRXTAA exits do not follow the same
conventions as the other raw exits, where subsetting records
affect not only the DETAIL, but also the higher timespan
files as well.  The USRXQAA and USRXTAA exits affect only the
DETAIL timespan files.
```

10.2 Exit Routine Considerations

There are data elements available for use by the user exits that vary according to the processing phase and the particular user exit point. Special data elements that are used in the CA MICS MQSeries Analyzer update process, but are not stored in the CA MICS database (and therefore have no corresponding Data Dictionary descriptions), are identified below. The individual user exit descriptions list which of these elements are available for the user exit routine.

```
ROUTINE  - Name of the Invoking Routine

FILEID   - Identifier of the File Being Processed

SMFRTYPE - SMF Record Type of the Record Being Processed

COMPT    - 8-Character Product and Data Source Identifier
```

10.3 Input Exits

This section provides a description of the user exits that are invoked during the first phase of the CA MICS Analyzer for MQSeries DAILY update processing. The exits are listed alphabetically.

Each exit description includes the name and title, a description of its purpose, when it is invoked, and whether it has an interface to CA MICS Accounting and Chargeback. In addition, it shows the data elements that are available, the special considerations to note, and a sample user exit.

```
+---------------+
| _ U S R S E L |  File Processing Selection Exit
+---------------+
```

DESCRIPTION: This exit allows access to each record processed by the MQSeries input format routine.

INVOCATION: The exit gains control after a DETAIL input record has been read.

ACCOUNTING INTERFACE: No interface to CA MICS Accounting and Chargeback.

USES: This exit can be used to exclude records from being processed by the CA MICS Analyzer for MQSeries during the daily input step. To exclude a record, set SKIP_REC to one.

ELEMENTS AVAILABLE:

ROUTINE - The name of the routine that invoked this exit. To use this exit in the MQSeries process, test for ROUTINE = 'DYMQSFMT'.

SMFRTYPE - The record type of the input record:

115 - Performance Statistics
116 - Accounting Data
117 - Message Broker Data

ORGSYSID - Original SYSID from SMF record.

ENDTS - Time when record was written to SMF or NPM Session Statistics Detail File.

COMPT - The 8-character value representing CA MICS Analyzer for MQSeries product ID 'MQS' and MQMSSI (MQSeries Queue

```
  Manager Name).  Product ID and MQMSSI are separated by a
  blank.  The MQMSSI data element is not available in the
  MQBMFA and MQBMFN files, therefore it will contain blank
  values in COMPT.

CODING RESTRICTIONS:  Refer to the System Modification Guide,
Section 4.3.2.1.

SPECIAL NOTES:

o  This exit is part of the CA MICS Base component and is
   located in sharedprefix.MICS.SOURCE(#BASEXIT).  However,
   it is recommended that you modify
   prefix.MICS.USER.SOURCE(#BASEXIT).  A more detailed
   description of this routine is provided in the System
   Modification Guide, Section 4.3.2.1, General Operational
   Exits.

o  Because this exit is used in many places, it is necessary
   to qualify all coding in this exit by examining the name
   of the routine in which the exit was invoked.  The program
   variable ROUTINE exists for this purpose.  See the example
   below.

SAMPLE USER EXIT:

DESCRIPTION:  In this exit, the data logged by MQM subsystem
CSQ2 is dropped from further processing. Perhaps this data is
coming from a test system that does not need to be kept in
the production database.

MACRO _USRSEL

IF ROUTINE = 'DYMQSFMT' THEN DO;
  IF MQMSSI = 'CSQ2' THEN
     SKIP_REC = 1;
END;
%


+---------------+
| _ U S R I H L |  Examine Input History Log Exit
+---------------+

DESCRIPTION:  This exit permits inspection of the DETAIL
timespan checkpoint SAS file immediately following
processing of all input records in the input format routine.

INVOCATION:  This exit is referenced in code that passes the
```

```
DETAIL timespan checkpoint SAS file.   The code reads
_ADMX.CKPTDATA as an integrity check on that file, and, in
the process, lets you inspect the file's contents.

ACCOUNTING INTERFACE:  No interface to CA MICS Accounting and
Chargeback.

USES:  This exit can be used to abort daily update processing
based on an extended checkpoint examination algorithm.  For
example, the daily process will end normally if data from SMF
record type 115 or 116 is provided.  However, it may be
critical that data from at least one specific system is
provided for a successful update. This routine can be used to
examine all entries in _ADMX.CKPTDATA to test for the
required condition.  If the appropriate data is not found,
the CA MICS Analyzer for MQSeries DAILY step could be
terminated with an ABORT ABEND statement.

ELEMENTS AVAILABLE:  All elements in the ADMIHL File

CODING RESTRICTIONS:  Refer to the System Modification Guide,
  Section 4.3.2.1.

SPECIAL NOTES:

o  This exit is part of the CA MICS Base component and is
   located in sharedprefix.MICS.SOURCE(#BASEXIT).  However,
   it is highly recommended that you modify
   prefix.MICS.USER.SOURCE(#BASEXIT).  A more detailed
   description of this routine is provided in the CA MICS
   System Modification Guide, Section 4.3.2.1, General
   Operational Exits.

o  Because this exit is used in many places, you must qualify
   all coding in this exit by examining the name of the
   routine in which the exit was invoked.  The program
   variable ROUTINE exists for this purpose.  Refer to the
   following example.

o  Note that COMPT has a special meaning to the CA MICS
   Analyzer for MQSeries, since it not only identifies the
   product, but each MQM subsystem ID as follows:

   'MQS xxxx' - xxxx is the MQM Subsystem Identifier

SAMPLE USER EXIT:

DESCRIPTION:  In this sample exit, the Input History Log is
examined to determine if input data was received for the
```

```
production SYSID 'TST1'.  When End of File (EOF) is reached
for the DAILY update run, a check is done to determine if
TST1 data was provided.  If TST1 data was not provided, then
further DAILY processing is aborted and a message is written
specifying the reason for aborting.

MACRO _USRIHL
 IF ROUTINE = 'DYMQSFMT' THEN DO;
 RETAIN TST1FLAG 0;
 IF SYSID = 'TST1' THEN
    TST1FLAG = 1;
 IF EOF THEN DO;
   IF TST1FLAG THEN GOTO ENDCHECK;
   PUT 'Data from Production System TST1 missing';
   ABORT ABEND;
 END;
 ENDCHECK:
 END;
%
```

10.4 Output Exits

This section provides an in-depth description of the CA MICS Analyzer for MQSeries standard output processing exits that are invoked during the daily update processing flow. The exits are organized alphabetically.

Each exit description includes the user exit name and title, a description of its purpose, when it is invoked, and whether it has an interface to CA MICS Accounting and Chargeback. It also shows what data elements are available, any special considerations to be aware of, and a sample user exit.

```
+---------------+
| U S R S B M S |  Buffer Manager Statistics File Exit
+---------------+
```

DESCRIPTION: This exit allows access to the data elements used to build the records in the Buffer Manager Statistics File.

INVOCATION: Exit gains control immediately prior to the output of records to interim work file for the Buffer Manager Statistics File. At the invocation point, the SMF type 115 subtype 2 record is still in the input buffer.

ACCOUNTING INTERFACE: No interface to CA MICS Accounting and Chargeback.

USES: This exit is used to add or change data elements, or to delete observations from the Buffer Manager Statistics File. To prevent a record from being output to the work file, set data element SKIP_REC=1 in the exit.

ELEMENTS AVAILABLE: All elements in the Buffer Manager Statistics File with the exception of derived data elements. Additionally, some temporary elements, used to construct MQSBMS file elements are available. Data elements read from the SMF record header, such as ORGSYSID and ENDTS, are available as well.

If you require access to the MQSBMS file derived data elements, you can invoke the %BMSDERV macro within the exit. This will add additional processing overhead and should be avoided unless absolutely necessary.

CODING RESTRICTIONS: Refer to the System Modification Guide, Section 4.3.2.2.

```
+---------------+
| U S R S C M S |  Coupling Facility Statistics File Exit
+---------------+

DESCRIPTION:  This exit allows access to the data elements
used to build the records in the Coupling Facility Statistics
File.

INVOCATION:  Exit gains control immediately prior to the
output of records to interim work file for the Coupling
Facility Statistics File.  At the invocation point, the SMF
type 115 subtype 2 record is still in the input buffer.

ACCOUNTING INTERFACE:  No interface to CA MICS Accounting and
Chargeback.

USES:  This exit is used to add or change data elements, or
to delete observations from the Coupling Facility Statistics
File.  To prevent a record from being output to the work
file, set data element SKIP_REC=1 in the exit.

ELEMENTS AVAILABLE:  All elements in the Coupling Facility
Statistics File with the exception of derived data elements.
Additionally, some temporary elements, used to construct
MQSCMS file elements are available.  Data elements read
from the SMF record header, such as ORGSYSID and ENDTS,
are available as well.

If you require access to the MQSCMS file derived data
elements, you can invoke the %CMSDERV macro within the exit.
This will add additional processing overhead and should be
avoided unless absolutely necessary.

CODING RESTRICTIONS:  Refer to the System Modification Guide,
Section 4.3.2.2.

+---------------+
| U S R S D B S |  DB2 Manager Statistics File Exit
+---------------+

DESCRIPTION:  This exit allows access to the data elements
used to build the records in the DB2 Manager Statistics File.

INVOCATION:  Exit gains control immediately prior to the
output of records to interim work file for the DB2 Manager
Statistics File.  At the invocation point, the SMF type 115
subtype 2 record is still in the input buffer.

ACCOUNTING INTERFACE:  No interface to CA MICS Accounting and
```

```
Chargeback.

USES:  This exit is used to add or change data elements, or
to delete observations from the DB2 Manager Statistics File.
To prevent a record from being output to the work file, set
data element SKIP_REC=1 in the exit.

ELEMENTS AVAILABLE:  All elements in the DB2 Manager
Statistics File with the exception of derived data elements.
Additionally, some temporary elements, used to construct
MQSDBS file elements are available.  Data elements read from
the SMF record header, such as ORGSYSID and ENDTS, are
available as well.

If you require access to the MQSDBS file derived data
elements, you can invoke the %DBSDERV macro within the exit.
This will add additional processing overhead and should be
avoided unless absolutely necessary.

CODING RESTRICTIONS:  Refer to the System Modification Guide,
Section 4.3.2.2.

+---------------+
| U S R S D M S |  Data Manager Statistics File Exit
+---------------+

DESCRIPTION:  This exit allows access to the data elements
used to build the records in the Data Manager Statistics
File.

INVOCATION:  Exit gains control immediately prior to the
output of records to interim work file for the Data Manager
Statistics File.  At the invocation point, the SMF type 115
subtype 2 record is still in the input buffer.

ACCOUNTING INTERFACE:  No interface to CA MICS Accounting and
Chargeback.

USES:  This exit is used to add or change data elements, or
to delete observations from the Data Manager Statistics File.
To prevent a record from being output to the work file, set
data element SKIP_REC=1 in the exit.

ELEMENTS AVAILABLE:  All elements in the Data Manager
Statistics File with the exception of derived data elements.
Additionally, some temporary elements, used to construct
MQSDMS file elements are available.  Data elements read from
the SMF record header, such as ORGSYSID and ENDTS, are
available as well.
```

```
If you require access to the MQSDMS file derived data
elements, you can invoke the %DMSDERV macro within the exit.
This will add additional processing overhead and should be
avoided unless absolutely necessary.

CODING RESTRICTIONS:  Refer to the System Modification Guide,
Section 4.3.2.2.

+---------------+
| U S R S L M S |  Log Manager Statistics File Exit
+---------------+

DESCRIPTION:  This exit allows access to the data elements
used to build the records in the Log Manager Statistics
File.

INVOCATION:  Exit gains control immediately prior to the
output of records to interim work file for the Log Manager
Statistics File.  At the invocation point, the SMF type 115
subtype 1 record is still in the input buffer.

ACCOUNTING INTERFACE:  No interface to CA MICS Accounting and
Chargeback.

USES:  This exit is used to add or change data elements, or
to delete observations from the Log Manager Statistics File.
To prevent a record from being output to the work file, set
data element SKIP_REC=1 in the exit.

ELEMENTS AVAILABLE:  All elements in the Log Manager
Statistics File with the exception of derived data elements.
Additionally, some temporary elements, used to construct
MQSLMS file elements are available.  Data elements read from
the SMF record header, such as ORGSYSID and ENDTS, are
available as well.

If you require access to the MQSLMS file derived data
elements, you can invoke the %LMSDERV macro within the exit.
This will add additional processing overhead and should be
avoided unless absolutely necessary.

CODING RESTRICTIONS:  Refer to the System Modification Guide,
Section 4.3.2.2.

+---------------+
| U S R S M M S |  Message Manager Statistics File Exit
+---------------+
```

```
DESCRIPTION:  This exit allows access to the data elements
used to build the records in the Message Manager Statistics
File.

INVOCATION:  Exit gains control immediately prior to the
output of records to interim work file for the Message
Manager Statistics File.  At the invocation point, the SMF
type 115 subtype 2 record is still in the input buffer.

ACCOUNTING INTERFACE:  No interface to CA MICS Accounting and
Chargeback.

USES:  This exit is used to add or change data elements, or
to delete observations from the Message Manager Statistics
File.  To prevent a record from being output to the work
file, set data element SKIP_REC=1 in the exit.

ELEMENTS AVAILABLE:  All elements in the Message Manager
Statistics File with the exception of derived data elements.
Additionally, some temporary elements, used to construct
MQSMMS file elements are available.  Data elements read from
the SMF record header, such as ORGSYSID and ENDTS, are
available as well.

If you require access to the MQSMMS file derived data
elements, you can invoke the %MMSDERV macro within the exit.
This will add additional processing overhead and should be
avoided unless absolutely necessary.

CODING RESTRICTIONS:  Refer to the System Modification Guide,
Section 4.3.2.2.

+---------------+
| U S R S M M A |  Message Manager Accounting File Exit
+---------------+

DESCRIPTION:  This exit allows access to the data elements
used to build the records in the Message Manager Accounting
File.

INVOCATION:  Exit gains control immediately prior to the
output of records to interim work file for the Message
Manager Accounting File.  At the invocation point, the SMF
type 116 subtype 0 record is still in the input buffer.

ACCOUNTING INTERFACE:  No interface to CA MICS Accounting and
Chargeback.

USES:  This exit is used to add or change data elements, or
```

```
to delete observations from the Message Manager Accounting
File.  To prevent a record from being output to the work
file, set data element SKIP_REC=1 in the exit.

ELEMENTS AVAILABLE:  All elements in the Message Manager
Accounting File with the exception of derived data elements.
Additionally, some temporary elements, used to construct
MQAMMA file elements are available.  Data elements read from
the SMF record header, such as ORGSYSID and ENDTS, are
available as well.

If you require access to the MQSMMA file derived data
elements, you can invoke the %MMADERV macro within the exit.
This will add additional processing overhead and should be
avoided unless absolutely necessary.

CODING RESTRICTIONS:  Refer to the System Modification Guide,
Section 4.3.2.2.

+---------------+
| U S R S Q A A |  Queue Activity File Exit
+---------------+

DESCRIPTION:  This exit allows access to the data elements
used to build the records in the Queue Activity File.

INVOCATION:  This exit is invoked in two separate locations;
one for queue segments associated with tasks that required a
single, non-continued SMF type 116 subtype 1 record, and the
other for queue segments associated with tasks that required
one or more SMF type 116 subtype 2 continuation records.

In the first location, the SMF type 116 subtype 1 record is
still in the SMF buffer. In the second location, the code
logic is merging partial interim work file MQATAA
observations with interim work file MQAQAA observations.

In both cases, immediately after the exit invocation, MQAQAA
observations are written to interim work files.

ACCOUNTING INTERFACE:  No interface to CA MICS Accounting and
Chargeback.

USES:  This exit is used to add or change data elements, or
to delete observations from the Queue Activity File.  To
prevent a record from being output to the work file, set data
element SKIP_REC=1 in the exit.

ELEMENTS AVAILABLE:  All elements in the Queue Activity File
```

```
with the exception of derived data elements.  Additionally,
some temporary elements, used to construct MQAQAA file
elements are available as well as data elements from the
MQATAA file for the task associated with the queue segments.

If you require access to the MQAQAA file derived data
elements, you can invoke the %QAADERV macro within the exit.
This will add additional processing overhead and should be
avoided unless absolutely necessary.

CODING RESTRICTIONS:  Refer to the System Modification Guide,
Section 4.3.2.2.

+---------------+
| U S R S T A A |  Task Accounting File Exit
+---------------+

DESCRIPTION:  This exit allows access to the data elements
used to build records in the Task Accounting File.

INVOCATION:  This exit is invoked in two separate locations;
one for queue segments associated with tasks that required a
single, non-continued SMF type 116 subtype 1 record, and the
other for queue segments associated with tasks that required
one or more SMF type 116 subtype 2 continuation records.

In the first location, the SMF type 116 subtype 1 record is
still in the SMF buffer. In the second location, the code
logic is merging partial interim work file MQATAA
observations with interim work file MQAQAA observations.

In both cases, immediately after the exit invocation, MQATAA
observations are written to interim work files.

ACCOUNTING INTERFACE:  No interface to CA MICS Accounting and
Chargeback.

USES:  This exit is used to add or change data elements, or
to delete observations from the Task Accounting File.  To
prevent a record from being output to the work file, set data
element SKIP_REC=1 in the exit.

ELEMENTS AVAILABLE:  All elements in the Task Accounting File
with the exception of derived data elements.  Additionally,
some temporary elements, used to construct MQATAA file
elements are available.

If you require access to the MQATAA file derived data
elements, you can invoke the %TAADERV macro within the exit.
```

```
This will add additional processing overhead and should be
avoided unless absolutely necessary.

CODING RESTRICTIONS:  Refer to the System Modification Guide,
Section 4.3.2.2.

+---------------+
| U S R S M F A |  Message Flow Accounting File Exit
+---------------+

DESCRIPTION:  This exit allows access to the data elements
used to build records in the Message Flow Accounting File.

INVOCATION:  Exit gains control immediately prior to the
output of records to interim work file for the Message Flow
Accounting File.  At the invocation point, the SMF type 117
subtype 1 record is still in the input buffer.

ACCOUNTING INTERFACE:  No interface to CA MICS Accounting and
Chargeback.

USES:  This exit is used to add or change data elements, or
to delete observations from the Message Flow Accounting File.
To prevent a record from being output to the work file, set
data element SKIP_REC=1 in the exit.

ELEMENTS AVAILABLE:  All elements in the Message Flow
Accounting File with the exception of derived data elements.
Additionally, some temporary elements, used to construct
MQBMFA file elements are available.  Data elements read from
the SMF record header, such as ORGSYSID and ENDTS, are
available as well.

If you require access to the MQBMFA file derived data
elements, you can invoke the %MFADERV macro within the exit.
This will add additional processing overhead and should be
avoided unless absolutely necessary.

CODING RESTRICTIONS:  Refer to the System Modification Guide,
Section 4.3.2.2.

+---------------+
| U S R S M F N |  Message Flow Node File Exit
+---------------+

DESCRIPTION:  This exit allows access to the data elements
used to build records in the Message Flow Node File.

INVOCATION:  Exit gains control immediately prior to the
```

output of records to interim work file for the Message Flow Node File. At the invocation point, the SMF type 117 subtype 1 or subtype 2 record is still in the input buffer.

ACCOUNTING INTERFACE: No interface to CA MICS Accounting and Chargeback.

USES: This exit is used to add or change data elements, or to delete observations from the Message Flow Node File. To prevent a record from being output to the work file, set data element SKIP_REC=1 in the exit.

ELEMENTS AVAILABLE: All elements in the Message Flow Node File with the exception of derived data elements. Additionally, some temporary elements, used to construct MQBMFN file elements are available. Data elements read from the SMF record header, such as ORGSYSID and ENDTS, are available as well.

If you require access to the MQBMFN file derived data elements, you can invoke the %MFNDERV macro within the exit. This will add additional processing overhead and should be avoided unless absolutely necessary.

CODING RESTRICTIONS: Refer to the System Modification Guide, Section 4.3.2.2.

```
+---------------+
| U S R D Q A A |  DAYS Queue Activity File Exit
+---------------+
```

DESCRIPTION: This exit allows access to the data elements used to build records in the DAYS Queue Activity (MQAQAA) File. Any record subsetting affects not only the DAYS timespan, but all higher timespans as well.

INVOCATION: This exit gains control immediately prior to the output of records to the DAYS Queue Activity File.

ACCOUNTING INTERFACE: No interface to CA MICS Accounting and Chargeback.

USES: This exit is used to add or change data elements or to delete observations from the DAYS Queue Activity File. To exclude an observation, set SKIP_REC=1 in the exit.

ELEMENTS AVAILABLE: All elements in the DAYS Queue Activity File.

```
CODING RESTRICTIONS:  Refer to the System Modification Guide,
Section 4.3.2.2.

+---------------+
| U S R D T A A |  DAYS Task Accounting File Exit
+---------------+

DESCRIPTION:  This exit allows access to the data elements
used to build records in the DAYS Task Accounting (MQATAA)
File.  Any record subsetting affects not only the DAYS
timespan but all higher timespans as well.

INVOCATION:  This exit gains control immediately prior to the
output of records to the DAYS Task Accounting File.

ACCOUNTING INTERFACE:  No interface to CA MICS Accounting and
Chargeback.

USES:  This exit is used to add or change data elements or to
delete observations from the DAYS Task Accounting File.  To
exclude an observation, set SKIP_REC=1 in the exit.

ELEMENTS AVAILABLE:  All elements in the DAYS Task Accounting
File.

CODING RESTRICTIONS:  Refer to the System Modification Guide,
Section 4.3.2.2.

+---------------+
| U S R X f f f |  DETAIL Only File Exits
+---------------+

DESCRIPTION:  USRXfff exit is available for the Queue
Activity (MQAQAA) File and the Task Accounting (MQATAA) File.

- The USRXTAA exit is invoked during the initial output of
  the Task Accounting File.

- The USRXQAA exit is also invoked during the initial output
  of the Queue Activity File.

User code in the USRXTAA and USRXQAA exits only modifies
observations that are output to the DETAIL timespans for the
MQATAA and MQAQAA files.  These modifications are not
propagated to the DAYS and higher timespans.

For example, using the USRXQAA exit to restrict output of
queue level records, where the queue name begins with
"customer," to the DETAIL MQAQAA01 Queue Activity File has no
```

```
impact on the observations summarized in the DAYS and higher
timespan MQAQAA files.

INVOCATION:  Exit gains control in the SAS data step that
creates the DETAIL timespan MQAfff00 file in
sharedprefix.MICS.SOURCE(DYMQSFM2).

ACCOUNTING INTERFACE:  No interface to CA MICS Accounting and
Chargeback.

USES:  The USRXfff exits allow subsetting and data element
modification that is restricted to the DETAIL timespan MQATAA
and MQAQAA files.  Due to data volume considerations, these
files are not active by default in the DETAIL timespan.
Observations can be excluded by setting SKIP_REC=1.

If you choose to create a DETAIL timespan file for the MQATAA
and MQAQAA files on tape rather than on DASD, use the USRTfff
exit.

ELEMENTS AVAILABLE:  All elements in the Queue Activity File
and the Task Accounting File.

CODING RESTRICTIONS:  Refer to the System Modification Guide,
Section 4.3.2.2.

SPECIAL NOTES:  To implement this exit at the unit level,
code it in prefix.MICS.USER.SOURCE(#MQSEXIT).

SAMPLE USER EXIT - USRXQAA:

DESCRIPTION:  This sample exit lists individual, DETAIL-level
queue segments for all queues associated with the XYZ
application.

/*                                                  */
/* Limit output of Detail Queue Activity to queues  */
/* associated with application XYZ.                 */
/*                                                  */
/* Note:  For this site, all queue names associated */
/*        with the XYZ application begin with the   */
/*        characters 'XYZ'                          */
/*                                                  */
IF QAABASNM NE: 'XYZ' THEN SKIP_REC=1 ;

SAMPLE USER EXIT - MQAXTAA:

DESCRIPTION:  This sample exit lists individual, DETAIL-level
records for each CICS transaction that interfaces with
```

```
WebSphere MQ.

/*                                                  */
/* Limit output of Detail Task Accounting records  */
/* to those associated with CICS transactions.     */
/*                                                  */
/* Note: Connection type=1 is CICS,                */
/*       connection type=2 is Batch/TSO,           */
/*       etc.                                       */
/*                                                  */
IF MQSATYP NE 1 THEN SKIP_REC=1 ;

+---------------+
| U S R T f f f |  DETAIL Tape Data Selection Exit
+---------------+

DESCRIPTION:  The USRTfff exits provide access to DETAIL file
records prior to their output to DETAIL tape data sets.
Refer to Chapter 7 of this guide for information about DETAIL
tape processing and a list of eligible component files.

INVOCATION:  The USRTfff exit is invoked prior to output to
DETAIL tape files.

ACCOUNTING INTERFACE:  No interface is provided.

USES:  Use this exit to limit the amount of data that is
written to DETAIL tape files, or to modify the contents of
data elements written to DETAIL tape files.  Note that
USRTfff exit code only affects the DETAIL tape file content
for a particular file (fff). It has no impact on the normal
unit database content for the same file (fff).

ELEMENTS AVAILABLE:  All elements in the DETAIL timespan of
the file.

ACTIVATION:  The USRTfff exits are invoked using the indirect
exit convention described in section 4.3.1.2 of the System
Modification Guide.  Please refer to this section for a
detailed discussion of indirect exit coding.

All of the USRTfff indirect exits are activated in
sharedprefix.MICS.SOURCE($cccEXIT).  In $cccEXIT, you will
find the following statement for each file (fff) eligible for
DETAIL tape:

    %LET USRTfff = ;

The exit is activated by providing a member name to the right
```

```
of the equal sign:

    %LET USRTfff = exitname ;

If you code an exitname, you MUST create a member in each
unit's prefix.MICS.USER.SOURCE library with that name.
Provide valid SAS code in the member.  This code will be
invoked prior to the output of records to the DETAIL tape
file.

Example:

   sharedprefix.MICS.SOURCE($MQSEXIT):

     %LET USRTQAA = QAATEXIT ;

   prefix.MICS.USER.SOURCE(QAATEXIT):

     IF MQMSSI NE 'QMN1' THEN SKIP_REC=1 ;

In this example, QAATEXIT was chosen as the name for the
DETAIL tape exit for the MQAQAA file.  Member QAATEXIT was
created in the unit level prefix.MICS.USER.SOURCE library for
each unit where DETAIL tape was activated for the MQAQAA
file.

The exit was coded to limit the records written to the DETAIL
tape file to those from a particular queue manager, QMN1.

Note that the exit member name must be identical in each
unit's prefix.MICS.USER.SOURCE library, but the contents of
each member can be different (or identical) for each unit.

CODING RESTRICTIONS:  Ensure that you have activated DETAIL
tape processing for a file, and executed MQSPGEN prior to
activating and coding USRTfff exits.
Additionally, some temporary elements, used to construct
MQBMFN file elements are available.  Data elements read from
the SMF record header, such as ORGSYSID and ENDTS, are
available as well.

If you require access to the MQBMFN file derived data
elements, you can invoke the %MFNDERV macro within the exit.
This will add additional processing overhead and should be
avoided unless absolutely necessary.

CODING RESTRICTIONS:  Refer to the System Modification Guide,
Section 4.3.2.2.
```

```
+--------------+
| U S R D Q A A |  DAYS Queue Activity File Exit
+--------------+

DESCRIPTION:  This exit allows access to the data elements
used to build records in the DAYS Queue Activity (MQAQAA)
File.  Any record subsetting affects not only the DAYS
timespan, but all higher timespans as well.

INVOCATION:  This exit gains control immediately prior to the
output of records to the DAYS Queue Activity File.

ACCOUNTING INTERFACE:  No interface to CA MICS Accounting and
Chargeback.

USES:  This exit is used to add or change data elements or to
delete observations from the DAYS Queue Activity File.  To
exclude an observation, set SKIP_REC=1 in the exit.

ELEMENTS AVAILABLE:  All elements in the DAYS Queue Activity
File.

CODING RESTRICTIONS:  Refer to the System Modification Guide,
Section 4.3.2.2.

+--------------+
| U S R D T A A |  DAYS Task Accounting File Exit
+--------------+

DESCRIPTION:  This exit allows access to the data elements
used to build records in the DAYS Task Accounting (MQATAA)
File.  Any record subsetting affects not only the DAYS
timespan but all higher timespans as well.

INVOCATION:  This exit gains control immediately prior to the
output of records to the DAYS Task Accounting File.

ACCOUNTING INTERFACE:  No interface to CA MICS Accounting and
Chargeback.

USES:  This exit is used to add or change data elements or to
delete observations from the DAYS Task Accounting File.  To
exclude an observation, set SKIP_REC=1 in the exit.

ELEMENTS AVAILABLE:  All elements in the DAYS Task Accounting
File.

CODING RESTRICTIONS:  Refer to the System Modification Guide,
Section 4.3.2.2.
```

```
+---------------+
| U S R X f f f |  DETAIL Only File Exits
+---------------+

DESCRIPTION:  USRXfff exit is available for the Queue
Activity (MQAQAA) File and the Task Accounting (MQATAA) File.

- The USRXTAA exit is invoked during the initial output of
  the Task Accounting File.

- The USRXQAA exit is also invoked during the initial output
  of the Queue Activity File.

User code in the USRXTAA and USRXQAA exits only modifies
observations that are output to the DETAIL timespans for the
MQATAA and MQAQAA files.  These modifications are not
propagated to the DAYS and higher timespans.

For example, using the USRXQAA exit to restrict output of
queue level records, where the queue name begins with
"customer," to the DETAIL MQAQAA01 Queue Activity File has no
impact on the observations summarized in the DAYS and higher
timespan MQAQAA files.

INVOCATION:  Exit gains control in the SAS data step that
creates the DETAIL timespan MQAfff00 file in
sharedprefix.MICS.SOURCE(DYMQSFM2).

ACCOUNTING INTERFACE:  No interface to CA MICS Accounting and
Chargeback.

USES:  The USRXfff exits allow subsetting and data element
modification that is restricted to the DETAIL timespan MQATAA
and MQAQAA files.  Due to data volume considerations, these
files are not active by default in the DETAIL timespan.
Observations can be excluded by setting SKIP_REC=1.

If you choose to create a DETAIL timespan file for the MQATAA
and MQAQAA files on tape rather than on DASD, use the USRTfff
exit.

ELEMENTS AVAILABLE:  All elements in the Queue Activity File
and the Task Accounting File.

CODING RESTRICTIONS:  Refer to the System Modification Guide,
Section 4.3.2.2.

SPECIAL NOTES:  To implement this exit at the unit level,
```

```
code it in prefix.MICS.USER.SOURCE(#MQSEXIT).

SAMPLE USER EXIT - USRXQAA:

DESCRIPTION:  This sample exit lists individual, DETAIL-level
queue segments for all queues associated with the XYZ
application.

/*                                                  */
/* Limit output of Detail Queue Activity to queues  */
/* associated with application XYZ.                 */
/*                                                  */
/* Note:  For this site, all queue names associated */
/*        with the XYZ application begin with the   */
/*        characters 'XYZ'                          */
/*                                                  */
IF QAABASNM NE: 'XYZ' THEN SKIP_REC=1 ;

SAMPLE USER EXIT - MQAXTAA:

DESCRIPTION:  This sample exit lists individual, DETAIL-level
records for each CICS transaction that interfaces with
WebSphere MQ.

/*                                                 */
/* Limit output of Detail Task Accounting records  */
/* to those associated with CICS transactions.     */
/*                                                 */
/* Note: Connection type=1 is CICS,                */
/*       connection type=2 is Batch/TSO,           */
/*       etc.                                      */
/*                                                 */
IF MQSATYP NE 1 THEN SKIP_REC=1 ;

+---------------+
| U S R T f f f |  DETAIL Tape Data Selection Exit
+---------------+

DESCRIPTION:  The USRTfff exits provide access to DETAIL file
records prior to their output to DETAIL tape data sets.
Refer to Chapter 7 of this guide for information about DETAIL
tape processing and a list of eligible component files.

INVOCATION:  The USRTfff exit is invoked prior to output to
DETAIL tape files.

ACCOUNTING INTERFACE:  No interface is provided.

USES:  Use this exit to limit the amount of data that is
```

written to DETAIL tape files, or to modify the contents of data elements written to DETAIL tape files. Note that USRTfff exit code only affects the DETAIL tape file content for a particular file (fff). It has no impact on the normal unit database content for the same file (fff).

ELEMENTS AVAILABLE: All elements in the DETAIL timespan of the file.

ACTIVATION: The USRTfff exits are invoked using the indirect exit convention described in section 4.3.1.2 of the System Modification Guide. Please refer to this section for a detailed discussion of indirect exit coding.

All of the USRTfff indirect exits are activated in sharedprefix.MICS.SOURCE($cccEXIT). In $cccEXIT, you will find the following statement for each file (fff) eligible for DETAIL tape:

```
%LET USRTfff = ;
```

The exit is activated by providing a member name to the right of the equal sign:

```
%LET USRTfff = exitname ;
```

If you code an exitname, you MUST create a member in each unit's prefix.MICS.USER.SOURCE library with that name. Provide valid SAS code in the member. This code will be invoked prior to the output of records to the DETAIL tape file.

Example:

sharedprefix.MICS.SOURCE($MQSEXIT):

```
%LET USRTQAA = QAATEXIT ;
```

prefix.MICS.USER.SOURCE(QAATEXIT):

```
IF MQMSSI NE 'QMN1' THEN SKIP_REC=1 ;
```

In this example, QAATEXIT was chosen as the name for the DETAIL tape exit for the MQAQAA file. Member QAATEXIT was created in the unit level prefix.MICS.USER.SOURCE library for each unit where DETAIL tape was activated for the MQAQAA file.

The exit was coded to limit the records written to the DETAIL

```
tape file to those from a particular queue manager, QMN1.

Note that the exit member name must be identical in each
unit's prefix.MICS.USER.SOURCE library, but the contents of
each member can be different (or identical) for each unit.

CODING RESTRICTIONS:  Ensure that you have activated DETAIL
tape processing for a file, and executed MQSPGEN prior to
activating and coding USRTfff exits.
```

10.5 Incremental Update Considerations

If you are using the TAPEfff option or USRXfff exits to collect detail-level data, and incremental update is active, you may need to make a few simple but very important adjustments to your exits or options to accommodate the way that incremental update processes data.

This section discusses the following:

- TAPEfff option considerations with incremental update
- USRXfff exit considerations with incremental update
  - DETAIL tape files created in USRXfff exits
  - DASD files created in USRXfff exits

TAPEfff OPTION CONSIDERATIONS WITH INCREMENTAL UPDATE

The TAPEfff option allows the creation of DETAIL timespan tape files for certain high volume files.

Without incremental update, a single DETAIL timespan tape file is created for TAPEfff activated files during the DAILY run. The general practice is to use GDGs so that the (+0) tape volume contains yesterday's data, (-1) contains the prior day's data, and so on.

With incremental update activated, a tape is created with each execution of an incremental update as well as a final tape during the DAILY update run. For example, three incremental updates followed by a final daily update run result in a total of four tapes created, one for each TAPEfff activated file. Each tape contains only the detail data encountered during the individual incremental update or daily run. If you are employing GDGs you will want to consider increasing the number of generations to encompass the desired time range of history. For example, if previously 7 "daily" generations were maintained and you run 4 increments per day, you may wish to expand the generations kept to 28 (7 times 4 updates per day).

The use of fewer tapes in a single update under the incremental feature expedites processing. In addition, due to the "special study" nature of the data, separation into multiple pieces representing period time slices should allow usage to be more direct. That is, the data is already subset to the period contained within the update.

You also may consider creating a standalone job to consolidate these individual tapes into a single one after

the DAILY job completes if you prefer to have a single tape data set contain all transactions for the time range.

USRXfff EXIT CONSIDERATIONS WITH INCREMENTAL UPDATE

The USRXfff exits allow client supplied code to force the creation of SAS files containing DETAIL level data. These exits were provided for specific high volume transaction based data that are populated at the DAYS and higher timespans in a summarized form in CA MICS. Due to the high volume of data involved, these exits may be used to create tape files, although nothing other than space considerations precludes creation of files on DASD with these exits.

Many of the products that provide USRXfff exits have implemented standardized approaches to collect DETAIL level data, thus removing the need for USRXfff exit coding. Any user code employed in USRXfff exits should be examined to ensure that the data and the approach are still required. Generally, transaction data at this level is employed for specific tuning projects or special studies centered on subsystem or application related issues and is needed only for occasional and isolated time periods.

If you are using incremental update and find that the USRXfff exits you have coded are still required for your operation, be sure to review the considerations below.

DETAIL TAPE FILES CREATED IN USRXfff EXITS

When using the exits to write to tape without incremental update activated, a single tape file is created from the user written code in each activated USRXfff exit. The general practice is to use generation data groups (GDGs) to retain history. In this case, it is assumed that CA MICS units are updated once a day with yesterday's data. Without incremental update the generation 0 (+0) tape data set would contain data from the previous CA MICS update (yesterday), (-1) contains the prior run (two days ago), and so on.

With incremental update, a tape file is again created from the user written code in each activated USRXfff exit with each execution of an update. However, rather than running CA MICS updates once per day, incremental update implies multiple update runs daily. For example, three incremental updates followed by a final daily update run result in a total of four tapes in one day, one created

from each activated USRXfff exit. Each tape contains only the detail data encountered during the individual incremental update or daily run. If you are employing GDGs you will want to evaluate increasing the number of generations to encompass the desired time range of history. For example, if previously 7 "daily" generations were maintained and you ran 4 increments per day, you may wish to expand the generations kept to 28 (7 times 4 updates per day).

The use of fewer tapes in a single update under the incremental feature expedites processing. In addition, in keeping with the "special study" nature of the data, separation of the data into multiple pieces representing the narrower period slices should simplify usage. That is, the data is already subset to the period contained within the update.

You also may consider creating a standalone job to consolidate these individual tapes into a single one after the DAILY job completes if you prefer to have a single tape data set contain all transactions for the time range.

DASD FILES CREATED IN USRXfff EXITS

Either of two basic approaches may be employed when using the exits to write to DASD files. Data can be written to detail data set(s) of CA MICS units. Or it can be written to data sets allocated externally to the CA MICS units (such as a user data set that has been added to the Daily JCL stream). In either scenario the SAS file written by the exit will be replaced by new data with each execution of the update step.

If the exit is writing to the CA MICS Detail data set and the recommended approach has been taken with the exit then no change to outputs will occur under incremental update. The recommended approach employs indirect coding to reference the database (uses "&iiit" not "DETAIL" in the data step) and an active detail status (file status of "Y" at the detail timespan in cccGENIN and cccCGEN has been executed). When these conditions are in place the file created by the exit will be treated as other CA MICS files in incremental update mode and at the conclusion of the Daily job stream a single file containing data from all increments will be available in the detail unit database. If the file status is not active, only data from the last incremental execution will be present.

An alternative to selective exit coding is to employ a generation data set (GDG) structure for the external DASD file. In this scenario GDG entries to cover the incremental updates would be defined and each incremental run would write to a new GDG entry which would contain data for the increment. Each series of incremental runs followed by a DAILY job execution would create a new series of GDG data sets. While this approach allows you to capture all data on an ongoing basis, use of the unit detail data set as described above is more efficient and is the recommended approach.

Appendix A: MESSAGES

Messages

This appendix lists all messages generated by the CA MICS MQSeries Analyzer. Some messages are generated during the processing of the control statements, while others are caused by various conditions in the data found during processing. The messages are listed in ascending numerical sequence and include the full text of the message, the type, the reason for the message, appropriate user action, and applicable references to documentation.

The following type codes are used to categorize the messages:

Information	Designates a note that documents a CA MICS MQSeries Analyzer option or potentially important feature in the data.
Warning	Designates a condition in either the data or the control statements that does not affect the CA MICS MQSeries Analyzer's operation, but that can lead to unexpected results.
Error	Designates that a problem has been encountered with a control statement that will prevent a successful run of the Analyzer. Execution is stopped after all control statements are processed.

The message text often includes references to information that is contained in a control statement or values of permanent or temporary variables created during CA MICS MQSeries Analyzer processing. In the descriptions below, the message text contains a word beginning with a percent sign (%), which indicates that a value will be substituted into the text at execution time. For example, message MQS00196 reads as follows:

```
NO SUSPEND RECORD FOR: SYSID=%SYSID; MQMSSI=%MQMSSI;
ENDTS=%XENDTS
```

If no record was found in suspend file DETAIL.MQS_MQ01 for specific value of SYSID='PROD' and MQMSSI='CSQ1' then the message is printed in MICSLOG as follows:

```
NO SUSPEND RECORD FOR: SYSID=PROD; MQMSSI=CSQ1;
ENDTS=11JUNyy:00:13:54.98
```

```
+-----------------+
| M Q S 0 0 0 9 9 |
+-----------------+

TEXT:        %LINE

TYPE:        Information

REASON:      Prints a line in the MICSLOG.

ACTION:      None required.

REFERENCES:  None

+-----------------+
| M Q S 0 0 1 0 1 |
+-----------------+

TEXT:        AN UNKNOWN SUBTYPE FOUND
             SMFRTYPE = %SMFRTYPE   SUBTYPE = %SUBTYPE

TYPE:        Warning

REASON:      This message is issued to present runtime
             control counts.  The numbers represent the
             number of records read from the INPUTSMF Files
             for each record type.
```

```
ACTION:      None required.

REFERENCES:  None


+-----------------+
| M Q S 0 0 1 0 2 |
+-----------------+

TEXT:        TOTAL WEBSPHERE SMF TYPE RECORDS READ

             SMF 115 = %ISMF115
             SMF 116 = %ISMF116
             SMF 117 = %ISMF117
             ------------------
             TOTAL  = %TISMF

TYPE:        Information

REASON:      This message is issued to present runtime
             control counts.  The numbers represent the
             number of records read from the INPUTSMF Files
             for each record type.

ACTION:      None required.

REFERENCES:  None

+-----------------+
| M Q S 0 0 1 0 3 |
+-----------------+

TEXT:         TOTAL WEBSPHERE SMF TYPE RECORDS KEPT

              SMF 115 = %KSMF115
              SMF 116 = %KSMF116
              SMF 117 = %KSMF117
              ------------------
              TOTAL  = %TKSMF

TYPE:        Information

REASON:      This message is issued to present runtime
             control counts.  The numbers represent the
             number of records kept from the INPUTSMF Files
             for each record type.

ACTION:      None required.
```

```
REFERENCES:  None


+------------------+
|  M Q S 0 0 1 0 4  |
+------------------+

TEXT:        %WRK_FILE USER EXIT DROPPED %WRK_SKIP OBS.

TYPE:        Information

REASON:      The user-defined exit USRSfff caused a number of
             records to be dropped from the fff file.

ACTION:      None required.

REFERENCES:  None

+------------------+
|  M Q S 0 0 1 0 6  |
+------------------+

TEXT:        OBSERVATIONS SKIPPED BY USER EXITS IN THE MAIN
             DATA STEP
             USRSBMS = %BMSEXIT
             USRSDMS = %DMSEXIT
             USRSLMS = %LMSEXIT
             USRSMMS = %MMSEXIT
             USRSCMS = %CMSEXIT
             USRSDBS = %DBSEXIT
             USRSMMA = %MMAEXIT
             USRSTAA = %TAAEXIT
             USRSQAA = %QAAEXIT
             USRSMFA = %MFAEXIT
             USRSMFN = %MFNEXIT
             -------------------------
             TOTAL    = %TOTEXIT

TYPE:        Information

REASON:      The user-defined exit USRSfff caused a number of
             records to be dropped from the fff file.

ACTION:      None required.

REFERENCES:  None


+------------------+
```

```
|  M Q S 0 0 1 0 7  |
+-------------------+

TEXT:        ERROR ERROR ERROR ERROR ERROR ERROR ERROR ERROR
             ERROR ERROR

             CORRUPT SMF TYPE 116 SUBTYPE %SUBTYPE ACCOUNTING
             RECORDS ENCOUNTERED. %SCNT SEGMENTS MUST EQUAL
             %ACNT SEGMENTS. PLEASE CONTACT CA MICS PRODUCT
             SUPPORT GROUP.

             %SCNT = %ASCNT      %ACNT = %AACNT

             ERROR ERROR ERROR ERROR ERROR ERROR ERROR ERROR
             ERROR ERROR

TYPE:        Error

REASON:      The number of record type 116 header segments do
             not equal the number of accounting segments in
             either the Message Manager Accounting or Task
             Accounting data. An unequal count indicates a
             corrupt SMF type 116 record. If five or fewer
             corrupt SMF records are detected, a warning
             message is issued in the MICSLOG and these
             records are not processed. The run will abort if
             more than five corrupt SMF records are
             encountered.

ACTION:      For assistance, contact Technical Support at
             http://ca.com/support.  An error threshold can
             be increased with a temporary user modification,
             however, this error message indicates a corrupt
             SMF type 116 record and should be reported to
             support.

REFERENCES:  None

+-------------------+
|  M Q S 0 0 1 0 8  |
+-------------------+

TEXT:        OBSERVATIONS SKIPPED BY USER EXITS IN A
             SECONDARY DATA STEP THAT RECONSTRUCTS
             CONTINUATION TYPE 116 SUBTYPE 1/2 RECS

TYPE:        Information

REASON:      The user-defined exit USRSfff caused a number of
```

records to be dropped from the fff file.

ACTION: None required.

REFERENCES: None

```
+------------------+
|  M Q S 0 0 1 0 9  |
+------------------+
```

TEXT: WARNING WARNING WARNING WARNING WARNING WARNING WARNING

CORRUPT SMF TYPE 116 SUBTYPE %SUBTYPE ACCOUNTING RECORD ENCOUNTERED. %SCNT SEGMENTS MUST EQUAL %ACNT SEGMENTS. JOB WILL ABORT IF MORE THAN FIVE OCCURRENCES. PLEASE CONTACT CA MICS PRODUCT SUPPORT GROUP.

%SCNT = %ASCNT %ACNT = %AACNT

WARNING WARNING WARNING WARNING WARNING WARNING WARNING

TYPE: Warning

REASON: The number of record type 116 header segments do not equal the number of accounting segments in either the Message Manager Accounting or Task Accounting data. An unequal count indicates a corrupt SMF type 116 record. If five or fewer corrupt SMF records are detected, a warning message is issued in the MICSLOG and these records are not processed. The run will abort if more than five corrupt SMF records are encountered.

ACTION: For assistance, contact Technical Support at http://ca.com/support. An error threshold can be increased with a temporary user modification, however, this error message indicates a corrupt SMF type 116 record and should be reported to support.

REFERENCES: None

```
+------------------+
|  M Q S 0 0 1 1 0  |
```

```
+------------------+

TEXT:         UNKNOWN IBM WEBSPHERE MQ VERSION/RELEASE %MQSREL
              ENCOUNTERED.

              ORGSYSID:  %ORGSYSID
              MQ VER/REL ENCOUNTERED:                %MQSREL
              HIGHEST MQ VER/REL KNOWN TO CA MICS:   %MQSLVL
              TOTAL UNKNOWN INPUT RECORDS REJECTED:  %COUNT


TYPE:         WARNING

REASON:       WebSphere MQ generated SMF records with an
              unknown version/release were encountered during
              DAY051 processing.  Processing continues and
              the records are rejected.

ACTION:       For assistance, contact Technical Support at
              http://ca.com/support.

REFERENCES:   None


+------------------+
|  M Q S 0 0 1 1 1  |
+------------------+

TEXT:         UNKNOWN WEBSPHERE MESSAGE BROKER SMF RECORD
              VERSION %WRKMVER ENCOUNTERED.

              ORGSYSID:  %ORGSYSID  END TIME STAMP:  %ENDTSMG
              SMF RECORD VERSION ENCOUNTERED:        %WRKMVER
              LATEST VERSION KNOWN TO CA MICS:       %MQBLVL
              >>> A TOTAL OF %MSGCOUNT RECORDS WERE REJECTED
              DUE TO INVALID SMF RECORD VERSION.

TYPE:         ERROR

REASON:       A WebSphere Message Broker generated SMF record
              with an unknown SMF record version was
              encountered during DAY051 processing.

ACTION:       For assistance, contact Technical Support at
              http://ca.com/support.

REFERENCES:   None

+-----------------+
```

```
| M Q S 0 0 1 2 5 |
+-----------------+

TEXT:        ' %LINE '  (the value of %LINE without the
             quotes).

TYPE:        Information

REASON:      This message is issued each time the CA MICS
             MQSeries Analyzer parameter generator (MQSPGEN)
             begins parsing the control statement.  The
             value of the complete control statement that you
             code equals the value of %LINE.

ACTION:      None required.

REFERENCES:  Chapter 7 of this guide


+-----------------+
| M Q S 0 0 1 2 8 |
+-----------------+

TEXT:        --->%TOKEN1 KEYWORD HAS MISSING PARAMETER.
             DEFAULT VALUE WILL BE SET TO 7.

TYPE:        Error

REASON:      The SUSPEND keyword has a missing parameter
             value.  A default value of 7 is automatically
             selected for this parameter. This message is
             issued if the SUSPEND keyword is coded without
             the parameter value.

ACTION:      If a value other than 7 is desired, then code
             the value for the SUSPEND keyword and resubmit
             prefix.MICS.CNTL(MQSPGEN).

REFERENCES:  Chapter 7 of this guide

+-----------------+
| M Q S 0 0 1 2 9 |
+-----------------+

TEXT:        --->%TOKEN2 IS LESS THAN 1 OR GREATER THAN 7.

TYPE:        Information

REASON:      The SUSPEND keyword contains a value that is
```

used to determine whether a suspended observation is dropped or kept. This message is issued if the value falls outside the range of 1 to 7.

ACTION: Code a value between 1 and 7.

REFERENCES: Chapter 7 of this guide

```
+-----------------+
| M Q S 0 0 1 3 0 |
+-----------------+
```

TEXT: ERRORS FOUND ON INPUT PARAMETERS. CORRECT AND RESUBMIT.

TYPE: Error

REASON: One or more errors were found during the parsing of the input parameter by the CA MICS MQSeries Analyzer parameter generation program. The run aborts after this message is issued.

ACTION: Correct the errors found in MICSLOG.

REFERENCES: Chapter 7 of this guide

```
+-----------------+
| M Q S 0 0 1 9 0 |
+-----------------+
```

TEXT: STARTING DELTA PROCESS FOR: %FILENAME

TYPE: Information

REASON: This message is displayed when the DAILY processing has completed the first data step, reading raw input, and enters into the next data step. In this step, DURATION and STARTTS elements for each observation are calculated.

ACTION: None required.

REFERENCES: None

```
+-----------------+
| M Q S 0 0 1 9 2 |
```

```
+-----------------+

TEXT:        SUSPEND RECORD DELETED DUE TO AGE:
             SYSID=%SYSID; MQMSSI=%MQMSSI; ENDTS=%XENDTS;
             MQSSUSCT=%MQSSUSCT

TYPE:        Information

REASON:      Suspend records are deleted from the suspend
             file for MQMSSIs not encountered for seven days.
             Suspend records hold the values last encountered
             for a MQMSSI in the DAILY update and are used to
             initialize the lag variables for delta
             calculations during the next DAILY run. MQMSSIs
             not encountered for seven days are considered
             decommissioned.

ACTION:      None required.

REFERENCES:  None

+-----------------+
| M Q S 0 0 1 9 6 |
+-----------------+

TEXT:        NO SUSPEND RECORD FOR: SYSID=%SYSID;
             MQMSSI=%MQMSSI; ENDTS=%XENDTS;


TYPE:        Information

REASON:      No suspend record was found to initialize
             lag variables for delta calculations.  The
             MQMSSI is probably new.  Delta processing will
             be skipped for the first record.

ACTION:      None required.

REFERENCES:  None


+-----------------+
| M Q S 0 0 1 9 7 |
+-----------------+

TEXT:        MORE THAN ONE DAY EXISTS BETWEEN CURRENT
             AND PREVIOUS OBSERVATIONS: SYSID=%SYSID;
             MQMSSI=%MQMSSI; ENDTS=%XENDTS;
             LAGENDTS=%XLAGTS; FILE00=%FILE00;
```

```
              SUSPEND=%SUSPEND

TYPE:         Warning

REASON:       The difference between ENDTS on the current
              record and the previous record is greater
              than 24 hours.

ACTION:       Determine if this gap in data is correct or if
              data was missing from SMF.  If data was missing
              but is available, you can restore the unit
              database and rerun the DAILY step DAY051 with
              all the input data.

REFERENCES:   None

+-----------------+
| M Q S 0 0 1 9 9 |
+-----------------+

TEXT:         ENDING DELTA PROCESS FOR: %FILENAME
              LAG RELOADS             : %RELOADS
              SUSPEND RECORDS AGED    : %SUSDELS
              MISSING SUSPEND RECORDS : %MISSSUSP

TYPE:         Informational

REASON:       Informational processing summary statistics.

ACTION:       None required.

REFERENCES:   None


+-----------------+
| M Q S 0 2 0 0 1 |
+-----------------+

TEXT:         NO DATA HAS PASSED THROUGH INITIAL SELECTION.
              CHECK FILE AND SELECTION CRITERIA VALIDITY.
              RUN TERMINATES WITH A USER 998 CONDITION CODE.

TYPE:         Error

REASON:       The selection criteria specified for this MICF
              inquiry excluded all data.

ACTION:       Review data selection criteria; rerun inquiry.
```

```
REFERENCES:  None

+----------------+
| M Q S 0 2 0 1 0 |
+----------------+

TEXT:        THE LINES PER PAGE WAS SET TO LESS THAN 30. THIS
             REPORT REQUIRES A MINIMUM
             PAGE SIZE OF 30. PAGE SIZE SET TO 30

TYPE:        Information

REASON:      To correctly format this report, the page size
             must be at least 30. The page size was
             automatically reset.

ACTION:      None required.

REFERENCES:  None
```

Appendix B: DATA DICTIONARY

The Data Dictionary is only available at your site, where it has been customized to your configuration and your product change level.

To see the Data Dictionary at your site, follow the instructions under Document Browse in the Document Access Guide.