CA MICS® Resource Management

Analyzer Option for IMS Guide

Release 12.9

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Chapter 1: OVERVIEW

Since IMS processing and the underlying operations necessary to control and facilitate its use are fundamental parts of many MVS systems, the systematic planning, monitoring, control, and evaluation of IMS data has become increasingly important. The IMS log provides continual historical performance and utilization information; however, because IMS log records are so detailed, the raw data is extremely difficult to use for IMS performance evaluation and monitoring.

The CA MICS IMS Analyzer provides an easier-to-use and more complete method of storing and interpreting IMS log data. It processes information on IMS users, transactions, and applications, which allows you to more effectively plan, monitor, control and evaluate IMS data. It gives you the ability to identify and track IMS problems and perform in-depth analysis of various users of IMS facilities. It provides a set of management and operational reports that you can use as is or tailor to your own needs and management levels. It also offers online data access that allows you to perform data analysis, retrieval, and report functions.

The IMS Analyzer is part of CA MICS (see Figure 1-1). CA MICS is a comprehensive, flexible application system that applies standard management practices to the IS organization. It provides integrated applications analogous to the integrated financial applications that are now indispensable to corporate financial management.

CA MICS is comprised of Data Integration Applications (one of which is the IMS Analyzer) and Management Support Applications:

- o Data Integration Applications validate, interpret, consolidate, and format data from diverse sources and locations; then store the subsequent information in the CA MICS database.

- o Management Support Applications process the information in the CA MICS database in support of IS application areas such as capacity planning, accounting and chargeback, performance management, and system reliability analysis.

```
+------------------------------------------------+
|          MANAGEMENT SUPPORT APPLICATIONS        |
+------------------------------------------------+
+---------------+  +-----------+  +----------------+
|               |  |           |  |                |
|     DATA      |  |  CA MICS  |  |     DATA       |
|  INTEGRATION  |  |   DATA-   |  |  INTEGRATION   |
|  APPLICATIONS |  |   BASE    |  |  APPLICATIONS  |
|               |  |           |  |                |
+---------------+  +-----------+  +----------------+
+------------------------------------------------+
|                  CA MICS PLATFORM               |
+------------------------------------------------+
```

Figure 1-1. CA MICS

Underlying the CA MICS database is the CA MICS platform. The CA MICS platform enables the entire CA MICS system to work together. It consists of four interrelated facilities:

o Access and retrieval facilities allow applications to access, analyze, and use information contained in the CA MICS database.

o Data management facilities provide the data management functions for the CA MICS database and administrative functions for the system.

o Development and extension facilities provide tools for expanding and customizing the system.

o Reference facilities enhance expertise through in-depth documentation with online and printed access.

One of the major strengths of CA MICS is its ability to integrate data from diverse sources into a single CA MICS database. Since the data processed by the IMS Analyzer is stored in a unified CA MICS database, you can combine IMS Analyzer data with any other data that CA MICS stores.

This section contains the following topics:

1.1 Primary Areas of Application (see page 11)
1.2 Major Features (see page 12)
1.3 Reporting and Inquiry Facilities (see page 15)
1.4 Files Overview (see page 22)
1.5 Product Prerequisites (see page 26)
1.6 Benefits (see page 26)

1.1 Primary Areas of Application

The IMS Analyzer provides analysis and reporting capabilities that aid in the management of complex IMS systems in the following areas:

- Performance Management - The ability to monitor resource-consuming subsystems is an important part of any performance tuning effort. The IMS Analyzer provides statistical information on buffer pool usage, transactions, and IMS database statistics.   You can use this data to identify periods of IMS performance degradation so that you may take corrective action, resulting in significant system performance improvement.

- Service Level Measurement - IMS information in the CA MICS database, combined with CA MICS' online reporting capabilities, provides a way to determine whether IMS-related performance objectives specified in service level agreements are being met or whether workload demands have increased past the levels at which performance objectives can be guaranteed.

- Operational Issues - The IMS Analyzer can track and monitor changes to the IMS system configuration as well as the occurrence of specific system events to ensure that procedures are followed and that necessary resources are available.

o Accounting and Chargeback - The IMS Analyzer data is suitable for basic billing of system resource use. The data includes CPU resources, transaction counts, queue and message counts, database access counts, database I/O counts, and terminal message counts. This information makes transaction accounting feasible. Integration with CA MICS Accounting and Chargeback facilitates accounting for IMS usage for all or selected system resources.

o Capacity Planning - The IMS Analyzer maintains a database of historical usage and performance data. This facilitates growth/trend projections at both the system and organizational unit (e.g., division or department) levels.

o System Availability and Reliability - The IMS Analyzer provides information that can be used to monitor such measures as transaction ABENDs and IMS database closes.

o Management Reporting - Users can group and summarize IMS information directly from the CA MICS database to create useful management reporting measures. They can use standard reports that are distributed with the system, or they can easily create custom reports by using CA MICS' online facilities. Additional tools allow resummarization when the summarized data in the database does not directly address reporting needs.

1.2 Major Features

The major features of the IMS Analyzer can be grouped into four categories:

o Report facilities

o Use of IMS data

o General product flexibility

o Integration capabilities

Report Facilities

The IMS Analyzer provides the following reports:

- Management Reports are run on a daily, weekly, and/or monthly basis as part of the standard CA MICS processing. These reports summarize the activities of the IS organization and can help you track IMS service and performance, monitor the operations configuration, and plan for future resource requirements.

- Standard Analysis Reports provide concise information in the form of graphs, tables, charts or plots. Typically, they are run on an as-needed basis and provide information that you can use to explore performance problems, analyze workloads, or examine resource consumption issues.

- Exception Analyzer Reports allow you to define, capture, and report on conditions that deviate from the expected norm.

- Ad Hoc Reporting Facilities allow you to access information in the CA MICS database either interactively or in batch via the CA MICS Information Center Facility (MICF), a panel-oriented productivity tool. The CA MICS Workstation Facility (MWF) allows those familiar with the advanced analysis language provided as part of the SAS program product to use SAS directly either interactively or in batch mode.

Use of IMS Data

Another feature of the IMS Analyzer is its comprehensive handling of IMS data.

- It accepts input from the IMS log, and processes both IMS and BMC MAINVIEW for IMS Online data.

- It consolidates data from multiple IMS systems into the CA MICS database and then provides a common access method for reporting on IMS activity.

- It collects event data to build an incident file, which allows you to examine exceptions.

- It uses checkpoint and statistical records to present a systems view of IMS performance.

- It interprets encoded values in the IMS input data so that information is immediately usable in a logical form without further conversion or translation.

- It enables each organization to set its own account codes to link individual IMS activities with the responsible cost center or organizational unit. This account code structure lets you produce IMS activity reports by user area (e.g., engineering, payroll, manufacturing, etc.), or by any other applicable section or category.

- It allows you to invoke IMS data collection through the IMS Archive Exit, as a stand alone job, or as a separate step within the daily CA MICS processing.

General Product Flexibility

Flexibility features of the IMS Analyzer include:

- Usage guidelines for applying IMS management information

- A wide range of standard exits that allow you to tailor the product to your needs

- A data dictionary that describes the information found in the IMS Information Area of the CA MICS database and how that information was derived

- Flexibility in defining criteria for exception reporting on response time

Integration Capabilities

The IMS Analyzer integrates IMS data into the CA MICS Data Base, thus providing integration with a number of other CA MICS Management Support Applications:

- CA MICS Accounting and Chargeback - The IMS Analyzer provides data to CA MICS Accounting and Chargeback that supports accounting for consumed resources in terms of such resource utilization measures as CPU time, database accesses, and terminal messages.

- o CA MICS Capacity Planner - The IMS Analyzer maintains a database of both detailed and summarized information about IMS usage and performance. The CA MICS Capacity Planner can use that data for historical growth/trend projections at the system, transaction, application, or organizational structure levels.

1.3 Reporting and Inquiry Facilities

The IMS Analyzer standard reports and online inquiries provide concise, comprehensive information to help you manage your IMS environment. The IMS Analyzer provides management reports, standard analysis reports, and exception reports that you can either use as delivered or tailor to your specific requirements. In addition, you may use the CA MICS Information Center Facility (MICF) or the SAS language interface to create ad hoc reports.

The following material describes each type of report and reporting facility.

MANAGEMENT REPORTS

Management reports distributed with the IMS Analyzer provide a concise graphic or tabular representation of the installation's processing objectives and how well they have been met. You define objectives through a series of parameters, then produce the reports during normal daily, weekly, or monthly CA MICS processing. You can activate or deactivate reports for any given timespan (daily, weekly, or monthly).

```
The following management objective reports are distributed
with the IMS Analyzer.

-------------------------------------------------------------
Management
Report Function
-------------------------------------------------------------
Daily IMS         Quantifies the previous day's total IMS
Service Report -  service on an hourly basis for each IMS
All Activity      system, including short, medium, and
                  long events.  This report can help you
                  determine whether IMS systems are
                  meeting established service levels.

Daily IMS         Quantifies the previous day's IMS
Service Report -  service medium activity on an hourly
Medium Activity   basis for each IMS system.  This report
                  can help you determine whether IMS
                  systems are meeting established service
                  levels for medium activity.

Daily IMS         Quantifies the previous day's IMS
Service Report -  service short activity on an hourly
Short Activity    basis for each IMS system.  This report
                  can help you determine whether IMS
                  systems are meeting established service
                  levels for short activity.

-------------------------------------------------------------
Management
Report Function
-------------------------------------------------------------
Daily IMS Outage  Quantifies the previous day's IMS outage
Report -          on an hourly basis for each IMS system.
Availability      This report can help you determine IMS
                  stability.

Daily IMS         Quantifies the previous day's total IMS
Throughput        throughput for each IMS system in terms
Report -          of commands processed per hour.  This
Transactions      report allows you to see the overall IMS
                  system load.

Weekly IMS        Quantifies the previous week's total IMS
Service Report -  service for each IMS system on an hourly
All Activity      basis grouped by day, including short,
                  medium, and long events.
```

Weekly IMS Service Report - Medium Activity	Quantifies the previous week's IMS service medium activity for each IMS system on an hourly basis grouped by day.
Weekly IMS Service Report - Short Activity	Quantifies the previous week's IMS service short activity for each IMS system on an hourly basis grouped by day.
Weekly IMS Outage Report - Availability	Quantifies the previous week's IMS outage for each IMS system on an hourly basis, grouped by day.
Weekly IMS Throughput Report - Transactions	Quantifies the previous week's total IMS throughput for each IMS system, in terms of transactions processed on an hourly basis, grouped by day.
Monthly IMS Service Report - All Activity	Quantifies the previous 12 months' total IMS service for each IMS system, including short, medium, and long events, on a zone basis, grouped by month.
Monthly IMS Service Report - Medium Activity	Quantifies the previous 12 months' IMS medium activity service for each IMS system, on a zone basis, grouped by month.
Monthly IMS Service Report - Short Activity	Quantifies the previous 12 months' IMS short activity service for each IMS system, on a zone basis, grouped by month.
Monthly IMS Availability Report	Quantifies IMS uptime for each IMS system, on a zone basis, grouped by month.
Monthly IMS Throughput IMS Report - Transactions	Quantifies total IMS throughput for each system in terms of transactions processed, on a zone basis, grouped by month.

STANDARD ANALYSIS REPORTS

The IMS Analyzer standard analysis reports consist of a series of predefined MICF inquiries. You can invoke these inquiries on an as-needed basis and you can also use them as templates for designing similar inquiries. The following MICF inquiries are distributed with the IMS Analyzer.

```
------------------------------------------------------------
Inquiry Function
------------------------------------------------------------
Daily IMS          Lists interval duration, calls to
Message Queue      dequeue a message, queue buffer reads
Analysis           per message, queue buffer writes per
                   message, and queue buffer I/Os per
                   message and queue manager waits for
                   enqueue/ dequeue conflicts, sorted by
                   system ID, IMS system ID, and end time-
                   stamp.

Daily IMS          Produces a vertical bar chart of
Workload           responses per hour for the previous day
                   for selected system IDs and IMS system
                   IDs.

Weekly IMS         Produces a vertical bar chart of
Workload           responses per hour for the last seven
                   weekdays for selected system IDs and IMS
                   system IDs.

Monthly IMS        Produces a vertical bar chart of
Workload           responses per hour for the last six
                   months by zone for selected system IDs
                   and IMS system IDs.

8 am - 5 pm IMS    Produces a vertical bar chart, by hour,
Service by Type    of average response times for short,
                   medium, and long transactions for
                   selected system IDs and IMS system IDs.

Daily IMS          Produces vertical bar charts of the
Service Report     previous day's average response times
                   for short, medium, and long
                   transactions, and the percentage of
                   time responses were less than a
                   predetermined value, for selected system
                   IDs and IMS system IDs.

Weekly IMS         Produces vertical bar charts, by hour,
Service Report     of the previous seven weekdays' average
                   response times for short, medium, and
                   long transactions, and the percentage of
                   time responses were less than a given
                   value, for selected system IDs and IMS
                   system IDs.
```

Monthly IMS Service Report	Produces vertical bar charts, by zone by hour, of the previous six months' average response times for short, medium, and long transactions, and the percentage of time responses were less than a predetermined value, for selected system IDs and IMS system IDs.
Daily IMS Availability	Produces vertical bar charts of IMS uptime and downtime per hour for selected system IDs and IMS system IDs. The chart is for the previous day for selected system IDs and IMS system IDs.
Weekly IMS Availability	Produces vertical bar charts, by hour, of the last seven weekdays' IMS uptime and downtime for selected system IDs and IMS system IDs.
Monthly IMS Availability	Produces vertical bar charts of IMS uptime and downtime per hour for selected system IDs and IMS system IDs. The chart displays responses per hour for the last six months by zone for selected system IDs and IMS system IDs.

EXCEPTION ANALYZER REPORTS

The CA MICS Platform provides an Exception Analyzer that works with CA MICS Data Integration Applications to provide consolidated reporting of exception conditions across systems and data sources.

An "exception" is any condition that deviates from the expected norm, or any missed objective in system performance or service.

The IMS Analyzer is delivered with several exception tests, and you can easily add your own. The exception reports produce increasing levels of detail to address the needs of different audiences and, when combined with exceptions from other CA MICS applications, comprise a powerful diagnostic tool for your organization.

```
-------------------------------------------------------------
Report Function
-------------------------------------------------------------

Exception          Lists, in terms of severity, the number
Management         of exceptions reported the previous day
Overview           for each defined management area, which
                   helps upper management to quickly assess
                   the operation's stability.

Management Area    Provides an hourly summary of exceptions
Exception          for a specific management area (e.g.,
                   performance or availability), and the
                   number and severity of each exception
                   type that occurred in an hour.
                   Typically, first level management
                   personnel responsible for defined
                   management area(s) use this inquiry.

Severity Level     Provides an hourly summary of exceptions
Exception          for a given severity level, which allows
                   quick assessment of the types of
                   exceptions in each level.  It gives
                   first-level managers, performance
                   analysts, and system programmers an
                   integrated report of problems that may
                   have affected the installation in any
                   given hour.

Detail Exception   Provides a detailed list, in order of
                   occurrence, of detected exceptions.  You
                   may produce this report online using
                   various selection criteria such as date
                   and time range, severity level,
                   management area, etc., to obtain the
                   necessary background detail for
                   effective analysis of the reported
                   exceptions.
```

AD HOC REPORTING FACILITIES

The specific types of information needed to manage a large IS organization change daily. CA MICS addresses these requirements with interactive capabilities that allow fast response to the most complex requests for information. The interactive capabilities are:

- The 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 fulfills your request by executing the program either in batch or interactive mode. Then, according to your specifications, MICF prints the results of your request, displays the results at your terminal, or catalogs the results for later viewing.

- The CA MICS Workstation Facility (MWF) provides an online environment in which the SAS System can be used both interactively or in batch mode. The SAS language is a powerful fourth generation language that provides easy data manipulation and statistical analysis. It enhances your staff's analytical capabilities and improves the quality of their decision-making. SAS also supports coding facilities for programmers who are conducting extensive analysis or designing new reports for IS business applications.

1.4 Files Overview

The use and contents of each CA MICS file in the IMS Information Area is described below. Figure 1-2 illustrates the IMS Information Area's data sources and files.

- System Activity File (IMSISY)

  This file quantifies total activity for the entire IMS system for all users and includes resource consumption, service, availability, and performance measures and is derived from the interval system activity records found in the IMS log.

- User Activity File - Full Function (IMSISU)

  This file quantifies the resources consumed by each user executing each different IMS transaction type. It provides service, load, access, and performance measures and is derived from the detailed transaction records found in the IMS log. Where BMC MAINVIEW for IMS Online is used, this file contains records for both full function and Fastpath transactions.

- User Activity File - Fastpath (IMS_IS)

  This file quantifies the resources consumed by Fastpath users. It provides service, load, access, and performance measures and is derived from the detailed transaction records found in the IMS log.

- Application Unit Activity File - Full Function (IMSIAU)

  This file quantifies the resources consumed by each application unit within IMS. It provides service, load, access, and performance measures and is derived from the detailed transaction records found in the IMS log. Where BMC MAINVIEW for IMS Online is used, this file contains records for both full function and Fastpath transactions.

- Application Unit Activity File - Fastpath (IMS_IA)

  This file quantifies the resources consumed by each application unit within IMS. It provides service, load, access, and performance measures and is derived from the detailed transaction records found in the IMS log.

- User Application Unit Count File (IMSIAC)

  This file quantifies frequency of use, by IMS user, for a specific application unit in the days, months, and years timespans.

- Incident File (IMSINC)

  This file quantifies interesting incidents that relate to the operation, performance, and integrity of the IMS system. It is derived from the detailed transaction records found in the IMS log or BMC MAINVIEW for IMS Online.

o BMC MAINVIEW for IMS Online Database Activity File (IMSIDB)

This file quantifies the activity that happens on databases used by IMS transactions that are monitored by the BMC MAINVIEW for IMS Online Event Collector. Because it contains a large volume of data, it is typically used only for special studies.

```
                                                  +--------------+--------------+
                                                  |      CA MICS IMS ANALYZER   |
                                                  +-----------------------------+

+-------------+-------------+------------+------------+-------------+-------------+------------
+
                      |            |            |            |            |            |            |
|
            +---------+---------+   |   +---------+---------+   |   +---------+---------+   |
+---------+-------+    |
            |      System      |   |   |  User Activity   |   |   |  User Activity   |   |   | User
Application|    |
            |     Activity    |   |   |      File       |   |   |      File       |   |   |     Counts
|    |
            |      File       |   |   |  Full Function   |   |   |    Fast Path    |   |   |      File
|    |
            |    (IMSISY)     |   |   |    (IMSISU)     |   |   |    (IMS_IS)     |   |   |    (IMSIAC)
|    |
            | Types 40 and 45   |   |   | Types 01, 03, 07, |   |   | Types 5901, 5903, |   |   | Types
01, 03,   |    |
            |                 |   |   | 08, 31, 35, 36,   |   |   | 5936, 5937, 5938, |   |   | 07,
08, 31, 35, |    |
            |                 |   |   | 5937, 5950, F900, |   |   | 5950, 5953, 5955  |   |   | 36,
5937, 5950, |    |
            |                 |   |   | FAF1             |   |   |                  |   |   | F900,
FAF1      |    |
            +-------------------+   |   +-------------------+   |   +-------------------+   |
+-----------------+    |
                                    |                    |                    |                   |
                          +---------+---------+    +---------+---------+    +---------+---------+
+--------+--------+
                          |  Application Unit |      |  Application Unit |      |    Incident     |
|       IMF       |
                          |   Activity File   |      |   Activity File   |      |      File       |
|    Data Base    |
                          |   Full Function   |      |     Fastpath      |      |                 |
|  Activity File  |
                          |     (IMSIAU)      |      |     (IMS_IA)      |      |    (IMSINC)     |
|     (IMSIDB)    |
                          | Types 01, 03, 07, |      | Types 5901, 5903, |      | Types 06, 10, 14,
|       | Type FAF1       |
                          | 08, 31, 35, 36,   |      | 5936, 5937, 5938, |      | 15, 16, 20, 21,
|       |                 |
                          | 5937, 5950, F900, |      | 5950, 5953, 5955  |      | 24, 40, 41, 42,
|       |                 |
                          | FAF1              |      |                   |      | 45, 4C, 69       |
|                 |
```

```
              +------------------+    +------------------+    +------------------+
+----------------+
```

Figure 1-2. IMS Information Area Structure

1.5 Product Prerequisites

The IMS Analyzer runs in a CA MICS environment operating under MVS, or, OS/390. You must also have IBM's Information Management System (IMS) for database and data communications active on your system.

1.6 Benefits

The IMS Analyzer contributes to the overall benefits that the CA MICS IS Management Support System provides. Those benefits fall into the following broad categories:

o Improves day-to-day IS management

o Reduces risk to the enterprise

o Controls and/or helps reduce costs

o Improves return on the IS investment

o Increases productivity

o Improves planning

The material below explains how the IMS Analyzer contributes to these benefits.

Improves Day-to-Day IS Management

o Helps you track IMS usage to plan corrective actions to ensure smooth operations

o Helps you to identify problems faster and more accurately, and to assess or quantify their impact in terms of root cause(s) and alternative solutions

- Allows you to measure and track service levels being delivered for batch workloads

Reduces Risk to the Enterprise

- Allows you to define exceptional conditions and to assess their impact

- Contributes to preventive maintenance activities

- Provides auditing and control capabilities for IMS transaction activity

Controls and/or Helps Reduce Costs

- Allows you to equitably charge users for the amount of resources they use

- Helps you to analyze and maximize resource usage and to lower associated fixed costs

- Replaces other IMS reporting products, eliminating the necessity for multiple products

Improves Return on the IS Investment

- Allows managers to gauge the quality of service that is being provided

- Provides a basis for chargeback of operating system and hardware resource usage either through CA MICS Accounting and Chargeback, or a basic user-developed costing process

- Improves your ability to understand, report on, control, and reduce IMS expenses

Increases Productivity

- Allows less experienced users to interpret results of reports and use database information

- Provides the opportunity to learn about the characteristics and uses of IMS data via the comprehensive data dictionary and reports documentation

- Reduces the task of coordinating information from multiple sources so that you can report or analyze information at the enterprise rather than the system level

- Reduces the large quantities of IMS data to a manageable and easy to use format

Improves Planning

- Allows managers to anticipate problems before the system is affected

- Provides the raw data and a common frame of reference for other analyses such as capacity and hardware planning, workload balancing, and performance management

- Allows trend analysis through the use of summarized historical data

Chapter 2: USAGE GUIDELINES

```
The following sections describe the interfaces provided to
other CA MICS products:

    1 - Work File Compression
    2 - Accounting and Chargeback Interface
    3 - Capacity Planner Interface
```

This section contains the following topics:

2.1 Work File Compression (see page 30)
2.2 Accounting and Chargeback Interface (see page 32)
2.3 Capacity Planner Interface (see page 37)

2.1 Work File Compression

The SAS system gives you the option to create variable-length or fixed-length observations in a SAS data set. Variable-length observations differ from fixed-length observations in that the former are usually smaller because the blank spaces used to pad fixed-length observations are removed.

You instruct SAS to create variable length observations by specifying the COMPRESS= option. SAS data set compression can be implemented for individual data sets or across the entire SAS system by specifying COMPRESS= on either a DATA statement (for the individual data set named on the DATA statement) or an OPTIONS statement (for the entire system).

For more information on the COMPRESS= option, see the SAS Institute documentation.

In deciding whether or not to implement compression for a SAS data set, CA's research indicates the following:

- o Compressed data sets generally require fewer IOs than uncompressed data sets.
- o Observations in a compressed data set cannot be accessed by observation number.
- o Compressed data sets use more TCB CPU time than uncompressed data sets. (TCB time is the amount of time spent executing application code.)

The IMS Analyzer supports compression for files in the CA MICS database as well as the work files used during daily operational processing. If you choose to implement data compression for the IMS Analyzer's work files, CPU and elapsed times may be prolonged in the DAY060 step of the DAILY job.

Before implementing work file compression, try using the following tailoring methods to decrease the size of you IMS Analyzer work files:

- deactivate unused data elements following the instructions in Section 10.1 of this guide.

- configure your unit databases so that products with large databases are in different units. Remember that compression takes place at the unit level, so all products in a unit are compressed when compression is activated.

2.2 Accounting and Chargeback Interface

The CA MICS IMS Analyzer provides data elements that CA MICS Accounting and Chargeback uses to bill data center resource consumers. The elements that can be billed per measurement unit are shown in Figure 2-1.

When the Accounting and Chargeback product produces invoices for data center users, those that have used IMS resources will be charged according to an algorithm using the values of these data elements.

```
      +------+-------------------------------------------+----------------+----------------------
-----------------------------+
      | Invc |                                           |    Measured    | Charging||Element Deri
vation(These calculations are|
      | Catg |Charging Element Description               |     Units      | Element ||in "sharedpr
efix.MICS.SOURCE" library).  |
      +------+-------------------------------------------+----------------+---------++------------
-----------------------------+
      |      |                                           |                |         ||
                             |
      |      |                                           |                |         ||
                             |
      |      |IMS Transaction Accounting                 |                |         ||
                             |
      |      |                                           |                |         ||
                             |
      | 1100 |    IMS Transaction Executions             | Transaction    |IACTRANS ||
                             |
      |      |                                           |                |         ||
                             |
      |      |                                           |                |         ||
                             |
      |      |IMS Resource Accounting                    |                |         ||
                             |
      |      |                                           |                |         ||
                             |
      |      |  IMS CPU Charges                          |                |         ||
                             |
      | 1100 |    IMS Instructions Executed              | 1 Million      |ISUCPUNI ||
                             |
      | 1100 |    IMS System Resource Units              | 1000 SRUs      |ISUKSRU  ||ISUSRU   / 1
000                          |
      | 1100 |    IMS Pseudo Elapsed Time                | Seconds        |ISUPETTM ||
                             |
      | 1100 |    IMS Total CPU Time                     | Seconds        |ISUCPUTM ||
                             |
      | 1100 |    IMS Message Region CPU Time            | Seconds        |ISUTMDCP ||
                             |
      | 1100 |    IMS DL/I CPU Time                      | Seconds        |ISUTMCDL ||
                             |
      | 1100 |    IMS Message Region CPU Time            | Seconds        |ISUTMDDL ||
                             |
      | 1100 |    IMS Fast Path Application Time         | Seconds        |ISURESTM ||
                             |
      | 1100 |    IMS DB2 CPU Time                       | Seconds        |ISUDB2TM ||
                             |
      |      |                                           |                |         ||
                             |
```

```
      |      |  IMS Transaction Charges                 |                |         ||
                       |
      | 1100 |    IMS Conv Transactions Processed       | Transaction    |ISUCTRN  ||
                       |
      | 1100 |    IMS Long Transactions Processed       | Transaction    |ISULTRN  ||
                       |
      | 1100 |    IMS Medium Transactions Processed     | Transaction    |ISUMTRN  ||
                       |
      | 1100 |    IMS Short Transactions Processed      | Transaction    |ISUSTRN  ||
                       |
      | 1100 |    IMS Excessive Transactions Processed  | Transaction    |ISUETRN  ||
                       |
      | 1100 |    IMS Total Transactions Processed      | Transaction    |ISUTRANS ||
                       |
      |      |                                          |                |         ||
                       |
      |      |  IMS Queue Logical I/O Charges           |                |         ||
                       |
      | 1100 |    IMS Msg Get Unique Count              | 1000 Messages  |ISUKMSGU ||ISUMSGGU / 1
000                    |
      | 1100 |    IMS Msg Get Next Count                | 1000 Messages  |ISUKMSGN ||ISUMSGGN / 1
000                    |
      | 1100 |    IMS Msg Insert Count                  | 1000 Messages  |ISUKMSIS ||ISUMSGIS / 1
000                    |
      | 1100 |    IMS Msg Other Count(Serv, Ckpt, Stats)| 1000 Messages  |ISUKMSOT ||ISUMSGOT / 1
000                    |
      | 1100 |    IMS Msg Purge Count                   | 1000 Messages  |ISUKMSPG ||ISUMSGPG / 1
000                    |
      | 1100 |    IMS Total Number Of Message Calls     | 1000 Messages  |ISUKMSTT ||ISUMSTOT / 1
000                    |
      | 1100 |    IMS Number Of Input Messages          | 1000 Messages  |IACMIMSG ||IACIMSGS / 1
000                    |
      |      |                                          |                |         ||
                       |
      |      |  IMS Data Base Logical I/O Charges       |                |         ||
                       |
      | 1200 |    IMS Total Number Of Data Base Calls   | 1000 Calls     |ISUKDBTT ||ISUDBTOT / 1
000                    |
      | 1200 |    IMS Data Base Deletes                 | 1000 Calls     |ISUKDBDL ||ISUDBDLT / 1
000                    |
      | 1200 |    IMS Data Base Get Nexts               | 1000 Calls     |ISUKDBGN ||ISUDBGN  / 1
000                    |
      | 1200 |    IMS Data Base Get Uniques             | 1000 Calls     |ISUKDBGU ||ISUDBGU  / 1
000                    |
      | 1200 |    IMS Data Base Inserts                 | 1000 Calls     |ISUKDBIS ||ISUDBIST / 1
000                    |
      | 1200 |    IMS Data Base Replaces                | 1000 Calls     |ISUKDBRE ||ISUDBREP / 1
000                    |
      | 1200 |    IMS Other Data Base Calls(Sys Service)| 1000 Calls     |ISUKDBOT ||ISUDBOTH / 1
```

```
000                          |
      | 1200 |    IMS Total Logical I/O                 | 1000 I/Os      |ISULOGIO ||(ISUDBGU+ISU
DBGN+ISUDBIST+ISUDBREP       |
      +------+------------------------------------------+----------------+----------------------
-----------------------------+
```

Figure 2-1. IMS Charging Elements (Part 1 of 2)

```
+------+------------------------------------------+----------------+---------------------------------------------------+
| Invc |                                          |    Measured    | Charging||Element Derivation(These calculations are|
| Catg |Charging Element Description              |     Units      | Element ||in "sharedprefix.MICS.SOURCE" library).  |
+------+------------------------------------------+----------------+---------++-----------------------------------------+
|      |                                          |                |         ||+ISUDBDLT+ISUDBOTH) /1000                |
| 1200 |    IMS Fast Path DEDB Calls              | 1000 Calls     |ISUKDEC  ||ISUFPDEC / 1000                          |
| 1200 |    IMS Fast Path DEDB Puts (I/Os)        | 1000 I/Os      |ISUKDEP  ||ISUFPDEP / 1000                          |
| 1200 |    IMS Fast Path DEDB Reads (I/Os)       | 1000 I/Os      |ISUKDER  ||ISUFPDER / 1000                          |
| 1200 |    IMS Fast Path MSDB Calls              | 1000 Calls     |ISUKMSC  ||ISUFPMSC / 1000                          |
| 1200 |    IMS Fast Path DEDB Total Logical I/Os | 1000 FP I/Os   |ISUKFPIO ||(ISUFPDEP + ISUFPDER) / 1000             |
|      |                                          |                |         ||                                         |
|      |  IMS Data Base Actual I/O Charges        |                |         ||                                         |
| 1100 |    IMS ISAM/KSDS Key Reads Issued        | 1000 I/Os      |ISUKKYRD ||ISUKEYRD / 1000                          |
| 1100 |    IMS ISAM/KSDS Key Writes Issued       | 1000 I/Os      |ISUKKYWT ||ISUKEYWT / 1000                          |
| 1100 |    IMS OSAM/ESDS Non-Key Reads Issued    | 1000 I/Os      |ISUKNKYR ||ISUNKEYR / 1000                          |
| 1100 |    IMS OSAM/ESDS Non-Key Writes Issued   | 1000 I/Os      |ISUKNKYW ||ISUNKEYW / 1000                          |
| 1200 |    IMS Total DL/I I/O                    | 1000 I/Os      |ISUTDLIO ||(ISUKEYRD+ISUKEYWT+ISUNKEYR+ISUNKEYW)    |
|      |                                          |                |         || / 1000                                  |
| 1200 |    IMS Key I/O                           | 1000 I/Os      |ISUKEYIO ||(ISUKEYRD+ISUKEYWT) / 1000               |
| 1200 |    IMS Non-key DL/I I/O                  | 1000 I/Os      |ISUNKYIO ||(ISUNKEYR+ISUNKEYW) / 1000               |
|      |                                          |                |         ||                                         |
|      |  IMS Terminal Charges                    |                |         ||                                         |
| 2100 |    IMS Terminal Input Message Count      | 1000 Messages  |ISUKIMSG ||ISUIMSGS / 1000                          |
| 2100 |    IMS Terminal Output Message Count     | 1000 Messages  |ISUKOMSG ||ISUOMSGS / 1000                          |
```

```
| 2100 |    IMS Terminal I/O                      | 1000 I/Os      |ISUTERIO ||(ISUIMSGS+ISUOMSGS) / 1000              |

| 1200 |    IMS Terminal Input Character Count    | 1000 Bytes     |ISUKINCH ||ISUINCH  / 1000                         |

| 1200 |    IMS Terminal Output Character Count   | 1000 Bytes     |ISUKOUTC ||ISUOUTCH / 1000                         |

| 1200 |    IMS Characters Transferred            | 1000 Bytes     |ISUTCHAR ||(ISUINCH+ISUOUTCH)  / 1000              |

+------+-----------------------------------------+----------------+-----------------------------------------------------+
```

Figure 2-1. IMS Charging Elements (Part 2 of 2)

2.3 Capacity Planner Interface

A CA MICS Capacity Planner IMS standard application can provide a "fast-track" approach to using the CA MICS Capacity Planner. These predefined applications are already coded to access the CA MICS files that you need.

The CA MICS IMS Analyzer provides the following data elements that the CA MICS Capacity Planner IMS standard application uses:

```
DURATION - Interval Duration
ISUAVCTM - Avg Conversational Transaction Response Time
ISUAVETM - Avg Excessive Transaction Response Time
ISUAVLTM - Avg Long Transaction Response Time
ISUAVMTM - Avg Medium Transaction Response Time
ISUAVSTM - Avg Short Transaction Response Time
ISUTMCBF - Control Region Buffer CPU Time
ISUTMCDL - Control Region DL/I Time
ISUTMCRO - Control Region Overhead CPU Time
ISUCPUTM - Task CPU Time
ISUTMDBF - Dependent Region Buffer Handler CPU Time
ISUTMDDL - Dependent Region DL/I Time
ISUTMDRO - Dependent Region Overhead CPU Time
ISUTMDCP - Dependent Region Processing CPU Time
ISUTMSCH - Dependent Region Sched/Term CPU Time
ISUDBDLT - Database Deletes
ISUDBGN  - Database Get Nexts
ISUDBGU  - Database Get Uniques
ISUDBIST - Database Inserts
ISUTMDOC - Database Open and Close Time
ISUDBREP - Database Replaces
ISUDBOTH - Other Database Calls (System Service)
ISUDBTOT - Total Number of Database Calls
ISUCTRN  - Conversational Transactions Processed
ISUETRN  - Excessive Transactions Processed
ISULTRN  - Long Transactions Processed
ISUMTRN  - Medium Transactions Processed
ISUSTRN  - Short Transactions Processed
ISUTRANS - Number of Ended Transactions
ISUUOWCT - Total Units of Work Executed
```

Chapter 3: REPORTS

The CA MICS IMS Analyzer produces reports using the batch and interactive reporting facilities of the CA MICS IS Management Support System. The reports are categorized as Management Objective, MICF Inquiry, and Exception reports.

CA MICS Management Objective reports provide a concise representation of an installation's workload, resource use, and response to the workload against installation defined objectives.

MICF inquiries are precomposed printer reports and color graphics that are accessed via the CA MICS Information Center Facility (MICF). MICF inquiries help you produce meaningful reports from the CA MICS database and provide the flexibility to code and save your own report formats.

Exception reports provide a concisely integrated and itemized list of the problems impacting an installation's effectiveness in terms of availability, service, workload, standards, security, and performance. Exception reports are discussed in Chapter 4 of this guide.

This chapter discusses the report categories and how reports are produced.

This section contains the following topics:

3.1 Management Objective Reports (see page 39)
3.2 MICF Inquiries (see page 111)
3.3 Normal Termination Report (see page 164)
3.4 How to Produce Reports (see page 165)

3.1 Management Objective Reports

The IMS reports are produced on a daily, weekly, and monthly basis by Information Area (e.g., IMS) as a standard output of the CA MICS reporting process. A separate set of reports is produced for each unique computer system applicable to the Information Areas. In addition, you can always produce reports that aggregate systems. In this way, multiprocessing, loosely coupled, or other aggregates can be reported as required.

A report series, such as daily, reports the installation's progress against a management objective (e.g., provide a 4 second response 92% of the time for short IMS transactions) as a one-page bar chart that quantifies performance against management's pre-determined objective.

The reports are produced using the CA MICS database. The criteria used to define the objectives are installation defined. The user can modify the standard reports to produce special data center-specific reports using the database and the standard CA MICS-SAS interfaces and language facilities.

This section identifies and describes the Management Objective reports provided in the IMS Information Area.

The reports are produced on a daily, weekly, and monthly basis and are described in that order within this section.

Options are provided to enable the user to specify data selection (time, zones, etc.), define the applicable objective values, and specify the scales of the graphic report representations. Each option is described in line with the reports to which it pertains, and is fully explained in section 3.1.4.1, Report Options.

The options available for producing the IMS Management Objective Reports are shown below:

Hourly Selection Range for Daily Reports:

The start and end hours of the day to be included in the Daily IMS Reports. It is suggested that the hours be set to include the entire day (00 23).

Hourly Selection Range for Weekly Reports:

The start and end hours of the day to be included in the Weekly IMS Reports. It is suggested that the hours be set to only include the prime-time hours (e.g., 08 16).

Total Response Objective:

The percentage of all IMS responses that were satisfied within a specified number of seconds to reflect the installation's response objective for total IMS activity (e.g., 90% within 15 seconds).

Short Response Objective:

The percentage of short IMS responses that were satisfied within a specified number of seconds to reflect the installation's response objective for short IMS activity (e.g., 96% within 4 seconds).

Medium Response Objective:

The percentage of medium IMS responses that were satisfied within a specified number of seconds to reflect the installation's response objective for medium IMS activity (e.g., 94% within 6 seconds).

Hourly IMS Outage Limits:

The target number of uptime minutes per hour, generally set to 60, and the downtime objective per hour, which is generally set to 0 minutes.

Zone Selection for Monthly Reporting:

The zone or range of zones that are to be included in the Monthly IMS Reports. Normally all zones should be reported and therefore the range should be 1 to 9. The reports can, however, be limited to only the range of zones required.

Monthly Availability Hours:

The number of hours that IMS is targeted to be available in any given month for the specified zones.

Monthly IMS Transaction Rate:

The target and maximum number of transactions processed per zone within month by IMS. The target amount is used as a reference line on the graph; the maximum is used to set the maximum value on the graph's vertical axis.

The IMS report options, which are defined as SAS MACROs, should be placed in the source member #IMSMOBJ in the prefix.MICS.USER.SOURCE library after the %INCLUDE SOURCE(#IMSMOBJ), which sets the defaults for these MACROs.

```
The SAS source code for the IMS Management  Objective Reports
is contained in three members in prefix.MICS.USER.SOURCE.

    DYIMSMBO - Daily IMS Management Objective Reports
    WKIMSMBO - Weekly IMS Management Objective Reports
    MNIMSMBO - Monthly IMS Management Objective Reports

The descriptive material is explained in the following
sections:

    1 - Daily IMS Management Objective Reports
    2 - Weekly IMS Management Objective Reports
    3 - Monthly IMS Management Objective Reports
    4 - IMS Report Options
```

3.1.1 Daily IMS Management Objective Reports

The daily management objective reports help management determine if primary IMS processing objectives are being attained. Several one-page charts illustrate the daily activity by hour in reference to established hourly objectives for short, medium, and total response, transaction load, and availability.

A hour of the day selection facility is provided, so that daily reports may reflect an entire 24 hours or a user specified range.

Hourly Selection Range for Daily Reports: The start and end hours of the day to be included in the Daily IMS Reports. It is suggested that the hours be set to include the entire day (00 23).

```
    _IMSDLHR and  _IMSDHHR define the low and high hours,
         respectively, of the day for selection of the IMS
         activity to be included in the daily reports.

    MACRO _IMSDLHR 00  %
    MACRO _IMSDHHR 23  %
```

A full description of the user options is provided in section 3.1.4.1, Report Options.

The following sections describe and explain the daily IMS Management Objective Reports:

1 - Report Format Descriptions
2 - Daily IMS Service Report - All Activity
3 - Daily IMS Service Report - Medium Activity
4 - Daily IMS Service Report - Short Activity
5 - Daily IMS Outage Report - Availability
6 - Daily IMS Throughput Report - Transactions

3.1.1.1 Report Format Descriptions

The Daily Management Objective Reports are produced as a standard process in the CA MICS Daily Job Stream. Each of the report are produced from the IMS System Activity File (DAYS.IMSISY01) and from the IMS User Activity File (DAYS.IMSISU01), maintained in the database's DAYS timespan. The SAS CHART procedure is used to produce the desired bar-chart reports.

The heading lines contain the installation name (e.g., XYZ Manufacturing, Inc.), the frequency identification (e.g., DAILY IMS MANAGEMENT OBJECTIVES), the objective being reported (e.g., IMS SERVICE OF 85% OF ALL ACTIVITY WITHIN 15 SECONDS), and the computing system (e.g., SYSID code) on which the IMS processing was measured.

The bar-chart illustrates the hour of the day along the horizontal axis and the measurement being reported (e.g., % of total), along the vertical axis. The day being reported is identified below the hours of the day, just under the horizontal axis.

The vertical axis charts the measure being reported and defines the management objective for this category. The vertical axis is established through the SAS CHART AXIS option that identifies the highest value to be represented on the vertical axis. The management objective is then illustrated through the SAS CHART REF option and a dashed line appears across the page to illustrate the management objective.

Consider the charting of the hourly objective for short service (response time, see Figure 3-3). The title describes the management objective as 95% within 5 seconds for short activity. The measure to be charted is the percentage of short events satisfied within 5 seconds for each hour of the day. The vertical axis displays a maximum value of 100 (for 100%) and the vertical reference line is printed at the 95% level. This reference line clearly depicts how the objective was satisfied or missed for each hour of the day.

NOTE: The location of the reference line on the vertical axis may be rounded for purposes of scaling the axis. Each vertical line may have a unit value of 2.5%, therefore a reference line specification of 86% would not fall directly on a vertical axis coordinate. In this case, the 86% line would be shown at 85%.

The member DYIMSMBO in the sharedprefix.MICS.SOURCE library contains the SAS statements for producing the five chart reports. The member #IMSMOBJ contains the SAS MACROs used by DYIMSMBO. #IMSMOBJ also contains the specifications for defining the objectives to be displayed and may be modified to reflect your installation's unique management objectives. For help in defining your installation objectives reference the section 3.1.4.1, Report Options.

The remainder of this section explains and illustrates each of the standard Daily IMS Management Objective Reports.

3.1.1.2 Daily IMS Service Report - All Activity

This report quantifies the total IMS service (all activity including short, medium, and long events but not excessive) provided on an hourly basis for the identified day and computing system.

The management objective to be tracked in evaluating the speed and consistency of all IMS activity is a percentage of the number of IMS interactions that were satisfied within a specified number of seconds.

Figure 3-1 illustrates the Daily IMS Service Report for All Activity based on a management objective of satisfying 85% of all IMS interactions within 15 seconds.

The following user options apply to this report:

Total Response Objective: The percentage of all IMS responses that were satisfied within a specified number of seconds to reflect the installation's response objective for total IMS activity (e.g., 95% within 15 seconds).

_IMSPTR and _IMSSTR define the percentage target and second threshold, respectively, (e.g., 95% within 15 seconds), for total IMS response time, used in daily, weekly, and monthly reports.

```
MACRO _IMSPTR 95  %
MACRO _IMSSTR 15  %
```

A full description of the user options is provided in section 3.1.4.1, Report Options.

Figure 3-1 quantifies the service provided by horizontally representing the hours of the day and vertically charting the percentage of total IMS interactions satisfied within the specified number of seconds, as identified in the title.

The management objective for total IMS service is shown by a dashed horizontal reference line printed across the chart. In Figure 3-1 the reference line is shown at the 95% level of the vertical axis. Any hour for which the charted bar falls below this reference line signals that the total IMS service objective was missed for that hour.

```
                                            CA MICS IMS DEVELOPMENT UNIT M0804AZ
1
                                       CA MICS IS Management Support System        14:40
Wednesday, September 10, yyyy
```

```
                                                  DAILY IMS MANAGEMENT OBJECTIVES

                                    IMS SERVICE OF   95  % OF ALL ACTIVITY WITHIN   15   SECONDS

--------------------------------------- System Identifier=IMSA IMS System Identification=IMSA
------------------------------------

       PERCENT Sum

       100 +                                            * * * * * * *   * * * * * * * * * *     *
           |                                              * * * * * * *   * * * * * * * * * * * *
*

|--------------------------------------------------*-*-*-*-*-*-*---*-*-*-*-*-*-*-*-*-*-*---*-----
----------------
           |                                              * * * * * * * * * * * * * * * * * * *
*
           |                                              * * * * * * * * * * * * * * * * * * *
*
        90 +                                              * * * * * * * * * * * * * * * * * * *
*
           |                                              * * * * * * * * * * * * * * * * * * *
*
           |                                              * * * * * * * * * * * * * * * * * * *
*
           |                                              * * * * * * * * * * * * * * * * * * *
*
           |                                              * * * * * * * * * * * * * * * * * * *
*
        80 +                                              * * * * * * * * * * * * * * * * * * *
* *
           |                                              * * * * * * * * * * * * * * * * * * *
* *
           |                                              * * * * * * * * * * * * * * * * * * *
* *
           |                                              * * * * * * * * * * * * * * * * * * *
* *
           |                                              * * * * * * * * * * * * * * * * * * *
* *
        70 +                                              * * * * * * * * * * * * * * * * * * *
* *
           |                                              * * * * * * * * * * * * * * * * * * *
* *
           |                                              * * * * * * * * * * * * * * * * * * *
* *
           |                                              * * * * * * * * * * * * * * * * * * *
* *
           |                                              * * * * * * * * * * * * * * * * * * *
* *
```

```
        60 +                                                * * * * * * * * * * * * * * * * * * *
* *
           |                                                * * * * * * * * * * * * * * * * * * *
* *
           |                                                * * * * * * * * * * * * * * * * * * *
* *
           |                                                * * * * * * * * * * * * * * * * * * *
* *
           |                                                * * * * * * * * * * * * * * * * * * *
* *
        50 +                                                * * * * * * * * * * * * * * * * * * *
* *
           |                                                * * * * * * * * * * * * * * * * * * *
* *
           |                                                * * * * * * * * * * * * * * * * * * *
* *
           |                                                * * * * * * * * * * * * * * * * * * *
* *
           |                                                * * * * * * * * * * * * * * * * * * *
* *
        40 +                                                * * * * * * * * * * * * * * * * * * *
* *
           |                                                * * * * * * * * * * * * * * * * * * *
* *
           |                                                * * * * * * * * * * * * * * * * * * *
* *
           |                                                * * * * * * * * * * * * * * * * * * *
* *
           |                                                * * * * * * * * * * * * * * * * * * *
* *
        30 +                                                * * * * * * * * * * * * * * * * * * *
* *
           |                                                * * * * * * * * * * * * * * * * * * *
* *
           |                                                * * * * * * * * * * * * * * * * * * *
* *
           |                                                * * * * * * * * * * * * * * * * * * *
* *

-----------------------------------------------------------------------------------------------
----------------
                                 1 1 1 1 1 1 1 1 1 1 2 2 2 2                     1 1 1 1 1 1 1 1 1
1 2 2 2 2  HOUR Midpoint
             0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8
9 0 1 2 3

             |------------------ 21JULyy ------------------|  |------------------ 22JULyy
------------------|  REPTDATE
```

Figure 3-1. Daily IMS Service Report - All Activity

3.1.1.3 Daily IMS Service Report - Medium Activity

This report quantifies the IMS service for medium activity provided on an hourly basis for the identified day and computing system.

The management objective to be tracked in evaluating the speed and consistency of medium IMS activity is a percentage of the number of medium IMS interactions that were satisfied within a specified number of seconds.

Figure 3-2 illustrates the Daily IMS Service Report for Medium Activity based on a management objective of satisfying 90% of all medium IMS interactions within 15 seconds.

The following user options apply to this report:

Medium Response Objective: The percentage of medium IMS responses that were satisfied within a specified number of seconds to reflect the installation's response objective for medium IMS activity (e.g., 90% within 15 seconds).

_IMSPMR and _IMSSMR define the percentage target and second threshold, respectively, (e.g., 90% within 15 seconds), for medium IMS response time, used in daily, weekly, and monthly reports.

```
MACRO _IMSPMR  90   %
MACRO _IMSSMR  15   %
```

A full description of the user options is provided in section 3.1.4.1, Report Options.

Figure 3-2 quantifies the service provided by horizontally representing the hours of the day and vertically charting the percentage of medium IMS interactions satisfied within the specified number of seconds, as identified in the title.

The management objective for medium IMS service is shown by a dashed horizontal reference line printed across the chart. In Figure 3-2 the reference line is shown at the 90% level of the vertical axis. Any hour for which the charted bar falls below this reference line signals that the medium IMS service objective was missed for that hour.

```
                                   CA MICS IMS DEVELOPMENT UNIT M0804AZ
1
                                        CA MICS IS Management Support System        14:40
Wednesday, September 10, yyyy
```

```
                                        DAILY IMS MANAGEMENT OBJECTIVES

                         IMS SERVICE FOR MEDIUM ACTIVITY OF   90  % WITHIN   15   SECONDS

-------------------------------------- System Identifier=IMSA IMS System Identification=IMSA
------------------------------------

       PERCENT Sum

       100 +                                               * * *     * * * * * * * * * * * * * *
* *
           |                                               * * *     * * * * * * * * * * * * * *
* *
           |                                               * * *     * * * * * * * * * * * * * *
* *
           |                                               * * *     * * * * * * * * * * * * * *
* *
           |                                               * * *     * * * * * * * * * * * * * *
* *
        90
+--------------------------------------------------*-*-*-----*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-----
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           |                                               * * *     * * * * * * * * * * * * * *
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           |                                               * * *     * * * * * * * * * * * * * *
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           |                                               * * *     * * * * * * * * * * * * * *
* *
           |                                               * * *     * * * * * * * * * * * * * *
* *
        80 +                                               * * *     * * * * * * * * * * * * * *
* *
           |                                               * * *     * * * * * * * * * * * * * *
* *
           |                                               * * *     * * * * * * * * * * * * * *
* *
           |                                               * * *     * * * * * * * * * * * * * *
* *
           |                                               * * *     * * * * * * * * * * * * * *
* *
        70 +                                               * * *     * * * * * * * * * * * * * *
* *
           |                                               * * *     * * * * * * * * * * * * * *
* *
           |                                               * * *     * * * * * * * * * * * * * *
* *
           |                                               * * *     * * * * * * * * * * * * * *
* *
```

```
           |                                               * * *    * * * * * * * * * * * * * *
* *
        60 +                                               * * *    * * * * * * * * * * * * * *
* *
           |                                               * * *    * * * * * * * * * * * * * *
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           |                                               * * *    * * * * * * * * * * * * * *
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           |                                               * * *    * * * * * * * * * * * * * *
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           |                                               * * *    * * * * * * * * * * * * * *
* *
        50 +                                               * * *    * * * * * * * * * * * * * *
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           |                                               * * *    * * * * * * * * * * * * * *
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           |                                               * * *    * * * * * * * * * * * * * *
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           |                                               * * *    * * * * * * * * * * * * * *
* *
           |                                               * * *    * * * * * * * * * * * * * *
* *
        40 +                                               * * *    * * * * * * * * * * * * * *
* *
           |                                               * * *    * * * * * * * * * * * * * *
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           |                                               * * *    * * * * * * * * * * * * * *
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           |                                               * * *    * * * * * * * * * * * * * *
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           |                                               * * *    * * * * * * * * * * * * * *
* *
        30 +                                               * * *    * * * * * * * * * * * * * *
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           |                                               * * *    * * * * * * * * * * * * * *
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           |                                               * * *    * * * * * * * * * * * * * *
* *
           |                                               * * *    * * * * * * * * * * * * * *
* *

-------------------------------------------------------------------------------------------------
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                                 1 1 1 1 1 1 1 1 1 1 2 2 2 2                   1 1 1 1 1 1 1 1 1
1 2 2 2 2  HOUR Midpoint
             0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8
9 0 1 2 3
```

```
             |------------------ 21JULyy ------------------|  |------------------ 22JULyy
------------------|  REPTDATE
```

Figure 3-2. Daily IMS Service Report - Medium Activity

3.1.1.4 Daily IMS Service Report - Short Activity

This report quantifies the IMS service for short activity provided on an hourly basis for the identified day and computing system.

The management objective to be tracked in evaluating the speed and consistency of short IMS activity is a percentage of the number of short IMS interactions that were satisfied within a specified number of seconds.

Figure 3-3 illustrates the Daily IMS Service Report for Short Activity based on a management objective of satisfying 95% of all short IMS interactions within 5 seconds.

The following user options apply to this report:

Short Response Objective: The percentage of short IMS responses that were satisfied within a specified number of seconds to reflect the installation's response objective for short IMS activity (e.g. 95% within 5 seconds).

```
_IMSPSR and _IMSSSR define the percentage target and
     second threshold, respectively, (e.g., 95% within 5
     seconds), for short IMS response time, used in
     daily, weekly, and monthly reports.

MACRO _IMSPSR 95 %
MACRO _IMSSSR  5 %
```

A full description of the user options is provided in section 3.1.4.1, Report Options.

Figure 3-3 quantifies the service provided by horizontally representing the hours of the day and vertically charting the percentage of short IMS interactions satisfied within the specified number of seconds, as identified in the title.

The management objective for short IMS service is shown by a dashed horizontal reference line printed across the chart. In Figure 3-3 the reference line is shown at the 95% level of the vertical axis. Any hour for which the charted bar falls below this reference line signals that the short IMS service objective was missed for that hour.

```
                                                           CA MICS IMS DEVELOPMENT UNIT M0804AZ
1
                                                   CA MICS IS Management Support System        14:40
Wednesday, September 10, yyyy
                                                     DAILY IMS MANAGEMENT OBJECTIVES
```

```
                                   IMS SERVICE FOR SHORT ACTIVITY OF   95  % WITHIN   5   SECONDS

-------------------------------------- System Identifier=IMSA IMS System Identification=IMSA
------------------------------------

       PERCENT Sum

       100 +                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*

|--------------------------------------------------*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*---*-----
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           |                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*
        90 +                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*
        80 +                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
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           |                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
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           |                                                 * * * * * * * * * * * * * * * * * * *
*
        70 +                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
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           |                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*
```

```
        60 +                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
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           |                                                 * * * * * * * * * * * * * * * * * * *
*
        50 +                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*
        40 +                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*
        30 +                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*
           |                                                 * * * * * * * * * * * * * * * * * * *
*

---------------------------------------------------------------------------------------------------
----------------
                                 1 1 1 1 1 1 1 1 1 1 2 2 2 2                     1 1 1 1 1 1 1 1 1
1 2 2 2 2  HOUR Midpoint
             0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8
9 0 1 2 3

             |------------------ 21JULyy ------------------|  |------------------ 22JULyy
------------------|  REPTDATE
```

Figure 3-3. Daily IMS Service Report - Short Activity

3.1.1.5 Daily IMS Outage Report - Availability

This report quantifies the IMS outage incurred on an hourly basis for the identified day and computing system.

The management objective to be tracked in evaluating the availability of the IMS system is the number of minutes IMS incurred outage within an hour of the day.

Figure 3-4 illustrates the Daily IMS Outage Report based on a management objective of no outage time (0 minutes) per hour.

The following user options apply to this report:

Hourly IMS Outage Limits: The target number of uptime minutes per hour, generally set to 60, and the downtime objective per hour, which is generally set to 0 minutes.

_IMSUT and _IMSDT define the hourly uptime target and hourly downtime reference line, respectively, for daily and weekly reporting.

```
MACRO _IMSUT 60 %
MACRO _IMSDT  0 %
```

A full description of the user options is provided in section 3.1.4.1, Report Options.

Figure 3-4 quantifies the outage incurred by horizontally representing the hours of the day and vertically charting the number of outage minutes incurred.

The management objective is to not incur any outage time; any time a charted bar appears the IMS Outage objective was missed for that hour. In Figure 3-4 the reference line is shown at the 0 minutes level on the vertical axis.

```
                                                         CA MICS IMS DEVELOPMENT UNIT M0804AZ
1
                                                 CA MICS IS Management Support System        14:40
Wednesday, September 10, yyyy
                                                   DAILY IMS MANAGEMENT OBJECTIVES

                                                  IMS DOWN TIME OF ZERO MINUTES/HOUR

-------------------------------------------- SYSTEM=IMSA IMS System Identification=IMSA
-----------------------------------------

          OUTAGE Sum
```

```
        60 +
           |
           |
           |
           |
        55 +
           |
           |
           |
           |                                                                                **
        50 +                                                                                **
           |                                                                                **
           |                                                                                **
           |                                                                                **
           |                                                                                **
        45 +                                                                                **
           |                                                                                **
           |                                                                                **
           |                                                                                **
           |                                                                                **
        40 +                                                                                **
           |                                                                                **
           |                                                                                **
           |                                                                                **
           |                                                                                **
        35 +                                                                                **
           |                                                                                **
           |                                                                                **
           |                                                                                **
           |                                                                                **
        30 +                                                                                **
           |                                                                                **
           |                                                                                **
           |                                                                                **
           |                                                                                **
        25 +                                                                                **
           |                                                                                **
           |                                                                                **
           |                                                                                **
           |                                                                                **

--------------------------------------------------------------------------------------------------
-----------
              0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20
21  22  23   HOUR

               |------------------------------------------ 22JULyy
-----------------------------------------|   REPTDATE
```

Figure 3-4. Daily IMS Outage Report - Availability

3.1.1.6 Daily IMS Throughput Report - Transactions

This report quantifies the total IMS throughput in terms of transactions processed on an hourly basis for the identified day and computing system.

The management objective to be tracked in evaluating the IMS throughput rate is the number of transactions processed per hour.

Figure 3-5 illustrates the Daily IMS Throughput Report based on a management objective of processing less than 6,000 transactions in any given hour.

The following user options apply to this report:

Daily IMS Transaction Rate: The target and maximum number of transactions processed per hour by IMS. The target number sets a reference line on the graph and the maximum number sets the maximum value on the graph's vertical axis.

```
_IMSCAX and _IMSCREF define the vertical axis maximum
     scaling and reference line, respectively, for hourly
     transaction rate execution in the daily and weekly
     reports.

_IMSCAX   5000  %
_IMSCREF  4000  %
```

A full description of the user options is provided in section 3.1.4.1, Report Options.

Figure 3-5 quantifies the transactions processed by horizontally representing the hours of the day and vertically charting the transactions processed.

The management objective for IMS throughput is shown by a dashed horizontal reference line printed across the chart. In Figure 3-5 the reference line is shown at the 4,000 transactions processed level of the vertical axis. Any hour for which the charted bar exceeds this reference line signals that the objective to contain throughput was missed for that hour.

The vertical axis is set with a maximum value of 5,000 to ensure uniform scaling from report to report. If the value is exceeded, the highest value encountered is used to set this vertical axis maximum value.

```
                                            CA MICS IMS DEVELOPMENT UNIT M0804AZ
1
                                    CA MICS IS Management Support System        14:40
Wednesday, September 10, yyyy
                                      DAILY IMS MANAGEMENT OBJECTIVES

                                 IMS THROUGHPUT MAXIMUM OF   4000   COMMANDS/HOUR

-------------------------------------- System Identifier=IMSA IMS System Identification=IMSA
------------------------------------

         Total Transaction Executions Sum

         5000 +                                                                        * *
              |                                                                        * *
              |                                                                        * *
              |                                                                        * *
              |                                                                        * *
         4500 +                                                                        * *
              |                                                                        * *
              |                                                                        * *
              |                                                                        * *
              |                                                                        * *
         4000
+---------------------------------------------------------------------------*-*-------------------
-----------
              |                                                                        * *
              |                                                                        * *
              |                                                                        * *
              |                                                                        * *
         3500 +                                                                        * *
              |                                                                        * *
              |                                                                        * *
              |                                                                        * *
              |                                                                      * * *
         3000 +                                                                      * * *
              |                                                                      * * *
              |                                                                      * * *
              |                                                                      * * *
              |                                                                      * * *
         2500 +                                                                      * * *
              |                                                                      * * *
              |                                                                      * * *
              |                                                                      * * *
              |                                                                      * * *
         2000 +                                                                      * * *
              |                                                                      * * *
              |                                                                      * * *
```

```
              |                                                                        * * *
              |                                                                        * * *
         1500 +                                                                        * * *
              |                                                                        * * *
              |                                                                        * * *
              |                                                                        * * *

-------------------------------------------------------------------------------------------------
-----------
                                    1 1 1 1 1 1 1 1 1 1 2 2 2 2                     1 1 1 1 1 1 1
1 1 1 2 2 2 2  HOUR
                0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
7 8 9 0 1 2 3

                |------------------ 21JULyy ------------------|  |------------------ 22JULyy
------------------|  REPTDATE
```

Figure 3-5. Daily IMS Throughput Report - Transactions

3.1.2 Weekly IMS Management Objective Reports

The weekly objective reports help management determine if primary IMS processing objectives are being met. Five one-page charts illustrate the weeks activity by prime-time hour within day of the week in reference to established hourly objectives for short, medium, and total response, transaction load, and availability.

A hour of the day selection facility is provided, so that the weekly reports may reflect the entire 24 hours of each day or a user specified range.

Hourly Selection Range for Weekly Reports: The start and end hours of the day to be included in the Weekly IMS Reports. It is suggested that the hours be set to include the prime time period of the day (08 18).

_IMSWLHR and _IMSWHHR define the low and high hours, respectively, of the days for selection of the IMS activity to be reported in the weekly reports.

```
MACRO _IMSWLHR 08 %
MACRO _IMSWHHR 18 %
```

A full description of the user options is provided in section 3.1.4.1, Report Options.

The following sections describe and explain the five weekly IMS Management Objective Reports:

1 - Report Format Descriptions
2 - Weekly IMS Service Report - All Activity
3 - Weekly IMS Service Report - Medium Activity
4 - Weekly IMS Service Report - Short Activity
5 - Weekly IMS Outage Report - Availability
6 - Weekly IMS Throughput Report - Transactions

3.1.2.1 Report Format Descriptions

The Weekly Management Objective Reports are produced as a standard process in the CA MICS Weekly Job Stream. Each report is produced from the IMS System Activity Files for the last seven days by looking at DAYS.IMSISY01-DAYS.IMSISY10 maintained in the CA database's DAYS time-period. The SAS CHART procedure is used to produce the desired bar-chart reports.

The heading lines contain the installation name (e.g., XYZ Manufacturing, Inc.), the frequency identification (e.g., WEEKLY IMS MANAGEMENT OBJECTIVES), the objective being reported (e.g., IMS SERVICE OF 85% OF ALL ACTIVITY WITHIN 15 SECONDS), and the computing system (e.g. SYSID code) on which the IMS processing was measured for the week.

The format of the bar-chart illustrates the hour of the day within a day of week grouping along the horizontal axis and the measurement being reported (e.g., # of IMS transactions), along the vertical axis. The day being reported is identified below the hours of the day, just under the horizontal axis.

The vertical axis charts the measure being reported and defines the management objective for this category. The vertical axis is established through the SAS CHART AXIS option that identifies the highest value to be represented on the vertical axis. The management objective is then illustrated through the SAS CHART REF option and a dashed line appears across the page to illustrate the management objective.

Consider the charting of the hourly objective for short service (response time, Figure 3-8). The title describes the management objective as 95% within 5 seconds for short activity. The measure to be charted is the percentage of short events satisfied within 5 seconds for each hour of the day. The vertical axis displays a maximum value of 100 (for 100%) and the vertical reference line is printed at the 95% level. This reference line then clearly depicts how the objective was satisfied or missed for each hour of the day.

The member WKIMSMBO in the sharedprefix.MICS.SOURCE library contains the SAS statements for producing the five chart reports. The member #IMSMOBJ contains the SAS MACROs used by WKIMSMBO. #IMSMOBJ contains the specifications for defining the objectives to be displayed and may be modified to reflect your installation's unique management objectives. For help in defining your installation objectives reference Section 3.1.4.1, Report Options.

The remainder of this section explains and illustrates each of the standard Weekly IMS Management Objective Reports.

3.1.2.2 Weekly IMS Service Report - All Activity

This report quantifies the total IMS service (all activity including short, medium, and long events but not excessive) provided on a prime-time hourly basis for the last seven days for each computing system.

The management objective to be tracked in evaluating the speed and consistency of all IMS activity is a percentage of the number of IMS interactions that were satisfied within a specified number of seconds.

Figure 3-6 illustrates the Weekly IMS Service Report for All Activity based on a management objective of satisfying 85% of all IMS interactions within 15 seconds.

The following user options apply to this report:

Total Response Objective: The percentage of all IMS responses that were satisfied within a specified number of seconds to reflect the installation's response objective for total IMS activity (e.g., 95% within 15 seconds).

_IMSPTR and _IMSSTR define the percentage target and second threshold, respectively (e.g., 95% within 15 seconds), for total IMS response time, used in daily, weekly, and monthly reports.

```
MACRO _IMSPTR 95  %
MACRO _IMSSTR 15  %
```

A full description of the user options is provided in section 3.1.4.1, Report Options.

Figure 3-6 quantifies the service provided by horizontally representing the hours of the seven days and vertically charting the percentage of total IMS interactions satisfied within the specified number of seconds, as identified in the title.

The management objective for total IMS service is shown by a dashed horizontal reference line printed across the chart. In Figure 3-6 the reference line is shown at the 95% level of the vertical axis. Any hour for which the charted bar falls below this reference line signals that the total IMS service objective was missed for that hour in the week.

NOTE: When the system was down and/or no measurement data was available for an hour within a date, no bar appears.

```
                                                          CA MICS IMS DEVELOPMENT UNIT M0804AZ
1
                                                  CA MICS IS Management Support System        17:47
Wednesday, September 10, yyyy
                                                    WEEKLY IMS MANAGEMENT OBJECTIVES

                                    IMS SERVICE OF   95  % OF ALL ACTIVITY WITHIN   15   SECONDS

-------------------------------------------- SYSTEM=IMSA IMS System Identification=IMSA
-----------------------------------------

       PERCENT Sum

       100 +                                              * * * * * * *   * * * * * * * * * *     *
           |                                                * * * * * * *   * * * * * * * * * * *
*

|--------------------------------------------------*-*-*-*-*-*-*---*-*-*-*-*-*-*-*-*-*-*---*-----
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           |                                                * * * * * * * * * * * * * * * * * * *
*
        90 +                                                * * * * * * * * * * * * * * * * * * *
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           |                                                * * * * * * * * * * * * * * * * * * *
*
           |                                                * * * * * * * * * * * * * * * * * * *
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           |                                                * * * * * * * * * * * * * * * * * * *
*
           |                                                * * * * * * * * * * * * * * * * * * *
*
        80 +                                                * * * * * * * * * * * * * * * * * * *
* *
           |                                                * * * * * * * * * * * * * * * * * * *
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           |                                                * * * * * * * * * * * * * * * * * * *
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           |                                                * * * * * * * * * * * * * * * * * * *
* *
           |                                                * * * * * * * * * * * * * * * * * * *
* *
        70 +                                                * * * * * * * * * * * * * * * * * * *
* *
           |                                                * * * * * * * * * * * * * * * * * * *
* *
```

```
          |                                              * * * * * * * * * * * * * * * * * * * *
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          |                                              * * * * * * * * * * * * * * * * * * * *
* *
          |                                              * * * * * * * * * * * * * * * * * * * *
* *
       60 +                                              * * * * * * * * * * * * * * * * * * * *
* *
          |                                              * * * * * * * * * * * * * * * * * * * *
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          |                                              * * * * * * * * * * * * * * * * * * * *
* *
          |                                              * * * * * * * * * * * * * * * * * * * *
* *
          |                                              * * * * * * * * * * * * * * * * * * * *
* *
       50 +                                              * * * * * * * * * * * * * * * * * * * *
* *
          |                                              * * * * * * * * * * * * * * * * * * * *
* *
          |                                              * * * * * * * * * * * * * * * * * * * *
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          |                                              * * * * * * * * * * * * * * * * * * * *
* *
          |                                              * * * * * * * * * * * * * * * * * * * *
* *
       40 +                                              * * * * * * * * * * * * * * * * * * * *
* *
          |                                              * * * * * * * * * * * * * * * * * * * *
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          |                                              * * * * * * * * * * * * * * * * * * * *
* *
          |                                              * * * * * * * * * * * * * * * * * * * *
* *
          |                                              * * * * * * * * * * * * * * * * * * * *
* *
       30 +                                              * * * * * * * * * * * * * * * * * * * *
* *
          |                                              * * * * * * * * * * * * * * * * * * * *
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          |                                              * * * * * * * * * * * * * * * * * * * *
* *
          |                                              * * * * * * * * * * * * * * * * * * * *
* *

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----------------
                                 1 1 1 1 1 1 1 1 1 1 2 2 2 2                     1 1 1 1 1 1 1 1 1
1 2 2 2 2  HOUR Midpoint
```

```
            0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8
9 0 1 2 3

            |----------------- 21JULyy -----------------|  |----------------- 22JULyy
-----------------|  WEEKDAY
```

Figure 3-6. Weekly IMS Service Report - All Activity

3.1.2.3 Weekly IMS Service Report – Medium Activity

This report quantifies the IMS service for medium activity provided on a prime-time hourly basis for the last seven days for each computing system.

The management objective to be tracked in evaluating the speed and consistency of medium IMS activity is a percentage of the number of medium IMS interactions that were satisfied within a specified number of seconds.

Figure 3-7 illustrates the Weekly IMS Service Report for Medium Activity based on a management objective of satisfying 90% of all medium IMS interactions within 15 seconds.

The following user options apply to this report:

Medium Response Objective: The percentage of medium IMS responses that were satisfied within a specified number of seconds to reflect the installation's response objective for medium IMS activity (e.g., 90% within 15 seconds).

```
    _IMSPMR and _IMSSMR define the percentage target and
         second threshold, respectively, (e.g., 90% within 15
         seconds), for medium IMS response time, used in
         daily, weekly, and monthly reports.

    MACRO _IMSPMR  90   %
    MACRO _IMSSMR  15   %
```

A full description of the user options is provided in section 3.1.4.1, Report Options.

Figure 3-7 quantifies the service provided by horizontally representing the hours of the seven days and vertically charting the percentage of medium IMS interactions satisfied within the specified number of seconds, as identified in the title.

The management objective for medium IMS service is shown by a dashed horizontal reference line printed across the chart. In Figure 3-7 the reference line is shown at the 90% level of the vertical axis. Any hour for which the charted bar falls below this reference line signals that the medium IMS service objective was missed.

CA MICS IMS DEVELOPMENT UNIT M0804AZ

1

```
                                                CA MICS IS Management Support System        17:47
Wednesday, September 10, yyyy
                                                  WEEKLY IMS MANAGEMENT OBJECTIVES

                                 IMS SERVICE FOR MEDIUM ACTIVITY OF   90  % WITHIN   15    SECONDS

-------------------------------------------- SYSTEM=IMSA IMS System Identification=IMSA
-----------------------------------------

          PERCENT Sum

          100 +                                                 * * *     * * * * * * * * * * * *
* * * *
              |                                                 * * *     * * * * * * * * * * * *
* * * *
              |                                                 * * *     * * * * * * * * * * * *
* * * *
              |                                                 * * *     * * * * * * * * * * * *
* * * *
              |                                                 * * *     * * * * * * * * * * * *
* * * *
           90
+--------------------------------------------------*-*-*-----*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-----
----------
              |                                                 * * *     * * * * * * * * * * * *
* * * *
              |                                                 * * *     * * * * * * * * * * * *
* * * *
              |                                                 * * *     * * * * * * * * * * * *
* * * *
              |                                                 * * *     * * * * * * * * * * * *
* * * *
           80 +                                                 * * *     * * * * * * * * * * * *
* * * *
              |                                                 * * *     * * * * * * * * * * * *
* * * *
              |                                                 * * *     * * * * * * * * * * * *
* * * *
              |                                                 * * *     * * * * * * * * * * * *
* * * *
              |                                                 * * *     * * * * * * * * * * * *
* * * *
           70 +                                                 * * *     * * * * * * * * * * * *
* * * *
              |                                                 * * *     * * * * * * * * * * * *
* * * *
              |                                                 * * *     * * * * * * * * * * * *
* * * *
```

```
              |                                                  * * *     * * * * * * * * * * * *
* * * *
              |                                                  * * *     * * * * * * * * * * * *
* * * *
           60 +                                                  * * *     * * * * * * * * * * * *
* * * *
              |                                                  * * *     * * * * * * * * * * * *
* * * *
              |                                                  * * *     * * * * * * * * * * * *
* * * *
              |                                                  * * *     * * * * * * * * * * * *
* * * *
              |                                                  * * *     * * * * * * * * * * * *
* * * *
           50 +                                                  * * *     * * * * * * * * * * * *
* * * *
              |                                                  * * *     * * * * * * * * * * * *
* * * *
              |                                                  * * *     * * * * * * * * * * * *
* * * *
              |                                                  * * *     * * * * * * * * * * * *
* * * *
              |                                                  * * *     * * * * * * * * * * * *
* * * *
           40 +                                                  * * *     * * * * * * * * * * * *
* * * *
              |                                                  * * *     * * * * * * * * * * * *
* * * *
              |                                                  * * *     * * * * * * * * * * * *
* * * *
              |                                                  * * *     * * * * * * * * * * * *
* * * *
              |                                                  * * *     * * * * * * * * * * * *
* * * *
           30 +                                                  * * *     * * * * * * * * * * * *
* * * *
              |                                                  * * *     * * * * * * * * * * * *
* * * *
              |                                                  * * *     * * * * * * * * * * * *
* * * *
              |                                                  * * *     * * * * * * * * * * * *
* * * *

--------------------------------------------------------------------------------------------------
----------
                                    1 1 1 1 1 1 1 1 1 1 2 2 2 2                     1 1 1 1 1 1 1
1 1 1 2 2 2 2  HOUR
                0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
7 8 9 0 1 2 3
```

```
                 |------------------ 21JULyy ------------------|  |------------------ 22JULyy
------------------|  WEEKDAY
```

Figure 3-7. Weekly IMS Service Report - Medium Activity

3.1.2.4 Weekly IMS Service Report - Short Activity

This report quantifies the IMS service for short activity provided on a prime-time hourly basis for the last seven days for each computing system.

The management objective to be tracked in evaluating the speed and consistency of short IMS activity is a percentage of the number of short IMS interactions that were satisfied within a specified number of seconds.

Figure 3-8 illustrates the Weekly IMS Service Report for Short Activity based on a management objective of satisfying 95% of all short IMS interactions within 5 seconds.

The following user options apply to this report:

Short Response Objective: The percentage of short IMS responses that were satisfied within a specified number of seconds to reflect the installation's response objective for short IMS activity (e.g., 95% within 5 seconds).

```
_IMSPSR and _IMSSSR define the percentage target, and
     second threshold, respectively, (e.g., 95% within 5
     seconds), for short IMS response time, used in
     daily, weekly, and monthly reports.

MACRO _IMSPSR 95 %
MACRO _IMSSSR  5 %
```

A full description of the user options is provided in section 3.1.4.1, Report Options.

Figure 3-8 quantifies the service provided by horizontally representing the hours of the seven days and vertically charting the percentage of short IMS interactions satisfied within the specified number of seconds, as identified in the title.

The management objective for short IMS service is shown by a dashed horizontal reference line printed across the chart. In Figure 3-8 the reference line is shown at the 95% level of the vertical axis. Any hour for which the charted bar falls below this reference line signals that the short IMS service objective was missed.

```
                                          CA MICS IMS DEVELOPMENT UNIT M0804AZ
1
                                CA MICS IS Management Support System        17:47
Wednesday, September 10, yyyy
```

```
                                              WEEKLY IMS MANAGEMENT OBJECTIVES

                                IMS SERVICE FOR SHORT ACTIVITY OF   95  % WITHIN   5    SECONDS

-------------------------------------------- SYSTEM=IMSA IMS System Identification=IMSA
-----------------------------------------

          PERCENT Sum

          100 +                                                * * * * * * * * * * * * * * * * *
* *   *
              |                                                * * * * * * * * * * * * * * * * *
* *   *

|--------------------------------------------------*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*---*-----
----------
              |                                                * * * * * * * * * * * * * * * * *
* *   *
              |                                                * * * * * * * * * * * * * * * * *
* *   *
           90 +                                                * * * * * * * * * * * * * * * * *
* *   *
              |                                                * * * * * * * * * * * * * * * * *
* *   *
              |                                                * * * * * * * * * * * * * * * * *
* *   *
              |                                                * * * * * * * * * * * * * * * * *
* *   *
              |                                                * * * * * * * * * * * * * * * * *
* *   *
           80 +                                                * * * * * * * * * * * * * * * * *
* *   *
              |                                                * * * * * * * * * * * * * * * * *
* *   *
              |                                                * * * * * * * * * * * * * * * * *
* *   *
              |                                                * * * * * * * * * * * * * * * * *
* *   *
              |                                                * * * * * * * * * * * * * * * * *
* *   *
           70 +                                                * * * * * * * * * * * * * * * * *
* *   *
              |                                                * * * * * * * * * * * * * * * * *
* *   *
              |                                                * * * * * * * * * * * * * * * * *
* *   *
              |                                                * * * * * * * * * * * * * * * * *
* *   *
```

```
              |                                                  * * * * * * * * * * * * * * * * *
* *   *
           60 +                                                  * * * * * * * * * * * * * * * * *
* *   *
              |                                                  * * * * * * * * * * * * * * * * *
* *   *
              |                                                  * * * * * * * * * * * * * * * * *
* *   *
              |                                                  * * * * * * * * * * * * * * * * *
* *   *
              |                                                  * * * * * * * * * * * * * * * * *
* *   *
           50 +                                                  * * * * * * * * * * * * * * * * *
* *   *
              |                                                  * * * * * * * * * * * * * * * * *
* *   *
              |                                                  * * * * * * * * * * * * * * * * *
* *   *
              |                                                  * * * * * * * * * * * * * * * * *
* *   *
              |                                                  * * * * * * * * * * * * * * * * *
* *   *
           40 +                                                  * * * * * * * * * * * * * * * * *
* *   *
              |                                                  * * * * * * * * * * * * * * * * *
* *   *
              |                                                  * * * * * * * * * * * * * * * * *
* *   *
              |                                                  * * * * * * * * * * * * * * * * *
* *   *
              |                                                  * * * * * * * * * * * * * * * * *
* *   *
           30 +                                                  * * * * * * * * * * * * * * * * *
* *   *
              |                                                  * * * * * * * * * * * * * * * * *
* *   *
              |                                                  * * * * * * * * * * * * * * * * *
* *   *
              |                                                  * * * * * * * * * * * * * * * * *
* *   *

-----------------------------------------------------------------------------------------------
----------
                                    1 1 1 1 1 1 1 1 1 1 2 2 2 2                     1 1 1 1 1 1 1
1 1 1 2 2 2 2  HOUR
                0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
7 8 9 0 1 2 3
```

```
                |------------------ 21JULyy ------------------|  |------------------ 22JULyy
------------------|  WEEKDAY
```

Figure 3-8. Weekly IMS Service Report - Short Activity

3.1.2.5 Weekly IMS Outage Report - Availability

This report quantifies the IMS outage incurred on an hourly basis for the identified day and computing system.

The management objective to be tracked in evaluating the availability of the IMS system, is the number of minutes IMS incurred outage within an hour of the day.

Figure 3-9 illustrates the Weekly IMS Outage Report based on a management objective of no outage time (0 minutes) per hour.

The following user options apply to this report:

Hourly IMS Outage Limits: The target number of uptime minutes per hour, generally set to 60, and the downtime objective per hour, which is generally set to 0 minutes.

```
_IMSUT and _IMSDT define the hourly uptime target and
     hourly downtime reference line, respectively, for
     daily and weekly reporting.

MACRO _IMSUT 60 %
MACRO _IMSDT  0 %
```

A full description of the user options is provided in section 3.1.4.1, Report Options.

Figure 3-9 quantifies the outage incurred by horizontally representing the hours of the seven days and vertically charting the number of outage minutes incurred.

The management objective is to not incur any outage time; any time a charted bar appears the IMS Outage objective was missed for that hour in the week. In Figure 3-9 the reference line is shown at 0 on the vertical axis.

```
                                                         CA MICS IMS DEVELOPMENT UNIT M0804AZ
1
                                                 CA MICS IS Management Support System        17:47
Wednesday, September 10, yyyy
                                                   WEEKLY IMS MANAGEMENT OBJECTIVES

                                                 IMS DOWN TIME OF    0   MINUTES/HOUR

-------------------------------------------- SYSTEM=IMSA IMS System Identification=IMSA
-----------------------------------------

           OUTAGE Sum
```

```
        60 +
           |
           |
           |
           |
        55 +
           |
           |
           |
           |                                                                                 *
        50 +                                                                                 *
           |                                                                                 *
           |                                                                                 *
           |                                                                                 *
           |                                                                                 *
        45 +                                                                                 *
           |                                                                                 *
           |                                                                                 *
           |                                                                                 *
           |                                                                                 *
        40 +                                                                                 *
           |                                                                                 *
           |                                                                                 *
           |                                                                                 *
           |                                                                                 *
        35 +                                                                                 *
           |                                                                                 *
           |                                                                                 *
           |                                                                                 *
           |                                                                                 *
        30 +                                                                                 *
           |                                                                                 *
           |                                                                                 *
           |                                                                                 *
           |                                                                                 *
        25 +                                                                                 *
           |                                                                                 *
           |                                                                                 *
           |                                                                                 *
-------------------------------------------------------------------------------------------------
----------
                                    1 1 1 1 1 1 1 1 1 1 2 2 2 2                     1 1 1 1 1 1 1
1 1 1 2 2 2 2  HOUR
                0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
7 8 9 0 1 2 3
```

```
                |------------------ 21JULyy ------------------|  |------------------ 22JULyy
------------------|  WEEKDAY
```

Figure 3-9. Weekly IMS Outage Report - Availability

3.1.2.6 Weekly IMS Throughput Report - Transactions

This report quantifies the total IMS throughput in terms of transactions processed on a prime-time hourly basis for the last seven days for each computing system.

The management objective to be tracked in evaluating the IMS throughput rate is the number of transactions processed per hour.

Figure 3-10 illustrates the Weekly IMS Throughput Report based on a management objective of processing less than 6,000 transactions in any given hour.

The following user options apply to this report:

Daily IMS Transaction Rate: The target and maximum number of transactions processed per hour by IMS. The target number sets a reference line on the graph and the maximum number sets the maximum value on the graph's vertical axis.

_IMSCAX and _IMSCREF define the vertical axis maximum scaling and reference line, respectively, for hourly transaction rate execution in the daily and weekly reports.

```
_IMSCAX   5000  %
_IMSCREF  4000  %
```

A full description of the user options is provided in section 3.1.4.1, Report Options.

Figure 3-10 quantifies the transactions processed by horizontally representing the hours of the seven days and vertically charting the transactions processed.

The management objective for IMS throughput is shown by a dashed horizontal reference line printed across the chart. In Figure 3-10 the reference line is shown at the 4,000 transactions processed level of the vertical axis. Any hour for which the charted bar exceeds this reference line signals that the objective to contain throughput was missed for that hour.

The maximum capacity for transaction processing is indicated by the top of the vertical axis which is set at a value of 5,000 transactions per hour.

```
                                                  CA MICS IMS DEVELOPMENT UNIT M0804AZ
1
                                          CA MICS IS Management Support System         17:47
Wednesday, September 10, yyyy
                                            WEEKLY IMS MANAGEMENT OBJECTIVES

                                      IMS THROUGHPUT MAXIMUM OF   4000   COMMANDS/HOUR

--------------------------------------------- SYSTEM=IMSA IMS System Identification=IMSA
-----------------------------------------

          COMMANDS Sum

          5000 +                                                                       * *
               |                                                                       * *
               |                                                                       * *
               |                                                                       * *
               |                                                                       * *
          4500 +                                                                       * *
               |                                                                       * *
               |                                                                       * *
               |                                                                       * *
               |                                                                       * *
          4000
+----------------------------------------------------------------------------*-*------------------
----------
               |                                                                       * *
               |                                                                       * *
               |                                                                       * *
               |                                                                       * *
          3500 +                                                                       * *
               |                                                                       * *
               |                                                                       * *
               |                                                                       * *
               |                                                                     * * *
          3000 +                                                                     * * *
               |                                                                     * * *
               |                                                                     * * *
               |                                                                     * * *
               |                                                                     * * *
          2500 +                                                                     * * *
               |                                                                     * * *
               |                                                                     * * *
               |                                                                     * * *
               |                                                                     * * *
          2000 +                                                                     * * *
               |                                                                     * * *
               |                                                                     * * *
               |                                                                     * * *
```

```
              |                                                                         * * *
         1500 +                                                                         * * *
              |                                                                         * * *
              |                                                                         * * *
              |                                                                         * * *

----------------------------------------------------------------------------------------------------
----------
                                      1 1 1 1 1 1 1 1 1 1 2 2 2 2                     1 1 1 1 1 1 1
1 1 1 2 2 2 2  HOUR
                 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6
7 8 9 0 1 2 3

                 |------------------ 21JULyy ------------------|  |------------------ 22JULyy
------------------|  WEEKDAY
```

Figure 3-10. Weekly IMS Throughput Report - Transactions

3.1.3 Monthly IMS Management Objective Reports

The monthly objective reports help management determine if primary IMS processing objectives are being met. Five charts illustrate the month's activity by average and maximum prime-time hour activity, for the twelve months of the current year. The charts report against established hourly objectives for short, medium, and total response, transaction load, and availability.

A user option is provided for zone selection.

Zone Selection for Monthly Reporting: The zone or range of zones to be included in the Monthly IMS Reports. Normally all zones should be reported and therefore the range should be 1 to 9. The IMS Reports can also be limited to only the range of zones required.

```
_IMSLOZN and _IMSHIZN define the low and high zones,
     respectively, in the months input for selection of
     the IMS activity to be reported in the monthly
     reports.

MACRO _IMSLOZN   1  %
MACRO _IMSHIZN   9  %
```

A full description of the user options is provided in section 3.1.4.1, Report Options.

The following sections describe and explain the five monthly IMS Management Objective Reports:

1 - Report Format Descriptions
2 - Monthly IMS Service Report - All Activity
3 - Monthly IMS Service Report - Medium Activity
4 - Monthly IMS Service Report - Short Activity
5 - Monthly IMS Available Hours Report
6 - Monthly IMS Throughput Report - Transactions

3.1.3.1 Report Format Descriptions

The Monthly Management Objective Reports are produced as a standard process in the CA MICS Monthly Job Stream. Each report is produced from the IMS System Activity Files for the previous twelve months (MONTHS.IMSISY01-12) in the database's MONTHS timespan. The SAS CHART procedure is used to produce the desired bar-chart reports.

The heading lines contain the installation name (e.g., XYZ Manufacturing, Inc.), the frequency identification (e.g., MONTHLY IMS MANAGEMENT OBJECTIVES), the objective being reported (e.g., IMS SERVICE OF 95% OF ALL ACTIVITY WITHIN 15 SECONDS), and the computing system (e.g., SYSID code) on which the IMS processing was measured for the month.

The charts illustrate time-zones within month along the horizontal axis and the measurement being reported (e.g., availability), along the vertical axis.

The vertical axis charts the measure being reported and defines the management objective for this category. The vertical axis is established through the SAS CHART AXIS option that identifies the highest value to be represented on the vertical axis. The management objective is then illustrated through the SAS CHART REF option and a dashed line appears across the page to illustrate the management objective.

Consider the charting of the objective for short service (response time, Figure 3-13). The title describes the management objective as 95% within 5 seconds for short activity. The measure to be charted is the percentage of short events satisfied within 5 seconds for each zone of each month. The vertical axis displays a maximum value of 100 (for 100%) and the vertical reference line is printed at the 95% level. This reference line clearly depicts how the objective was satisfied or missed for each zone of each month.

The member MNIMSMBO in the sharedprefix.MICS.SOURCE library contains the SAS statements for producing the five chart reports.

The user-defined options are provided through a SAS MACRO that is the member #IMSMOBJ stored in the same source library. The following are the definitions applicable to IMS monthly management objective reporting. The labels within parenthesis are the MACRO names used to define the options and are fully described in section 3.1.4.1, Report Options.

- Total IMS Service Definition (_IMSPTR and _IMSSTR)
- Short IMS Service Definition (_IMSPSR and _IMSSSR)
- Medium IMS Service Definition (_IMSPMR and _IMSSMR)
- Monthly Zone Availability Definition (_MUPHRS and _RUPHRS)
- Monthly Zone Maximum and Target Transactions (_IMSMCAX and _IMSMCRF)

The remainder of this section explains and illustrates each of the standard Monthly IMS Management Objective Reports.

3.1.3.2 Monthly IMS Service Report - All Activity

This report quantifies the total IMS service (all activity including short, medium, and long events but not excessive) provided on a zone basis by month for each computing system.

The management objective to be tracked in evaluating the speed and consistency of all IMS activity is a percentage of the number of IMS interactions that were satisfied within a specified number of seconds.

Figure 3-11 illustrates the Monthly IMS Service Report for All Activity based on a management objective of satisfying 85% of all IMS interactions within 15 seconds.

The following user options apply to this report:

Total Response Objective: The percentage of all IMS responses that were satisfied within a specified number of seconds to reflect the installation's response objective for total IMS activity (e.g., 95% within 15 seconds).

_IMSPTR and _IMSSTR define the percentage target, and second threshold, respectively, (e.g., 95% within 15 seconds), for total IMS response time, used in daily, weekly, and monthly reports.

```
MACRO _IMSPTR 95 %
MACRO _IMSSTR 15 %
```

A full description of the user options is provided in section 3.1.4.1, Report Options.

Figure 3-11 quantifies the service provided by horizontally representing zone within month and vertically charting the percentage of total IMS interactions satisfied within the specified number of seconds, as identified in the title.

The management objective for total IMS service is shown by a dashed horizontal reference line printed across the chart. In Figure 3-11 the reference line is shown at the 95% level of the vertical axis. Any zone for which the charted bar falls below this reference line signals that the total IMS service objective was missed for that zone in the month.

```
                                             CA MICS IMS DEVELOPMENT UNIT M0804AZ
1
                                    CA MICS IS Management Support System         14:41
Wednesday, September 10, yyyy
                                     MONTHLY IMS MANAGEMENT OBJECTIVES
```

```
IMS SERVICE OF   95  % OF ALL ACTIVITY WITHIN   15   SECONDS

-------------------------------------------- SYSTEM=IMSA IMS System Identification=IMSA
-----------------------------------------

PERCENT Sum

100 +       *****
    |       *****       *****
    |-------*****-------*****---------------
    |       *****       *****
    |       *****       *****
 90 +       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
 80 +       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
 70 +       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
 60 +       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
 50 +       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
 40 +       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
 30 +       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
    ----------------------------------------
```

```
                                                         1           2          ZONE

                                                       |---- yy/mm ----|        YRMONTH
```

Figure 3-11. Monthly IMS Service Report - All Activity

3.1.3.3 Monthly IMS Service Report – Medium Activity

This report quantifies the IMS service for medium activity provided on a zone basis by month for each computing system.

The management objective to be tracked in evaluating the speed and consistency of medium IMS activity is a percentage of the number of medium IMS interactions that were satisfied within a specified number of seconds.

Figure 3-12 illustrates the Monthly IMS Service report for Medium Activity based on a management objective of satisfying 90% of all medium IMS interactions within 15 seconds.

The following user options apply to this report:

Medium Response Objective: The percentage of medium IMS responses that were satisfied within a specified number of seconds to reflect the installation's response objective for medium IMS activity (e.g., 90% within 15 seconds).

```
    _IMSPMR and _IMSSMR define the percentage target, and
         second threshold, respectively, (e.g., 90% within 15
         seconds), for medium IMS response time, used in
         daily, weekly, and monthly reports.

    MACRO _IMSPMR  90   %
    MACRO _IMSSMR  15   %
```

A full description of the user options is provided in section 3.1.4.1, Report Options.

Figure 3-12 quantifies the service provided by horizontally representing zone within month and vertically charting the percentage of medium IMS interactions satisfied within the specified number of seconds, as identified in the title.

The management objective for medium IMS service is shown by a dashed horizontal reference line printed across the chart. In Figure 3-12 the reference line is shown at the 90% level of the vertical axis. Any zone for which the charted bar falls below this reference line signals that the medium IMS service objective was missed for that zone in the month.

```
                                     CA MICS IMS DEVELOPMENT UNIT M0804AZ
1
                                CA MICS IS Management Support System         14:41
Wednesday, September 10, yyyy
                                 MONTHLY IMS MANAGEMENT OBJECTIVES
```

```
                                IMS SERVICE FOR MEDIUM ACTIVITY OF   90  % WITHIN   15    SECONDS

-------------------------------------------- SYSTEM=IMSA IMS System Identification=IMSA
-----------------------------------------

                                           PERCENT Sum

                                           100 +       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                            90 +-------*****-------*****---------------
                                               |       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                            80 +       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                            70 +       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                            60 +       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                            50 +       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                            40 +       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                            30 +       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                               |       *****       *****
                                               ----------------------------------------
```

```
                                                          1           2          ZONE

                                                        |---- yy/mm ----|        YRMONTH

Figure 3-12.  Monthly IMS Service Report - Medium Activity
```

3.1.3.4 Monthly IMS Service Report – Short Activity

This report quantifies the IMS service for short activity provided on a zone basis by month for each computing system.

The management objective to be tracked in evaluating the speed and consistency of short IMS activity is a percentage of the number of short IMS interactions that were satisfied within a specified number of seconds.

Figure 3-13 illustrates the Monthly IMS Service Report for Short Activity based on a management objective of satisfying 95% of all short IMS interactions within 5 seconds.

The following user options apply to this report:

Short Response Objective: The percentage of short IMS responses that were satisfied within a specified number of seconds to reflect the installation's response objective for short IMS activity (e.g., 95% within 5 seconds).

_IMSPSR and _IMSSSR define the percentage target, and second threshold, respectively, (e.g., 95% within 5 seconds), for short IMS response time, used in daily, weekly, and monthly reports.

```
MACRO _IMSPSR 95 %
MACRO _IMSSSR  5 %
```

A full description of the user options is provided in section 3.1.4.1, Report Options.

Figure 3-13 quantifies the service provided by horizontally representing zone within month and vertically charting the percentage of short IMS interactions satisfied within the specified number of seconds, as identified in the title.

The management objective for short IMS service is shown by a dashed horizontal reference line printed across the chart. In Figure 3-13 the reference line is shown at the 95% level of the vertical axis. Any zone for which the charted bar falls below this reference line signals that the short IMS service objective was missed for that zone in the month.

```
                                                             CA MICS IMS DEVELOPMENT UNIT M0804AZ
1
                                                      CA MICS IS Management Support System        14:41
Wednesday, September 10, yyyy
                                                       MONTHLY IMS MANAGEMENT OBJECTIVES
```

```
                  IMS SERVICE FOR SHORT ACTIVITY OF   95  % WITHIN   5    SECONDS

-------------------------------------------- SYSTEM=IMSA IMS System Identification=IMSA
-----------------------------------------

PERCENT Sum

100 +       *****       *****
    |       *****       *****
    |-------*****-------*****---------------
    |       *****       *****
    |       *****       *****
 90 +       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
 80 +       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
 70 +       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
 60 +       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
 50 +       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
 40 +       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
 30 +       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
    |       *****       *****
    ----------------------------------------
              1           2          ZONE
```

```
                                                        |---- yy/mm ----|       YRMONTH
```

Figure 3-13. Monthly IMS Service Report - Short Activity

3.1.3.5 Monthly IMS Available Hours Report

This report quantifies the IMS available hours on a zone basis by month and for each computing system.

The management objective to be tracked in evaluating the availability of the IMS system is the number of hours IMS was available for each zone by month.

Figure 3-14 illustrates the Monthly IMS Available Hours Report based on a management objective of 200 hours per zone per month.

The following user options apply to this report:

Monthly Availability Hours: The number of hours that IMS is targeted to be available in any given month for the specified zones.

_IMSMUPH and _IMSRUPH define the vertical axis maximum scaling and reference line, respectively, for the number of hours IMS was available by zone in the monthly reports.

```
MACRO _IMSMUPH 400 %
MACRO _IMSRUPH 200 %
```

A full description of the user options is provided in section 3.1.4.1, Report Options.

Figure 3-14 quantifies the available hours by horizontally representing zone within month and vertically charting the number of available IMS hours.

```
                                                            CA MICS IMS DEVELOPMENT UNIT M0804AZ
1
                                                    CA MICS IS Management Support System         14:41
Wednesday, September 10, yyyy
                                                     MONTHLY IMS MANAGEMENT OBJECTIVES

                                                IMS AVAILABLE HOURS OF    200   HOURS/ZONE

--------------------------------------------- SYSTEM=IMSA IMS System Identification=IMSA
------------------------------------------

                                              UPTIME Sum

                                                   |
                                                   |
                                               200 +----------------------------------------
```

```
          |
          |
          |
      180 +
          |
          |
          |
      160 +
          |
          |
          |
      140 +
          |
          |
          |
      120 +
          |
          |
          |
      100 +
          |
          |
          |
       80 +
          |
          |
          |
       60 +
          |
          |
          |
       40 +
          |
          |
          |
       20 +
          |
          ----------------------------------------
                    1           2           ZONE

                |---- yy/mm ----|           YRMONTH
```

Figure 3-14. Monthly IMS Available Hours Report

3.1.3.6 Monthly IMS Throughput Report - Transactions

This report quantifies the total IMS throughput in terms of transactions processed on a zone basis for each month for each computing system.

The management objective to be tracked in evaluating the IMS throughput rate is the number of transactions processed per zone.

Figure 3-15 illustrates the Monthly IMS Throughput Report based on a management objective of processing less than 1,400,000 transactions in any given zone.

The following user options apply to this report:

Monthly IMS Transaction Rate: The target and maximum number of transactions processed per zone within month by IMS. The target number sets a reference line on the graph and the maximum number sets the maximum value on the graph's vertical axis.

```
    _IMSMCAX and _IMSMCRF define the vertical axis maximum
         scaling and reference line, respectively, for
         transactions executed by zone in the monthly
         reports.

    MACRO _IMSMCAX 200000  %
    MACRO _IMSMCRF 160000  %
```

A full description of the user options is provided in section 3.1.4.1, Report Options.

Figure 3-15 quantifies the transactions processed by horizontally representing zone within month and vertically charting the transactions processed.

The management objective for IMS throughput is shown by a dashed horizontal reference line printed across the chart. In Figure 3-15 the reference line is shown at the 160,000 transactions processed level of the vertical axis. Any zone for which the charted bar exceeds this reference line signals that the objective to contain throughput was missed for that zone.

The maximum capacity for transaction processing is indicated by the top of the vertical axis which is set at a value of 200,000 transactions per zone.

```
                                                       CA MICS IMS DEVELOPMENT UNIT M0804AZ
1
                                               CA MICS IS Management Support System         14:41
Wednesday, September 10, yyyy
                                                MONTHLY IMS MANAGEMENT OBJECTIVES

                                           IMS THROUGHPUT MAXIMUM OF   160000   COMMANDS/ZONE

--------------------------------------------- SYSTEM=IMSA IMS System Identification=IMSA
-----------------------------------------

                                            COMMANDS Sum

                                            200000 +
                                                   |
                                                   |
                                                   |
                                            180000 +
                                                   |
                                                   |
                                                   |
                                            160000 +---------------------------------------
                                                   |
                                                   |
                                                   |
                                            140000 +
                                                   |
                                                   |
                                                   |
                                            120000 +
                                                   |
                                                   |
                                                   |
                                            100000 +
                                                   |
                                                   |
                                                   |
                                             80000 +
                                                   |
                                                   |
                                                   |
                                             60000 +
                                                   |
                                                   |
                                                   |
                                             40000 +
                                                   |       *****
                                                   |       *****
                                                   |       *****
```

```
20000 +       *****
      |       *****
      |       *****
      |       *****       *****
      ----------------------------------------
                1           2          ZONE

              |---- yy/mm ----|        YRMONTH
```

Figure 3-15. Monthly IMS Throughput Report - Transactions

3.1.4 IMS Report Options

The Management Objective Reports assume that a set of objectives related to the operation of IMS have been determined. This may not always be the case. This section describes how the management objectives may be specified to the reporting process once they have been defined by management. First, however, a discussion of how the objectives may be established might prove useful.

Numbers that will be used as management objectives should not be defined without some analysis of the installation's historical IMS performance.

The CA MICS database provides a useful information base for analyzing historical performance. It is suggested that one or more of the following analysis steps be used to study past performance.

Statistical Analysis: The same data sources mentioned above may be used to analyze in-depth measures around which the management objectives are to be determined. Specifically, the SAS procedures UNIVARIATE and FREQ may be used to provide a reasonable statistical analysis of an individual measure, providing the analyst with mean, standard deviation, and percentile values. It is our opinion that the percentile values may be the most applicable to the process of determining the management objectives target values.

The database files that should be used in analyzing the IMS activity for purposes of establishing the IMS Report Options are listed according to the reports they apply to.

```
Daily   - DAYS.IMSIMS01
Weekly  - WEEKS.IMSIMS01
Monthly - MONTHS.IMSIMS01-12
```

In each case the data source is the IMS System Activity File, however you may want to use the IMS User Activity File since this is the file used to create any of the reports where an an accurate HOUR field is important.

The hour figure used in the IMS System Activity File is taken from the checkpoint record that, during a slow time of the day, may not be produced with a great enough frequency to give HOUR field enough validity. On the other hand the HOUR field in the IMS User Activity File comes from the timestamp of the X'01' - X'03' IMS log record pair and is therefore always valid.

The final input essential in defining management objectives for IMS is the perspective of IMS users as to what minimum level of service, availability, and throughput they require.

The integration of this information with data processing management's own priorities and requirements, will establish the base for defining the management objectives for IMS.

The following sections describe specifically how an installation is able to specify the numerical values used in these reports.

1 - IMS Report Options
2 - IMS Report Options MACRO Example

3.1.4.1 Management Objective Report Options

The following options are provided for defining the IMS Management Objective Reports. The names of the SAS MACROs used for option definition are also given.

Hourly Selection Range for Daily Reports: The start and end hours of the day that are to be included in the Daily IMS Reports. It is suggested that the hours be set to include the entire day (00 23).

_IMSDLHR and _IMSDHHR define the low and high hours of the day, respectively, for selection of the IMS activity to be reported in the daily reports.

Hourly Selection Range for Weekly Reports: The start and end hours of the day that are to be included in the Weekly IMS Reports. It is suggested that the hours be set to only include the prime-time hours (e.g., 08 16).

_IMSWLHR and _IMSWHHR define the low and high hours of the days, respectively, for selection of the IMS activity to be reported in the weekly reports.

Total Response Objective: The percentage of all IMS responses that were satisfied within a specified number of seconds to reflect the installation's response objective for total IMS activity (e.g., 90% within 15 seconds).

_IMSPTR and _IMSSTR define the percentage target and second threshold, respectively, (e.g., 90% within 4 seconds), for total IMS response time, used in daily, weekly, and monthly reports.

Short Response Objective: The percentage of short IMS responses that were satisfied within a specified number of seconds to reflect the installation's response objective for short IMS activity (e.g., 96% within 4 seconds).

_IMSPSR and _IMSSSR define the percentage target and second threshold, respectively, (e.g., 90% within 4 seconds), for short IMS response time, used in daily, weekly, and monthly reports.

Medium Response Objective: The percentage of medium IMS responses that were satisfied within a specified number of seconds to reflect the installation's response objective for medium IMS activity (e.g., 94% within 6 seconds).

_IMSPMR and _IMSSMR define the percentage target, and second threshold, respectively, (e.g., 90% within 4 seconds), for medium IMS response time, used in daily, weekly, and monthly reports.

Daily IMS Message Rate: The target and maximum number of messages processed per hour by IMS. The target amount is used for a reference line on the graph and the maximum is used to set the maximum value on the graph's vertical axis.

_IMSCAX and _IMSCREF define the vertical axis maximum scaling and reference line, respectively, for hourly message rate execution in the daily and weekly reports.

Hourly IMS Outage Limits: The target number of uptime minutes per hour, generally set to 60, and the downtime objective per hour, which is generally set to 0 minutes.

_IMSUT and _IMSDT define the hourly uptime target and hourly downtime reference line, respectively, for daily and weekly reporting.

Zone Selection for Monthly Reporting: The zone or range of zones that are to be included in the Monthly IMS Reports. Normally all zones should be reported and therefore the range should be 1 to 9. The IMS Reports could be limited to only the range of zones required.

_IMSLOZN and _IMSHIZN define the low and high zones, respectively, in the months input for selection of the IMS activity to be reported in the monthly reports.

Monthly Availability Hours: The number of hours that IMS is targeted to be available in any given month for the specified zones.

_IMSMUPH and _IMSRUPH define the vertical axis maximum scaling and reference line, respectively, for the number of hours IMS was available by zone in the monthly reports.

Monthly IMS Message Rate: The target and maximum number of messages processed per zone within month by IMS. The target amount is used for a reference line on the graph and the maximum is used to set the maximum value on the graph's vertical axis.

_IMSMCAX and _IMSMCRF define the vertical axis maximum scaling and reference line, respectively, for transactions executed by zone in the monthly reports.

The IMS report options, which are defined as SAS MACROs, should be placed in the source member #IMSMOBJ in the prefix.MICS.USER.SOURCE library after the %INCLUDE SOURCE(#IMSMOBJ) which sets the defaults for these MACROs.

Note: sharedprefix.MICS.SOURCE(#IMSMOBJ) contains the "model" macro statements. The macro statements contained in sharedprefix.MICS.SOURCE(#IMSMOBJ) should NOT be touched; instead, the administrator should copy this member into prefix.MICS.USER.SOURCE after the %INCLUDE and then may update the member contained in prefix.MICS.USER.SOURCE. The next section describes the member and how to modify the options.

3.1.4.2 Report Options MACRO Example

Once the management objectives for IMS have been established they can easily be incorporated into the IMS reports.

The specification of the management objectives to be used in the reporting process is defined in the #IMSMOBJ member contained in library prefix.MICS.USER.SOURCE. This member consists of a series of SAS MACROs that define values for the required objectives.

The #IMSMOBJ member is distributed with a set of default values; it is the responsibility of the CA MICS System Administrator to initially tailor the values and maintain them for subsequent installation changes and CA MICS system maintenance.

Prior to discussing the specification of the objectives several points should be explained. All values input by the user for defining objectives are specified as SAS MACROs for ease of incorporation into the reporting process. A brief explanation of SAS MACROs is provided. For instance, the objective for maximum messages per hour might be defined as:

```
MACRO _IMSCAX  6000 %
```

A SAS MACRO is defined by the word MACRO followed in order by the name used to reference the MACRO, the value that is to be substituted any time the MACRO is used in a SAS program, and the % sign that signifies the end of the MACRO definition. For example, the name of the MACRO in the above statement is _IMSCAX; any time that _IMSCAX is referenced in the CA MICS code the value 6000 is substituted.

In changing the objectives used in the reports, the user is simply changing the appropriate MACRO's value to reflect what should be in the reports for a particular installation.

The user must ensure that the word MACRO, the CA MICS MACRO name, and the ending % character ARE NOT ALTERED IN ANY WAY, and the only item changed is the value within the MACRO.

The #IMSMOBJ member is organized to enable the user to quickly identify the values that require changing and is laid-out as shown below in Figure 3-16.

```
******************************************************* ;
* THE FOLLOWING SECTION DEFINES THE OBJECTIVES,       * ;
* SELECTION FIELDS, AND CHARTING OPTIONS TO BE USED   * ;
* FOR DAILY, WEEKLY, AND MONTHLY IMS MANAGEMENT       * ;
```

```
* OBJECTIVE REPORTING.                               * ;
****************************************************** ;
* ;
* TOTAL RESPONSE SPECIFICATIONS ;
MACRO _IMSPTR   percentage             %
MACRO _IMSSTR   seconds                %
* MEDIUM RESPONSE SPECIFICATIONS ;
MACRO _IMSPMR   percentage             %
MACRO _IMSSMR   seconds                %
* SHORT RESPONSE SPECIFICATIONS;
MACRO _IMSPSR   percentage             %
MACRO _IMSSSR   seconds                %
* AVAILABILITY SPECIFICATIONS;
MACRO _IMSUT    uptime-mins            %
MACRO _IMSDT    downtime-mins          %
* MESSAGE THROUGHPUT SPECIFICATION;
MACRO _IMSCAX   maximum-transactions   %
MACRO _IMSCREF  target-transactions    %
* TIME SELECTION SPECIFICATION - DAILY;
MACRO _IMSDLHR  low-hour               %
MACRO _IMSDHHR  high-hour              %
* TIME SELECTION SPECIFICATION  - WEEKLY;
MACRO _IMSWLHR  low-hour               %
MACRO _IMSWHHR  high-hour              %
* ZONE SELECTION SPECIFICATION - MONTHLY ;
MACRO _IMSHIZN  low-zone               %
MACRO _IMSLOZN  high-zone              %
* MONTHLY - MESSAGE THROUGHPUT SPECIFICATION ;
MACRO _IMSMCAX  maximum-transactions   %
MACRO _IMSMCRF  target-transactions    %
* MONTHLY - AVAILABILITY SPECIFICATIONS ;
MACRO _IMSMUPH   maximum-uphours        %
MACRO _IMSRUPH   target-uphours         %
```

Figure 3-16. IMS Report Options in #IMSMOBJ

Figure 3-17 shows how the IMS options have been defined in #IMSMOBJ in the distributed version of the member.

```
****************************************************** ;
* THE FOLLOWING SECTION DEFINES THE OBJECTIVES,      * ;
* SELECTION FIELDS, AND CHARTING OPTIONS TO BE USED  * ;
* FOR DAILY, WEEKLY, AND MONTHLY IMS MANAGEMENT      * ;
* OBJECTIVE REPORTING.                               * ;
****************************************************** ;
* ;
* TOTAL RESPONSE SPECIFICATIONS ;
MACRO _IMSPTR 95 %
MACRO _IMSSTR 15 %
* MEDIUM RESPONSE SPECIFICATIONS ;
MACRO _IMSPMR 90 %
MACRO _IMSSMR 15 %
* SHORT RESPONSE SPECIFICATIONS ;
MACRO _IMSPSR 95 %
MACRO _IMSSSR 5 %
* AVAILABILITY SPECIFICATIONS ;
MACRO _IMSUT 60 %
MACRO _IMSDT  0 %
* MESSAGE THROUGHPUT SPECIFICATION ;
MACRO _IMSCAX  5000 %
MACRO _IMSCREF 4000 %
* TIME SELECTION SPECIFICATION - DAILY ;
MACRO _IMSDLHR 0 %
MACRO _IMSDHHR 23 %
* TIME SELECTION SPECIFICATION - WEEKLY ;
MACRO _IMSWLHR 8 %
MACRO _IMSWHHR 17 %
* ZONE SELECTION SPECIFICATION - MONTHLY ;
MACRO _IMSHIZN  3 %
MACRO _IMSLOZN  1 %
* MONTHLY - MESSAGE THROUGHPUT SPECIFICATION ;
MACRO _IMSMCAX 200000 %
MACRO _IMSMCRF 160000 %
* MONTHLY - AVAILABILITY SPECIFICATIONS ;
MACRO _IMSMUPH  210 %
MACRO _IMSRUPH  200 %
```

Figure 3-17. Completed #IMSMOBJ Member

The installation need only define the management objectives in the #IMSMOBJ member and the reporting process will be tailored to your system's definitions.

3.2 MICF Inquiries

The MICF inquiries provided with the IMS Analyzer are listed in Figure 3-18.

MICF inquiry names follow the form cccptn, where:

```
 ccc   is the three-character product identifier.
   p   is the type of graphic.  The value of this field is
       either C (color graphic), L (list), or P (printer).
   t   is the frequency with which the report may be
       executed.
   n   is an integer that differentiates this inquiry from
       others.
```

For example: An inquiry named IMSLD4 would be interpreted as:

```
IMSLD4
---|||= the fourth list inquiry
 | ||   being produced for the IMS
 | ||   product at the DAYS timespan
 | ||= may be run daily
 | |= a list inquiry
 |= an IMS inquiry
```

MICF Distributed Inquiries

Report Class	Report Name	Report Identifier: Color Graphics	List	Printer Graphics
General	Daily IMS Message Queue Analysis		IMSLDQ	
MBO	Daily IMS MBO Reports		IMSMDO	
	Weekly IMS MBO Reports		IMSMWO	
	Monthly IMS MBO Reports		IMSMMO	
Workload	Daily IMS Workload	IMSCD1		IMSPD1

```
          |             | Weekly IMS Workload                        |  IMSCW1  |         |  IMSPW1
|
          |             | Monthly IMS Workload                       |  IMSCM1  |         |  IMSPM1
|

+-------------+-----------------------------------------+-----------------------------+
          | Service     | 8am - 5pm IMS Service by Type             |  IMSCDT  |         |         |
          |             | Daily IMS Service Reports                  |  IMSCD2  |         |  IMSPD2
|
          |             | Weekly IMS Service Reports                 |  IMSCW2  |         |  IMSPW2
|
          |             | Monthly IMS Service Reports                |  IMSCM2  |         |  IMSPM2
|

+-------------+-----------------------------------------+-----------------------------+
          | Availability | Daily IMS Availability                    |  IMSCD3  |         |  IMSPD3
|
          |             | Weekly IMS Availability                    |  IMSCW3  |         |  IMSPW3
|
          |             | Monthly IMS Availability                   |  IMSCM3  |         |  IMSPM3
|

+-------------+-----------------------------------------+-----------------------------+
```

Figure 3-18. MICF Distributed Inquiries

If you want to run the IMS MICF inquiries, access them as needed through the MICF Inquiries panel of the CA MICS Workstation Facility (MWF).

MBO inquiries are described in the previous section. The rest of the inquiries are described in the following sections:

1 - General Inquiries
2 - Workload Inquiries
3 - Service Inquiries
4 - Availability Inquiries

3.2.1 General Inquiries

The general inquiry is described in the following section:

1 - Daily IMS Message Queue Analysis

3.2.1.1 Daily IMS Message Queue Analysis

This daily report provides a snapshot of IMS control region message queue activity. Information includes the number of messages dequeued, average reads per message, average writes per message, as well as additional information related to queue activity. The data are provided on an hourly basis for the identified day and IMS control region.

```
                                                  Daily IMS Message Queue Analysis
1


 INQUIRY:  IMSLDQ                                                                                  RUN
DATE:  10SEPyy

-------------------------------------- System Identifier=IMSA IMS System Identification=IMSA
------------------------------------

                         Interval     Interval    Messages     Reads     Writes     Iwaits      I/O
Waits For
                         End Time     Duration    Dequeued    Per Msg    Per Msg    Per Msg     Per
Msg     ENQ/DEQ

                 21JULyy:16:53:52            .         .        .          .          .          .
.
                 21JULyy:17:22:59            .         .        .          .          .          .
.
                 21JULyy:21:59:21            .         .        .          .          .          .
.
                 21JULyy:22:14:38            .         .        .          .          .          .
.
                 21JULyy:23:15:55            .         .        .          .          .          .
.
                 22JULyy:00:55:14     1:05:00       590     2.1780     1.6797     0.0017     3.8576
0
                 22JULyy:01:55:15     1:00:00       757     2.1942     2.2325     0.0013     4.4267
0
                 22JULyy:02:55:14     1:00:00       959     2.0730     2.2586     0.0042     4.3316
0
                 22JULyy:03:55:15     1:00:00       767     2.1147     1.8814     0.0026     3.9961
0
                 22JULyy:04:55:14     1:00:00       551     2.2414     1.5172     0.0036     3.7586
0
                 22JULyy:05:55:15     1:00:00       724     2.0829     2.6381     0.0014     4.7210
0
                 22JULyy:06:55:15     1:00:00       918     1.8627     2.1209     0.0011     3.9837
0
```

```
                  22JULyy:07:55:14     0:59:59     1381      6.4569     2.1332     0.0007     8.5902
0
                  22JULyy:08:55:15     1:00:00     1388      5.5713     1.8408     0.0000     7.4121
0
                  22JULyy:09:55:15     1:00:00      871      7.4592     2.6051     0.0011    10.0643
0
                  22JULyy:10:55:15     1:00:00     1469      6.4466     2.4227     0.0020     8.8693
0
                  22JULyy:11:55:15     1:00:00     1315      7.0532     4.4213     0.0053    11.4745
0
                  22JULyy:12:55:14     1:00:00      941     12.0414    15.1158     0.0021    27.1573
0
                  22JULyy:13:55:15     1:00:00     1750      7.5731    10.1514     0.0023    17.7246
0
                  22JULyy:14:55:15     1:00:00      851     11.2879     2.0799     0.0012    13.3678
0
                  22JULyy:15:55:15     1:00:00      815     10.2871     2.4123     0.0012    12.6994
0
                  22JULyy:16:55:14     1:00:00     1299      6.2925     2.7937     0.0000     9.0862
0
                  22JULyy:17:55:14     1:00:00      696      9.2227     2.3894     0.0029    11.6121
0
                  22JULyy:18:55:15     1:00:00      471     17.1274     2.3609     0.0042    19.4883
0
                  22JULyy:19:55:14     0:59:59      570      3.6018     1.5632     0.0000     5.1649
0
                  22JULyy:20:55:15     1:00:01      439      2.7312     1.2232     0.0023     3.9544
0
                  22JULyy:21:03:58     0:08:43      218      0.5642     0.3165     0.0000     0.8807
0
```

Figure 3-19. Daily IMS Message Queue Analysis

3.2.2 Workload Inquiries

The workload inquiries are described individually in the following sections:

1 - Daily IMS Workload Report
2 - Weekly IMS Workload Report
3 - Monthly IMS Workload Report

3.2.2.1 Daily IMS Workload Report

This daily report quantifies the total number of transactions that were processed by an IMS control region. The information is provided on an hourly basis for the identified day and IMS control region.

```
                                        Daily IMS Workload Report - Transactions by Hour
1


 INQUIRY:  IMSPD1                                                                                    RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

Transactions Sum

 10,000 +                                                             ***  ***
        |                                                             ***  ***
        |                                                             ***  ***
        |                                                             ***  ***
  9,000 +                                                             ***  ***
        |                                                             ***  ***
        |                                                             ***  ***
        |                                                             ***  ***
  8,000 +                                                             ***  ***
        |                                                             ***  ***
        |                                                             ***  ***
        |                                                             ***  ***
  7,000 +                                                             ***  ***
        |                                                             ***  ***
        |                                                             ***  ***
        |                                                             ***  ***
  6,000 +                                                             ***  ***
        |                                                             ***  ***
        |                                                             ***  ***
        |                                                             ***  ***
  5,000 +                                                             ***  ***
        |                                                             ***  ***
        |                                                             ***  ***
        |                                                             ***  ***
  4,000 +                                                             ***  ***
        |                                                             ***  ***
        |                                                             ***  ***
        |                                                             ***  ***
```

```
  3,000 +                                                       ***  ***  ***
        |                                                       ***  ***  ***
        |                                                       ***  ***  ***
        |                                                       ***  ***  ***
  2,000 +                                                       ***  ***  ***
        |                                                       ***  ***  ***
        |                                                       ***  ***  ***
        |                                                       ***  ***  ***
  1,000 +                                  ***            ***  ***  ***  ***            ***
        |            ***                  ***  ***  ***  ***  ***  ***  ***  ***            ***
        |       ***  ***            ***  ***  ***  ***  ***  ***  ***  ***  ***       ***  ***
        |  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***

-------------------------------------------------------------------------------------------------
------------------------
            0    1    2    3    4    5    6    7    8    9   10   11   12   13   14   15   16   17
18   19   20   21   22   23

                                                               Hour Of Day

                       Figure 3-20.  Daily IMS Workload Report
```

3.2.2.2 Weekly IMS Workload Report

These weekly reports quantify the total number of transactions that were processed by an IMS control region. The information is provided on a hourly basis for the last seven days for IMS control region.

```
                                             Weekly IMS Workload - Transactions by Hour
1


 INQUIRY:  IMSPW1                                                                                       RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

          Transactions Sum

           10,000 +                                                                                    * *
                  |                                                                                    * *
                  |                                                                                    * *
                  |                                                                                    * *
            9,000 +                                                                                    * *
                  |                                                                                    * *
                  |                                                                                    * *
                  |                                                                                    * *
            8,000 +                                                                                    * *
                  |                                                                                    * *
                  |                                                                                    * *
                  |                                                                                    * *
            7,000 +                                                                                    * *
                  |                                                                                    * *
                  |                                                                                    * *
                  |                                                                                    * *
            6,000 +                                                                                    * *
                  |                                                                                    * *
                  |                                                                                    * *
                  |                                                                                    * *
            5,000 +                                                                                    * *
                  |                                                                                    * *
                  |                                                                                    * *
                  |                                                                                    * *
            4,000 +                                                                                    * *
                  |                                                                                    * *
                  |                                                                                    * *
                  |                                                                                    * *
```

```
          3,000 +                                                                             * * *
                |                                                                             * * *
                |                                                                             * * *
                |                                                                             * * *
          2,000 +                                                                             * * *
                |                                                                             * * *
                |                                                                             * * *
                |                                                                             * * *
          1,000 +                                                                 *     * * * *     *
                |                                                        *       * * * * * * * *     *
                |                                                       * *     * * * * * * * * *   *
*
                |                                                      * * * * * * * * * * * * * * *
* * *

---------------------------------------------------------------------------------------------------
-------
                                        1 1 1 1 1 1 1 1 1 1 2 2 2 2                     1 1 1 1 1
1 1 1 1 1 2 2 2 2  HOUR
                    0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4
5 6 7 8 9 0 1 2 3

                    |------------------ 21JULyy ------------------|  |------------------ 22JULyy
------------------|  DATE
```

Figure 3-21. Weekly IMS Workload Report

3.2.2.3 Monthly IMS Workload Report

```
                      This monthly report quantifies the total number of
                      transactions that were processed by an IMS control region.
                      The information is provided on a zone basis by month for each
IMS control region.

                                           Monthly IMS Workload - Transactions by Zone
1


 INQUIRY:  IMSPM1                                                                                 RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

                                         Transactions Sum
                                          30,000 +       *****
                                                 |       *****
                                                 |       *****
                                                 |       *****
                                          27,000 +       *****
                                                 |       *****
                                                 |       *****
                                                 |       *****
                                          24,000 +       *****
                                                 |       *****
                                                 |       *****
                                                 |       *****
                                          21,000 +       *****
                                                 |       *****
                                                 |       *****
                                                 |       *****
                                          18,000 +       *****
                                                 |       *****
                                                 |       *****
                                                 |       *****
                                          15,000 +       *****
                                                 |       *****
                                                 |       *****
                                                 |       *****
                                          12,000 +       *****
                                                 |       *****
                                                 |       *****
                                                 |       *****
                                           9,000 +       *****
                                                 |       *****
                                                 |       *****
                                                 |       *****
```

```
6,000 +       *****
      |       *****
      |       *****       *****
      |       *****       *****
3,000 +       *****       *****
      |       *****       *****
      |       *****       *****
      |       *****       *****
      ----------------------------------------
                1           2          ZONE

              |---- yy/mm ----|        YRMONTH
```

Figure 3-22. Monthly IMS Workload Report

3.2.3 Service Inquiries

The service inquiries are described individually in the following sections:

1 - Daily IMS Service Reports
2 - Weekly IMS Service Reports
3 - Monthly IMS Service Reports

3.2.3.1 Daily IMS Service Reports

These daily reports quantify the IMS service response times that occurred within an IMS control region. The information is provided on an hourly basis for the identified day and IMS control region. The following representations of response times are provided:

1 - Average Short Response Time
2 - Percent Short Responses Within 1 Second
3 - Average Medium Response Time
4 - Percent Medium Responses Within 5 Seconds
5 - Average Total Response Time
6 - Percent Total Responses Within 5 Seconds

```
                                            Daily IMS Service - Avg. Short Response Time
1


 INQUIRY:  IMSPD2                                                                              RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------


 Seconds Sum

  0.04 +                                                                   ***
       |                                                                   ***
       |                                                              ***  ***
       |                                                              ***  ***
       |                                                              ***  ***
  0.03 +                                                              ***  ***
       |                                                              ***  ***
       |                                                         ***  ***  ***
       |                                                         ***  ***  ***
       |                                                         ***  ***  ***
  0.03 +                                                         ***  ***  ***
       |                                                         ***  ***  ***
       |                                                         ***  ***  ***       ***
       |                                                         ***  ***  ***       ***
       |                                                         ***  ***  ***       ***
  0.02 +                                                         ***  ***  ***       ***
       |                                                         ***  ***  ***       ***
       |                                       ***     ***  ***  ***      ***                  ***
       |      ***                              ***  ***  ***  ***  ***     ***                  ***
       |      ***      ***                     ***  ***  ***  ***  ***     ***                  ***
  0.02 +       ***       ***                          ***  ***  ***  ***  ***       ***       ***
***
```

```
       |       ***       ***                           ***  ***  ***  ***  ***       ***       ***
***
       |       ***       ***                           ***  ***  ***  ***  ***       ***  ***  ***
***
       |       ***       ***  ***                      ***  ***  ***  ***  ***  ***  ***  ***  ***
***
       |       ***       ***  ***            ***       ***  ***  ***  ***  ***  ***  ***  ***  ***
***
  0.01 +       ***       ***  ***  ***       ***       ***  ***  ***  ***  ***  ***  ***  ***  ***
***
       |       ***       ***  ***  ***  ***  ***       ***  ***  ***  ***  ***  ***  ***  ***  ***
***
       |       ***       ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***
       |       ***       ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***
       |       ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***
  0.01 +       ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***
       |       ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***
       |       ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***
       |       ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***
       |  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***
  0.01 +  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***       ***
       |  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***       ***
       |  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***       ***
       |  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***       ***
       |  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***       ***

--------------------------------------------------------------------------------------------------
-------------------------
           0    1    2    3    4    5    6    7    8    9     10   11   12   13   14   15   16   17
18   19   20   21   22   23

                                                              Hour Of Day
```

Figure 3-23a. Daily IMS Service Report - Avg. Short Response Time

```
                                       Daily IMS Service - Pct. Short Responses Within 1 Sec.
1

 INQUIRY:  IMSPD2                                                                                  RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

           Percent Sum

            100.00 % +  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
             90.00 %
+--**--**--**--**--**--**--**--**--**--**--**--**--**--**--**--**--**--**------**------------
--
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
             80.00 % +  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
             70.00 % +  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
```

```
                    |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                    |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
             60.00 % + **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                    |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                    |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                    |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                    |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
             50.00 % + **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                    |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                    |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                    |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                    |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
             40.00 % + **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                    |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                    |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                    |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                    |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
             30.00 % + **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                    |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                    |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                    |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                    |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
             20.00 % + **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**

-----------------------------------------------------------------------------------------------
--
```

```
                         0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18
19  20  21  22  23

                                                               Hour of Day

 Figure 3-23b.  Daily IMS Service Report - Pct. Short Responses

                                           Daily IMS Service - Avg. Medium Response Time
1


 INQUIRY:  IMSPD2                                                                                RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

 Seconds Sum

  0.80 +  ***                                                                                    ***
       |  ***                                                                                    ***
       |  ***                                                                                    ***
       |  ***                                                                                    ***
       |  ***                                                                                    ***
  0.70 +  ***                                                                                    ***
       |  ***                                                                                    ***
       |  ***                                                                                    ***
       |  ***                                                                                    ***
***  ***
       |  ***                                                                                    ***
***  ***
  0.60 +  ***                                                                                    ***
***  ***
       |  ***                                                                                    ***
***  ***
       |  ***                                                                                    ***
***  ***
       |  ***                                                                                    ***
***  ***
       |  ***                                                                                    ***
***  ***
  0.50 +  ***                                                                                    ***
***  ***
       |  ***                                                                                    ***
***  ***
       |  ***                                                                                    ***
***  ***
       |  ***                           ***                                                      ***
***  ***
```

```
       |  ***                           ***                                                    ***
***  ***
  0.40 +  ***                           ***                                                    ***
***  ***
       |  ***                           ***                                                    ***
***  ***
       |  ***                      ***  ***                                                    ***
***  ***
       |  ***                      ***  ***  ***                                               ***
***  ***
       |  ***                      ***  ***  ***                                               ***
***  ***
  0.30 +  ***                      ***  ***  ***  ***                                          ***
***  ***
       |  ***  ***                 ***  ***  ***  ***                                          ***
***  ***
       |  ***  ***                 ***  ***  ***  ***  ***                                     ***
***  ***
       |  ***  ***  ***            ***  ***  ***  ***  ***            ***       ***  ***       ***
***  ***
       |  ***  ***  ***            ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***
  0.20 +  ***  ***  ***            ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***  ***
       |  ***  ***  ***            ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***  ***
       |  ***  ***  ***            ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***  ***
       |  ***  ***  ***            ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***  ***
       |  ***  ***  ***            ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***  ***
  0.10 +  ***  ***  ***            ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***  ***
       |  ***  ***  ***            ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***  ***
       |  ***  ***  ***            ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***  ***
       |  ***  ***  ***            ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***  ***
       |  ***  ***  ***            ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***  ***

--------------------------------------------------------------------------------------------------
-------------------------
           0    1    2    3    4    5    6    7    8    9   10   11   12   13   14   15   16   17
18   19   20   21   22   23

                                                              Hour Of Day
```

```
                    Figure 3-23c.  Daily IMS Service Report - Avg. Medium Response Time

                                   Daily IMS Service - Pct. Medium Responses Within 5 Sec.
1


 INQUIRY:  IMSPD2                                                                              RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

           Percent Sum

            100.00 % +  **  **  **         **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **         **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **         **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **         **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **         **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
             90.00 %
+--**--**--**----------**--**--**--**--**--**--**--**--**--**--**--**--**--**--**--**------------
--
                     |  **  **  **         **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **         **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **         **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **         **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
             80.00 % +  **  **  **         **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **         **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **         **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **         **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **         **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
```

```
             70.00 % +  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
             60.00 % +  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
             50.00 % +  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
             40.00 % +  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
             30.00 % +  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
```

```
                     |  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
             20.00 % +  **  **  **          **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **

-------------------------------------------------------------------------------------------------
--
                         0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18
19  20  21  22  23

                                                                Hour of Day


                       Figure 3-23d.  Daily IMS Service Report - Pct. Medium Responses

                                            Daily IMS Service - Avg. Total Response Time
1


 INQUIRY:  IMSPD2                                                                               RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

         Seconds Sum

                       |                                                                         **
          200000000.00 +                                                                         **
                       |                                                                         **
                       |                                                                         **
                       |                                                                         **
          180000000.00 +                                                                         **
                       |                                                                         **
                       |                                                                         **
                       |                                                                         **
          160000000.00 +                                                                         **
                       |                                                                         **
                       |                                                                         **
                       |                                                                         **
          140000000.00 +                                                                         **
                       |                                                                         **
                       |                                                                         **
                       |                                                                         **
          120000000.00 +                                                                         **
                       |                                                                         **
                       |                                                                         **
                       |                                                                         **
          100000000.00 +                                                                         **
```

```
                       |                                                                        **
                       |                                                                        **
                       |                                                                        **
           80000000.00 +                                                                        **
                       |                                                                        **
                       |                                                                        **
                       |                                                                        **
           60000000.00 +                                                                        **
                       |                                                                        **
                       |                                                                        **
                       |                                                                        **
           40000000.00 +                                                                        **
                       |                                                                        **
                       |                                                                        **
                       |                                                                        **
           20000000.00 +                                                                        **
**
                       |                                                                        **
**
                       |                            **                                     **   **
**
                       |         **          **  **  **  **  **  **                        **   **
**

-------------------------------------------------------------------------------------------------
--
                          0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18
19  20  21  22  23

                                                                  Hour Of Day

 Figure 3-23e.  Daily IMS Service Report - Avg. Total Response Time


                                       Daily IMS Service - Pct. Total Responses Within 5 Sec.
1


 INQUIRY:  IMSPD2                                                                             RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

           Percent Sum

            100.00 % +  **  **  **  **  **  **  **      **  **  **  **  **  **  **  **  **           **
                     |  **  **  **  **  **  **  **      **  **  **  **  **  **  **  **  **  **  **
**
```

```
                     |  **  **  **  **  **  **  **      **  **  **  **  **  **  **  **  **  **  **
**
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
             90.00 %
+--**--**--**--**--**--**--**--**--**--**--**--**--**--**--**--**--**--**------**------------
--
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**
             80.00 % +  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
             70.00 % +  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
             60.00 % +  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
             50.00 % +  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
```

```
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
             40.00 % +  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
             30.00 % +  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
                     |  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **
             20.00 % +  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **  **
**  **

-------------------------------------------------------------------------------------------------
--
                          0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18
19  20  21  22  23

                                                                Hour of Day
```

Figure 3-23f. Daily IMS Service Report - Pct. Total Responses

3.2.3.2 Weekly IMS Service Reports

These weekly reports quantify the IMS service response times that occurred within an IMS control region. The information is provided on a hourly basis for the last seven days for IMS control region. The following representations of response times are provided:

1 - Average Short Response Time
2 - Percent Short Responses Within 1 Second
3 - Average Medium Response Time
4 - Percent Medium Responses Within 5 Seconds
5 - Average Total Response Time
6 - Percent Total Responses Within 5 Seconds

```
                                           Weekly IMS Service - Avg. Short Response Time
1


 INQUIRY:  IMSPW2                                                                             RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

           Seconds Sum

            0.04 +                                                                             *
                 |                                                                             *
                 |                                                                           * *
                 |                                                                           * *
                 |                                                                           * *
            0.03 +                                                                           * *
                 |                                                                           * *
                 |                                                                         * * *
                 |                                                                         * * *
                 |                                                                         * * *
            0.03 +                                                                         * * *
                 |                                                                         * * *
                 |                                                                       * * *   *
                 |                                                                       * * *   *
                 |                                                                       * * *   *
            0.02 +                                                                       * * *   *
                 |                                                                       * * *   *
                 |                                                                   *   * * *   *
*
                 |                                                   *               * * * * *   *
*
                 |                                                   *   *           * * * * *   *
*
```

```
          0.02 +                                                *   *       * * * * *   *
*     *
               |                                                *   *       * * * * *   *
*     *
               |                                                *   *       * * * * *   *
* *     *
               |                                                *   * *     * * * * * * *
* *     *
               |                                                *   * *   *   * * * * * * *
* *     *
          0.01 +                                                *   * * *   *   * * * * * * *
* *     *
               |                                                *   * * * * *   * * * * * * *
* *     *
               |                                                *   * * * * * * * * * * * * *
* *     *
               |                                                *   * * * * * * * * * * * * *
* *     *
               |                                                * * * * * * * * * * * * * * *
* *     *
          0.01 +                                                * * * * * * * * * * * * * * *
* *     *
               |                                                * * * * * * * * * * * * * * *
* *     *
               |                                                * * * * * * * * * * * * * * *
* *     *
               |                                                * * * * * * * * * * * * * * *
* *     *
               |                                              * * * * * * * * * * * * * * * *
* *     *
          0.01 +                                              * * * * * * * * * * * * * * * *
* * *   *
               |                                              * * * * * * * * * * * * * * * *
* * *   *
               |                                              * * * * * * * * * * * * * * * *
* * *   *
               |                                              * * * * * * * * * * * * * * * *
* * *   *
               |                                              * * * * * * * * * * * * * * * *
* * *   *

-------------------------------------------------------------------------------------------------
-------
                                        1 1 1 1 1 1 1 1 1 1 2 2 2 2                     1 1 1 1 1 1
1 1 1 1 2 2 2 2  HOUR
                   0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
6 7 8 9 0 1 2 3
```

```
                   |------------------ 21JULyy ------------------|  |------------------ 22JULyy
------------------|  DATE

 Figure 3-24a.  Weekly IMS Service Report - Avg. Short Response Time

                                      Weekly IMS Service - Pct. Short Responses Within 1 Sec.
1


 INQUIRY:  IMSPW2                                                                                   RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

         Percent Sum

          100.00 % +                                                  * * * * * * * * * * * * * * *
* * * *   *
                   |                                                  * * * * * * * * * * * * * * *
* * * *   *
                   |                                                  * * * * * * * * * * * * * * *
* * * *   *
                   |                                                  * * * * * * * * * * * * * * *
* * * *   *
                   |                                                  * * * * * * * * * * * * * * *
* * * *   *
           90.00 %
+--------------------------------------------------*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*---*-----
-------
                   |                                                  * * * * * * * * * * * * * * *
* * * *   *
                   |                                                  * * * * * * * * * * * * * * *
* * * *   *
                   |                                                  * * * * * * * * * * * * * * *
* * * *   *
                   |                                                  * * * * * * * * * * * * * * *
* * * *   *
           80.00 % +                                                  * * * * * * * * * * * * * * *
* * * *   *
                   |                                                  * * * * * * * * * * * * * * *
* * * *   *
                   |                                                  * * * * * * * * * * * * * * *
* * * *   *
                   |                                                  * * * * * * * * * * * * * * *
* * * *   *
                   |                                                  * * * * * * * * * * * * * * *
* * * *   *
```

```
           70.00 % +                                                * * * * * * * * * * * * * * *
* * * *   *
                   |                                                * * * * * * * * * * * * * * *
* * * *   *
                   |                                                * * * * * * * * * * * * * * *
* * * *   *
                   |                                                * * * * * * * * * * * * * * *
* * * *   *
                   |                                                * * * * * * * * * * * * * * *
* * * *   *
           60.00 % +                                                * * * * * * * * * * * * * * *
* * * *   *
                   |                                                * * * * * * * * * * * * * * *
* * * *   *
                   |                                                * * * * * * * * * * * * * * *
* * * *   *
                   |                                                * * * * * * * * * * * * * * *
* * * *   *
                   |                                                * * * * * * * * * * * * * * *
* * * *   *
           50.00 % +                                                * * * * * * * * * * * * * * *
* * * *   *
                   |                                                * * * * * * * * * * * * * * *
* * * *   *
                   |                                                * * * * * * * * * * * * * * *
* * * *   *
                   |                                                * * * * * * * * * * * * * * *
* * * *   *
                   |                                                * * * * * * * * * * * * * * *
* * * *   *
           40.00 % +                                                * * * * * * * * * * * * * * *
* * * *   *
                   |                                                * * * * * * * * * * * * * * *
* * * *   *
                   |                                                * * * * * * * * * * * * * * *
* * * *   *
                   |                                                * * * * * * * * * * * * * * *
* * * *   *
                   |                                                * * * * * * * * * * * * * * *
* * * *   *
           30.00 % +                                                * * * * * * * * * * * * * * *
* * * *   *
                   |                                                * * * * * * * * * * * * * * *
* * * *   *
                   |                                                * * * * * * * * * * * * * * *
* * * *   *
                   |                                                * * * * * * * * * * * * * * *
* * * *   *
```

```
                   |                                                * * * * * * * * * * * * * * *
* * * *   *

-------------------------------------------------------------------------------------------------
-------
                                         1 1 1 1 1 1 1 1 1 1 2 2 2 2                    1 1 1 1 1
1 1 1 1 1 2 2 2 2  HOUR
                     0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4
5 6 7 8 9 0 1 2 3

                     |------------------ 21JULyy ------------------|  |------------------ 22JULyy
------------------|  DATE

 Figure 3-24b.  Weekly IMS Service Report - Pct. Short Responses

                                           Weekly IMS Service - Avg. Medium Response Time
1


 INQUIRY:  IMSPW2                                                                               RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

           Seconds Sum

                 |                                                   *
                 |                                                   *
                 |                                                   *
            0.90 +                                                   *
                 |                                                   *
                 |                                                   *
                 |                                             *                                  *
                 |                                             *                                  *
            0.80 +                                             *                                  *
                 |                                             *                                  *
                 |                                             *                                  *
                 |                                             *                                  *
                 |                                             *                                  *
            0.70 +                                             *                                  *
                 |                                             *                                  *
                 |                                             *                                  *
                 |                                               *                                *
* *
                 |                                               *                                *
* *
            0.60 +                                               *                                *
* *
```

```
                 |                                               *                                *
* *
                 |                                               *                                *
* *
                 |                                               *                                *
* *
                 |                                               *                                *
* *
            0.50 +                                               *                                *
* *
                 |                                               *                                *
* *
                 |                                               *                                *
* *
                 |                                               *          *                     *
* *
                 |                                               *          *                     *
* *
            0.40 +                                               *          *                     *
* *
                 |                                               *          *                     *
* *
                 |                                               *        * *                     *
* *
                 |                                               *        * * *                   *
* *
                 |                                               *        * * *                   *
* *
            0.30 +                                               *        * * * *                 *
* *
                 |                                               * *      * * * *                 *
* *
                 |                                               * *      * * * * *               *
* *
                 |                                                   * * *    * * * * *     *   * *
* * *
                 |                                                   * * *    * * * * * * * * * * *
*   * * *
            0.20 +                                                   * * *    * * * * * * * * * * *
* * * * *
                 |                                                   * * *    * * * * * * * * * * *
* * * * *

--------------------------------------------------------------------------------------------------
-------
                                        1 1 1 1 1 1 1 1 1 1 2 2 2 2                     1 1 1 1 1 1
1 1 1 1 2 2 2 2  HOUR
                   0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
6 7 8 9 0 1 2 3
```

```
                   |------------------ 21JULyy ------------------|  |------------------ 22JULyy
------------------|  DATE

 Figure 3-24c.  Weekly IMS Service Report - Avg. Medium Response Time

                                      Weekly IMS Service - Pct. Medium Responses Within 5 Sec.
1


 INQUIRY:  IMSPW2                                                                                    RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

         Percent Sum

          100.00 % +                                                * * *    * * * * * * * * * *
* * * * * *
                   |                                                * * *    * * * * * * * * * *
* * * * * *
                   |                                                * * *    * * * * * * * * * *
* * * * * *
                   |                                                * * *    * * * * * * * * * *
* * * * * *
                   |                                                * * *    * * * * * * * * * *
* * * * * *
           90.00 %
+---------------------------------------------------*-*-*-----*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-----
-------
                   |                                                * * *    * * * * * * * * * *
* * * * * *
                   |                                                * * *    * * * * * * * * * *
* * * * * *
                   |                                                * * *    * * * * * * * * * *
* * * * * *
                   |                                                * * *    * * * * * * * * * *
* * * * * *
           80.00 % +                                                * * *    * * * * * * * * * *
* * * * * *
                   |                                                * * *    * * * * * * * * * *
* * * * * *
                   |                                                * * *    * * * * * * * * * *
* * * * * *
                   |                                                * * *    * * * * * * * * * *
* * * * * *
                   |                                                * * *    * * * * * * * * * *
* * * * * *
```

```
           70.00 % +                                                  * * *    * * * * * * * * * *
* * * * * *
                   |                                                  * * *    * * * * * * * * * *
* * * * * *
                   |                                                  * * *    * * * * * * * * * *
* * * * * *
                   |                                                  * * *    * * * * * * * * * *
* * * * * *
                   |                                                  * * *    * * * * * * * * * *
* * * * * *
           60.00 % +                                                  * * *    * * * * * * * * * *
* * * * * *
                   |                                                  * * *    * * * * * * * * * *
* * * * * *
                   |                                                  * * *    * * * * * * * * * *
* * * * * *
                   |                                                  * * *    * * * * * * * * * *
* * * * * *
                   |                                                  * * *    * * * * * * * * * *
* * * * * *
           50.00 % +                                                  * * *    * * * * * * * * * *
* * * * * *
                   |                                                  * * *    * * * * * * * * * *
* * * * * *
                   |                                                  * * *    * * * * * * * * * *
* * * * * *
                   |                                                  * * *    * * * * * * * * * *
* * * * * *
                   |                                                  * * *    * * * * * * * * * *
* * * * * *
           40.00 % +                                                  * * *    * * * * * * * * * *
* * * * * *
                   |                                                  * * *    * * * * * * * * * *
* * * * * *
                   |                                                  * * *    * * * * * * * * * *
* * * * * *
                   |                                                  * * *    * * * * * * * * * *
* * * * * *
                   |                                                  * * *    * * * * * * * * * *
* * * * * *
           30.00 % +                                                  * * *    * * * * * * * * * *
* * * * * *
                   |                                                  * * *    * * * * * * * * * *
* * * * * *
                   |                                                  * * *    * * * * * * * * * *
* * * * * *
                   |                                                  * * *    * * * * * * * * * *
* * * * * *
```

```
                   |                                                 * * *     * * * * * * * * * *
* * * * * *

-------------------------------------------------------------------------------------------------
-------
                                         1 1 1 1 1 1 1 1 1 1 2 2 2 2                    1 1 1 1 1
1 1 1 1 1 2 2 2 2  HOUR
                     0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4
5 6 7 8 9 0 1 2 3

                     |------------------ 21JULyy ------------------|  |------------------ 22JULyy
------------------|  DATE

 Figure 3-24d.  Weekly IMS Service Report - Pct. Medium Responses

                                           Weekly IMS Service - Avg. Total Response Time
1


 INQUIRY:  IMSPW2                                                                               RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

       Seconds Sum

                     |                                                                          *
        300000000.00 +                                                                          *
                     |                                                                          *
                     |                                                                          *
                     |                                                                          *
        280000000.00 +                                                                          *
                     |                                                                          *
                     |                                                                          *
                     |                                                                          *
        260000000.00 +                                                                          *
                     |                                                                          *
                     |                                                                          *
                     |                                                                          *
        240000000.00 +                                                                          *
                     |                                                                          *
                     |                                                                          *
                     |                                                                          *
        220000000.00 +                                                                          *
                     |                                                                          *
                     |                                                                          *
                     |                                                                          *
        200000000.00 +                                                                          *
```

```
                    |                                                                          *
                    |                                                                          *
                    |                                                                          *
       180000000.00 +                                                                          *
                    |                                                                          *
                    |                                                                          *
                    |                                                                          *
       160000000.00 +                                                                          *
                    |                                                                          *
                    |                                                                          *
                    |                                                                          *
       140000000.00 +                                                                          *
                    |                                                                          *
                    |                                                                          *
                    |                                                                          *
       120000000.00 +                                                                          *
                    |                                                                          *
                    |                                                                          *

---------------------------------------------------------------------------------------------------
-------
                                         1 1 1 1 1 1 1 1 1 1 2 2 2 2                    1 1 1 1
1 1 1 1 1 1 2 2 2 2  HOUR
                      0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3  0 1 2 3 4 5 6 7 8 9 0 1 2 3
4 5 6 7 8 9 0 1 2 3

                      |------------------ 21JULyy ------------------|  |------------------ 22JULyy
------------------|  DATE

 Figure 3-24e.  Weekly IMS Service Report - Avg. Total Response Time

                                      Weekly IMS Service - Pct. Total Responses Within 5 Sec.
1


 INQUIRY:  IMSPW2                                                                               RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

         Percent Sum

          100.00 % +                                                    * * * * * * *   * * * * * * *
* *       *
                   |                                                    * * * * * * *   * * * * * * *
* * * *   *
                   |                                                    * * * * * * *   * * * * * * *
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```
                   |                                                * * * * * * * * * * * * * * *
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                   |                                                * * * * * * * * * * * * * * *
* * * *   *
           90.00 %
+--------------------------------------------------*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*-*---*-----
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                   |                                                * * * * * * * * * * * * * * *
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                   |                                                * * * * * * * * * * * * * * *
* * * *   *
           80.00 % +                                                * * * * * * * * * * * * * * *
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                   |                                                * * * * * * * * * * * * * * *
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           70.00 % +                                                * * * * * * * * * * * * * * *
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                   |                                                * * * * * * * * * * * * * * *
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                   |                                                * * * * * * * * * * * * * * *
* * * * * *
           60.00 % +                                                * * * * * * * * * * * * * * *
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                   |                                                * * * * * * * * * * * * * * *
* * * * * *
                   |                                                * * * * * * * * * * * * * * *
* * * * * *
           50.00 % +                                                * * * * * * * * * * * * * * *
* * * * * *
                   |                                                * * * * * * * * * * * * * * *
* * * * * *
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```
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                   |                                                * * * * * * * * * * * * * * *
* * * * * *
                   |                                                * * * * * * * * * * * * * * *
* * * * * *
           40.00 % +                                                * * * * * * * * * * * * * * *
* * * * * *
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* * * * * *
                   |                                                * * * * * * * * * * * * * * *
* * * * * *
                   |                                                * * * * * * * * * * * * * * *
* * * * * *
                   |                                                * * * * * * * * * * * * * * *
* * * * * *
           30.00 % +                                                * * * * * * * * * * * * * * *
* * * * * *
                   |                                                * * * * * * * * * * * * * * *
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* * * * * *
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                   |                                                * * * * * * * * * * * * * * *
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                                         1 1 1 1 1 1 1 1 1 1 2 2 2 2                    1 1 1 1 1
1 1 1 1 1 2 2 2 2  HOUR
                     0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4
5 6 7 8 9 0 1 2 3

                     |------------------ 21JULyy ------------------|  |------------------ 22JULyy
------------------|  DATE
```

Figure 3-24f. Weekly IMS Service Report - Pct. Total Responses

3.2.3.3 Monthly IMS Service Reports

These monthly reports quantify the IMS service response times that occurred within an IMS control region. The information is provided on a zone basis by month for each IMS control region. The following representations of response times are provided:

```
 1 - Average Short Response Time
 2 - Percent Short Responses Within 1 Second
 3 - Average Medium Response Time
 4 - Percent Medium Responses Within 5 Seconds
 5 - Average Total Response Time
 6 - Percent Total Responses Within 5 Seconds
```

```
                                             Monthly IMS Service - Avg. Short Response Time
1


 INQUIRY:  IMSPM2                                                                                          RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

                                             Seconds Sum
                                              0.02 +       *****
                                                   |       *****
                                                   |       *****
                                                   |       *****
                                              0.02 +       *****
                                                   |       *****
                                                   |       *****
                                                   |       *****
                                              0.02 +       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                              0.01 +       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                              0.01 +       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                              0.01 +       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
```

```
                                     0.01 +       *****       *****
                                          |       *****       *****
                                          |       *****       *****
                                          |       *****       *****
                                     0.01 +       *****       *****
                                          |       *****       *****
                                          |       *****       *****
                                          |       *****       *****
                                     0.00 +       *****       *****
                                          |       *****       *****
                                          |       *****       *****
                                          |       *****       *****
                                     0.00 +       *****       *****
                                          |       *****       *****
                                          |       *****       *****
                                          |       *****       *****
                                          ----------------------------------------
                                                    1           2           ZONE

                                                  |---- yy/mm ----|         YRMONTH
```

Figure 3-25a. Monthly IMS Service Report - Avg. Short Response Time

```
                                   Monthly IMS Service - Pct. Short Responses Within 1 Sec.
1


 INQUIRY:  IMSPM2                                                                              RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

                                        Percent Sum

                                   100.00 % +       *****       *****
                                            |       *****       *****
                                            |       *****       *****
                                            |       *****       *****
                                            |       *****       *****
                                    90.00 % +-------*****-------*****---------------
                                            |       *****       *****
                                            |       *****       *****
                                            |       *****       *****
                                            |       *****       *****
                                    80.00 % +       *****       *****
                                            |       *****       *****
                                            |       *****       *****
                                            |       *****       *****
```

```
                                                  |       *****       *****
                                          70.00 % +       *****       *****
                                                  |       *****       *****
                                                  |       *****       *****
                                                  |       *****       *****
                                                  |       *****       *****
                                          60.00 % +       *****       *****
                                                  |       *****       *****
                                                  |       *****       *****
                                                  |       *****       *****
                                                  |       *****       *****
                                          50.00 % +       *****       *****
                                                  |       *****       *****
                                                  |       *****       *****
                                                  |       *****       *****
                                                  |       *****       *****
                                          40.00 % +       *****       *****
                                                  |       *****       *****
                                                  |       *****       *****
                                                  |       *****       *****
                                                  |       *****       *****
                                          30.00 % +       *****       *****
                                                  |       *****       *****
                                                  |       *****       *****
                                                  |       *****       *****
                                                  |       *****       *****
                                          20.00 % +       *****       *****
                                                  ----------------------------------------
                                                            1           2          ZONE

                                                          |---- yy/mm ----|        YRMONTH

 Figure 3-25b.  Monthly IMS Service Report - Pct. Short Responses

                                         Monthly IMS Service - Avg. Medium Response Time
1


 INQUIRY:  IMSPM2                                                                                  RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

                                          Seconds Sum

                                           0.40 +                   *****
                                                |                   *****
                                                |                   *****
```

```
       |                   *****
       |                   *****
0.35 +                     *****
       |                   *****
       |                   *****
       |                   *****
       |                   *****
0.30 +                     *****
       |                   *****
       |                   *****
       |                   *****
       |                   *****
0.25 +                     *****
       |                   *****
       |       *****       *****
       |       *****       *****
       |       *****       *****
0.20 +         *****       *****
       |       *****       *****
       |       *****       *****
       |       *****       *****
       |       *****       *****
0.15 +         *****       *****
       |       *****       *****
       |       *****       *****
       |       *****       *****
       |       *****       *****
0.10 +         *****       *****
       |       *****       *****
       |       *****       *****
       |       *****       *****
       |       *****       *****
0.05 +         *****       *****
       |       *****       *****
       |       *****       *****
       |       *****       *****
       |       *****       *****
       ----------------------------------------
                 1           2          ZONE

               |---- yy/mm ----|        YRMONTH
```

Figure 3-25c. Monthly IMS Service Report - Avg. Medium Response Time

Monthly IMS Service - Pct. Medium Resp. Within 5 Sec.

1

```
 INQUIRY:  IMSPM2                                                                                     RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

                                         Percent Sum

                                          100.00 % +       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                           90.00 % +-------*****-------*****---------------
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                           80.00 % +       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                           70.00 % +       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                           60.00 % +       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                           50.00 % +       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                           40.00 % +       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                           30.00 % +       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                           20.00 % +       *****       *****
```

```
                                        ----------------------------------------
                                                 1           2          ZONE

                                               |---- yy/mm ----|        YRMONTH

 Figure 3-25d.  Monthly IMS Service Report - Pct. Medium Responses


                                          Monthly IMS Service - Avg. Total Response Time
1


 INQUIRY:  IMSPM2                                                                                        RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

                                       Seconds Sum

                                        4000000.00 +                   *****
                                                   |                   *****
                                                   |                   *****
                                                   |                   *****
                                                   |                   *****
                                        3500000.00 +                   *****
                                                   |                   *****
                                                   |                   *****
                                                   |                   *****
                                                   |                   *****
                                        3000000.00 +                   *****
                                                   |                   *****
                                                   |                   *****
                                                   |                   *****
                                                   |                   *****
                                        2500000.00 +                   *****
                                                   |                   *****
                                                   |                   *****
                                                   |                   *****
                                                   |                   *****
                                        2000000.00 +                   *****
                                                   |                   *****
                                                   |                   *****
                                                   |                   *****
                                                   |                   *****
                                        1500000.00 +                   *****
                                                   |                   *****
                                                   |                   *****
                                                   |                   *****
```

```
                                           |                   *****
                                1000000.00 +                   *****
                                           |                   *****
                                           |                   *****
                                           |                   *****
                                           |                   *****
                                 500000.00 +                   *****
                                           |       *****       *****
                                           |       *****       *****
                                           |       *****       *****
                                           |       *****       *****
                                           ----------------------------------------
                                                     1           2          ZONE

                                                   |---- yy/mm ----|        YRMONTH
```

Figure 3-25e. Monthly IMS Service Report - Avg. Total Response Time

```
                                      Monthly IMS Service - Pct. Total Responses Within 5 Sec.
1


 INQUIRY:  IMSPM2                                                                              RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

                                         Percent Sum

                                          100.00 % +       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                           90.00 % +-------*****-------*****---------------
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                           80.00 % +       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
                                           70.00 % +       *****       *****
                                                   |       *****       *****
                                                   |       *****       *****
```

```
          |       *****       *****
          |       *****       *****
 60.00 %  +       *****       *****
          |       *****       *****
          |       *****       *****
          |       *****       *****
          |       *****       *****
 50.00 %  +       *****       *****
          |       *****       *****
          |       *****       *****
          |       *****       *****
          |       *****       *****
 40.00 %  +       *****       *****
          |       *****       *****
          |       *****       *****
          |       *****       *****
          |       *****       *****
 30.00 %  +       *****       *****
          |       *****       *****
          |       *****       *****
          |       *****       *****
          |       *****       *****
 20.00 %  +       *****       *****
          ----------------------------------------
                    1           2          ZONE

                  |---- yy/mm ----|        YRMONTH
```

Figure 3-25f. Monthly IMS Service Report - Pct. Total Responses

3.2.4 Availability Inquiries

The availability inquiries are described individually in the following sections:

1 - Daily IMS Availability Reports
2 - Weekly IMS Availability Reports
3 - Monthly IMS Availability Report

3.2.4.1 Daily IMS Availability Reports

These daily reports quantify the availability for IMS control regions. The reports indicate either the number of minutes the IMS control region was not available (downtime) during an hourly interval or the number of minutes the IMS control region was available (uptime) during an hourly interval. The information is provided on an hourly basis for the identified day and IMS control region.

```
                                             Daily IMS Availability - Downtime by Hour
1


 INQUIRY:  IMSPD3                                                                                          RUN
DATE:  10SEPyy

----------------------------------------------------- SYSID=IMSA IMS Region=IMSA
--------------------------------------------------

  Minutes Sum

   40 +                                                                                                    ***
***  ***
      |                                                                                                    ***
***  ***
      |                                                                                                    ***
***  ***
      |                                                                                                    ***
***  ***
      |                                                                                                    ***
***  ***
   35 +                                                                                                    ***
***  ***
      |                                                                                                    ***
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      |                                                                                                    ***
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      |                                                                                                    ***
***  ***
   30 +                                                                                                    ***
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***  ***
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```
      |                                                                                        ***
***  ***
      |                                                                                        ***
***  ***
   25 +                                                                                        ***
***  ***
      |                                                                                        ***
***  ***
      |                                                                                        ***
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      |                                                                                        ***
***  ***
      |                                                                                        ***
***  ***
   20 +                                                                                        ***
***  ***
      |                                                                                        ***
***  ***
      |                                                                                        ***
***  ***
      |                                                                                        ***
***  ***
      |                                                                                        ***
***  ***
   15 +                                                                                        ***
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      |                                                                                        ***
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      |                                                                                        ***
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   10 +                                                                                        ***
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***  ***
    5 +                                                                                        ***
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***  ***
    0
+-------------------------------------------------------------------------------------------------
-------------------------
      |

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-------------------------
          0    1    2    3    4    5    6    7    8    9    10   11   12   13   14   15   16   17   18
19   20   21   22   23
                                                              Hour of Day

 Figure 3-26a.  Daily IMS Availability Report - Downtime by Hour

                                              Daily IMS Availability - Uptime by Hour
1


 INQUIRY:  IMSPD3                                                                                  RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

  Minutes Sum

   60 +  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***
      |  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
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***  ***
   55 +  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
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      |  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***
   50 +  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
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   45 +  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
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***  ***
   40 +  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***
      |  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
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***  ***
   35 +  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***
      |  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
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      |  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***
   30 +  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***
      |  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
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      |  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***
      |  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***
   25 +  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
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      |  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***
   20 +  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***  ***
***  ***

-------------------------------------------------------------------------------------------------
-------------------------
          0    1    2    3    4    5    6    7    8    9    10   11   12   13   14   15   16   17   18
19   20   21   22   23

                                                              Hour of Day
```

Figure 3-26b. Daily IMS Availability Report - Uptime by Hour

3.2.4.2 Weekly IMS Availability Reports

These weekly reports quantify the availability for IMS control regions. The reports indicate either the number of minutes the IMS control region was not available (downtime) during an hourly interval or the number of minutes the IMS control region was available (uptime) during an hourly interval. The information is provided on a hourly basis for the last seven days for IMS control region.

```
                                         Weekly IMS Availability - Downtime by Hour
1


 INQUIRY:  IMSPW3                                                                                   RUN
DATE:  10SEPyy

----------------------------------------------------- SYSID=IMSA IMS Region=IMSA
--------------------------------------------------

            Minutes Sum

             60 + * * * * * * * * * * * * * * * * * * * * * * * *                                     *
                | * * * * * * * * * * * * * * * * * * * * * * * *                                     *
                | * * * * * * * * * * * * * * * * * * * * * * * *                                     *
                | * * * * * * * * * * * * * * * * * * * * * * * *                                     *
                | * * * * * * * * * * * * * * * * * * * * * * * *                                     *
*
             55 + * * * * * * * * * * * * * * * * * * * * * * * *                                     *
*
                | * * * * * * * * * * * * * * * * * * * * * * * *                                     *
*
                | * * * * * * * * * * * * * * * * * * * * * * * *                                     *
*
                | * * * * * * * * * * * * * * * * * * * * * * * *                                     *
*
                | * * * * * * * * * * * * * * * * * * * * * * * *                                     *
*
             50 + * * * * * * * * * * * * * * * * * * * * * * * *                                     *
* *
                | * * * * * * * * * * * * * * * * * * * * * * * *                                     *
* *
                | * * * * * * * * * * * * * * * * * * * * * * * *                                     *
* *
                | * * * * * * * * * * * * * * * * * * * * * * * *                                     *
* *
                | * * * * * * * * * * * * * * * * * * * * * * * *                                     *
* *
```

```
          45 + * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
             | * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
             | * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
             | * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
             | * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
          40 + * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
             | * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
             | * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
             | * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
             | * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
          35 + * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
             | * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
             | * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
             | * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
             | * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
          30 + * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
             | * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
             | * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
             | * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
             | * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
          25 + * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
             | * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
             | * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
             | * * * * * * * * * * * * * * * * * * * * * * * *                                          *
* *
```

```
             20 + * * * * * * * * * * * * * * * * * * * * * * * *                    *
* *

---------------------------------------------------------------------------------------------------
-------
                                      1 1 1 1 1 1 1 1 1 1 2 2 2 2                     1 1 1 1 1 1
1 1 1 1 2 2 2 2  HOUR
                  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
6 7 8 9 0 1 2 3

                  |------------------ 21JULyy ------------------|  |------------------ 22JULyy
------------------|  DATE

 Figure 3-27a.  Weekly IMS Availability Report - Downtime by Hour


                                             Weekly IMS Availability - Uptime by Hour
1


 INQUIRY:  IMSPW3                                                                                RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

            Minutes Sum

             60 +                                                  * * * * * * * * * * * * * * * *
* * * * *
                |                                                  * * * * * * * * * * * * * * * *
* * * * *
                |                                                  * * * * * * * * * * * * * * * *
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                |                                                  * * * * * * * * * * * * * * * *
* * * * *
                |                                                  * * * * * * * * * * * * * * * *
* * * * *
             55 +                                                  * * * * * * * * * * * * * * * *
* * * * *
                |                                                  * * * * * * * * * * * * * * * *
* * * * *
                |                                                  * * * * * * * * * * * * * * * *
* * * * *
                |                                                  * * * * * * * * * * * * * * * *
* * * * *
                |                                                  * * * * * * * * * * * * * * * *
* * * * *
```

```
             50 +                                 * * * * * * * * * * * * * * * *
* * * * *
                |                                 * * * * * * * * * * * * * * * *
* * * * *
                |                                 * * * * * * * * * * * * * * * *
* * * * *
                |                                 * * * * * * * * * * * * * * * *
* * * * *
                |                                 * * * * * * * * * * * * * * * *
* * * * *
             45 +                                 * * * * * * * * * * * * * * * *
* * * * *
                |                                 * * * * * * * * * * * * * * * *
* * * * *
                |                                 * * * * * * * * * * * * * * * *
* * * * *
                |                                 * * * * * * * * * * * * * * * *
* * * * *
                |                                 * * * * * * * * * * * * * * * *
* * * * *
             40 +                                 * * * * * * * * * * * * * * * *
* * * * *
                |                                 * * * * * * * * * * * * * * * *
* * * * *
                |                                 * * * * * * * * * * * * * * * *
* * * * *
                |                                 * * * * * * * * * * * * * * * *
* * * * *
                |                                 * * * * * * * * * * * * * * * *
* * * * *
             35 +                                 * * * * * * * * * * * * * * * *
* * * * *
                |                                 * * * * * * * * * * * * * * * *
* * * * *
                |                                 * * * * * * * * * * * * * * * *
* * * * *
                |                                 * * * * * * * * * * * * * * * *
* * * * *
                |                                 * * * * * * * * * * * * * * * *
* * * * *
             30 +                                 * * * * * * * * * * * * * * * *
* * * * *
                |                                 * * * * * * * * * * * * * * * *
* * * * *
                |                                 * * * * * * * * * * * * * * * *
* * * * *
                |                                 * * * * * * * * * * * * * * * *
* * * * *
```

```
                |                                                  * * * * * * * * * * * * * * * *
* * * * *
             25 +                                                  * * * * * * * * * * * * * * * *
* * * * *
                |                                                  * * * * * * * * * * * * * * * *
* * * * *
                |                                                  * * * * * * * * * * * * * * * *
* * * * *
                |                                                  * * * * * * * * * * * * * * * *
* * * * *
                |                                                  * * * * * * * * * * * * * * * *
* * * * *

-------------------------------------------------------------------------------------------------
-------
                                      1 1 1 1 1 1 1 1 1 1 2 2 2 2                     1 1 1 1 1 1
1 1 1 1 2 2 2 2  HOUR
                  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3  0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5
6 7 8 9 0 1 2 3

                  |------------------ 21JULyy ------------------|  |------------------ 22JULyy
------------------|  DATE
```

Figure 3-27b. Weekly IMS Availability Report - Uptime by Hour

3.2.4.3 Monthly IMS Availability Report

This monthly report quantifies the availability for IMS control regions. The report indicates the number of hours that an IMS control region was available during the reporting period. The information is provided on a zone basis by month for each IMS control region.

```
                                    Monthly IMS Availability - Available Hours by Zone
1


 INQUIRY:  IMSPM3                                                                          RUN
DATE:  10SEPyy

---------------------------------------------------- SYSID=IMSA IMS Region=IMSA
-------------------------------------------------

                                            Hours Sum
                                                |                  *****
                                             12 +                  *****
                                                |                  *****
                                                |                  *****
                                                |                  *****
                                                |                  *****
                                             11 +                  *****
                                                |                  *****
                                                |                  *****
                                                |                  *****
                                                |                  *****
                                             10 +                  *****
                                                |                  *****
                                                |                  *****
                                                |                  *****
                                                |                  *****
                                              9 +       *****      *****
                                                |       *****      *****
                                                |       *****      *****
                                                |       *****      *****
                                                |       *****      *****
                                              8 +       *****      *****
                                                |       *****      *****
                                                |       *****      *****
                                                |       *****      *****
                                                |       *****      *****
                                              7 +       *****      *****
                                                |       *****      *****
```

```
        |       *****       *****
        |       *****       *****
        |       *****       *****
      6 +       *****       *****
        |       *****       *****
        |       *****       *****
        |       *****       *****
        |       *****       *****
      5 +       *****       *****
        |       *****       *****
        |       *****       *****
        |       *****       *****
        |       *****       *****
      4 +       *****       *****
        ----------------------------------------
                  1           2          ZONE

                |---- yy/mm ----|        YRMONTH
```

Figure 3-28. Monthly IMS Availability - Available Hours by Zone

3.3 Normal Termination Report

The Normal Termination report is produced by the assembly language programs (listed in section 10.3) when they complete. This report includes termination statistics, such as the number of records processed by record type, and is illustrated below.

A similar report is produced if the programs abend. That report displays reasons for the abend and suggests corrections.

3.4 How to Produce Reports

The IMS Analyzer produces reports using the standard reporting capabilities of the CA MICS IS Management Support System.

The content of the reports can be tailored to match your requirements. Refer to Chapter 4 of this guide for information on tailoring exception reports.

The reporting strategies available through the CA MICS IS Management Support System are discussed in the following sections:

1 - Batch Operations
2 - CA MICS Information Center Facility
3 - Interactive Reporting (MSAS)

3.4.1 Batch Operations

Standard analysis and exception reports are produced by the standard operational reporting jobs DAILYRPT, WEEKRPT, and MONTHRPT. These jobs are submitted for execution by the corresponding database update job, or may be submitted manually.

Control over which report sets are produced is provided through the dynamic execution options (EXECDEF) member in the prefix.MICS.PARMS library. Section 2.3.5 of the CA MICS Planning, Installation, Operation, and Maintenance Guide describes the EXECDEF member.

3.4.2 CA MICS Information Center Facility

The CA MICS Information Center Facility (MICF) is a menu-based system that operates under IBM's Interactive System Productivity Facility (ISPF). Those familiar with ISPF commands will find that MICF menus are similar to standard ISPF menus. The major features of MICF include the following:

- o Structured inquiry composition
- o Logical inquiry modification
- o Direct inquiry composition
- o Execution time specifications
- o Output replay
- o Facilities for expert users
- o Distributed inquiries
- o User-written reports

For more information on using MICF, see Chapter 2 in the MICF User Guide.

3.4.3 Interactive Reporting (MSAS)

Interactive access to SAS with CA MICS is provided through the MSAS dialog from the CA MICS Workstation Facility (MWF). The MSAS dialog, running under ISPF, allows experienced SAS users to exercise a flexible set of options for invoking interactive full-screen SAS in the CA MICS environment. The MSAS dialog supports several types of interactive reporting, including:

- read-only access to a single unit database
- read-only access to multiple unit databases
- SAS without any unit databases

To support the interactive use of SAS with CA MICS, MSAS allocates the required SAS files, work files, user files, sort files, CA MICS libraries, and, optionally, the CA MICS database. In addition to allocating CA MICS database files, MSAS uses the standard CA MICS DDNAMEs (for example, SOURCE, INCLLIB, and USOURCE) to allocate the CA MICS library data sets. This lets you select SAS statements from the CA MICS libraries, modify and execute these statements under SAS/DMS, and then save the program for future use.

MSAS is a MICF application running under your private MICF options. Through MICF Options, you can control the set up of SAS execution parameters and temporary data set allocations. You can also control the allocation of additional data sets for one-time or repeated use.

To use MSAS, see Chapter 3 of this guide.

Chapter 4: EXCEPTIONS

The CA MICS IMS Analyzer supports the standard CA MICS exception process.

CA MICS exception processing enables the IS organization to focus on issues that can impact its effectiveness such as availability, service, workload, standards, security, and performance of the different areas of responsibility (e.g., SMF, RMF, CICS, TSO, IMS, VSE/POWER).

The IMS Analyzer provides the necessary detail data to specifically identify IMS exception conditions. These exceptions are used to assist in the management of the IMS subsystems.

The standard exceptions for this product are shown in Figure 4-1. Each standard exception test is shipped with default values. However, to make effective use of the exception process, you must evaluate your needs and modify these sample values accordingly.

Number	Severity	Management Area	Exception Description
06001	Impacting	Performance	Messages Waiting to Process Exceeds Standard
06002	Impacting	Performance	Messages Waiting to Output Exceeds Standard
06003	Warning	Performance	Message Processing Rate Exceeds Standard
06004	Warning	Performance	Message Processing Rate Below Standard
06005	Warning	Performance	Message Queue Enqueue Rate Exceeds Standard
06006	Warning	Performance	Message Queue Dequeue Rate Exceeds Standard
06007	Warning	Performance	Message Queue Internal Request Rate Exceeds Standard
06008	Warning	Performance	Message Queue Requests Satisfied In Pool Below Standard
06009	Impacting	Performance	Message Queue I/O Rate Exceeds Standard
06010	Impacting	Performance	Message Queue I/O Per Message Exceeds Standard
06011	Impacting	Performance	Message Queue Reads Per Message Exceed Standard
06012	Impacting	Performance	Message Queue Writes Per Message Exceed Standard
06013	Impacting	Performance	Message Queue Forced Write Percentage Exceeds Standard
06014	Critical	Performance	Message Queue IWAITS Per Message Exceed Zero
06015	Warning	Performance	MFS Prefetch I/O Rate Exceeds Standard
06016	Warning	Performance	MFS Immediate Fetch I/O Rate Exceeds Standard
06017	Critical	Performance	MFS I/O Rate Exceeds Standard
06018	Critical	Performance	MFS Directory I/O Rate Exceeds Standard
06019	Warning	Performance	DMB Pool High Water Mark Exceeds Standard
06020	Impacting	Performance	DMB Pool Current Use Exceeds Standard
06021	Warning	Performance	PSB Pool High Water Mark Exceeds Standard
06022	Impacting	Performance	PSB Pool Current Use Mark Exceeds Standard
06023	Warning	Performance	CIO Pool High Water Mark Exceeds Standard
06024	Impacting	Performance	CIO Pool Current Use Exceeds Standard
06025	Warning	Performance	Scheduling Rate Exceeds Standard
06026	Warning	Performance	Scheduling Rate Below Standard
06027	Impacting	Performance	Scheduling Conflict Percentage Exceeds Standard
06028	Critical	Performance	PI Current Use Exceeds Standard
06029	Warning	Performance	PI Request Rate Exceeds Standard
06030	Impacting	Performance	PI Average Search Length Exceeds Standard

06031	Impacting	Performance	PI Maximum Search Length Exceeds Standard
06036	Warning	Performance	Logical Log Latch Conflict Rate Exceeds Standard

Figure 4-1. IMS Exception List (Part 1 of 2)

Number	Severity	Management Area	Exception Description
06037	Warning	Performance	Storage Management Latch Conflict Rate Exceeds Standard
06038	Warning	Performance	Exclusive Control Latch Conflict Rate Exceeds Standard
06039	Warning	Performance	Dynamic Log Latch Conflict Rate Exceeds Standard
06040	Warning	Performance	Monitor Latch Conflict Rate Exceeds Standard
06041	Warning	Performance	DMB Latch Conflict Rate Exceeds Standard
06042	Warning	Performance	ISAM/OSAM Request Rate Exceeds Standard
06043	Warning	Performance	ISAM/OSAM Request Satisfied in Pool Below Standard
06044	Impacting	Performance	ISAM/OSAM I/O Rate Exceeds Standard
06045	Warning	Performance	ISAM/OSAM Formatted Cylinders Exceeds Standard
06046	Impacting	Performance	ISAM/OSAM Forced Writes Exceed Standard
06100	Critical	Security	IMS Security Violation
06101	Critical	Availability	IMS Application Abend
06102	Warning	Performance	IMS Data Base Open
06103	Warning	Performance	IMS Data Base Close
06104	Critical	Availability	IMS Cold Started
06105	Critical	Availability	IMS Warm Started
06106	Critical	Availability	IMS Emergency Started
06107	Critical	Availability	IMS Data Base I/O Error
06108	Critical	Availability	IMS Stopped
06109	Critical	Availability	Probable IMS Abend
06110	Critical	Availability	IMS Started
06111	Critical	Availability	IMS Abend
06112	Impacting	Availability	MPP Region Started or Stopped
06113	Warning	Availability	BMP Region Started or Stopped
06114	Critical	Availability	IMS Stopped for RSR Plan Takeover
06200	Critical	Standards	Application Avg MPP DL/I Calls Exceed Standard

```
          |  06201 |  Critical  | Standards      | Application Avg BMP DL/I Calls Exceed Standard
|
          | 06202 |  Critical  | Service      | Hourly IMS Total Service Objective Missed         |
          |  06203 |  Impacting | Performance     | Application Avg MPP CPU Time Exceeds Standard
|

+--------+-----------+---------------+------------------------------------------------------
+
```

Figure 4-1. IMS Exception List (Part 2 of 2)

This section contains the following topics:

4.1 Exception Process Overview (see page 173)
4.2 Setting Exception Values (see page 176)
4.3 Detailed Exception Descriptions (see page 177)

4.1 Exception Process Overview

The CA MICS exception process consists of the exceptions themselves, a set of standard reports, CA MICS Information Center Facility (MICF) inquiries, an exception test routine, and an exception value analysis routine. Each of these is described below.

EXCEPTIONS

An exception is any condition that deviates from the expected norm, or any missed objective in system performance or service. It may be a distinct problem (e.g., CICS abended at 2:00 p.m.), a potential problem that requires further research (e.g., a TSO user overloaded the system from 1:00 to 1:30 p.m.), or it may represent a standard, security, or audit violation (e.g., user XYZ is not authorized to use PDZAP and was detected using it seven times yesterday).

Because the volume of exception occurrences can be quite large, CA MICS provides a means to categorize, aggregate, consolidate, and prioritize them to meet your needs. Each exception has:

- o An Exception Number for unique definition
- o A Severity Level to signify degree of importance
- o A Management Area to identify area of responsibility

STANDARD REPORTS

The standard exception reports provide a concise, integrated method for reporting problems. The following reports can be produced as part of the CA MICS DAILY job:

- o Exception Management Overview Report
- o Severity Level Exception Summary Report
- o Management Area Exception Summary Report

You control which reports are produced via the REPORT EXCEPTIONS statement in prefix.MICS.PARMS(EXECDEF). Refer to Section 2.3.5 of the PIOM for more information.

Two additional standard reports can be produced, as required, to provide the necessary background detail to effectively analyze reported exceptions. The two reports are:

- o Full Exception Detail Report

- o Short Exception Detail Report

MICF INQUIRIES

The catalog group EXCEPT, that is shipped with CA MICS, contains a number of standard MICF inquiries that can be used to report exception conditions. In the following inquiry list, graphic reports whose value of 'x' is 'C', produce color graphic reports using SAS/GRAPH. If the value of 'x' is 'P', printer graphic reports are produced without using SAS/GRAPH.

- o BASxM1 - Monthly Exception Summary Report
- o BASxM2 - Monthly Mgmt. Area Exception Summary Report
- o BASxM3 - Monthly Info. Area Exception Summary Report
- o BASxM4 - Monthly Exception Management Overview Report
- o BASxM5 - Monthly Info. Area Exception Overview Report
- o BASxW1 - Weekly Exception Summary Report
- o BASxW2 - Weekly Mgmt. Area Exception Summary Report
- o BASxW3 - Weekly Info. Area Exception Summary Report

The following inquiries that produce printed reports are also available:

- o BASLD2 - Daily Severity Level Exception Summary Report
- o BASLD3 - Daily Management Area Exception Summary Report
- o BASLD4 - Daily Short Exception Detail Report
- o BASLD5 - Daily Full Exception Detail Report
- o BASLD6 - Daily Exception Ranking Report
- o BASLM6 - Monthly Exception Ranking Report

These standard inquiries have an execution-time parameter selection that permits you to report on a subset of the exceptions. For example, inquiry BASLD5 allows selection on SYSID, Information Area, Management Area, Severity Level, and other criteria.

EXCEPTION TEST ROUTINE

Each Analyzer has an exception test routine that is invoked in the DAY200 step of the CA MICS DAILY job. You control which routines are invoked using the CREATE EXCEPTIONFILES statement in prefix.MICS.PARMS(EXECDEF). Refer to the PIOM, Section 2.3.5, for more information on EXECDEF.

An exception test routine, written in the SAS language, defines the exception and tests to determine whether or not the exception condition is present in the data being processed. The distributed exception test routine for each Analyzer is contained in sharedprefix.MICS.SOURCE(DYcccEXC) where ccc is the Analyzer identifier. When the DAY200 step invokes the test routine, it does so by %INCLUDEing the DYcccEXC member from prefix.MICS.USER.SOURCE. As distributed, that member then %INCLUDEs the member from sharedprefix.MICS.SOURCE. See Section 4.2 of this guide, Setting Exception Values, for more information on DYIMSEXC.

EXCEPTION VALUE ANALYSIS ROUTINE

Each Analyzer has an exception value analysis (EVA) routine that can be used to help determine values for the exception conditions. The EVA routine extracts information from the CA MICS database. Descriptive statistics for the values of variables used in exception tests are printed in the Exception Value Analysis Report. The EVA routine for each Analyzer is stored in sharedprefix.MICS.SOURCE(cccEVA). The job control to execute the EVA process is contained in prefix.MICS.CNTL(cccEVA).

4.2 Setting Exception Values

Exception test routines contain tests that determine the exception conditions and definitions that define and classify the exception for reporting and analysis. The following is a sample exception test:

```
*
** 06008
** MESSAGE QUEUE REQUESTS SATISFIED IN POOL BELOW STANDARD;
*;
  IF ISYPCMQP < percent-satisfied-in-pool
   THEN DO;
    EXCCODE ='06008';
    SEVERITY='W';
    MGMTAREA='PERFORMANCE';
    EXCDESC1=
    'MSG QUEUE REQUESTS SATISFIED IN POOL BELOW STANDARD';
    EXCDESC2='MESSAGES QUEUE REQ SATIS IN POOL = ' ||
             PUT(ISYPCMQP,7.2);
    LINK HIT;
  END;
```

This exception test is processed for each observation in the latest cycle of the DETAIL IMS System Activity File (IMSISY). The test is positive when the percent of message queue manager requests falls below the installation-defined limit. When the test is positive, the exception is categorized by providing the appropriate values for EXCCODE, SEVERITY, and MGMTAREA. EXCDESC1 provides a constant title for the exception. EXCDESC2 provides variable information for the conditions that caused the test to be positive. The LINK HIT statement invokes a routine that causes the exception condition to eventually be written to the Exception Activity File (ADMEXC) for later processing by the standard reports or MICF inquiries.

The values for most exception conditions should be determined uniquely for different environments within a single organization. For example, a system paging rate that would be excessive during the nightly batch processing may be normal during the daytime hours that have heavy interactive usage. Also, different processors can support different paging rates. Numbers used as exception values should not be defined without some analysis of installation history, performance, and user requirements.

Remember to use the information in the CKPTMASK data element (Checkpoint Record Component Mask) when assigning values to exception conditions. CKPTMASK tracks the checkpoints encountered in the IMS log, which enables you to determine the applicability of data element values used in your exception tests.

The exception value analysis routine uses the CA MICS Data Base to produce a report that provides a statistical analysis of the values of the variables used in the standard exception tests distributed with the products. Using the results of this analysis, along with your installation's internal political, security, or standards policies, industry publications, and possibly your own analysis of data element behavior, you can determine the modifications that you should make to each exception test to provide meaningful exceptions in your environments.

You can also modify the exception test routine to add your own tests for additional exception conditions not detected by the standard tests delivered with the product.

4.3 Detailed Exception Descriptions

This section provides an in-depth description of each IMS standard exception available in the exception report process. The exceptions are organized by number and appear sequentially starting with exception 06001.

The description format provides the title, number, and a statement on the purpose, rationale, and definition for each exception to give you some insight as to the meaning and use of the information. Lastly, SAS code is listed with a short explanation on modifying the exception threshold values.

06001: Messages Waiting to Process Exceeds Standard

```
FILE:            IMS System Activity
SAS FILE NAME:   DETAIL.IMSISY01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Impacting     (SEVERITY='I')
MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies the time period during which messages queued to process exceeded standard.

RATIONALE: The excessive build up of messages waiting to process may indicate over-commitment of some system resource or other system throughput-impacting problem.

```
    DEFINITION:  This exception is detected when the number
of messages waiting to process at a system checkpoint exceeds
the installation-defined limit.  It does not include messages
waiting on stopped or zero priority SMB's.

    EXCEPTION STATEMENTS:  The SAS statements identifying the
exception situation and describing the condition are stored
in the source member named in SOURCE LOCATION and are
described below:

*
**  06001
**  MESSAGES WAITING TO PROCESS EXCEEDS STANDARD
*;
IF ISYMSGPR > number-of-messages
 THEN DO;
  EXCCODE='06001'; SEVERITY='I'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'MESSAGES WAITING TO PROCESS EXCEEDS STANDARD';
  EXCDESC2='MESSAGES WAITING TO PROCESS = '
           || PUT(ISYMSGPR,7.) ;
  LINK HIT;
END;

    THRESHOLD MODIFICATION:  Modify the value used for
number-of-messages.
```

06002: Messages Waiting to Output Exceeds Standard

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Impacting     (SEVERITY='I')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')

    PURPOSE:    Identifies the time period during which
messages queued to output exceeded standard.

    RATIONALE:  The excessive build up of messages waiting to
output may indicate over-commitment of some system resource
or other system throughput-impacting problem.

    DEFINITION:  This exception is detected when the number
of messages waiting to output at a system checkpoint exceeds
the installation-defined limit.  It does not include messages
waiting on stopped CNT's.
```

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06002
**  MESSAGES WAITING TO OUTPUT EXCEEDS STANDARD
*;
IF ISYMSGOT > number-of-messages
 THEN DO;
  EXCCODE='06002'; SEVERITY='I'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'MESSAGES WAITING TO OUTPUT EXCEEDS STANDARD';
  EXCDESC2='MESSAGES WAITING TO OUTPUT = '
           || PUT(ISYMSGOT,7.);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for number-of-messages.

06003: Message Processing Rate Exceeds Standard

```
FILE:            IMS System Activity
SAS FILE NAME:   DETAIL.IMSISY01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Warning       (SEVERITY='W')
MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies the time period during which the message processing rate exceeded the installation standard.

RATIONALE: While not necessarily bad, an abnormally high message processing rate may indicate potential resource over-commitment. It is possible that only transactions favored in the class/priority scheduling scheme are being processed or a BMP has monopolized the message queues.

DEFINITION: This exception is detected when the number of messages processed between system checkpoints exceeds the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06003
**  MESSAGE PROCESSING RATE EXCEEDS STANDARD
*;
IF ISYPSMSG > messages-per-second
 THEN DO;
  EXCCODE='06003'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'MESSAGE PROCESSING RATE EXCEEDS STANDARD';
  EXCDESC2='MESSAGES PROCESSING RATE = '
           || PUT(ISYPSMSG,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for messages-per-second.

06004: Message Processing Rate Below Standard

```
FILE:            IMS System Activity
SAS FILE NAME:   DETAIL.IMSISY01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Warning       (SEVERITY='W')
MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies the time period during which the message processing rate fell below the installation standard.

RATIONALE: While not necessarily bad, an abnormally low message processing rate may indicate potential resource over-commitment or non-optimum class/priority scheduling scheme. If the number of messages waiting to process is high and the message processing rate is low, a problem may exist.

DEFINITION: This exception is detected when the number of messages processed between system checkpoints falls below the installation-defined limit and the messages waiting to process is above the co-limit.

```
    EXCEPTION STATEMENTS:  The SAS statements identifying the
exception situation and describing the condition are stored
in the source member named in SOURCE LOCATION and are
described below:

*
**  06004
**  MESSAGE PROCESSING RATE BELOW STANDARD
*;
IF ISYPSMSG < messages-per-second
   & ISYMSGPR > number-of-messages
 THEN DO;
  EXCCODE='06004'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'MESSAGE PROCESSING RATE BELOW STANDARD';
  EXCDESC2='MESSAGES PROCESSING RATE = '
           || PUT(ISYPSMSG,7.2) ||
           ' AND Msg WAITING=' ||
           PUT(ISYMSGPR,7.);
  LINK HIT;
END;

    THRESHOLD MODIFICATION:   Modify the value used for
messages-per-second and number-of-messages.
```

06005: Message Queue Enqueue Rate Exceeds Standard

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Warning       (SEVERITY='W')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')

    PURPOSE:  Identifies the time period during which the
message queue pool was over-utilized.

    RATIONALE:  An abnormally high message queue pool enqueue
rate indicates over-commitment of the message queue pool.
This may be caused by a message generating BMP or user misuse
of transactions.  System performance is extremely sensitive
to activity in this pool.  This number is affected by the
complexity of message traffic as well as volume.

    DEFINITION:  This exception is detected when the message
enqueue rate exceeds the installation-defined limit.
```

```
    EXCEPTION STATEMENTS:  The SAS statements identifying the
exception situation and describing the condition are stored
in the source member named in SOURCE LOCATION and are
described below:

*
**  06005
**  MESSAGE QUEUE ENQUEUE RATE EXCEEDS STANDARD
*;
IF ISYPSMQE > message-queue-enqueue-rate
 THEN DO;
  EXCCODE='06005'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'MESSAGE QUEUE ENQUEUE RATE EXCEEDS STANDARD';
  EXCDESC2='MESSAGES QUEUE ENQUEUE RATE = '
           || PUT(ISYPSMQE,7.2);
  LINK HIT;
END;

    THRESHOLD MODIFICATION:  Modify the value used for the
message-queue-enqueue-rate.
```

06006: Message Queue Dequeue Rate Exceeds Standard

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Warning       (SEVERITY='W')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')

    PURPOSE:    Identifies the time period during which the
message queue pool was over-utilized.

    RATIONALE:  An abnormally high message queue pool dequeue
rate indicates over-commitment of the message queue pool.
This may be caused by a message generating BMP or user misuse
of transactions.  System performance is extremely sensitive
to activity in this pool.  This number is affected by the
complexity of message traffic as well as volume.

    DEFINITION:  This exception is detected when the message
dequeue rate exceeds the installation-defined limit.
```

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06006
**  MESSAGE QUEUE DEQUEUE RATE EXCEEDS STANDARD
*;
IF ISYPSMQD > message-queue-dequeue-rate
 THEN DO;
  EXCCODE='06006'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'MESSAGE QUEUE DEQUEUE RATE EXCEEDS STANDARD';
  EXCDESC2='MESSAGES QUEUE DEQUEUE RATE = '
           || PUT(ISYPSMQD,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the message-queue-dequeue-rate.

06007: Message Queue Internal Request Rate Exceeds Standard

```
FILE:            IMS System Activity
SAS FILE NAME:   DETAIL.IMSISY01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Warning       (SEVERITY='W')
MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies the time period during which the message queue pool was over-utilized.

RATIONALE: An abnormally high message queue pool internal request rate indicates over-commitment of the message queue pool. This may be caused by a message generating BMP or user misuse of transactions. System performance is extremely sensitive to activity in this pool. This number is affected by the complexity of message traffic as well as volume.

DEFINITION: This exception is detected when the message queue internal request rate exceeds the installation-defined limit.

```
    EXCEPTION STATEMENTS:  The SAS statements identifying the
exception situation and describing the condition are stored
in the source member named in SOURCE LOCATION and are
described below:

*
**  06007
**  MESSAGE QUEUE INTERNAL REQUEST RATE EXCEEDS STANDARD
*;
IF ISYPSMQR > message-queue-internal-request-rate
 THEN DO;
  EXCCODE='06007'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'MESSAGE QUEUE INTERNAL REQUEST RATE EXCEEDS STANDARD';
  EXCDESC2='MESSAGES QUEUE INTERNAL REQUEST RATE = '
           || PUT(ISYPSMQR,7.2);
  LINK HIT;
END;

    THRESHOLD MODIFICATION:  Modify the value used for the
message-queue-internal-request-rate.
```

06008: Msg Queue Requests Satisfied In Pool Below Standard

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Warning       (SEVERITY='W')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')

    PURPOSE:   Identifies the time period during which the
message queue pool was handling complex message traffic.

    RATIONALE:   An abnormally low percent of message queue
pool requests satisfied in the pool indicates complex message
traffic and may show over-commitment of the message pool.
This may be caused by a message processing BMP or user
misuse of transactions.  System performance is extremely
sensitive to activity in this pool.  This number is affected
by the complexity of message traffic as well as volume.

    DEFINITION:  This exception is detected when the percent
of message queue manager requests falls below the
installation-defined limit.
```

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06008
**  MESSAGE QUEUE REQUESTS SATISFIED IN POOL BELOW STANDARD
*;
IF ISYPCMQP < percent-satisfied-in-pool
 THEN DO;
  EXCCODE='06008'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'MESSAGE QUEUE REQUESTS SATISFIED IN POOL BELOW STANDARD';
  EXCDESC2='MESSAGES QUEUE REQ SATIS IN POOL = '
           || PUT(ISYPCMQP,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the message queue percent-satisfied-in-pool to a value between 0 and 60.

06009: Message Queue I/O Rate Exceeds Standard

```
FILE:            IMS System Activity
SAS FILE NAME:   DETAIL.IMSISY01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Impacting     (SEVERITY='I')
MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies the time period during which the message queue pool was over-committed.

RATIONALE: An abnormally high message queue pool I/O indicates complex message traffic which required I/O to the message queue data sets. Ideally, message processing takes place with no I/O to these data sets. Simple message traffic, which is processed before the space in the pool is required for other traffic, generates minimum I/O. This may be caused by a message processing BMP or user misuse of transactions. System performance is extremely sensitive to activity in this pool. This number is affected by the complexity of message traffic as well as volume.

DEFINITION: This exception is detected when the message queue pool I/O exceeds the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06009
**  MESSAGE QUEUE I/O RATE EXCEEDS STANDARD
*;
IF ISYPSMQI > I/O-rate
 THEN DO;
  EXCCODE='06009'; SEVERITY='I'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'MESSAGE QUEUE I/O RATE EXCEEDS STANDARD';
  EXCDESC2='MSG QUEUE I/O RATE = '
           || PUT(ISYPSMQI,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the message queue I/O-rate.

06010: Message Queue I/O Per Message Exceeds Standard

```
FILE:            IMS System Activity
SAS FILE NAME:   DETAIL.IMSISY01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Impacting     (SEVERITY='I')
MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies the time period during which the message queue pool was over-committed.

RATIONALE: An abnormally high message queue pool I/O per message indicates complex message traffic which required I/O to the message queue data sets. Ideally, message processing takes place with no I/O to these data sets. Simple message traffic, which is processed before the space in the pool is required for other traffic, generates minimum I/O. This may be caused by a message processing BMP or user misuse of transactions. System performance is extremely sensitive to activity in this pool. This number is affected by the complexity of message traffic as well as volume.

DEFINITION: This exception is detected when the message queue pool I/O's per message exceeds the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06010
**  MESSAGE QUEUE I/O PER MESSAGE EXCEEDS STANDARD
*;
IF ISYMQIOM > I/Os-per-message
 THEN DO;
  EXCCODE='06010'; SEVERITY='I'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'MESSAGE QUEUE I/O PER MESSAGE EXCEEDS STANDARD';
  EXCDESC2='MSG QUEUE I/O PER MESSAGE = '
           || PUT(ISYMQIOM,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the message queue I/Os-per-message.

06011: Message Queue Reads Per Message Exceeds Standard

```
FILE:            IMS System Activity
SAS FILE NAME:   DETAIL.IMSISY01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Impacting     (SEVERITY='I')
MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies the time period during which the message queue pool was over-committed.

RATIONALE: An abnormally high message queue pool read per message indicates complex message traffic which required I/O to the message queue data sets. Ideally, message processing takes place with no I/O to these data sets. Simple message traffic, which is processed before the space in the pool is required for other traffic, generates minimum I/O. This may be caused by a message processing BMP or user misuse of transactions. System performance is extremely sensitive to activity in this pool. This number is affected by the complexity of message traffic as well as volume.

DEFINITION: This exception is detected when the message queue pool reads per message exceeds the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06011
**  MESSAGE QUEUE READS PER MESSAGE EXCEEDS STANDARD
*;
IF ISYMQIOR > reads-per-message
 THEN DO;
  EXCCODE='06011'; SEVERITY='I'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'MESSAGE QUEUE READS PER MESSAGE EXCEEDS STANDARD';
  EXCDESC2='MSG QUEUE READS PER MESSAGE = '
           || PUT(ISYMQIOR,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the message queue reads-per-message.

06012: Message Queue Writes Per Message Exceeds Standard

```
FILE:            IMS System Activity
SAS FILE NAME:   DETAIL.IMSISY01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Impacting     (SEVERITY='I')
MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies the time period during which the message queue pool was over-committed.

RATIONALE: An abnormally high message queue pool write per message indicates complex message traffic which required I/O to the message queue data sets. Ideally, message processing takes place with no I/O to these data sets. Simple message traffic, which is processed before the space in the pool is required for other traffic, generates minimum I/O. This may be caused by a message processing BMP or user misuse of transactions. System performance is extremely sensitive to activity in this pool. This number is affected by the complexity of message traffic as well as volume.

DEFINITION: This exception is detected when the message queue pool writes per message exceeds the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06012
**  MESSAGE QUEUE WRITES PER MESSAGE EXCEEDS STANDARD
*;
IF ISYMQIOW > writes-per-message
 THEN DO;
  EXCCODE='06012'; SEVERITY='I'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'MESSAGE QUEUE WRITES PER MESSAGE EXCEEDS STANDARD';
  EXCDESC2='MSG QUEUE WRITES PER MESSAGE = '
           || PUT(ISYMQIOW,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the message queue writes-per-message.

06013: Msg Queue Forced Write Percentage Exceeds Standard

```
FILE:             IMS System Activity
SAS FILE NAME:    DETAIL.IMSISY01
SOURCE LOCATION:  sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:         Impacting     (SEVERITY='I')
MANAGEMENT AREA:  Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies the time period during which the message queue pool was over-committed.

RATIONALE: An abnormally high message queue pool forced write percentage indicates complex message traffic which required I/O to the message queue data sets. Ideally, message processing takes place with no I/O to these data sets. Simple message traffic, which is processed before the space in the pool is required for other traffic, generates minimum I/O. This may be caused by a message processing BMP or user misuse of transactions. System performance is extremely sensitive to activity in this pool. This number is affected by the complexity of message traffic as well as volume. The theoretical maximum for this number is fifty (50) percent as all traffic written must then be read again to be processed. A large percentage of forced writes indicates the pool is too small.

```
    DEFINITION:  This exception is detected when the message
queue pool forced write percentage exceeds the installation
defined limit.

    EXCEPTION STATEMENTS:  The SAS statements identifying the
exception situation and describing the condition are stored
in the source member named in SOURCE LOCATION and are
described below:

*
**  06013
**  MESSAGE QUEUE FORCED WRITE PERCENTAGE EXCEEDS STANDARD
*;
IF ISYPCMQF > forced-write-percentage
 THEN DO;
  EXCCODE='06013'; SEVERITY='I'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'MESSAGE QUEUE FORCED WRITE PERCENTAGE EXCEEDS STANDARD';
  EXCDESC2='MSG QUEUE FORCED WRITES PERCENTAGE = '
           || PUT(ISYPCMQF,7.2);
  LINK HIT;
END;

    THRESHOLD MODIFICATION:  Modify the message queue
forced-write-percentage to a value between 0 and 50.
```

06014: Message Queue IWAITS Per Message Exceed Zero

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Critical      (SEVERITY='C')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')

    PURPOSE:  Identifies the time period during which the
message queue pool was over-committed.

    RATIONALE:  There should be no message queue pool IWAITS.
They may result from:

  o  A purge completion
  o  No buffer available
  o  Other DECB to read/write buffer
  o  Conflicting enqueue-dequeue requests

These situations all indicate a critical pool shortage.
```

```
    DEFINITION:  This exception is detected when the message
queue pool IWAIT per message exceeds zero.

    EXCEPTION STATEMENTS:  The SAS statements identifying the
exception situation and describing the condition are stored
in the source member named in SOURCE LOCATION and are
described below:

*
**  06014
**  MESSAGE QUEUE IWAITS PER MESSAGE EXCEED ZERO
*;
IF ISYMQIWT > 0
 THEN DO;
  EXCCODE='06014'; SEVERITY='C'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'MESSAGE QUEUE IWAITS PER MESSAGE EXCEEDS ZERO';
  EXCDESC2='MSG QUEUE IWAITS PER MESSAGE = '
           || PUT(ISYMQIWT,7.4);
  LINK HIT;
END;

    THRESHOLD MODIFICATION:  None required
```

06015: MFS Prefetch I/O Rate Exceeds Standard

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Warning       (SEVERITY='W')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')

    PURPOSE:  Identifies the time period during which the
message MFS pool was over-committed.

    RATIONALE:  An abnormally high MFS prefetch I/O rate may
indicate misuse of MFS.  Proliferation of formats with no
attempt to use common displays, may lead to high I/O here.
Prefetch I/O is generally preferable to immediate fetch I/O
providing the prefetch is satisfied before a subsequent
immediate fetch request.  If a significant portion of the
immediate fetch I/O is satisfied from the prefetch queue,
prefetch may be considered for elimination from the system.
Prefetch is determined by the 'NEXT=' parameter in the MFS
gen.  Take care to use this parameter only where reasonable.
```

```
    DEFINITION:   This exception is detected when the MFS
buffer prefetch I/O rate exceeds the installation-defined
limit.  It does not apply to IMS 4.1 and higher systems.

    EXCEPTION STATEMENTS:  The SAS statements identifying the
exception situation and describing the condition are stored
in the source member named in SOURCE LOCATION and are
described below:

*
**  06015
**  MFS PRE FETCH I/O RATE EXCEEDS STANDARD
*;
IF (ISYFMPFI/DURATION) > prefetch-I/O-rate
 THEN DO;
  X = ISYFMPFI / DURATION;
  EXCCODE='06015'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'MFS PRE FETCH I/O RATE EXCEEDS STANDARD';
  EXCDESC2='MFS PRE FETCH I/O RATE ='
           || PUT(X,7.2) ||
           ' if from PRE FETCH =' ||
           PUT(ISYPCIPQ,6.2) || '%';
  LINK HIT;
END;

    THRESHOLD MODIFICATION:  Modify the value used for the
MFS prefetch-I/O-rate.
```

06016: MFS Immediate Fetch I/O Rate Exceeds Standard

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Warning       (SEVERITY='W')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')

    PURPOSE:  Identifies the time period during which the
message MFS pool was over-committed.
```

RATIONALE: An abnormally high MFS immediate I/O rate may indicate misuse of MFS. Proliferation of formats with no attempt to use common displays may lead to high I/O here. Prefetch I/O is generally preferable to immediate fetch I/O providing the prefetch is satisfied before a subsequent immediate fetch request. If a significant portion of the immediate fetch I/O is satisfied from the prefetch queue, prefetch may be considered for elimination from the system. Prefetch is determined by the 'NEXT=' parameter in the MFS gen. Take care to use this parameter only where reasonable.

DEFINITION: This exception is detected when the MFS buffer immediate fetch I/O rate exceeds the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06016
**  MFS IMMEDIATE FETCH I/O RATE EXCEEDS STANDARD
*;
IF (ISYFMIFI/DURATION) > immediate-fetch-I/O-rate
 THEN DO;
  X = ISYFMIFI / DURATION;
  EXCCODE='06016'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'MFS IMMEDIATE FETCH I/O RATE EXCEEDS STANDARD';
  EXCDESC2='MFS PRE FETCH I/O RATE ='
           || PUT(X,7.2) ||
           ' if FROM PRE FETCH =' ||
           PUT(ISYPCIPQ,6.2) || '%';
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the MFS immediate-fetch-I/O-rate.

06017: MFS I/O Rate Exceeds Standard

```
FILE:            IMS System Activity
SAS FILE NAME:   DETAIL.IMSISY01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Critical      (SEVERITY='C')
MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies the time period during which the message MFS pool was over-committed.

RATIONALE: An abnormally high MFS I/O rate may indicate misuse of MFS. Proliferation of formats with no attempt to use common displays may lead to high I/O here. The use of the in-core directory $$IMSDIR is strongly recommended. As each entry is only fourteen bytes, most installations include all formats in this directory. If this is the case, there should be no directory I/O. However, if there are more formats than will fit in $$IMSDIR (2339 entries in a 32K pool out of the MFS pool), then the most often referenced formats should be included to minimize I/O. A large directory I/O rate indicates a non-optimum choice of formats to be included in the directory. A consistently high I/O value may dictate an increase in MFS pool size.

DEFINITION: This exception is detected when the MFS I/O rate exceeds the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06017
**  MFS I/O RATE EXCEEDS STANDARD
*;
IF ISYPSMFB > I/O-rate
 THEN DO;
  EXCCODE='06017'; SEVERITY='C'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'MFS I/O RATE EXCEEDS STANDARD';
  EXCDESC2='MFS I/O RATE ='
           || PUT(ISYPSMFB,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the MFS I/O-rate.

06018: MFS Directory I/O Rate Exceeds Standard

```
FILE:            IMS System Activity
SAS FILE NAME:   DETAIL.IMSISY01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)
```

```
    SEVERITY:        Critical      (SEVERITY='C')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies the time period during which the message MFS pool was over-committed.

RATIONALE: An abnormally high MFS Directory I/O rate may indicate misuse of MFS. Proliferation of formats with no attempt to use common displays may lead to high I/O here. The use of the in-core directory $$IMSDIR is strongly recommended. As each entry is only fourteen bytes, most installations include all formats in this directory. If this is the case, there should be no directory I/O. However, if there are more formats than will fit in $$IMSDIR (2339 entries in a 32K pool out of the MFS pool), the most often referenced formats should be included to minimize I/O. A large I/O rate indicates a non-optimum choice of formats to be included in the directory.

DEFINITION: This exception is detected when the MFS directory I/O rate exceeds the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06018
**  MFS DIRECTORY I/O RATE EXCEEDS STANDARD
*;
IF (ISYFMDIO/DURATION) > directory-I/O-rate
 THEN DO;
  X = ISYFMDIO / DURATION;
  EXCCODE='06018'; SEVERITY='C'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'MFS DIRECTORY I/O RATE EXCEEDS STANDARD';
  EXCDESC2='MFS DIRECTORY I/O RATE ='
           || PUT(X,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the MFS directory-I/O-rate.

06019: DMB Pool High Water Mark Exceeds Standard

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Warning       (SEVERITY='W')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')

    PURPOSE:  Identifies that the DMB pool may require
    enlarging.

    RATIONALE:  Insufficient storage for this pool, which
contains all non-resident DMBs, will cause data base opens
and closes for the DMBs which are flushed for insufficient
space in this pool.  This can have severe performance
implications.  The number monitored is the percentage of the
pool that the high water mark represents.  A number close to
60% may indicate insufficient pool size.  The only way to
determine sufficiency is to increase pool size until the high
water mark remains constant and this percentage number
decreases.

    DEFINITION:  This exception is detected when the DMB pool
high water mark percentage exceeds the installation-defined
limit.

    EXCEPTION STATEMENTS:  The SAS statements identifying the
exception situation and describing the condition are stored
in the source member named in SOURCE LOCATION and are
described below:

*
**  06019
**  DMB POOL HIGH WATER MARK EXCEEDS STANDARD
*;
IF ((ISYDMBHW/ISYDMBSZ) * 100) > high-water-mark-percentage
 THEN DO;
  X = ((ISYDMBHW / ISYDMBSZ) * 100);
  EXCCODE='06019'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'DMB POOL HIGH WATER MARK EXCEEDS STANDARD';
  EXCDESC2='DMB POOL HWM='
           || PUT(X,7.2) || '% OF AVAILABLE POOL ';
  LINK HIT;
END;

    THRESHOLD MODIFICATION:  Modify the DMB pool
high-water-mark-percentage to a value between 0 and 100.
```

06020: DMB Pool Current Use Exceeds Standard

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Impacting     (SEVERITY='I')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')

    PURPOSE:  Identifies that the DMB pool may require
    enlarging.

    RATIONALE:  Insufficient storage for this pool, which
contains all non-resident DMBs, will cause data base opens
and closes for the DMBs which are flushed for insufficient
space in this pool.  This can have severe performance
implications.  The number monitored is the percentage of the
pool that current use represents.  A number close to 60% may
indicate insufficient pool size.  The only way to determine
sufficiency is to increase pool size until the current use
remains below the available pool size and this percentage
number decreases.

    DEFINITION:  This exception is detected when the DMB
current use percentage exceeds the installation-defined
limit.

    EXCEPTION STATEMENTS:  The SAS statements identifying the
exception situation and describing the condition are stored
in the source member named in SOURCE LOCATION and are
described below:

*
**  06020
**  DMB POOL CURRENT USE MARK EXCEEDS STANDARD
*;
IF ((ISYDMBUS/ISYDMBSZ) * 100) > current-use-percentage
 THEN DO;
  X = ((ISYDMBUS / ISYDMBSZ) * 100);
  EXCCODE='06020'; SEVERITY='I'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'DMB POOL CURRENT USE EXCEEDS STANDARD';
  EXCDESC2='DMB POOL USE ='
           || PUT(X,7.2) || '% OF AVAILABLE POOL ';
  LINK HIT;
END;

    THRESHOLD MODIFICATION:      Modify the DMB pool
current-use-percentage to a value between 0 and 100.
```

06021: PSB Pool High Water Mark Exceeds Standard

FILE: IMS System Activity
SAS FILE NAME: DETAIL.IMSISY01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY: Warning (SEVERITY='W')
MANAGEMENT AREA: Performance (MGMTAREA='PERFORMANCE')

PURPOSE: Identifies that the PSB pool may require enlarging.

RATIONALE: Insufficient storage for this pool, which contains all non-resident PSBs, will cause ACBLIB I/O's for the PSBs which are flushed for insufficient space in this pool. The number monitored is the percentage of the pool that high water mark represents. A number close to 100 % may indicate insufficient pool size. The only way to determine sufficiency is to increase pool size until the high water mark remains constant and this percentage number decreases.

DEFINITION: This exception is detected when the PSB pool high water mark percentage exceeds the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06021
**  PSB POOL HIGH WATER MARK EXCEEDS STANDARD
*;
IF ((ISYPSBHW/ISYPSBSZ) * 100) > high-water-mark-percentage
 THEN DO;
  X = ((ISYPSBHW / ISYPSBSZ) * 100);
  EXCCODE='06021'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'PSB POOL HIGH WATER MARK EXCEEDS STANDARD';
  EXCDESC2='PSB POOL HWM='
           || PUT(X,7.2) || '% OF AVAILABLE POOL ' ;
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the PSB pool high-water-mark-percentage to a value between 0 and 100.

06022: PSB Pool Current Use Mark Exceeds Standard

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Impacting     (SEVERITY='I')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies that the PSB pool may require enlarging.

RATIONALE: Insufficient storage for this pool, which contains all non-resident PSBs, will cause ACBLIB I/O's for the PSBs which are flushed for insufficient space in this pool. The number monitored is the percentage of the pool that current use represents. A number close to 100 % may indicate insufficient pool size. The only way to determine sufficiency is to increase pool size until the current use remains below the available pool size and this percentage number decreases.

DEFINITION: This exception is detected when the PSB current use percentage exceeds the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06022
**  PSB POOL CURRENT USE MARK EXCEEDS STANDARD
*;
IF ((ISYPSBUS/ISYPSBSZ) * 100) > current-use-percentage
 THEN DO;
  X = ((ISYPSBUS / ISYPSBSZ) * 100);
  EXCCODE='06022'; SEVERITY='I'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'PSB POOL CURRENT USE EXCEEDS STANDARD';
  EXCDESC2='PSB POOL USE ='
           || PUT(X,7.2) || '% OF AVAILABLE POOL ';
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the PSB pool current-use-percentage to a value between 0 and 100.

06023: CIO Pool High Water Mark Exceeds Standard

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Warning       (SEVERITY='W')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')

    PURPOSE:  Identifies that the CIO pool may require
    enlarging.

    RATIONALE:  Insufficient storage for this pool, which is
used to build incoming messages and by MFS for output
messages, can have severe performance implications.  The
number monitored is the percentage of the pool that high
water mark represents.  A number close to 100% may indicate
insufficient pool size.  The only way to determine
sufficiency is to increase pool size until the high water
mark remains constant and this percentage number decreases.
Commands like START LINE ALL require large pool sizes not
required for normal operation.  Since this pool is normally
page fixed, starting lines one at a time may be a reasonable
trade off to a large pool.

    DEFINITION:  This exception is detected when the CIO pool
high water mark percentage exceeds the installation-defined
limit.  It does not apply to IMS 4.1 and higher systems.

    EXCEPTION STATEMENTS:  The SAS statements identifying the
exception situation and describing the condition are stored
in the source member named in SOURCE LOCATION and are
described below:

*
**  06023
**  CIO POOL HIGH WATER MARK EXCEEDS STANDARD
*;
IF ((ISYCIPHW/ISYCIPSZ) * 100) > high-water-mark-percentage
 THEN DO;
  X = ((ISYCIPHW / ISYCIPSZ) * 100);
  EXCCODE='06023'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'CIO POOL HIGH WATER MARK EXCEEDS STANDARD';
  EXCDESC2='CIO POOL HWM='
           || PUT(X,7.2) || '% OF AVAILABLE POOL ';
  LINK HIT;
END;
```

    THRESHOLD MODIFICATION: Modify the CIO pool
high-water-mark-percentage to a value between 0 to 100.

06024: CIO Pool Current Use Exceeds Standard

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Impacting     (SEVERITY='I')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

    PURPOSE: Identifies that the CIO pool may require
    enlarging.

    RATIONALE: Insufficient storage for this pool, which is
used to build incoming messages and by MFS for output
messages, can have severe performance implications. The
number monitored is the percentage of the pool that current
use represents. A number close to 100 % may indicate
insufficient pool size. The only way to determine
sufficiency is to increase pool size until the current use
remains below the available pool size and this percentage
number decreases.

    DEFINITION: This exception is detected when the CIO
current use percentage exceeds the installation-defined
limit. It does not apply to IMS 4.1 and higher systems.

    EXCEPTION STATEMENTS: The SAS statements identifying the
exception situation and describing the condition are stored
in the source member named in SOURCE LOCATION and are
described below:

```
*
**  06024
**  CIO POOL CURRENT USE MARK EXCEEDS STANDARD
*;
IF ((ISYCIPUS/ISYCIPSZ) * 100) > current-use-percentage
 THEN DO;
  X = ((ISYCIPUS / ISYCIPSZ) * 100);
  EXCCODE='06024'; SEVERITY='I'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'CIO POOL CURRENT USE EXCEEDS STANDARD';
  EXCDESC2='CIO POOL USE ='
           || PUT(X,7.2) || '% OF AVAILABLE POOL ';
  LINK HIT;
END;
```

```
    THRESHOLD MODIFICATION:      Modify the CIO pool
current-use-percentage to a value between 0 and 100.
```

06025: Scheduling Rate Exceeds Standard

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Warning       (SEVERITY='W')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')

    PURPOSE:  Identifies the time period during which the
scheduling rate exceeded the installation standard.

    RATIONALE:  While not necessarily bad, an abnormally high
scheduling rate may indicate a potential resource over-
commitment.  It is possible that only short running
transactions favored in the class/priority scheduling scheme
are being processed or that scheduling conflicts lead to
fruitless schedules.

    DEFINITION:  This exception is detected when the
scheduling rate exceeds the installation-defined limit.

    EXCEPTION STATEMENTS:  The SAS statements identifying the
exception situation and describing the condition are stored
in the source member named in SOURCE LOCATION and are
described below:

*
**  06025
**  SCHEDULING RATE EXCEEDS STANDARD
*;
IF ISYPSSCD > scheduling-rate
 THEN DO;
  EXCCODE='06025'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'SCHEDULING RATE EXCEEDS STANDARD';
  EXCDESC2='SCHEDULING RATE = '
           || PUT(ISYPSSCD,7.2) || ' AT ' ||
           PUT(ENDTS,TIME.);
  LINK HIT;
END;

    THRESHOLD MODIFICATION:  Modify the value used for the
scheduling-rate.
```

06026: Scheduling Rate Below Standard

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Warning       (SEVERITY='W')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies the time period during which the scheduling fell below the installation standard.

RATIONALE: While not necessarily bad, an abnormally low scheduling rate may indicate a potential resource over-commitment. It is possible that only transactions favored in the class/priority scheduling scheme are being processed or that long running programs are dominating the system. If the scheduling rate is low and there are messages waiting to process, it is likely that a problem exists.

DEFINITION: This exception is detected when the scheduling rate exceeds the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06026
**  SCHEDULING RATE BELOW STANDARD
*;
IF ISYPSSCD < scheduling-rate
   & ISYMSGPR > messages-waiting-to-process
 THEN DO;
  EXCCODE='06026'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'SCHEDULING RATE BELOW STANDARD';
  EXCDESC2='SCHED RATE = '
           || PUT(ISYPSSCD,7.2) ||
           ' MSGS WAITING TO PROCESS =' ||
             PUT(ISYMSGPR,7.);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the scheduling-rate and messages-waiting-to-process.

06027: Scheduling Conflict Percentage Exceeds Standard

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Impacting     (SEVERITY='I')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies the time period during which the scheduling conflict percentage exceeded the installation standard.

RATIONALE: Scheduling conflicts occur when the scheduler examines an SMB in class/priority order with a message queued that cannot be scheduled for one of the following reasons:

```
  o  program conflict - A transaction is already active and
                        is not eligible for parallel
                        scheduling.

  o  priority cutoff  - A transaction of higher priority in
                        this class has previously suffered
                        an intent failure schedule and that
                        transaction had scheduling option 1
                        or 2.

  o  DB intent        - The data base needed for the
                        transaction is held by another PSB
                        using PROCOPT=E or there is a pool
                        space failure in DMB PSB or PSBW.

  o  other conflicts  - These include :  The data base
                        stopped, SMB locked or stopped, PSB
                        locked or stopped, SMB is zero
                        priority, I/O error on DOPT PSB, and
                        SMB is already in the process of
                        being scheduled.
```

A high conflict percentage can be caused by any of the above reasons. DB intent conflicts are the most expensive. BMP SMBs should be assigned to a non-scheduleable class which will prevent scheduling conflicts. Resources which are stopped or locked for long periods should also have transactions that use them assigned to non-scheduleable classes. If there are a high number of program conflicts, parallel scheduling may be considered.

    DEFINITION: This exception is detected when the
scheduling conflict percentage exceeds the installation-
defined limit.

    EXCEPTION STATEMENTS: The SAS statements identifying the
exception situation and describing the condition are stored
in the source member named in SOURCE LOCATION and are
described below:

```
*
**  06027
**  SCHEDULING CONFLICT PERCENTAGE EXCEEDS STANDARD
*;
IF ISYPCCFL > scheduling-conflict-percent
 THEN DO;
  EXCCODE='06027'; SEVERITY='I'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'SCHEDULING CONFLICT PERCENTAGE EXCEEDS STANDARD';
  EXCDESC2='SCHED CONFLICT PERCENTAGE = '
           || PUT(ISYPCCFL,7.2);
  LINK HIT;
END;
```

    THRESHOLD MODIFICATION: Modify the value used for the
scheduling-conflict-percent.

06028: PI Current Use Exceeds Standard

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Critical      (SEVERITY='C')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

    PURPOSE: Identifies that the PI pool may require
enlarging.

    RATIONALE: Insufficient storage for this pool, which is
used to hold the program isolation enque table, will result
in IMS abending with a user 775. Thus, there should always
be a margin of safety in allocating this pool. The number
represented here is the percent of the total pool that the
current utilization represents. Excessively high usage in
this pool is an indication that sync points are not being
reached frequently enough by application programs. The size
of the pool required is directly proportional to the number
of PSTs.

DEFINITION: This exception is detected when the PI current use percentage exceeds the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06028
**  PI CURRENT USE MARK EXCEEDS STANDARD
*;
IF ((ISYPIUSE/ISYPIMAX) * 100) > current-use-percentage
 THEN DO;
  X = ((ISYPIUSE / ISYPIMAX) * 100);
  EXCCODE='06028'; SEVERITY='C'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'PI POOL CURRENT USE EXCEEDS STANDARD';
  EXCDESC2='PI POOL USE ='
          || PUT(X,7.2) || '% OF AVAILABLE POOL ';
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the PI pool current-use-percentage to a value between 0 and 100.

06029: PI Request Rate Exceeds Standard

```
FILE:            IMS System Activity
SAS FILE NAME:   DETAIL.IMSISY01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Warning        (SEVERITY='W')
MANAGEMENT AREA: Performance    (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies that PI processing may be over-committed.

RATIONALE: An abnormally high number here may represent resource over-utilization. This number, combined with the average search length in the PI pool, indicates whether applications are taking checkpoints frequently enough.

DEFINITION: This exception is detected when the PI request rate exceeds the installation-defined limit.

```
    EXCEPTION STATEMENTS:  The SAS statements identifying the
exception situation and describing the condition are stored
in the source member named in SOURCE LOCATION and are
described below:

*
**  06029
**  PI REQUEST RATE EXCEEDS STANDARD
*;
IF ISYPSPIR > PI-request-rate
 THEN DO;
  EXCCODE='06029'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'PI REQUEST RATE EXCEEDS STANDARD';
  EXCDESC2='PI REQ RATE ='
           || PUT(ISYPSPIR,7.2);
  LINK HIT;
END;

    THRESHOLD MODIFICATION:  Modify the value used for the
PI-request-rate.
```

06030: PI Average Search Length Exceeds Standard

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Impacting     (SEVERITY='I')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')

    PURPOSE:  Identifies that PI processing may be over-
committed.

    RATIONALE:  An abnormally high number here may represent
resource over-utilization.  This number, combined with the
request rate in the PI pool, indicates whether applications
are taking checkpoints frequently enough.  This number should
be less than one.

    DEFINITION:  This exception is detected when the PI
average search length exceeds the installation-defined limit.

    EXCEPTION STATEMENTS:  The SAS statements identifying the
exception situation and describing the condition are stored
in the source member named in SOURCE LOCATION and are
described below:
```

```
*
**  06030
**  PI AVERAGE SEARCH LENGTH EXCEEDS STANDARD
*;
IF ISYAVPIS > PI-search-length
 THEN DO;
  EXCCODE='06030'; SEVERITY='I'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'PI AVERAGE SEARCH LENGTH EXCEEDS STANDARD';
  EXCDESC2='PI AVG SEARCH LENGTH ='
           || PUT(ISYAVPIS,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the PI-search-length.

06031: PI Maximum Search Length Exceeds Standard

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Impacting     (SEVERITY='I')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies that PI processing may be over-committed.

RATIONALE: An abnormally high number here may represent resource over-utilization. This number, combined with the request rate in the PI pool, indicates whether applications are taking checkpoints frequently enough. This number should be less than one.

DEFINITION: This exception is detected when the PI maximum search length exceeds the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06031
**  PI MAXIMUM SEARCH LENGTH EXCEEDS STANDARD
*;
IF ISYMXPIS > PI-search-length
 THEN DO;
  EXCCODE='06031'; SEVERITY='I'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'PI MAXIMUM SEARCH LENGTH EXCEEDS STANDARD';
  EXCDESC2='PI MAX SEARCH LENGTH ='
           || PUT(ISYMXPIS,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the PI-search-length.

06036: Logical Log Latch Conflict Rate Exceeds Standard

```
FILE:            IMS System Activity
SAS FILE NAME:   DETAIL.IMSISY01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Warning       (SEVERITY='W')
MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies that latch processing may be over-committed.

RATIONALE: An abnormally high number here may represent resource over-utilization. There is little remedy for this situation other than reducing the number of PSTs or decreasing the time required for logical logging via hardware changes. Only large values should be of concern.

DEFINITION: This exception is detected when the logical log latch conflict rate exceeds the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06036
**  LOGICAL LOG LATCH CONFLICT RATE EXCEEDS STANDARD
*;
IF ISYPSLLL > logical-log-latch-conflict-rate
 THEN DO;
  EXCCODE='06036'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'LOGICAL LOG LATCH CONFLICT RATE EXCEEDS STANDARD';
  EXCDESC2='LOGICAL LOG LATCH CONFL RATE ='
           || PUT(ISYPSLLL,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the logical-log-latch-conflict-rate.

06037: Storage Mgt Latch Conflict Rate Exceeds Standard

```
FILE:            IMS System Activity
SAS FILE NAME:   DETAIL.IMSISY01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Warning       (SEVERITY='W')
MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies that latch processing may be over-committed.

RATIONALE: An abnormally high number here may represent resource over-utilization. There is little remedy for this situation other than reducing the number of PSTs or decreasing the time required for processing via hardware changes. Only large values should be of concern.

DEFINITION: This exception is detected when the storage management latch conflict rate exceeds the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06037
**  STORAGE MANAGEMENT LATCH CONFLICT RATE EXCEEDS STANDARD
*;
IF ISYPSLSM > storage-management-latch-conflict-rate
 THEN DO;
  EXCCODE='06037'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'STORAGE MANAGEMENT LATCH CONFLICT RATE EXCEEDS STANDARD';
  EXCDESC2='STG MGt LATCH CONFL RATE ='
           || PUT(ISYPSLSM,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the storage-management-latch-conflict-rate.

06038: Exclusive Cntl Latch Conflict Rate Exceeds Limit

```
FILE:            IMS System Activity
SAS FILE NAME:   DETAIL.IMSISY01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Warning       (SEVERITY='W')
MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies that latch processing may be over-committed.

RATIONALE: An abnormally high number here may represent resource over-utilization. This value may indicate misuse of program isolation. Latches are required to serialize access to PI enqueue/dequeue control blocks and queues. There is little remedy for this situation other than reducing the number of PSTs or decreasing the time required for processing via hardware changes. Only large values should be of concern.

DEFINITION: This exception is detected when the exclusive control latch conflict rate exceeds the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06038
**  EXCLUSIVE CONTROL LATCH CONFLICT RATE EXCEEDS LIMIT
*;
IF ISYPSLEC > exclusive-control-latch-conflict-rate
 THEN DO;
  EXCCODE='06038'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'EXCLUSIVE CONTROL LATCH CONFLICT RATE EXCEEDS LIMIT';
  EXCDESC2='EXCL CTL LATCH CONFLICT RATE ='
           || PUT(ISYPSLEC,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the exclusive-control-latch-conflict-rate.

06039: Dynamic Log Latch Conflict Rate Exceeds Standard

```
FILE:            IMS System Activity
SAS FILE NAME:   DETAIL.IMSISY01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Warning       (SEVERITY='W')
MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies that latch processing may be over-committed.

RATIONALE: An abnormally high number here may represent resource over-utilization. Latches are required during sync point and backout processing. There is little remedy for this situation other than reducing the number of PSTs or decreasing the time required for processing via hardware changes. Only large values should be of concern.

DEFINITION: This exception is detected when the dynamic log latch conflict rate exceeds the installation-defined limit. It does not apply to IMS 4.1 and higher systems.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06039
**  DYNAMIC LOG LATCH CONFLICT RATE EXCEEDS STANDARD
*;
IF ISYPSLDL > dynamic-log-latch-conflict-rate
 THEN DO;
  EXCCODE='06039'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'DYNAMIC LOG LATCH CONFLICT RATE EXCEEDS STANDARD';
  EXCDESC2='DYN LOG LATCH CONFL RATE ='
           || PUT(ISYPSLDL,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the dynamic-log-latch-conflict-rate.

06040: Monitor Latch Conflict Rate Exceeds Standard

```
FILE:            IMS System Activity
SAS FILE NAME:   DETAIL.IMSISY01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Warning       (SEVERITY='W')
MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies that the DC Monitor may be affecting system performance.

RATIONALE: An abnormally high number here may represent impact on the system from running the DC Monitor. The latch conflict results in an OS wait for the requesting task. There is little remedy for this situation other than not running the DC Monitor. Only large values should be of concern.

DEFINITION: This exception is detected when the monitor latch conflict rate exceeds the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06040
**  MONITOR LATCH CONFLICT RATE EXCEEDS STANDARD
*;
IF ISYPSLMN > monitor-latch-conflict-rate
 THEN DO;
  EXCCODE='06040'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'MONITOR LATCH CONFLICT RATE EXCEEDS STANDARD';
  EXCDESC2='MONITOR LATCH CONFL RATE ='
           || PUT(ISYPSLMN,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the monitor-latch-conflict-rate.

06041: DMB Latch Conflict Rate Exceeds Standard

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Warning       (SEVERITY='W')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies that system processing may be over-committed.

RATIONALE: An abnormally high number here may represent system over-commitment. The latches are used to serialize access to DMBs by DL/I modules. There is one latch per DMB. Also included in this count are conflicts for the ISAM/OSAM buffer handler. There is one of these latches per subpool. There is little remedy for this situation other than decreasing the number of PSTs or decreasing the time the latches are held via hardware changes. Only large values should be of concern.

DEFINITION: This exception is detected when the DMB latch conflict rate exceeds the installation-defined limit. It does not apply to IMS 4.1 and higher systems.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06041
**  DMB LATCH CONFLICT RATE EXCEEDS STANDARD
*;
IF ISYPSLGN > DMB-latch-conflict-rate
 THEN DO;
  EXCCODE='06041'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'DMB LATCH CONFLICT RATE EXCEEDS STANDARD';
  EXCDESC2='DMB LATCH CONFL RATE ='
           || PUT(ISYPSLGN,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the DMB-latch-conflict-rate.

06042: ISAM/OSAM Request Rate Exceeds Standard

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Warning       (SEVERITY='W')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies that system processing may be over-committed.

RATIONALE: An abnormally high number here may represent resource over-utilization.

DEFINITION: This exception is detected when the ISAM/OSAM request rate exceeds the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06042
**  ISAM/OSAM REQUEST RATE EXCEEDS STANDARD
*;
IF ISYPSISO > ISAM/OSAM-request-rate
 THEN DO;
  EXCCODE='06042'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'ISAM/OSAM REQUEST RATE EXCEEDS STANDARD';
  EXCDESC2='ISAM/OSAM REQuest RATE ='
           || PUT(ISYPSISO,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the ISAM/OSAM-request-rate.

06043: ISAM/OSAM Request Satisfied in Pool Below Standard

```
FILE:            IMS System Activity
SAS FILE NAME:   DETAIL.IMSISY01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Warning       (SEVERITY='W')
MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies that system processing may be over-committed.

RATIONALE: An abnormally high number here may represent resource over-utilization or non-optimum application processing schemes or data base design.

DEFINITION: This exception is detected when the ISAM/OSAM percent request satisfied in pool falls below the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06043
**  ISAM/OSAM REQUEST SATISFIED IN POOL BELOW STANDARD
*;
IF ISYPCISO < ISAM/OSAM-percent-satisfied-in-pool
 THEN DO;
  EXCCODE='06043'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'ISAM/OSAM REQUEST SATISFIED IN POOL BELOW STANDARD';
  EXCDESC2='ISAM/OSAM REQUEST SATIS IN POOL ='
           || PUT(ISYPCISO,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the ISAM/OSAM-percent-satisfied-in-pool to a value between 0 and 100.

06044: ISAM/OSAM I/O Rate Exceeds Standard

```
FILE:            IMS System Activity
SAS FILE NAME:   DETAIL.IMSISY01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Impacting     (SEVERITY='I')
MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies that system processing may be over-committed.

RATIONALE: An abnormally high number here may represent resource over-utilization.

DEFINITION: This exception is detected when the ISAM/OSAM I/O rate exceeds the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06044
**  ISAM/OSAM I/O RATE EXCEEDS STANDARD
*;
IF ISYPSISI > ISAM/OSAM-I/O-rate
 THEN DO;
  EXCCODE='06044'; SEVERITY='I'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'ISAM/OSAM I/O RATE EXCEEDS STANDARD';
  EXCDESC2='ISAM/OSAM I/O RATE ='
           || PUT(ISYPSISI,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the ISAM/OSAM-I/O-rate.

06045: ISAM/OSAM Formatted Cylinders Exceeds Standard

```
    FILE:            IMS System Activity
    SAS FILE NAME:   DETAIL.IMSISY01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Warning       (SEVERITY='W')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies that system processing may be over-committed.

RATIONALE: An abnormally high number here may represent unanticipated data base growth.

DEFINITION: This exception is detected when the number of ISAM/OSAM formatted cylinders exceeds the installation-defined limit. It does not apply to IMS 4.1 and higher systems.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06045
**  ISAM/OSAM FORMATTED CYLINDERS EXCEEDS STANDARD
*;
IF ISYOSFMT > ISAM/OSAM-formatted-cylinders
 THEN DO;
  EXCCODE='06045'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'ISAM/OSAM FORMATTED CYLINDERS EXCEEDS STANDARD';
  EXCDESC2='ISAM/OSAM FORMATTED CYL='
           || PUT(ISYOSFMT,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the value used for the ISAM/OSAM-formatted-cylinders.

06046: ISAM/OSAM Forced Writes Exceed Standard

```
FILE:            IMS System Activity
SAS FILE NAME:   DETAIL.IMSISY01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Impacting     (SEVERITY='I')
MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies that system data base processing may be over-committed.

RATIONALE: An abnormally high number here may represent insufficient buffer space or non-optimum application design. A forced write occurs when a buffer is needed and only altered buffers are available. The request for a new buffer must wait for the forced write to complete. They are less efficient than chained writes which occur at sync points.

DEFINITION: This exception is detected when the percentage of forced writes exceeds the installation-defined limit.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06046
**  ISAM/OSAM FORCED WRITES EXCEED STANDARD
*;
IF ISYPCOFW > ISAM/OSAM-forced-write-percentage
 THEN DO;
  EXCCODE='06046'; SEVERITY='I'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'ISAM/OSAM FORCED WRITES EXCEED STANDARD';
  EXCDESC2='ISAM/OSAM FRC WRTS ='
           || PUT(ISYPCOFW,7.2);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the ISAM/OSAM-forced-write-percentage to a value between 0 and 100.

06100: IMS Security Violation

```
FILE:            IMS System Incident
SAS FILE NAME:   DETAIL.IMSINC01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Critical      (SEVERITY='C')
MANAGEMENT AREA: Security      (MGMTAREA='SECURITY')
```

PURPOSE: Identifies an IMS recognized security violation.

RATIONALE: Access to system and application services may be restricted by an IMS Security Gen. This exception indicates that some function restricted in the IMS security gen has been attempted in a non-authorized fashion.

DEFINITION: This exception is detected when IMS detects some unauthorized action.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06100
**  IMS SECURITY VIOLATION
*;
IF INCCODE = '10'X
 THEN DO;
  EXCCODE='06100'; SEVERITY='C'; MGMTAREA='SECURITY';
  EXCDESC1=
  'IMS SECURITY VIOLATION ' || INCTEXT;
  EXCDESC2= 'ENTRY =' || TRANSACT || ' LINE ' ||
           PUT(LINE,4.) || ' PTERM ' ||
           PUT(PTERM,4.) || ' LTERM ' ||
           LTERM ;
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: None required

06101: IMS Application Abend

```
FILE:            IMS System Incident
SAS FILE NAME:   DETAIL.IMSINC01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Critical      (SEVERITY='C')
MANAGEMENT AREA: Availability  (MGMTAREA='AVAILABILITY')
```

PURPOSE: Identifies an IMS application program abend.

RATIONALE: Application abends annoy users and induce extreme overhead in the system as all processing must be backed out. Some abends are IMS generated pseudo abends, such as intent deadlocks (U777), which can be alleviated by such means as improved scheduling schemes or use of PROCOPT=E in PSBs. These abends do not result in stopping the transaction or program. Other abends do result in availability gaps and should be addressed immediately.

DEFINITION: This exception is detected when IMS detects an application abend.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06101
**  IMS APPLICATION ABEND
*;
IF INCCODE = '71'X | INCCODE = '72'X
 THEN DO;
  EXCCODE='06101'; SEVERITY='C'; MGMTAREA='AVAILABILITY';
  EXCDESC1 = INCTEXT;
  EXCDESC2= 'PGM=' || PSBNAME  ||
           ' REG=' || INCREGIN ||
           ' TRAN=' || TRANSACT || ' LINE ' ||
           PUT(LINE,4.) || ' PTERM ' ||
           PUT(PTERM,4.) || ' LTERM ' ||
           LTERM;
  LINK HIT;
END;
```

    THRESHOLD MODIFICATION: None required

06102: IMS Data Base Open

```
FILE:            IMS System Incident
SAS FILE NAME:   DETAIL.IMSINC01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Warning       (SEVERITY='W')
MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies an OS open of an IMS data base.

RATIONALE: Data Base Opens can lead to sporadic performance problems as the requestor must wait for the OS open process to complete. Ideally, a data base should be opened only once per execution of the IMS Control Region. Frequent Data Base Opens and Closes may indicate insufficiency in the DMB pool size.

DEFINITION: This exception is detected when IMS detects a Data Base Open.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06102
**  IMS DATA BASE OPEN
*;
IF INCCODE = '20'X
 THEN DO;
  EXCCODE='06102'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1= INCTEXT;
  EXCDESC2= 'DB=' || DATABASE ||
        'PGM=' || PSBNAME;
  LINK HIT;
END;

    THRESHOLD MODIFICATION:  None required
```

06103: IMS Data Base Close

```
    FILE:            IMS System Incident
    SAS FILE NAME:   DETAIL.IMSINC01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Warning       (SEVERITY='W')
    MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')

    PURPOSE:  Identifies an OS close of an IMS data base.

    RATIONALE:  Data Base Closes can lead to sporadic
performance problems as the requestor must wait for the OS
close process to complete.  Ideally, a data base should be
closed only once per execution of the IMS Control Region.
Frequent Data Base Opens and Closes may indicate
insufficiency in the DMB pool size.

    DEFINITION:  This exception is detected when IMS detects
a Data Base Close.

    EXCEPTION STATEMENTS:  The SAS statements identifying the
exception situation and describing the condition are stored
in the source member named in SOURCE LOCATION and are
described below:
```

```
*
**  06103
**  IMS DATA BASE CLOSE
*;
IF INCCODE = '21'X
 THEN DO;
  EXCCODE='06103'; SEVERITY='W'; MGMTAREA='PERFORMANCE';
  EXCDESC1= INCTEXT;
  EXCDESC2= 'DB=' || DATABASE ||
        'PGM=' || PSBNAME;
  LINK HIT;
END;

    THRESHOLD MODIFICATION:  None required
```

06107: IMS Data Base I/O Error

```
    FILE:            IMS System Incident
    SAS FILE NAME:   DETAIL.IMSINC01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Critical      (SEVERITY='C')
    MANAGEMENT AREA: Availability  (MGMTAREA='AVAILABILITY')

    PURPOSE: Identifies a non-recoverable I/O error on an IMS
data base.

    RATIONALE:  Data base I/O errors immediately causes the
data base to be stopped as well as any transactions trying to
use that data base.  Immediate action is required.

    DEFINITION:  This exception is detected when IMS detects
a Data Base I/O error.

    EXCEPTION STATEMENTS:  The SAS statements identifying the
exception situation and describing the condition are stored
in the source member named in SOURCE LOCATION and are
described below:
```

```
*
**  06107
**  IMS DATA BASE I/O ERROR
*;
IF INCCODE = '24'X
 THEN DO;
  EXCCODE='06107'; SEVERITY='C'; MGMTAREA='AVAILABILITY';
  EXCDESC1= INCTEXT;
  EXCDESC2= 'DB=' || DATABASE ||
        'PGM=' || PSBNAME ||
        'TRAN=' || TRANSACT;
  LINK HIT;
END;
```

    THRESHOLD MODIFICATION: None required

06108: IMS Stopped

```
    FILE:            IMS System Incident
    SAS FILE NAME:   DETAIL.IMSINC01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Critical      (SEVERITY='C')
    MANAGEMENT AREA: Availability  (MGMTAREA='AVAILABILITY')
```

PURPOSE: Identifies an IMS Stop

RATIONALE: Access to system and application services requires that IMS be up.

DEFINITION: This exception is detected when IMS detects a shutdown.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06108
**  IMS STOPPED
*;
IF INCCODE = '61'X
 THEN DO;
  EXCCODE='06108'; SEVERITY='C'; MGMTAREA='AVAILABILITY';
  EXCDESC1= INCTEXT;
  EXCDESC2= INCTEXT;
  LINK HIT;
END;

    THRESHOLD MODIFICATION:  None required
```

06109: Probable IMS Abend

```
    FILE:            IMS System Incident
    SAS FILE NAME:   DETAIL.IMSINC01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Critical      (SEVERITY='C')
    MANAGEMENT AREA: Availability  (MGMTAREA='AVAILABILITY')
```

PURPOSE: Identifies a probable IMS system abend.

RATIONALE: To access system and application services, IMS must be up. A shutdown record was not found before a start up record in the processing stream. The assumption is made that IMS went down without writing the shutdown record.

DEFINITION: This exception is detected when IMS starts without a previous shutdown record.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06109
**  PROBABLE IMS ABEND
*;
IF INCCODE = '63'X
 THEN DO;
  EXCCODE='06109'; SEVERITY='C'; MGMTAREA='AVAILABILITY';
  EXCDESC1= INCTEXT;
  EXCDESC2= INCTEXT;
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: None required

06110: IMS Started

```
FILE:            IMS System Incident
SAS FILE NAME:   DETAIL.IMSINC01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Critical      (SEVERITY='C')
MANAGEMENT AREA: Availability  (MGMTAREA='AVAILABILITY')
```

PURPOSE: Identifies an IMS system start up.

RATIONALE: To access system and application services, IMS must be up. A system start record implies the system had been down.

DEFINITION: This exception is detected when IMS starts.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06110
**  IMS STARTED
*;
IF INCCODE = '60'X
 THEN DO;
  EXCCODE='06110'; SEVERITY='C'; MGMTAREA='AVAILABILITY';
  EXCDESC1= INCTEXT;
  EXCDESC2= INCTEXT;
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: None required

06111: IMS Abend

```
    FILE:            IMS System Incident
    SAS FILE NAME:   DETAIL.IMSINC01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Critical      (SEVERITY='C')
    MANAGEMENT AREA: Availability  (MGMTAREA='AVAILABILITY')

    PURPOSE:  Identifies an IMS system abend.

    RATIONALE:  To access system and application services,
IMS must be up.  The log tape was closed by the STAE routine
of IMS indicating that IMS abended.

    DEFINITION:  This exception is detected when IMS
indicates its STAE routine closed the log tape.

    EXCEPTION STATEMENTS:  The SAS statements identifying the
exception situation and describing the condition are stored
in the source member named in SOURCE LOCATION and are
described below:

*
**  06111
**  IMS ABEND
*;
IF INCCODE = '67'X
 THEN DO;
  EXCCODE='06111'; SEVERITY='C'; MGMTAREA='AVAILABILITY';
  EXCDESC1= INCTEXT;
  EXCDESC2= inctext;
  LINK HIT;
END;

    THRESHOLD MODIFICATION:  None required
```

06200: Application Avg MPP DL/I Calls Exceed Standard

```
    FILE:            IMS Application Unit Activity
    SAS FILE NAME:   DAYS.IMSIAU01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Critical      (SEVERITY='C')
    MANAGEMENT AREA: Standards     (MGMTAREA='STANDARDS')

    PURPOSE:  Identifies an excessive amount of DL/I calls
for an online application.
```

RATIONALE: An excessive number of DL/I calls can be an indication of non-optimum data base design, inefficient use of the DC facilities of IMS (multiple short messages), or non-optimum application processing schemes.

DEFINITION: This exception is detected when the number of DL/I calls exceeds the installation-defined limit for the installation-chosen transaction.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06200
**  APPLICATION AVG MPP DL/I CALLS EXCEED STANDARD
*;
CALLS = number-of-DL/I-calls
IF IAUTRANS THEN COUNT = IAUDBTOT / IAUTRANS;
ELSE COUNT = 0;
IF
   (IMSAPU = 'application-unit') AND
   ( COUNT > CALLS )
 THEN DO;
  EXCCODE='06200'; SEVERITY='C'; MGMTAREA='STANDARDS';
  EXCDESC1=
  'APPLICATION AVG MPP DL/I CALLS EXCEED STANDARD';
  EXCDESC2=
           ' APPL=' || IMSAPU ||
           ' AVG CALLS=' || PUT(CALLS,7.);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the list of transactions according to the following conventions:

application-unit: The application unit identifier used to restrict selection to the desired MPP activity, specified as a one to twelve character alphanumeric field, must be enclosed in quotes as a standard SAS character literal. Additional identifiers must be included in the parenthesis and be connected to the list with an OR. For example, for all application units with an ID beginning with SYS or ABC, the specification is:

```
AND (IMSAPU=:'SYS' OR IMSAPU=:'ABC')
```

```
   For all units with an ID that does not begin with SYS or
   equal ABC006, the specification is:

   AND NOT(IMSAPU=:'SYS' OR IMSAPU='ABC006')

number-of-DL/I-calls:  Specify the total number of DL/I
   calls as the threshold, including Get without hold, Get
   with hold, Insert, Replace, and Delete calls.

   CALLS=20;
```

06201: Application Avg BMP DL/I Calls Exceed Standard

```
    FILE:            IMS Application Unit Activity
    SAS FILE NAME:   DAYS.IMSIAU01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Critical      (SEVERITY='C')
    MANAGEMENT AREA: Standards     (MGMTAREA='STANDARDS')

    PURPOSE:  Identifies an excessive amount of DL/I calls
for a BMP program run in a given zone.

    RATIONALE:  An excessive number of DL/I calls can be
an indication of non-optimum data base design, inefficient
use of the DC facilities of IMS (multiple short messages), or
non-optimum application processing schemes.

    DEFINITION:  This exception is detected when the number
of DL/I calls exceeds the installation-defined limit for BMPs
in the user-specified zone.

    EXCEPTION STATEMENTS:  The SAS statements identifying the
exception situation and describing the condition are stored
in the source member named in SOURCE LOCATION and are
described below:
```

```
*
**  06201
**  APPLICATION AVG BMP DL/I CALLS EXCEED STANDARD;
*;
CALLS = number-of-DL/I-calls
IF IAUTRANS THEN COUNT = IAUDBTOT / IAUTRANS;
ELSE COUNT = 0;
IF
   (IMSAPU = 'application-unit') AND
   ( COUNT > CALLS )
 THEN DO;
  EXCCODE='06201'; SEVERITY='C'; MGMTAREA='STANDARDS';
  EXCDESC1=
  'APPLICATION AVG BMP DL/I CALLS EXCEED STANDARD';
  EXCDESC2=
           ' APPL UNIT =' || IMSAPU ||
           ' AVG CALLS =' || PUT(CALLS,7.);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the list of transactions according to the following conventions:

application-unit: The application unit identifier used to restrict selection to the desired BMP activity, specified as a one to twelve character alphanumeric field, must be enclosed in quotes as a standard SAS character literal. Additional identifiers must be included in the parenthesis and be connected to the list with an OR. For all application units with an ID beginning with SYS or ABC, the specification is:

```
AND (IMSAPU=:'SYS' OR IMSAPU=:'ABC')
```

For all units with an ID that does not begin with SYS or equal ABC006, the specification is:

```
AND NOT(IMSAPU=:'SYS' OR IMSAPU='ABC006')
```

number-of-DL/I-calls: Specify the total number of DL/I calls as the threshold, including Get without hold, Get with hold, Insert, Replace, and Delete calls.

```
CALLS=20;
```

06202: Hourly IMS Total Service Objective Missed

```
    FILE:            IMS User Activity File
    SAS FILE NAME:   DAYS.IMSISU01
    SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

    SEVERITY:        Critical      (SEVERITY='C')
    MANAGEMENT AREA: Service       (MGMTAREA='SERVICE')

    PURPOSE:  Identifies hours when IMS users did not
receive the installation-defined total response service
objective.

    RATIONALE:   An installation can set a service objective
for users as a percent of all responses which will be
completed within a certain time.  Setting the service
objective this way recognizes the importance of consistency
of response which is not reflected in an average.

    DEFINITION:  This exception is detected when average user
response for an hour falls below the installation objective.

    EXCEPTION STATEMENTS:  The SAS statements identifying the
exception situation and describing the condition are stored
in the source member named in SOURCE LOCATION and are
described below:

*
**  06202
**  HOURLY IMS TOTAL SERVICE OBJECTIVE MISSED
*;
IF
  (IMSACTn = :'level-n-condition')
  THEN DO;
      SECONDS=seconds;
      %PCTIMSR;
      PERCENT = UPCT;
      IF PERCENT < percent
       THEN DO;
        EXCCODE='06202'; SEVERITY='C'; MGMTAREA='SERVICE';
        EXCDESC1='HOURLY IMS TOTAL SERVICE OBJECTIVE MISSED';
        EXCDESC2='RESP WAS ' || PUT (PERCENT,3.) ||
                 '%IN ' || PUT (SECONDS,3.) ||
                 ' SECONDS';
        LINK HIT;
      END;
   END;
```

THRESHOLD MODIFICATION: Modify the values of seconds and percent to define the installation service objective (the percent of responses within a certain number of seconds) according to the following conventions:

percent: The percent of responses in the service objective is specified. An objective of 95% would appear as:

```
PERCENT < 95
```

seconds: The number of seconds in the service objective is specified. An objective of 5 seconds would appear as:

```
SECONDS = 5
```

level-n-condition: Any restriction of user accounting identifiers may be inserted here. This may be used to limit the service analysis to certain users only or to exclude specific users from the analysis. Follow the SAS language rules for construction of conditional statements. For all the users with first-level account codes beginning with SYS or ABC, the specification is:

```
AND (IMSACT1=:'SYS' OR IMSACT1=:'ABC')
```

For all users with first-level account codes that do not begin with SYS, and with second-level account codes that are not equal to user ABC006, the specification is:

```
AND NOT(IMSACT1=:'SYS' OR IMSACT2='ABC006')
```

06203: Application Avg MPP CPU Time Exceeds Standard

```
FILE:            IMS Application Unit Activity
SAS FILE NAME:   DAYS.IMSIAU01
SOURCE LOCATION: sharedprefix.MICS.SOURCE(DYIMSEXC)

SEVERITY:        Impacting     (SEVERITY='I')
MANAGEMENT AREA: Performance   (MGMTAREA='PERFORMANCE')
```

PURPOSE: Identifies excessive CPU time for an online application.

RATIONALE: CPU time for a given application exceeds the installation-defined maximum. This time represents the sum of control region buffer handler time, control region DL/I time, dependent region buffer handler time, dependent region processing time, dependent region DL/I time, and data base open and close time.

DEFINITION: This exception is detected when the CPU time exceeded the installation-defined maximum.

EXCEPTION STATEMENTS: The SAS statements identifying the exception situation and describing the condition are stored in the source member named in SOURCE LOCATION and are described below:

```
*
**  06203
**  APPLICATION AVG MPP CPU TIME EXCEEDS STANDARD
*;
IF
   (IMSAPU = 'application-unit') AND
   (IAUAVTRT GT time-in-seconds )
 THEN DO;
  EXCCODE='06203'; SEVERITY='I'; MGMTAREA='PERFORMANCE';
  EXCDESC1=
  'APPLICATION AVG MPP CPU TIME EXCEEDS STANDARD';
  EXCDESC2=
           ' APPL =' || IMSAPU ||
           ' AVG CPU=' || PUT(IAUAVTRT,TIME9.3);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: Modify the list of transactions according to the following conventions:

application-unit: The application unit identifier used to restrict selection to the desired MPP activity, specified as a one to twelve character alphanumeric field, must be enclosed in quotes as a standard SAS character literal. Additional identifiers must be included in the parenthesis and be connected to the list with an OR. For all application units with an ID beginning with SYS or ABC, the specification is:

```
AND (IMSAPU=:'SYS' OR IMSAPU=:'ABC')
```

```
  For all units with an id that does not begin with SYS or
  equal ABC006, the specification is:

  AND NOT(IMSAPU=:'SYS' OR IMSAPU='ABC006')

time-in-seconds:  The CPU time expressed in seconds. For a
  two second limit, specify:

  IAUAVTRT GT 2
```

Chapter 5: FILES

The CA MICS IMS Analyzer stores its data in the IMS Information Area (IMS). The table in Figure 5-1 lists the product's files and the timespans that are activated for each file. For each file in the information area, the following information is provided:

```
  XDWMYT  -  Defines the timespans in which the file is
             supported.

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

  File - The SAS name used to access this file.

  File name - The descriptive label for the file.

+-----------------------------------------+-------------------+
| IMS Activity                            | Date Generated:   |
| Information Area                        |Tue, May 12, 2009  |
+-----------------------------------------+-------------------+
|                                                             |
| XDWMYT  File    File Name                                   |
|                                                             |
| ......  IMSIDB  DATA BASE ACTIVITY FILE                     |
| X.....  IMSINC  IMS INCIDENT FILE                           |
| X.....  IMSISS  IMS SYSTEM ACTIVITY SUSPEND FILE            |
| .D.MY.  IMSIAC  IMS USER APPLICATION COUNT FILE             |
| .D.MY.  IMS_IS  IMS USER ACTIVITY FILE FP                   |
| .D.MY.  IMSISU  IMS USER ACTIVITY FILE                      |
| .D.M..  IMS_IA  IMS APPLICATION UNIT ACTIVITY FP            |
| .D.M..  IMSIAU  IMS APPLICATION UNIT ACTIVITY FILE          |
| XDWMY.  IMSISY  IMS SYSTEM ACTIVITY FILE                    |
|                                                             |
+-------------------------------------------------------------+

 Figure 5-1.  IMS Information Area Files
```

This section contains the following topics:

5.1 Data Element Naming Conventions (see page 238)
5.2 IMS Information Area Files (see page 239)

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 chart lists the file in which they are contained and the three-character prefix with which the standard data element names begin.

File Name	File	Names Begin With
System Activity File	IMSISY	ISY
User Activity File	IMSISU	ISU
User Activity File - Fastpath	IMS_IS	ISU
Application Unit Activity File	IMSIAU	IAU
Application Unit Activity File - Fastpath	IMS_IA	IAU
User Application Unit Count File	IMSIAC	IAC
Incident File	IMSINC	INC

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 in the "Sequence/Summary Data Elements" and "Common Data Elements" sections of the Data Elements Lists that accompany the file descriptions that follow.

5.2 IMS Information Area Files

This section identifies each file in the IMS Information Area, the file's organization, the data elements contained in the file, and the timespans in which they are supported.

Data elements are described in Appendix B, the Data Dictionary.

This section describes the following files:

1 - IMS System Activity File (IMSISY)
2 - IMS User Activity File (IMSISU)
3 - IMS Application Unit Activity File (IMSIAU)
4 - IMS User Application Unit Count File (IMSIAC)
5 - IMS Incident File (IMSINC)
6 - IMS User Activity File - Fastpath (IMS_IS)
7 - IMS Application Unit Activity File - Fastpath (IMS_IA)
8 - IMF Database Activity File (IMSIDB)

5.2.1 IMS System Activity File (IMSISY)

The IMS System Activity File contains data quantifying the IMS system's service (response), load, and usage in the DETAIL time-span, and total usage in the DAYS, WEEKS, MONTHS and YEARS time-spans.

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

1 - (IMSISY) File Organization
2 - (IMSISY) Data Elements List
3 - (IMSISY) Usage Considerations

5.2.1.1 IMSISY File Organization

The table below identifies data elements by which the file is sequenced and summarized in 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     IMSID     YEAR      MONTH     DAY    |
|         |HOUR      ENDTS                                |
|         |                                               |
|  DAYS   |SYSID     IMSID     YEAR      MONTH     DAY    |
|         |HOUR                                           |
|         |                                               |
|  WEEKS  |SYSID     IMSID     YEAR      WEEK      ZONE   |
|         |HOUR                                           |
|         |                                               |
|  MONTHS |SYSID     IMSID     YEAR      MONTH     ZONE   |
|         |                                               |
|  YEARS  |SYSID     IMSID     YEAR      ZONE             |
|         |                                               |
+---------+-----------------------------------------------+
|  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 5-2. IMSISY Time-Span Granularity Chart

5.2.1.2 IMSISY 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 &quot;XDWMYT&quot; 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, Apr 1, 2014

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

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


 Sequence/Summary Data Elements

  XD....E  DAY       - Day of Month
  XDW...E  HOUR      - Hour of Day
  XDWMY.E  IMSID     - IMS System Identification
  XD.M..E  MONTH     - Month of Year
  XDWMY.E  SYSID     - System Identifier
  XDW...E  WEEK      - Week of Year
```

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

Common Data Elements

 X.....E  CKPTMASK - Checkpoint Record Component Mask
 XD....E  DAYNAME  - Name of Day of Week
 XDWMY.E  DURATION - Recording Interval Time
 XDWMY.E  ENDTS    - End Time Stamp
 X.....E  IMSCHKNO - IMS Checkpoint Number
 X.....E  IMSCHKTP - Checkpoint Type
 XDWMY.E  IMSNODST - Number of Response Distributions
 X.....E  IMSRESTP - Restart Type
 XDWMY.E  IMSRVALX - Response Distribution Limit x
 XDWMY.E  IMSVER   - IMS Version
 XDWMY.E  INTERVLS - Number of Recording Intervals
 XDWMY.E  ORGIMSID - Original IMS Identification
 XDWMY.E  ORGSYSID - Originating System Identification
 XDWMY.E  STARTTS  - Start Time Stamp

Retained Data Elements

 XDWMY.E  ISYCIPSZ - Size Of CIO Pool
 XDWMY.E  ISYCIPUS - Current Amount Used From CIO Pool
 XDWMY.E  ISYDMBSZ - Size Of DMB Pool
 XDWMY.E  ISYDMBUS - Current Amount Used from DMB Pool
 XDWMY.   ISYDPSSZ - Size of DPSB Pool
 XDWMY.   ISYDPSUS - Current Amount Used from DPSB
 XDWMY.   ISYDWPSZ - Size of DBWP Pool
 XDWMY.   ISYDWPUS - Current Amount Used from DBWP
 XDWMY.   ISYKDSAN - Number of Dynamic SAPs
 XDWMY.   ISYKDSWC - Dyn. SAP Current Non-privileged Wtrs
 XDWMY.   ISYKDVEN - Dyn. SAP No. of Dynamic + Privileged
 XDWMY.   ISYKPSWC - Dyn. SAP Current Privileged Waiters
 XDWMY.   ISYKSCUR - Dyn. SAP Current Assigned
 XDWMY.   ISYK1GAC - I/O POOL Current Storage of Buffers
 XDWMY.   ISYK1GCC - I/O POOL Current GETMAINs for Buf Area
 XDWMY.   ISYK1SIZ - I/O POOL Total Size of Pool
 XDWMY.   ISYK1USE - I/O POOL Current Storage Used
 XDWMY.   ISYK1WSC - I/O POOL Current Number of WAITS
 XDWMY.   ISYK2GAC - CWAP STAT Current Storage of Buffers
 XDWMY.   ISYK2GCC - CWAP STAT Cur. GETMAINs for Buf Areas
 XDWMY.   ISYK2SIZ - CWAP STAT Total Size of Pool
 XDWMY.   ISYK2USE - CWAP STAT Current Storage Used
 XDWMY.   ISYK2WSC - CWAP STAT Current Number of WAITS
 XDWMY.   ISYK3GAC - HIOP STAT Current Storage of Buffers
 XDWMY.   ISYK3GCC - HIOP STAT Cur. GETMAINs for Buf Areas
 XDWMY.   ISYK3SIZ - HIOP STAT Total Size of Pool
 XDWMY.   ISYK3USE - HIOP STAT Current Storage Used
```

```
XDWMY.   ISYK3WSC - HIOP STAT Current Number of WAITS
XDWMY.E  ISYMBFAV - Total Buffers Available
XDWMY.E  ISYMBFCT - Total Buffers Counted
XDWMY.E  ISYMBFIU - Total Buffers In Use
XDWMY.E  ISYMBFTR - Total Buffers Transitioning
XDWMY.E  ISYMCMBA - Common Buffers Available
XDWMY.E  ISYMCMBC - Common Buffers Counted
XDWMY.E  ISYMCMBO - Common Buffers Transitioning
XDWMY.E  ISYMCMBT - Common Buffers Total
XDWMY.E  ISYMCMBU - Common Buffers In Use
XDWMY.E  ISYMECBB - Total ECSA Buffer Bytes Used
XDWMY.E  ISYMECDB - Total ECSA DMHR Bytes Used
XDWMY.E  ISYMECDO - ECSA Storage With DMHR Used On
XDWMY.E  ISYMECOB - Total ECSA Ctl Block Bytes Used
XDWMY.E  ISYMECUB - Total ECSA Storage Bytes Used
XDWMY.E  ISYMEPBB - Total EPVT Buffer Bytes Used
XDWMY.E  ISYMEPDB - Total EPVT DMHR Bytes Used
XDWMY.E  ISYMEPNB - Total EPVT Non-SP Ctl Blk Bytes
XDWMY.E  ISYMEPOB - Total EPVT Ctl Block Bytes Used
XDWMY.E  ISYMEPUB - Total EPVT Storage Bytes Used
XDWMY.E  ISYMEX64 - 64 Bit Extents SP Storage Used
XDWMY.E  ISYMNSCB - Non-SP/EXT Ctl Blks Storage
XDWMY.E  ISYMSP64 - 64 Bit Base SP Storage Bytes
XDWMY.E  ISYMSYBA - System Buffers Available
XDWMY.E  ISYMSYBC - System Buffers Counted
XDWMY.E  ISYMSYBO - System Buffers Transitioning
XDWMY.E  ISYMSYBT - System Buffers Total
XDWMY.E  ISYMSYBU - System Buffers In Use
XDWMY.E  ISYMTBQU - Total Buffers Being Quiesced
XDWMY.E  ISYM64DO - 64 Bit Storage With DMHR Used On
XDWMY.E  ISYM64UB - Total 64 Bit Storage Bytes Used
XDWMY.   ISYNOWFI - WFI Transaction Counter
XDWMY.   ISYPIINC - Getmain Increment For Pgm Isoln Pool
XDWMY.E  ISYPSBSZ - Size Of PSB Pool
XDWMY.E  ISYPSBUS - Current Amount Used from PSB Pool
XDWMY.   ISYWPSSZ - Size of PSBW Pool
XDWMY.   ISYWPSUS - Current Amount Used from PSBW

Accumulated Data Elements

.DWMY.E  ISYCDSTX - Conv. Response Distribution x
XDWMY.E  ISYCNTDQ - Msgs Dequeued For Started CNTs
XDWMY.   ISYCNTDS - Msgs Dequeued For Stopped CNTs
XDWMY.E  ISYCNTQ  - Msgs Queued For Started CNTs
XDWMY.   ISYCNTQS - Msgs Queued For Stopped CNTs
.DWMY.E  ISYCPCNT - Cnt Checkpoints/Syncpoints
.DWMY.E  ISYCPUTM - Total CPU Time
.DWMY.E  ISYCRESC - Conv. Responses Counted
.DWMY.E  ISYCRSTM - Conv. Response Time Total
```

```
XDWMY.E  ISYCTLTM - Control Region CPU Time
XDWMY.E  ISYDBOTM - DL/I, Buffer, Open/Close CPU Time
.DWMY.E  ISYDB2TM - DB2 CPU Time
.DWMY.E  ISYERESC - Excessive Responses Counted
.DWMY.E  ISYERSTM - Excessive Response Time Total
XDWMY.   ISYFMCMP - Times MFS Compress Would Be Ok
XDWMY.E  ISYFMDIO - MFS Directory I/O Operations
XDWMY.   ISYFMFBN - MFS F/B Requests Ignored
XDWMY.   ISYFMFBR - MFS Free Block Requests
XDWMY.   ISYFMFIQ - MFS F/B Blocks On I/F Queue
XDWMY.E  ISYFMIFI - MFS Immediate Fetch I/Os
XDWMY.   ISYFMIFP - MFS I/F And Block On P/F Queue
XDWMY.   ISYFMIFQ - MFS I/F Blocks On F/B Queue
XDWMY.   ISYFMIFR - MFS Immediate Fetch Request
XDWMY.   ISYFMIFW - MFS I/F Wait For P/F Load
XDWMY.   ISYFMIIQ - MFS I/F Blocks On I/F Queue
XDWMY.E  ISYFMPFI - MFS Prefetch I/Os
XDWMY.   ISYFMPFN - MFS Prefetch Requests Ignored
XDWMY.   ISYFMPFQ - MFS P/F Blocks On F/B Queue
XDWMY.   ISYFMPFR - MFS Prefetch Requests
XDWMY.   ISYFMPIQ - MFS P/F Blocks On I/F Queue
XDWMY.   ISYFMPPQ - MFS P/F Blocks On P/F Queue
XDWMY.   ISYFMWFR - MFS Blocks Purged For FRE
XDWMY.   ISYKDSWT - Dyn SAP Total Non-privileged Waits
XDWMY.   ISYKPSWT - Dyn SAP Total Privileged Waits
XDWMY.   ISYKSPET - Dynamic SAP Total Assigned
XDWMY.   ISYK1GTC - I/O POOL Total GETMAINs for Buf Areas
XDWMY.   ISYK1WAC - I/O POOL Total of Current Waiters
XDWMY.   ISYK2GTC - CWAP STAT Total GETMAINs for Buf Areas
XDWMY.   ISYK2WAC - CWAP STAT Total of Current Waiters
XDWMY.   ISYK3GTC - HIOP STAT Total GETMAINs for Buf Areas
XDWMY.   ISYK3WAC - HIOP STAT Total of Current Waiters
XDWMY.E  ISYLCDLG - Dynamic Log Latch Conflicts
XDWMY.E  ISYLCDMB - DMB And ISAM/OSAM Latch Conflicts
XDWMY.E  ISYLCLOG - Logical Log Latch Conflicts
XDWMY.E  ISYLCMON - DC Monitor Latch Conflicts
XDWMY.E  ISYLCSMG - Storage Management Latch Conflict
XDWMY.E  ISYLCXCN - Exclusive Control Latch Conflicts
.DWMY.E  ISYLDSTX - Long Response Distribution x
XDWMY.   ISYLLAWT - L-LOGGER Number of AWEs on Write
XDWMY.   ISYLLBWA - L-LOGGER Wait for Buffers Requests
XDWMY.   ISYLLCWT - L-LOGGER Check Write Requests
XDWMY.   ISYLLORD - L-LOGGER Number of OLDS Reads
XDWMY.   ISYLLOWT - L-LOGGER Number of OLDS Writes
XDWMY.   ISYLLWEX - L-LOGGER Number of WADS EXCPVRs
XDWMY.   ISYLLWWT - L-LOGGER Write Wait Requests
XDWMY.   ISYLLW2K - L-LOGGER Number of 2K Writes to WADS
.DWMY.E  ISYLRESC - Long Responses Counted
.DWMY.E  ISYLRSTM - Long Response Time Total
```

```
XDWMY.E  ISYMBDO  - Msgs Dequeued Started SMBs, Class Other
XDWMY.E  ISYMBDSO - Msgs Dequeued Stopped SMBs, Class Other
XDWMY.E  ISYMBDSX - Msgs Dequeued Stopped SMBs, Class x
XDWMY.E  ISYMBDX  - Msgs Dequeued Started SMBs, Class x
XDWMY.E  ISYMBQO  - Msgs Queued Started SMBs, Class Other
XDWMY.   ISYMBQSO - Msgs Queued Stopped SMBs, Class Other
XDWMY.   ISYMBQSX - Msgs Queued Stopped SMBs, Class x
XDWMY.E  ISYMBQX  - Msgs Queued Started SMBs, Class x
.DWMY.E  ISYMDSTX - Medium Response Distribution x
.DWMY.E  ISYMRESC - Medium Responses Counted
.DWMY.E  ISYMRSTM - Medium Response Time Total
XDWMY.E  ISYNOLOG - User Logons
XDWMY.   ISYOSALT - OSAM Alter Requests
XDWMY.   ISYOSBKC - OSAM New Blocks Created
XDWMY.   ISYOSBKW - OSAM Blocks Written
XDWMY.E  ISYOSBMG - Calls To OSAM Buffer Manager
XDWMY.E  ISYOSFMT - OSAM Format Logical Cylinders
XDWMY.   ISYOSGNC - ISAM/OSAM Get Next (PSTGETNX) Calls
XDWMY.   ISYOSKEY - ISAM/OSAM ISAM Retrieve By Key
XDWMY.E  ISYOSNBK - OSAM New Block Requests
XDWMY.   ISYOSPRG - OSAM Purge User Calls
XDWMY.E  ISYOSQWT - OSAM Queued Writes
XDWMY.E  ISYOSRIO - OSAM Read I/Os
XDWMY.E  ISYOSRKU - ISAM/OSAM BISAM RKU Or QISAM SETL
XDWMY.   ISYOSRLS - ISAM/OSAM Explicit Release Calls
XDWMY.   ISYOSRQP - Requests Satisfied In OSAM Pool
XDWMY.   ISYOSWER - ISAM/OSAM Permanent Write Error
XDWMY.   ISYOSWET - ISAM/OSAM Locked Buffers Due To Error
XDWMY.E  ISYOSWIO - OSAM Writes Issued
XDWMY.   ISYPETTM - Pseudo Elapsed Time
XDWMY.E  ISYPIFQC - Number Of FINDQCB Pgm Isoln Pool Ent
XDWMY.E  ISYPITSY - Total Pgm Isoln Pool Synonyms Searched
XDWMY.E  ISYQMALT - Locate And Alter Queue Manager
XDWMY.E  ISYQMBFR - Queue Manager Waits For No Buffer
XDWMY.   ISYQMBLK - Queue Manager Buffers Locked
XDWMY.   ISYQMCAN - Queue Manager Calls To Cancel A Msg
XDWMY.E  ISYQMCON - Queue Manager Wait For ENQ/DEQ Conflict
XDWMY.E  ISYQMDEQ - Queue Manager Calls To DEQ A Mesg(s)
XDWMY.   ISYQMDRN - Addr To DRRN Tran Req Queue Manager
XDWMY.E  ISYQMENQ - Queue Manager Calls To ENQ A Mesg
XDWMY.   ISYQMFRE - Queue Manager Buffers Unlocked
XDWMY.   ISYQMIOE - Queue Mgr Temp I/O Error Not Retried
XDWMY.E  ISYQMLCT - Locate Calls From Queue Manager
XDWMY.   ISYQMMID - RRN Of Last Dummy Rcd Assigned
XDWMY.E  ISYQMOUT - Queue Manager Wait For Other Decb Write
XDWMY.E  ISYQMPRG - Req To Purge Msg Queue Pool
XDWMY.E  ISYQMPRW - Queue Manager Waits For Purg Complete
XDWMY.E  ISYQMRED - Queue Manager Read Requests
XDWMY.E  ISYQMREL - Release Calls From Queue Manager
```

```
 XDWMY.   ISYQMREP - Queue Mgr Calls To Repos At Lost Buffer
 XDWMY.   ISYQMREQ - Calls To Queue Manager
 XDWMY.E  ISYQMRPG - Queue Manager Writes For Purg
 XDWMY.E  ISYQMSYC - Req To Wait From Queue Manager
 XDWMY.   ISYQMUSR - Queue Manager Buffers Unchained Pcbs
 XDWMY.E  ISYQMWIN - Queue Manager Wait For Other Decb Read
 XDWMY.E  ISYQMWRT - Queue Manager Write Requests
 XDWMY.   ISYQWILG - Queue Manager Number of Waits for Log
 .DWMY.E  ISYRESTM - Message Reg Residency Time
 .DWMY.E  ISYSCHCT - Total Units of Work Scheduled
 .DWMY.E  ISYSDSTX - Short Response Distribution x
 XDWMY.   ISYSERVU - Service Units
 XDWMY.   ISYSIBMP - Number of BMPs Active
 XDWMY.E  ISYSICUT - SMBs Not Scheduled Priority Cutoff
 XDWMY.E  ISYSIDBI - SMBs Not Scheduled DB Intent
 XDWMY.   ISYSIMPP - Number of MPPs Active
 XDWMY.E  ISYSIOTH - SMBs Not Scheduled Other Reasons
 XDWMY.E  ISYSIPGM - SMBs Not Scheduled Program Conflict
 XDWMY.E  ISYSISCD - SMBs Examined For Scheduling
 .DWMY.E  ISYSRESC - Short Responses Counted
 XDWMY.   ISYSRMTR - SRM Ended Transactions
 .DWMY.E  ISYSRSTM - Short Response Time Total
 .DWMY.E  ISYSUCTM - Dep Reg zIIP Eligible CPU on a CP
 .DWMY.E  ISYTAPPC - Total APPC Transactions
 .DWMY.E  ISYTDSTX - Total Response Distribution x
 XDWMY.E  ISYTMCBF - Control Region Buffer Handler Time
 XDWMY.E  ISYTMCDL - Control Region DL/I Time
 XDWMY.E  ISYTMCP  - Dependent Region CP Time
 XDWMY.E  ISYTMCRO - Control Reg Overhead CPU Time
 XDWMY.E  ISYTMDBF - Dependent Region Buffer Handler Time
 XDWMY.E  ISYTMDCP - Dependent Region Processing Time
 XDWMY.E  ISYTMDDL - Dependent Region DL/I Time
 XDWMY.E  ISYTMDOC - Data Base Open and Close Time
 XDWMY.E  ISYTMDRO - Dependent Reg Overhead CPU Time
 XDWMY.E  ISYTMSCH - Dependent Reg Sched/Term CPU Time
 XDWMY.E  ISYTMZAP - Dependent Region zAAP/zIIP Time
 .DWMY.E  ISYTOLKH - Tot Checkpoints/Syncpoints Locks Held
 .DWMY.E  ISYTOTHR - Total Other Transactions
 .DWMY.E  ISYTOTMA - Total OTMA Transactions
 .DWMY.E  ISYTRANS - Total Transaction Executions
 .DWMY.E  ISYUOWCT - Total Units of Work Executed
 XDWMY.E  ISYUPTM  - IMS System Up Time
 .DWMY.E  ISYXCSTM - CP CPU Time Minus zIIP/zAAP Eligible
 .DWMY.E  ISYZACTM - Dep Reg zAAP Eligible CPU on a CP

Minimum Data Elements

 XDWMY.   ISYK1PLL - I/O POOL Lower Limit - Pool Normal
 XDWMY.   ISYK2PLL - CWAP STAT Lower Limit - Pool Normal
```

```
 XDWMY.   ISYK3PLL - HIOP STAT Lower Limit - Pool Normal
```

Maximum Data Elements

```
 XDWMY.E  ISYCIPHW - Maximum Amount Ever Used from CIOP
 XDWMY.E  ISYDMBHW - Maximum Amount Ever Used from DMB
 XDWMY.   ISYDPSHW - Maximum Amount Ever Used from DPSB
 XDWMY.   ISYDWPHW - Maximum Amount Ever Used from DBW
 XDWMY.   ISYKDSWH - Dynamic SAP High Non-privileged Wtrs
 XDWMY.   ISYKPSWH - Dynamic SAP High Privileged Waiters
 XDWMY.   ISYKSHIG - Dynamic SAP High Assigned
 XDWMY.   ISYK1GAH - I/O POOL Largest Storage of Buffers
 XDWMY.   ISYK1GAL - I/O POOL Largest Single Storage Buf
 XDWMY.   ISYK1HWM - I/O POOL Maximum Storage Used
 XDWMY.   ISYK1PUL - I/O POOL Upper Limit - Pool Critical
 XDWMY.   ISYK1WAH - I/O POOL Highest Total of Waiters
 XDWMY.   ISYK1WRH - I/O POOL Largest Single Request
 XDWMY.   ISYK1WSH - I/O POOL High Number of WAITS
 XDWMY.   ISYK2GAH - CWAP STAT Largest Storage of Buffers
 XDWMY.   ISYK2GAL - CWAP STAT Largest Single Storage Buf
 XDWMY.   ISYK2HWM - CWAP STAT Maximum Storage Used
 XDWMY.   ISYK2PUL - CWAP STAT Upper Limit - Pool Critical
 XDWMY.   ISYK2WAH - CWAP STAT Highest Total of Waiters
 XDWMY.   ISYK2WRH - CWAP STAT Largest Single Request
 XDWMY.   ISYK2WSH - CWAP STAT High Number of WAITS
 XDWMY.   ISYK3GAH - HIOP STAT Largest Storage of Buffers
 XDWMY.   ISYK3GAL - HIOP STAT Largest Single Storage Buf
 XDWMY.   ISYK3HWM - HIOP STAT Maximum Storage Used
 XDWMY.   ISYK3PUL - HIOP STAT Upper Limit - Pool Critical
 XDWMY.   ISYK3WAH - HIOP STAT Highest Total of Waiters
 XDWMY.   ISYK3WRH - HIOP STAT Largest Single Request
 XDWMY.   ISYK3WSH - HIOP STAT High Number of WAITS
 XDWMY.   ISYMXCDQ - Max Msgs Dequeued For Started CNTs
 XDWMY.   ISYMXCDS - Max Msgs Dequeued For Stopped CNTs
 XDWMY.   ISYMXCFL - Max Pct Scheduling Conflict
 XDWMY.   ISYMXCOT - Max Pct Scheduling Conflict - Misc Caus
 XDWMY.   ISYMXCQ  - Max Msgs Queued For Started CNTs
 XDWMY.   ISYMXCQR - Max Pct Msg Queue Buffer I/O Reads
 XDWMY.   ISYMXCQS - Max Msgs Queued For Stopped CNTs
 .DWMY.E  ISYMXCTM - Max Conversational Response Time
 XDWMY.   ISYMXDBI - Max Pct Sched Conflict, DB Intent Confl
 XDWMY.   ISYMXDO  - Max Msgs Dequeued Started SMBs Other
 XDWMY.   ISYMXDSO - Max Msgs Dequeued Stopped SMBs Other
 XDWMY.   ISYMXDSX - Max Msgs Dequeued Stopped SMBs, Class x
 XDWMY.   ISYMXDYB - Max Dynamic Log Buffer Contention
 XDWMY.   ISYMXDYI - Max Dynamic Log I/O Rate
 XDWMY.   ISYMXDYR - Max Dynamic Log Service Requests Rate
 XDWMY.   ISYMXDX  - Max Msgs Dequeued Started SMBs, Class x
 .DWMY.E  ISYMXETM - Max Excessive Response Time
```

```
XDWMY.   ISYMXGOT - Max Msgs Queued To Output
XDWMY.   ISYMXGPR - Max Msgs Queued To Process
XDWMY.   ISYMXIFB - Max Immed Fetch Req Sat, Free Blk Queue
XDWMY.   ISYMXIFI - Max MFS Immed Fetch I/O-Pct Of All I/O
XDWMY.   ISYMXIIF - Max Immed Fetch Req Sat, I/F Queue
XDWMY.   ISYMXIMF - Max MFS Buffer Immed Fetch Request Rate
XDWMY.   ISYMXINI - Max Immed Fetch Req Sat Without I/O
XDWMY.   ISYMXIOM - Max Msg Queue Buffer I/O Per Msg
XDWMY.   ISYMXIOR - Max Msg Queue Buffer Reads Per Msg
XDWMY.   ISYMXIOW - Max Msg Queue Buffer Writes Per Msg
XDWMY.   ISYMXIPL - Max Immed Fetch Req Sat, Pre Fetch Load
XDWMY.   ISYMXIPQ - Max Immed Fetch Req Sat, P/F Queue
XDWMY.   ISYMXISI - Max ISAM/OSAM Physical I/O Rate
XDWMY.   ISYMXISO - Max ISAM/OSAM Buffer Pool Request Rate
XDWMY.   ISYMXISP - Max ISAM/OSAM Buff Pool Req Sat In Pool
XDWMY.   ISYMXISR - Max Pct ISAM/OSAM Physical I/O ISAM Rds
XDWMY.   ISYMXIWT - Max Msg Queue Buffer Iwaits Per Msg
XDWMY.   ISYMXLDL - Max Dynamic Log Latch Conflict Rate
XDWMY.   ISYMXLEC - Max Exclusive Control Latch Confl Rate
XDWMY.   ISYMXLGN - Max Generic (all DMB) Conflict Rate
.DWMY.E  ISYMXLKH - Max Checkpoints/Syncpoints Locks Held
XDWMY.   ISYMXLLL - Max Logical Log Latch Conflict Rate
XDWMY.   ISYMXLMN - Max DC Monitor Latch Conflict Rate
XDWMY.   ISYMXLSM - Max Storage Manage Latch Conflict Rate
.DWMY.E  ISYMXLTM - Max Long Response Time
XDWMY.   ISYMXMFB - Max Msg Format Buffer Pool I/O Rate
XDWMY.   ISYMXMFD - Max MFS Directory I/O As Pct Of All I/O
XDWMY.   ISYMXMQC - Max Pct Msg Queue Buffer I/O Chkpt Writ
XDWMY.   ISYMXMQD - Max Msg Queue Buffer Dequeue Rate
XDWMY.   ISYMXMQE - Max Msg Queue Buffer Enqueue Rate
XDWMY.   ISYMXMQF - Max Pct Msg Queue Bfr I/O Forcd Write
XDWMY.   ISYMXMQI - Max Msg Queue Buffer I/O Rate
XDWMY.   ISYMXMQP - Max Pct MQB Intl Req Satisfied In Pool
XDWMY.   ISYMXMSG - Max Msg Processing Rate
.DWMY.E  ISYMXMTM - Max Medium Response Time
XDWMY.   ISYMXOCW - Max Pct ISAM/OSAM Phys I/O OSAM Chnd Wr
XDWMY.   ISYMXOFW - Max Pct ISAM/OSAM Phys I/O OSAM Fcd Wrt
XDWMY.   ISYMXOSR - Max Pct ISAM/OSAM Phys I/O OSAM Reads
XDWMY.   ISYMXPCF - Max Pct Sched Conflict, Program Confl
XDWMY.   ISYMXPFB - Max Pre Fetch Req Sat, Free Block Queue
XDWMY.   ISYMXPFI - Max MFS Pre Fetch I/O As Pct Of All I/O
XDWMY.   ISYMXPFR - Max Msg Format Bfr Pre Fetch Rqst Rate
XDWMY.   ISYMXPIF - Max Pre Fetch Req Sat, I/F Queue
XDWMY.   ISYMXPIR - Max Program Isoln Serv Requests Rate
XDWMY.E  ISYMXPIS - Max Length Of PI Search Per Request
XDWMY.   ISYMXPNI - Max Pre Fetch Requests Satis w/o I/O
XDWMY.   ISYMXPPF - Max Pre Fetch Req Sat, Pre Fetch Queue
XDWMY.   ISYMXPRC - Max Pct Sched Conflict, Priority Cutoff
XDWMY.   ISYMXQO  - Max Msgs Queued Started SMBs Other
```

```
XDWMY.   ISYMXQSO - Max Msgs Queued Stopped SMBs Other
XDWMY.   ISYMXQSX - Max Msgs Queued Stopped SMBs, Class x
XDWMY.   ISYMXQX  - Max Msgs Queued Started SMBs, Class x
XDWMY.   ISYMXSCD - Max Scheduling Rate
XDWMY.   ISYMXSQR - Max Msg Queue Buffer Intrnl Rate Rqstd
.DWMY.E  ISYMXSTM - Max Short Response Time
.DWMY.E  ISYMXTTM - Max Response Time All Functions
XDWMY.E  ISYPIMAX - Maximum Size Of Program Isolation Pool
XDWMY.   ISYPIMSY - Max Pgm Isoln Pool Synonyms Searched
XDWMY.E  ISYPIUSE - Current And Max Pgm Isolation Pool Used
XDWMY.E  ISYPSBHW - Maximum Amount Ever Used from PSB
XDWMY.   ISYWPSHW - Maximum Amount Ever Used from WPSB

Derived Data Elements

.DWMY.E  ISYAVCTM - Avg Conversational Response Time
.DWMY.E  ISYAVETM - Avg Excessive Response Time
.DWMY.E  ISYAVLKH - Avg Checkpoints/Syncpoints Locks Held
.DWMY.E  ISYAVLTM - Avg Long Response Time
.DWMY.E  ISYAVMTM - Avg Medium Response Time
XDWMY.E  ISYAVPIS - Avg Length Of PI Search Per Request
.DWMY.E  ISYAVSTM - Avg Short Response Time
.DWMY.E  ISYAVTTM - Avg Response Time All Functions
XDWMY.E  ISYMQIOM - Msg Queue Buffer I/O Per Msg
XDWMY.E  ISYMQIOR - Msg Queue Buffer Reads Per Msg
XDWMY.E  ISYMQIOW - Msg Queue Buffer Writes Per Msg
XDWMY.E  ISYMQIWT - Msg Queue Buffer Iwaits Per Msg
XDWMY.E  ISYMSGOT - Msgs Queued To Output
XDWMY.E  ISYMSGPR - Msgs Queued To Process
XDWMY.E  ISYPCCFL - Pct Scheduling Conflict
XDWMY.   ISYPCCOT - Pct Scheduling Conflict - Misc Cause
.DWMY.E  ISYPCCR1 - Conversational Response Percentage 1
.DWMY.E  ISYPCCR2 - Conversational Response Percentage 2
.DWMY.E  ISYPCCR3 - Conversational Response Percentage 3
.DWMY.E  ISYPCCR4 - Conversational Response Percentage 4
.DWMY.E  ISYPCCR5 - Conversational Response Percentage 5
.DWMY.E  ISYPCCR6 - Conversational Response Percentage 6
.DWMY.E  ISYPCCR7 - Conversational Response Percentage 7
XDWMY.   ISYPCDBI - Pct Sched Conflict - DB Intent Conflict
XDWMY.   ISYPCIFB - Pct Imd Fetch Req Sat, Free Block Queue
XDWMY.   ISYPCIFI - Pct MFS Imd Fetch I/O As Pct Of All I/O
XDWMY.   ISYPCIIF - Pct Imd Fetch Req Sat, Immed Fetch Queu
XDWMY.   ISYPCINI - Pct Imd Fetch Req Satisfied Without I/O
XDWMY.   ISYPCIPL - Pct Imd Fetch Req Sat, Pre Fetch Load
XDWMY.   ISYPCIPQ - Pct Imd Ftch Req Sat - Pre Ftch Queue
XDWMY.   ISYPCISO - Pct ISAM/OSAM Buff Pool Req Sat In Pool
XDWMY.   ISYPCISR - Pct ISAM/OSAM Physical I/O ISAM Reads
.DWMY.E  ISYPCLR1 - Long Response Percentage 1
.DWMY.E  ISYPCLR2 - Long Response Percentage 2
```

```
.DWMY.E  ISYPCLR3 - Long Response Percentage 3
.DWMY.E  ISYPCLR4 - Long Response Percentage 4
.DWMY.E  ISYPCLR5 - Long Response Percentage 5
.DWMY.E  ISYPCLR6 - Long Response Percentage 6
.DWMY.E  ISYPCLR7 - Long Response Percentage 7
XDWMY.   ISYPCMFD - Pct MFS Directory I/O As Pct Of All I/O
XDWMY.   ISYPCMQC - Pct Msg Queue Buffer I/O Chkpt Write
XDWMY.E  ISYPCMQF - Pct Msg Queue Buffer I/O Forced Write
XDWMY.E  ISYPCMQP - Pct MQB Int Requests Satisfied In Pool
XDWMY.   ISYPCMQR - Pct Msg Queue Buffer I/O Reads
.DWMY.E  ISYPCMR1 - Medium Response Percentage 1
.DWMY.E  ISYPCMR2 - Medium Response Percentage 2
.DWMY.E  ISYPCMR3 - Medium Response Percentage 3
.DWMY.E  ISYPCMR4 - Medium Response Percentage 4
.DWMY.E  ISYPCMR5 - Medium Response Percentage 5
.DWMY.E  ISYPCMR6 - Medium Response Percentage 6
.DWMY.E  ISYPCMR7 - Medium Response Percentage 7
XDWMY.   ISYPCOCW - Pct ISAM/OSAM Phys I/O OSAM Chnd Writes
XDWMY.E  ISYPCOFW - Pct ISAM/OSAM Phys I/O OSAM Fcd Writes
XDWMY.   ISYPCOSR - Pct ISAM/OSAM Physical I/O OSAM Reads
XDWMY.   ISYPCPCF - Pct Sched Conflict - Program Conflict
XDWMY.   ISYPCPFB - Pct Pre Ftch Req Sat - Free Blk Queue
XDWMY.   ISYPCPFI - Pct MFS Pre Fetch I/O As Pct Of All I/O
XDWMY.   ISYPCPIF - Pct Pre Ftch Req Sat - Imd Fetch Queue
XDWMY.   ISYPCPNI - Pre Fetch Requests Satisfied w/o I/O
XDWMY.   ISYPCPPF - Pct Pre Ftch Req Sat - Pre Fetch Queue
XDWMY.E  ISYPCPRC - Pct Sched Conflict - Priority Cutoff
.DWMY.E  ISYPCSR1 - Short Response Percentage 1
.DWMY.E  ISYPCSR2 - Short Response Percentage 2
.DWMY.E  ISYPCSR3 - Short Response Percentage 3
.DWMY.E  ISYPCSR4 - Short Response Percentage 4
.DWMY.E  ISYPCSR5 - Short Response Percentage 5
.DWMY.E  ISYPCSR6 - Short Response Percentage 6
.DWMY.E  ISYPCSR7 - Short Response Percentage 7
.DWMY.E  ISYPCTR1 - Total Response Percentage 1
.DWMY.E  ISYPCTR2 - Total Response Percentage 2
.DWMY.E  ISYPCTR3 - Total Response Percentage 3
.DWMY.E  ISYPCTR4 - Total Response Percentage 4
.DWMY.E  ISYPCTR5 - Total Response Percentage 5
.DWMY.E  ISYPCTR6 - Total Response Percentage 6
.DWMY.E  ISYPCTR7 - Total Response Percentage 7
XDWMY.   ISYPSIMF - MFS Buffer Immed Fetch Request Rate
XDWMY.E  ISYPSISI - ISAM/OSAM Physical I/O Rate
XDWMY.E  ISYPSISO - ISAM/OSAM Buffer Pool Request Rate
XDWMY.E  ISYPSLDL - Dynamic Log Latch Conflict Rate
XDWMY.E  ISYPSLEC - Exclusive Control Latch Conflict Rate
XDWMY.E  ISYPSLGN - Generic (all DMB) Conflict Rate
XDWMY.E  ISYPSLLL - Logical Log Latch Conflict Rate
XDWMY.E  ISYPSLMN - DC Monitor Latch Conflict Rate
```

```
XDWMY.E  ISYPSLSM - Storage Management Latch Conflict Rate
XDWMY.E  ISYPSMFB - Msg Format Buffer Pool I/O Rate
XDWMY.E  ISYPSMQD - Msg Queue Buffer Dequeue Rate
XDWMY.E  ISYPSMQE - Msg Queue Buffer Enqueue Rate
XDWMY.E  ISYPSMQI - Msg Queue Buffer I/O Rate
XDWMY.E  ISYPSMQR - Msg Queue Buffer Internal Rate Request
XDWMY.E  ISYPSMSG - Msg Processing Rate
XDWMY.   ISYPSPFR - Msg Format Buffer Pre Fetch Request Rat
XDWMY.E  ISYPSPIR - Program Isolation Service Requests Rate
XDWMY.E  ISYPSSCD - Scheduling Rate
.DWMY.E  ISYTRESC - Total Responses Counted
.DWMY.E  ISYTRSTM - Response Time Total All Functions
```

5.2.1.3 Usage Considerations

This section identifies any special considerations or techniques related to using the IMSISY file. Additionally, sample retrieval examples are provided to help you use this file.

In the examples, a SAS macro variable is used to specify the DDname part of the CA MICS file name. These macro variables are a standard part of CA MICS and are available for all files. The macro variable name has the form &diiit, where d is the database identifier, iii is the information area name, and t is the timespan. For the examples, a database identifier of P is used. The identifier is installation dependent, so you should find out what the identifiers are at your installation.

Special Considerations/Techniques

1. The following data elements only have meaning when using the IMSISY file in the DETAIL timespan as they lose significance once summarization has been performed. Reference these data elements only when using the IMSISY file in the DETAIL timespan.

```
ISYCIPSZ - Size of CIO Pool
ISYCIPUS - Current Amount Allocated From CIO Pool
ISYDLCKP - Checkpoints Since System Start
ISYDMBSZ - Size Of Dmb Pool
ISYDMBUS - Current Amount Allocated From DMB Pool
ISYPSBSZ - Size of PSB Pool
ISYPSBUS - Current Amount Allocated From PSB Pool
ISYDPSSZ - Size Of DPSB Pool
ISYDPSUS - Current Amount Allocated From DPSB Pool
ISYWPSSZ - Size of PSBW Pool
ISYWPSUS - Current Amount Allocated From PSBW Pool
```

2. The following data elements are reserved in this record for future use:

```
ISYPETTM - Pseudo Elapsed Time
ISYSRU   - System Resource Units
ISYCOST  - Processing Charges
```

3. Use of the following data element is dependent upon the MIPS rate parameter of prefix.MICS.PARMS(SYSID). Its use should be within the frame of reference of the option's definition:

ISYCPUNI - Instructions Executed

4. Be careful using the special date and time data elements contained in each CA MICS file. As the IMSISY file's granularity increases in higher timespans, the following fields lose significance and should not be used in the case described:

   o HOUR should not be used in MONTHS and YEARS.
   o DAY and DAYNAME should not be used in WEEKS, MONTHS, or YEARS.
   o WEEK should not be used in MONTHS or YEARS.
   o MONTH should not be used in YEARS.

5. The STARTTS and ENDTS, when appearing in the DAYS, WEEKS, MONTHS, or YEARS timespans, mark the span of time over which the data has been summarized, with STARTTS being the lowest (earliest) date and time and ENDTS the highest (latest) date and time.

6. The data elements STARTTS and ENDTS have special meanings when used in the DETAIL timespan. Their purpose in the DETAIL timespan is described below:

   o STARTTS represents the start time of the interval of time that the IMS checkpoint covers. This time stamp comes from either the end time stamp of the previous checkpoint, if there was one, or from the first recognized event for the system being processed, if there was no previous checkpoint for that system. Such an event is typically an IMS start or IMS log switch.

   o ENDTS represents the time stamp on the last IMS log checkpoint record processed for the interval, in IMS log record type '40', subtype '98'.

7. Response time statistics, distributions, and their percentages are not maintained in the DETAIL timespan of the IMSISY file.

Retrieval Examples

1. Create a pie chart that shows the relative occurrences of various reasons for scheduling conflicts. Use month-to-date data.

```
DATA TEMP (KEEP= REASON COUNT);
SET &PIMSM..IMSISY00 END=EOF;
LENGTH REASON $8;
  REASON = 'PROGRAM '; COUNT = ISYSIPGM; OUTPUT;
  REASON = 'DATABASE'; COUNT = ISYSIDBI; OUTPUT;
  REASON = 'PRIORITY'; COUNT = ISYSICUT; OUTPUT;
  REASON = 'OTHER   '; COUNT = ISYSIOTH; OUTPUT;
RUN;
PROC CHART DATA=TEMP;
PIE REASON / SUMVAR = COUNT;
TITLE IMS TRANSACTION SCHEDULING CONFLICTS;
```

2. Generate a vertical bar graph of the transaction scheduling rate by hour for yesterday.

```
PROC CHART DATA=&PIMSD..IMSISY01;
VBAR HOUR / SUMVAR = ISYPSSCD DISCRETE NOSPACE;
TITLE IMS SCHEDULING RATE BY HOUR;
```

5.2.2 IMS User Activity File (IMSISU)

The IMS User Activity File quantifies a user's IMS service (response), load, and usage.

The placement of observations is dependent only on the data source used and the scheduling mechanism involved.

SCHEDULING MECHANISM	DATA SOURCE	
	IMF	NON-IMF
EMH (Expedited Message Handling)	IMSISU	IMS_IS
Non-EMH (Message queue or BMP)	IMSISU	IMSISU

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

1 - IMSISU File Organization
2 - IMSISU Data Elements List
3 - IMSISU Usage Considerations

5.2.2.1 IMSISU File Organization

The table below identifies data elements by which the file is sequenced and summarized in 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     IMSID     IMSACT1   IMSACT2   IMSACT3 |
|         |YEAR      MONTH     DAY       HOUR            |
|         |                                              |
|  WEEKS  |  N/A                                         |
|         |                                              |
|  MONTHS |SYSID     IMSID     IMSACT1   IMSACT2   IMSACT3 |
|         |YEAR      MONTH     ZONE                      |
|         |                                              |
|  YEARS  |SYSID     IMSID     IMSACT1   IMSACT2   IMSACT3 |
|         |YEAR      ZONE                                |
|         |                                              |
+---------+----------------------------------------------+
|  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. IMSISU Time-Span Granularity Chart

5.2.2.2 IMSISU 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 &quot;XDWMYT&quot; 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, Apr 1, 2014

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

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


 Sequence/Summary Data Elements

  .D....E  DAY      - Day of Month
  .D....E  HOUR     - Hour of Day
  .D.MY.E  IMSACT1  - IMS Transaction Type
  .D.MY.E  IMSID    - IMS System Identification
```

```
 ......E  LTERM    - Logical Terminal Identification
 .D.M..E  MONTH    - Month of Year
 .D.MY.E  SYSID    - System Identifier
 ......E  TRANSACT - Transaction Code
 ......E  TRANTYPE - Transaction Relative Longevity Code
 .D....E  WEEK     - Week of Year
 .D.MY.E  YEAR     - Year of Century
 .D.MY.E  ZONE     - Time Zone

Common Data Elements

 .D....E  DAYNAME  - Name of Day of Week
 .D.MY.E  ENDTS    - End Time Stamp
 ......E  IMSAPU   - Application Unit Name
 .D.MY.E  IMSNODST - Number of Response Distributions
 ......E  IMSREGIN - IMS Dependent Region Jobname
 .D.MY.E  IMSRVALX - Response Distribution Limit x
 .D.MY.E  IMSVER   - IMS Version
 ......E  LINE     - Terminal Line Identification
 ......E  PSBNAME  - PSB Name
 ......E  PTERM    - Physical Terminal Identification
 .D.MY.E  STARTTS  - Start Time Stamp
 ......E  VTAMNODE - VTAM Node Name

Retained Data Elements

 ......   ISUCICUW - CICS Logical Unit of Work ID
 .D.MY.E  ISUFPNBA - FP Number of Buffers Allocated
 .D.MY.E  ISUFPOBA - FP Overflow Buffers Allocated
 .D.MY.   ISUFPSRC - FP Sync Point Return Code

Accumulated Data Elements

 .D.MY.E  ISUABEND - Abnormal Termination Count
 .D.MY.E  ISUALT   - Alternate Terminal Output Length
 .D.MY.E  ISUBUFCP - Buffer Compactions
 .D.MY.E  ISUCDSTX - Count Conv. Responses Within Limit x
 .D.MY.E  ISUCONTM - Terminal Connect Time
 .D.MY.E  ISUCOST  - Processing Charge
 .D.MY.E  ISUCPCNT - Cnt Checkpoints/Syncpoints
 .D.MY.E  ISUCPUNI - Instructions Executed
 .D.MY.E  ISUCPUTM - Total CPU Time
 .D.MY.E  ISUCRSTM - Conv. Transaction Response Time
 .D.MY.E  ISUCTRN  - Conversational Transaction Count
 .D.MY.E  ISUDBDLT - Data Base Deletes
 .D.MY.E  ISUDBDNO - Number of Data Bases Accessed
 .D.MY.E  ISUDBGN  - Data Base Get Nexts
 .D.MY.E  ISUDBGU  - Data Base Get Uniques
 .D.MY.E  ISUDBIST - Data Base Inserts
```

```
.D.MY.E  ISUDBOTH - Other Data Base Calls (System Service)
.D.MY.E  ISUDBOTM - DL/I, Buffer, Open/Close CPU Time
.D.MY.E  ISUDBREP - Data Base Replaces
.D.MY.E  ISUDBTOT - Total Number of Data Base Calls
.D.MY.E  ISUDB2TM - DB2 CPU Time
.D.MY.E  ISUEAPPL - Application Elapsed Time
.D.MY.E  ISUEDB2  - DB2 Call Elapsed Time
.D.MY.E  ISUEDLDB - DL/I DB Call Elapsed Time
.D.MY.E  ISUEDLTM - DL/I TM Call Elapsed Time
.D.MY.E  ISUELDLI - Duration of Last DL/I Call
.D.MY.E  ISUEMQS  - MQSeries Call Elapsed Time
.D.MY.E  ISUEOESS - Other ESS Call Elapsed Time
.D.MY.E  ISUEOPCL - Data Base Open/Close Elapsed Time
.D.MY.E  ISUEREST - Excessive Transaction Residency Time
.D.MY.E  ISUERSTM - Excessive Transaction Response Time
.D.MY.E  ISUESYNC - Sunc Point Elapsed Time
.D.MY.E  ISUETMQN - Excessive Transaction Input Queue Time
.D.MY.E  ISUETRN  - Excessive Transaction Count
.D.MY.E  ISUE1STD - Sched-to-1st DL/I Call Elapsed Time
.D.MY.   ISUFPBQC - FP Balancing Queue Count
.D.MY.   ISUFPBQW - FP Balancing Queue Wait Time
.D.MY.   ISUFPBUF - FP Buffers Used
.D.MY.   ISUFPCIC - FP CI Contentions
.D.MY.E  ISUFPDEC - FP DEDB Call Count
.D.MY.E  ISUFPDEP - FP DEDB Put Count
.D.MY.E  ISUFPDER - FP DEDB Read Count
.D.MY.E  ISUFPMSC - FP MSDB Call Count
.D.MY.   ISUFPOBL - FP Overflow Buffer Latch Waits
.D.MY.   ISUFPSDB - FP Seq Dep Buffer Gets
.D.MY.   ISUFPUIO - FP Utility I/O Counts
.D.MY.   ISUFPWFB - FP Buffer Waits
.D.MY.E  ISUILENG - Msg Input Length As Queued
.D.MY.E  ISUIMSGS - Terminal Input Message Count
.D.MY.E  ISUINCH  - Terminal Input Character Count
.D.MY.E  ISUINSPA - Input SPA Length
.D.MY.E  ISUKEYRD - ISAM/KSDS Key Reads Issued
.D.MY.E  ISUKEYWT - ISAM/KSDS Key Writes Issued
.D.MY.E  ISULDSTX - Count Long Responses Within Limit x
.D.MY.E  ISULRSTM - Long Transaction Response Time
.D.MY.E  ISULTRN  - Long Transaction Count
.D.MY.E  ISUMDSTX - Count Medium Responses Within Limit x
.D.MY.E  ISUMRSTM - Medium Transaction Response Time
.D.MY.E  ISUMSGGN - Msg Get Next Count
.D.MY.E  ISUMSGGU - Msg Get Unique Count
.D.MY.E  ISUMSGIS - Msg Insert Count
.D.MY.E  ISUMSGOT - Msg Other Count (sys Serv, Chkp, Stats)
.D.MY.E  ISUMSGPG - Msg Purge Count
.D.MY.E  ISUMSTOT - Total Number of Message Calls
.D.MY.E  ISUMTRN  - Medium Transaction Count
```

```
.D.MY.E  ISUNIOA  - Alters to Data in Buffer w/o I/O
.D.MY.E  ISUNKEYR - OSAM/ESDS Non-Key Reads Issued
.D.MY.E  ISUNKEYW - OSAM/ESDS Non-Key Writes Issued
.D.MY.E  ISUNOLOG - User Logons
.D.MY.E  ISUNONIO - Data Found in Buffer w/o I/O
.D.MY.E  ISUOLENG - Msg Output Length As Queued
.D.MY.E  ISUOMSGS - Terminal Output Message Count
.D.MY.E  ISUOTSPA - Output SPA Length
.D.MY.E  ISUOUTCH - Terminal Output Character Count
.D.MY.E  ISUPETTM - Pseudo Elapsed Time
.D.MY.E  ISURESTM - Message Region Residency Time
.D.MY.E  ISUSCHCT - Total Units of Work Scheduled
.D.MY.E  ISUSDSTX - Count Short Responses Within Limit x
.D.MY.E  ISUSQCTL - DB2 Control Calls
.D.MY.E  ISUSQDDL - DB2 Data Definition Language Calls
.D.MY.E  ISUSQDEL - DB2 Delete Calls
.D.MY.E  ISUSQDYN - DB2 Dynamic Calls
.D.MY.E  ISUSQINS - DB2 Insert Calls
.D.MY.E  ISUSQOPN - DB2 Open Calls
.D.MY.E  ISUSQOTH - DB2 Other Calls
.D.MY.E  ISUSQSLF - DB2 Select/Fetch Calls
.D.MY.E  ISUSQTOT - Total DB2 SQL Calls
.D.MY.E  ISUSQUPD - DB2 Update Calls
.D.MY.E  ISUSRSTM - Short Transaction Response Time
.D.MY.E  ISUSRU   - System Resource Units
.D.MY.E  ISUSTRN  - Short Transaction Count
.D.MY.E  ISUSUCTM - Dep Reg zIIP Eligible CPU on a CP
.D.MY.E  ISUSWITH - Output Message Switch Length
.D.MY.E  ISUTAPPC - Total APPC Transactions
.D.MY.E  ISUTDSTX - Count Total Responses Within Limit x
.D.MY.E  ISUTMCBF - Control Region Buffer Handler Time
.D.MY.E  ISUTMCDL - Control Region DL/I Time
.D.MY.E  ISUTMCP  - Dependent Region CP Time
.D.MY.E  ISUTMCRO - Control Reg Overhead CPU Time
.D.MY.E  ISUTMDBF - Dependent Region Buffer Handler Time
.D.MY.E  ISUTMDCP - Dependent Region Processing Time
.D.MY.E  ISUTMDDL - Dependent Region DL/I Time
.D.MY.E  ISUTMDOC - Data Base Open and Close Time
.D.MY.E  ISUTMDRO - Dependent Reg Overhead CPU Time
.D.MY.E  ISUTMQIN - Msg Input Queue Time
.D.MY.E  ISUTMSCH - Dependent Reg Sched/Term CPU Time
.D.MY.E  ISUTMZAP - Dependent Region zIIP/zAAP CPU Time
.D.MY.E  ISUTOLKH - Tot Checkpoints/Syncpoints Locks Held
.D.MY.E  ISUTOTHR - Total Other Transactions
.D.MY.E  ISUTOTMA - Total OTMA Transactions
.D.MY.E  ISUTRANS - Total Transaction Executions
.D.MY.E  ISUTRSTM - Transaction Response Time
.D.MY.E  ISUUOWCT - Total Units of Work Executed
.D.MY.E  ISUXCSTM - CP CPU Time Minus zIIP/zAAP Eligible
```

```
 .D.MY.E  ISUZACTM - Dep Reg zAAP Eligible CPU on a CP

Maximum Data Elements

 .D.MY.E  ISUMXALT - Max Alternate Terminal Output Length
 .D.MY.E  ISUMXBFC - Max Buffer Compactions
 .D.MY.E  ISUMXCBF - Max Control Region Buffer Handler Time
 .D.MY.E  ISUMXCDL - Max Control Region DL/I Time
 .D.MY.E  ISUMXCP  - Max Dependent Region CP Time
 .D.MY.E  ISUMXCTM - Conv Transaction Response Time Max
 .D.MY.E  ISUMXDB  - Max Data Bases Accessed
 .D.MY.E  ISUMXDBF - Max Dependent Reg. Buffer Handler Time
 .D.MY.E  ISUMXDBO - Max DL/I, Buffer, Open/Close CPU Time
 .D.MY.E  ISUMXDBT - Max Total Number Of Data Base Calls
 .D.MY.E  ISUMXDCP - Max Dependent Region Processing Time
 .D.MY.E  ISUMXDDL - Max Dependent Region DL/I Time
 .D.MY.E  ISUMXDDT - Max Data Base Deletes
 .D.MY.E  ISUMXDGN - Max Data Base Get Nexts
 .D.MY.E  ISUMXDGU - Max Data Base Get Uniques
 .D.MY.E  ISUMXDIS - Max Data Base Inserts
 .D.MY.E  ISUMXDOC - Max Data Base Open and Close Time
 .D.MY.E  ISUMXDOT - Max Other Data Base Calls (sysm Serv)
 .D.MY.E  ISUMXDRP - Max Data Base Replaces
 .D.MY.E  ISUMXETM - Max Excessive Response Time
 .D.MY.E  ISUMXILN - Max Msg Input Length As Queued
 .D.MY.E  ISUMXIQ  - Max Msg Input Queue Time
 .D.MY.E  ISUMXISP - Max Input SPA Length
 .D.MY.E  ISUMXKRD - Max ISAM/KSDS Key Reads Issued
 .D.MY.E  ISUMXKWT - Max ISAM/KSDS Key Writes Issued
 .D.MY.E  ISUMXLKH - Max Checkpoints/Syncpoints Locks Held
 .D.MY.E  ISUMXLTM - Long Transaction Response Time Max
 .D.MY.E  ISUMXMGN - Max Msg Get Next Count
 .D.MY.E  ISUMXMGU - Max Msg Get Unique Count
 .D.MY.E  ISUMXMIS - Max Msg Insert Count
 .D.MY.E  ISUMXMOT - Max Msg Other Cnt (sys Serv/chkp/stats)
 .D.MY.E  ISUMXMPG - Max Msg Purge Count
 .D.MY.E  ISUMXMST - Max Total Number Of Message Calls
 .D.MY.E  ISUMXMTM - Medium Transaction Response Time Max
 .D.MY.E  ISUMXNIA - Max Alters to Data in Buffer w/o I/O
 .D.MY.E  ISUMXNIO - Max Data Found in Buffer w/o I/O
 .D.MY.E  ISUMXNKR - Max OSAM/ESDS Non-Key Reads Issued
 .D.MY.E  ISUMXNKW - Max OSAM/ESDS Non-Key Writes Issued
 .D.MY.E  ISUMXOLN - Max Msg Output Length As Queued
 .D.MY.E  ISUMXOSP - Max Output SPA Length
 .D.MY.E  ISUMXOSW - Max Output Message Switch Length
 .D.MY.E  ISUMXQCT - Max DB2 Control Calls
 .D.MY.E  ISUMXQDD - Max DB2 Data Definition Language Calls
 .D.MY.E  ISUMXQDL - Max DB2 Delete Calls
 .D.MY.E  ISUMXQDY - Max DB2 Dynamic Calls
```

```
 .D.MY.E  ISUMXQIN - Max DB2 Insert Calls
 .D.MY.E  ISUMXQOP - Max DB2 Open Calls
 .D.MY.E  ISUMXQOT - Max DB2 Other Calls
 .D.MY.E  ISUMXQSF - Max DB2 Select/Fetch Calls
 .D.MY.E  ISUMXQTT - Max Total DB2 SQL Calls
 .D.MY.E  ISUMXQUP - Max DB2 Update Calls
 .D.MY.E  ISUMXSTM - Short Transaction Response Time Max
 .D.MY.E  ISUMXSUC - Max Dep Reg zIIP Eligible CPU on a CP
 .D.MY.E  ISUMXTRT - Max CPU Time
 .D.MY.E  ISUMXTTM - Max Transaction Response Time
 .D.MY.E  ISUMXXCS - Max CP Time Minus zIIP/zAAP Eligible
 .D.MY.E  ISUMXZAC - Max Dep Reg zAAP Eligible CPU on a CP
 .D.MY.E  ISUMXZAP - Max Dependent Region zAAP Time
 .D.MY.E  ISUMX2TM - Max DB2 CPU Time

Derived Data Elements

 .D.MY.E  ISUAVCTM - Avg Conversational Response Time
 .D.MY.E  ISUAVETM - Avg Excessive Response Time
 .D.MY.E  ISUAVLKH - Avg Checkpoints/Syncpoints Locks Held
 .D.MY.E  ISUAVLTM - Avg Long Response Time
 .D.MY.E  ISUAVMTM - Avg Medium Response Time
 .D.MY.E  ISUAVSTM - Avg Short Response Time
 .D.MY.E  ISUAVTRT - Average CPU Time
 .D.MY.E  ISUAVTTM - Avg Response Time All Functions
 .D.MY.E  ISUPCTRX - Total Pct Resp Within Limit x
```

5.2.2.3 IMSISU Usage Considerations

This section identifies any special considerations or techniques related to using the IMSISU file. Additionally, sample retrieval examples are provided to help you use this file.

In the examples, a SAS macro variable is used to specify the DDname part of the CA MICS file name. These macro variables are a standard part of CA MICS and are available for all files. The macro variable name has the form &diiit, where d is the database identifier, iii is the information area name, and t is the timespan. For the examples, a database identifier of P is used. The identifier is installation dependent, so you should find out what the identifiers are at your installation.

Special Considerations/Techniques

1. The following data elements are reserved in this record for future use:

```
ISUPETTM - Pseudo Elapsed Time
ISUSRU   - System Resource Units
ISUCOST  - Processing Charges
```

2. Use of the following data element is dependent upon the MIPS rate parameter of prefix.MICS.PARMS(SYSID). Its use should be within the frame of reference of the option's definition:

```
ISUCPUNI - Instructions Executed
```

3. Be careful using the special date and time data elements contained in each CA MICS file. As the IMSISU file's granularity increases in higher timespans, the following fields lose significance and should not be used in the case described:

   - HOUR should not be used in MONTHS.
   - DAY and DAYNAME should not be used in MONTHS.
   - WEEK should not be used in MONTHS.

4. The STARTTS and ENDTS, when appearing in the DAYS, WEEKS, MONTHS, or YEARS timespans, mark the span of time over which the data has been summarized, with STARTTS being the lowest (earliest) date and time and ENDTS the highest (latest) date and time.

Retrieval Examples

1. Print IMS application CPU time used yesterday by hour of the day.

```
PROC FREQ DATA=&PIMSD..IMSISU01;
TABLES HOUR / NOROW NOCOL; WEIGHT ISUCPUTM; RUN;
```

2. Generate a block chart of the percentage of IMS application CPU time spent in each message or control region functional area. Use yesterday's data.

```
DATA SUMF (KEEP= TIMETYPE PERCENT);
SET &PIMSD..IMSISU01 END=EOF;
RETAIN TOTTOT CDLTOT CBFTOT DOCTOT DDLTOT DBFTOT
       DCPTOT 0;
   CDLTOT + ISUTMCDL;
   CBFTOT + ISUTMCBF;
   DOCTOT + ISUTMDOC;
   DDLTOT + ISUTMDDL;
   DBFTOT + ISUTMDBF;
   DCPTOT + ISUTMDCP;
   IF EOF  THEN DO;
     TOTTOT+CDLTOT+CBFTOT+DOCTOT+DDLTOT+DBFTOT+
       DCPTOT ;
     IF TOTTOT NE 0  THEN DO;
       TIMETYPE = 'CTL DLI';
       PERCENT  = 100 * CDLTOT / TOTTOT;
       OUTPUT SUMF;
       TIMETYPE = 'CTL BUF';
       PERCENT  = 100 * CBFTOT / TOTTOT;
       OUTPUT SUMF;
       TIMETYPE = 'OPN/CLOS';
       PERCENT  = 100 * DOCTOT / TOTTOT;
       OUTPUT SUMF;
       TIMETYPE = 'DEP DLI';
       PERCENT  = 100 * DDLTOT / TOTTOT;
       OUTPUT SUMF;
       TIMETYPE = 'DEP BUF';
       PERCENT  = 100 * DBFTOT / TOTTOT;
       OUTPUT SUMF;
       TIMETYPE = 'DEP CPU';
       PERCENT  = 100 * DCPTOT / TOTTOT;
       OUTPUT SUMF;
     END;
   END; RUN;
   PROC CHART DATA=SUMF;
```

```
BLOCK TIMETYPE / SUMVAR=PERCENT ; RUN;
```

5.2.3 IMS Application Unit Activity File (ISMIAU)

The IMS Application Unit Activity File contains data quantifying an IMS application unit's resource usage and service.

The placement of observations is dependent only on the source data used and the scheduling mechanism involved.

```
+------------------------------------------------------------+
|                                     |      DATA SOURCE      |
|        SCHEDULING MECHANISM         |----------------------|
|                                     |    IMF    |  NON-IMF |
+------------------------------------------------------------+
|  EMH (Expedited Message Handling)   |  IMSIAU   |  IMS_IA  |
+------------------------------------------------------------+
|  Non-EMH (Message queue or BMP)     |  IMSIAU   |  IMSIAU  |
+------------------------------------------------------------+
```

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

1 - IMSIAU File Organization
2 - IMSIAU Data Elements List
3 - IMSIAU Usage Considerations

5.2.3.1 IMSIAU File Organization

The table below identifies data elements by which the file is sequenced and summarized in 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     IMSID     IMSAPU    YEAR      MONTH  |
|         |DAY       HOUR                                 |
|         |                                               |
|  WEEKS  |  N/A                                          |
|         |                                               |
|  MONTHS |SYSID     IMSID     IMSAPU    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. IMSIAU Time-Span Granularity Chart

5.2.3.2 IMSIAU 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, Apr 1, 2014

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

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


Sequence/Summary Data Elements

 .D....E  DAY       - Day of Month
 .D....E  HOUR      - Hour of Day
 .D.M..E  IMSAPU    - Application Unit Name
 .D.M..E  IMSID     - IMS System Identification
 .D.M..E  MONTH     - Month of Year
```

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

Common Data Elements

 .D....E  DAYNAME  - Name of Day of Week
 .D.M..E  ENDTS    - End Time Stamp
 .D.M..E  IMSNODST - Number of Response Distributions
 ......E  IMSREGIN - IMS Dependent Region Jobname
 .D.M..E  IMSRVALX - Response Distribution Limit x
 .D.M..E  IMSVER   - IMS Version
 .D.M..E  STARTTS  - Start Time Stamp

Retained Data Elements

 .D.M..E  IAUFPNBA - FP Number of Buffers Allocated
 .D.M..E  IAUFPOBA - FP Overflow Buffers Allocated
 .D.M..   IAUFPSRC - FP Sync Point Return Code

Accumulated Data Elements

 .D.M..E  IAUABEND - Abnormal Termination Count
 .D.M..E  IAUALT   - Alternate Terminal Output Length
 .D.M..E  IAUBUFCP - Buffer Compactions
 .D.M..E  IAUCDSTX - Count Conv. Responses Within Limit x
 .D.M..   IAUCONTM - Terminal Connect Time
 .D.M..E  IAUCOST  - Processing Charge
 .D.M..E  IAUCPCNT - Cnt Checkpoints/Syncpoints
 .D.M..   IAUCPUNI - Instructions Executed
 .D.M..E  IAUCPUTM - Total CPU Time
 .D.M..E  IAUCRSTM - Conv. Transaction Response Time
 .D.M..E  IAUCTRN  - Conversational Transaction Count
 .D.M..E  IAUDBDLT - Data Base Deletes
 .D.M..E  IAUDBDNO - Number of Data Bases Accessed
 .D.M..E  IAUDBGN  - Data Base Get Nexts
 .D.M..E  IAUDBGU  - Data Base Get Uniques
 .D.M..E  IAUDBIST - Data Base Inserts
 .D.M..E  IAUDBOTH - Other Data Base Calls (System Service)
 .D.M..E  IAUDBOTM - DL/I, Buffer, Open/Close CPU Time
 .D.M..E  IAUDBREP - Data Base Replaces
 .D.M..E  IAUDBTOT - Total Number of Data Base Calls
 .D.M..E  IAUDB2TM - DB2 CPU Time
 .D.M..E  IAUEAPPL - Application Elapsed Time
 .D.M..E  IAUEDB2  - DB2 Call Elapsed Time
 .D.M..E  IAUEDLDB - DL/I DB Call Elapsed Time
 .D.M..E  IAUEDLTM - DL/I TM Call Elapsed Time
 .D.M..E  IAUELDLI - Duration of Last DL/I Call
```

```
.D.M..E  IAUEMQS  - MQSeries Call Elapsed Time
.D.M..E  IAUEOESS - Other ESS Call Elapsed Time
.D.M..E  IAUEOPCL - Data Base Open/Close Elapsed Time
.D.M..E  IAUERSTM - Excessive Transaction Response Time
.D.M..E  IAUESYNC - Sunc Point Elapsed Time
.D.M..E  IAUETRN  - Excessive Transaction Count
.D.M..E  IAUE1STD - Sched-to-1st DL/I Call Elapsed Time
.D.M..   IAUFPBQC - FP Balancing Queue Count
.D.M..   IAUFPBQW - FP Balancing Queue Wait Time
.D.M..   IAUFPBUF - FP Buffers Used
.D.M..   IAUFPCIC - FP CI Contentions
.D.M..   IAUFPDEC - FP DEDB Call Count
.D.M..   IAUFPDEP - FP DEDB Put Count
.D.M..   IAUFPDER - FP DEDB Read Count
.D.M..   IAUFPMSC - FP MSDB Call Count
.D.M..   IAUFPOBL - FP Overflow Buffer Latch Waits
.D.M..   IAUFPSDB - FP Seq Dep Buffer Gets
.D.M..   IAUFPUIO - FP Utility I/O Counts
.D.M..   IAUFPWFB - FP Buffer Waits
.D.M..E  IAUILENG - Msg Input Length As Queued
.D.M..E  IAUIMSGS - Terminal Input Messages Count
.D.M..E  IAUINCH  - Terminal Input Character Count
.D.M..E  IAUINSPA - Input SPA Length
.D.M..E  IAUKEYRD - ISAM/KSDS Key Reads Issued
.D.M..E  IAUKEYWT - ISAM/KSDS Key Writes Issued
.D.M..E  IAULDSTX - Count Long Responses Within Limit x
.D.M..E  IAULRSTM - Long Transaction Response Time
.D.M..E  IAULTRN  - Long Transaction Count
.D.M..E  IAUMDSTX - Count Medium Responses Within Limit x
.D.M..E  IAUMRSTM - Medium Transaction Response Time
.D.M..E  IAUMSGGN - Msg Get Next Count
.D.M..E  IAUMSGGU - Msg Get Unique Count
.D.M..E  IAUMSGIS - Msg Insert Count
.D.M..E  IAUMSGOT - Msg Other Count (sys Serv, Chkp, Stats)
.D.M..E  IAUMSGPG - Msg Purge Count
.D.M..E  IAUMSTOT - Total Number of Message Calls
.D.M..E  IAUMTRN  - Medium Transaction Count
.D.M..E  IAUNIOA  - Alters to Data in Buffer w/o I/O
.D.M..E  IAUNKEYR - OSAM/ESDS Non-Key Reads Issued
.D.M..E  IAUNKEYW - OSAM/ESDS Non-Key Writes Issued
.D.M..   IAUNOLOG - User Logons
.D.M..E  IAUNONIO - Data Found in Buffer w/o I/O
.D.M..E  IAUOLENG - Msg Output Length As Queued
.D.M..E  IAUOMSGS - Terminal Output Messages Count
.D.M..E  IAUOTSPA - Output SPA Length
.D.M..E  IAUOUTCH - Terminal Output Character Count
.D.M..   IAUPETTM - Pseudo Elapsed Time
.D.M..E  IAURESTM - Message Region Residency Time
.D.M..E  IAUSCHCT - Total Units of Work Scheduled
```

```
 .D.M..E  IAUSDSTX - Count Short Responses Within Limit x
 .D.M..E  IAUSQCTL - DB2 Control Calls
 .D.M..E  IAUSQDDL - DB2 Data Definition Language Calls
 .D.M..E  IAUSQDEL - DB2 Delete Calls
 .D.M..E  IAUSQDYN - DB2 Dynamic Calls
 .D.M..E  IAUSQINS - DB2 Insert Calls
 .D.M..E  IAUSQOPN - DB2 Open Calls
 .D.M..E  IAUSQOTH - DB2 Other Calls
 .D.M..E  IAUSQSLF - DB2 Select/Fetch Calls
 .D.M..E  IAUSQTOT - Total DB2 SQL Calls
 .D.M..E  IAUSQUPD - DB2 Update Calls
 .D.M..E  IAUSRSTM - Short Transaction Response Time
 .D.M..   IAUSRU   - System Resource Units
 .D.M..E  IAUSTRN  - Short Transaction Count
 .D.M..E  IAUSUCTM - Dep Reg zIIP Eligible CPU on a CP
 .D.M..E  IAUSWITH - Output Message Switch Length
 .D.M..E  IAUTAPPC - Total APPC Transactions
 .D.M..E  IAUTDSTX - Count Total Responses Within Limit x
 .D.M..E  IAUTMCBF - Control Region Buffer Handler Time
 .D.M..E  IAUTMCDL - Control Region DL/I Time
 .D.M..E  IAUTMCP  - Dependent Region CP Time
 .D.M..   IAUTMCRO - Control Reg Overhead CPU Time
 .D.M..E  IAUTMDBF - Dependent Region Buffer Handler Time
 .D.M..E  IAUTMDCP - Dependent Region Processing Time
 .D.M..E  IAUTMDDL - Dependent Region DL/I Time
 .D.M..E  IAUTMDOC - Data Base Open and Close Time
 .D.M..   IAUTMDRO - Dependent Reg Overhead CPU Time
 .D.M..E  IAUTMQIN - Msg Input Queue Time
 .D.M..   IAUTMSCH - Dependent Reg Sched/Term CPU Time
 .D.M..E  IAUTMZAP - Dependent Region zIIP/zAAP CPU Time
 .D.M..E  IAUTOLKH - Tot Checkpoints/Syncpoints Locks Held
 .D.M..E  IAUTOTHR - Total Other Transactions
 .D.M..E  IAUTOTMA - Total OTMA Transactions
 .D.M..E  IAUTRANS - Total Transaction Executions
 .D.M..E  IAUTRSTM - Transaction Response Time
 .D.M..E  IAUUOWCT - Total Units of Work Executed
 .D.M..E  IAUXCSTM - CP CPU Time Minus zIIP/zAAP Eligible
 .D.M..E  IAUZACTM - Dep Reg zAAP Eligible CPU on a CP

Maximum Data Elements

 .D.M..E  IAUMXALT - Max Alternate Terminal Output Length
 .D.M..E  IAUMXBFC - Max Buffer Compactions
 .D.M..E  IAUMXCBF - Max Control Region Buffer Handler Time
 .D.M..E  IAUMXCDL - Max Control Region DL/I Time
 .D.M..E  IAUMXCP  - Max Dependent Region CP Time
 .D.M..E  IAUMXCTM - Conv Transaction Response Time Max
 .D.M..E  IAUMXDB  - Max Data Bases Accessed
 .D.M..E  IAUMXDBF - Max Dependent Reg. Buffer Handler Time
```

```
.D.M..E  IAUMXDBO - Max DL/I, Buffer, Open/Close CPU Time
.D.M..E  IAUMXDBT - Max Total Number Of Data Base Calls
.D.M..E  IAUMXDCP - Max Dependent Region Processing Time
.D.M..E  IAUMXDDL - Max Dependent Region DL/I Time
.D.M..E  IAUMXDDT - Max Data Base Deletes
.D.M..E  IAUMXDGN - Max Data Base Get Nexts
.D.M..E  IAUMXDGU - Max Data Base Get Uniques
.D.M..E  IAUMXDIS - Max Data Base Inserts
.D.M..E  IAUMXDOC - Max Data Base Open and Close Time
.D.M..E  IAUMXDOT - Max Other Data Base Calls (sysm Serv)
.D.M..E  IAUMXDRP - Max Data Base Replaces
.D.M..E  IAUMXETM - Max Excessive Response Time
.D.M..E  IAUMXILN - Max Msg Input Length As Queued
.D.M..E  IAUMXIQ  - Max Msg Input Queue Time
.D.M..E  IAUMXISP - Max Input SPA Length
.D.M..E  IAUMXKRD - Max ISAM/KSDS Key Reads Issued
.D.M..E  IAUMXKWT - Max ISAM/KSDS Key Writes Issued
.D.M..E  IAUMXLKH - Max Checkpoints/Syncpoints Locks Held
.D.M..E  IAUMXLTM - Long Transaction Response Time Max
.D.M..E  IAUMXMGN - Max Msg Get Next Count
.D.M..E  IAUMXMGU - Max Msg Get Unique Count
.D.M..E  IAUMXMIS - Max Msg Insert Count
.D.M..E  IAUMXMOT - Max Msg Other Cnt (sys Serv/chkp/stats)
.D.M..E  IAUMXMPG - Max Msg Purge Count
.D.M..E  IAUMXMST - Max Total Number Of Message Calls
.D.M..E  IAUMXMTM - Medium Transaction Response Time Max
.D.M..E  IAUMXNIA - Max Alters to Data in Buffer w/o I/O
.D.M..E  IAUMXNIO - Max Data Found in Buffer w/o I/O
.D.M..E  IAUMXNKR - Max OSAM/ESDS Non-Key Reads Issued
.D.M..E  IAUMXNKW - Max OSAM/ESDS Non-Key Writes Issued
.D.M..E  IAUMXOLN - Max Msg Output Length As Queued
.D.M..E  IAUMXOSP - Max Output SPA Length
.D.M..E  IAUMXOSW - Max Output Message Switch Length
.D.M..E  IAUMXQCT - Max DB2 Control Calls
.D.M..E  IAUMXQDD - Max DB2 Data Definition Language Calls
.D.M..E  IAUMXQDL - Max DB2 Delete Calls
.D.M..E  IAUMXQDY - Max DB2 Dynamic Calls
.D.M..E  IAUMXQIN - Max DB2 Insert Calls
.D.M..E  IAUMXQOP - Max DB2 Open Calls
.D.M..E  IAUMXQOT - Max DB2 Other Calls
.D.M..E  IAUMXQSF - Max DB2 Select/Fetch Calls
.D.M..E  IAUMXQTT - Max Total DB2 SQL Calls
.D.M..E  IAUMXQUP - Max DB2 Update Calls
.D.M..E  IAUMXSTM - Short Transaction Response Time Max
.D.M..E  IAUMXSUC - Max Dep Reg zIIP Eligible CPU on a CP
.D.M..E  IAUMXTRT - Max CPU Time
.D.M..E  IAUMXTTM - Max Transaction Response Time
.D.M..E  IAUMXXCS - Max CP Time Minus zIIP/zAAP Eligible
.D.M..E  IAUMXZAC - Max Dep Reg zAAP Eligible CPU on a CP
```

```
 .D.M..E  IAUMXZAP - Max Dependent Region zAAP Time
 .D.M..E  IAUMX2TM - Max DB2 CPU Time

Derived Data Elements

 .D.M..E  IAUAVCTM - Avg Conversational Response Time
 .D.M..E  IAUAVETM - Avg Excessive Response Time
 .D.M..E  IAUAVLKH - Avg Checkpoints/Syncpoints Locks Held
 .D.M..E  IAUAVLTM - Avg Long Response Time
 .D.M..E  IAUAVMTM - Avg Medium Response Time
 .D.M..E  IAUAVSTM - Avg Short Response Time
 .D.M..E  IAUAVTRT - Average CPU Time
 .D.M..E  IAUAVTTM - Avg Response Time All Functions
 .D.M..   IAUPCTRX - Total Pct Resp Within Limit x
```

5.2.3.3 IMSIAU Usage Considerations

This section identifies any special considerations or techniques related to using the IMSIAU file. Additionally, sample retrieval examples are provided to help you use this file.

In the examples, a SAS macro variable is used to specify the DDname part of the CA MICS file name. These macro variables are a standard part of CA MICS and are available for all files. The macro variable name has the form &diiit, where d is the database identifier, iii is the information area name, and t is the timespan. For the examples, a database identifier of P is used. The identifier is installation dependent, so you should find out what the identifiers are at your installation.

Special Considerations/Techniques

1. The following data elements are reserved in this record for future use:

   ISUPETTM - Pseudo Elapsed Time
   ISUSRU   - System Resource Units
   ISUCOST - Processing Charges

2. Use of the following data element is dependent upon the MIPS rate parameter of prefix.MICS.PARMS(SYSID). Its use should be within the frame of reference of the option's definition:

   ISUCPUNI - Instructions Executed

3. Be careful using the special date and time data elements contained in each CA MICS file. As the IMSIAU file's granularity increases in higher timespans, the following fields lose significance and should not be used in the case described:

   - HOUR should not be used in MONTHS.
   - DAY and DAYNAME should not be used in MONTHS.
   - WEEK should not be used in MONTHS.

4. The STARTTS and ENDTS, when appearing in the DAYS, WEEKS, MONTHS, or YEARS timespans, mark the span of time over which the data has been summarized, with STARTTS being the lowest (earliest) date and time and ENDTS the highest (latest) date and time.

Retrieval Examples

1. Produce a frequency distribution chart of application units that executed last week showing the number of times each executed.

```
DATA TEMP (KEEP= IMSAPU EXECUTES);
SET &PIMSW..IMSIAU01;
   IF EXECUTES GT 0  THEN OUTPUT TEMP;
RUN;
PROC FREQ DATA=TEMP;
TABLES IMSAPU / NOROW NOCOL; WEIGHT EXECUTES;
RUN;
```

2. Generate a horizontal bar graph of total database access, by HOUR of the day, using yesterday's data.

```
PROC CHART DATA=&PIMSD..IMSIAU01;
HBAR HOUR / SUMVAR = IAUDBTOT DISCRETE;  RUN;
```

5.2.4 IMS User Application Count File (IMSIAC)

The IMS User Application Count File contains data quantifying the IMS user's frequency of use of a specific application unit.

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

1 - IMSIAC File Organization
2 - IMSIAC Data Elements List
3 - IMSIAC Usage Considerations

5.2.4.1 IMSIAC File Organization

The table below identifies data elements by which the file is sequenced and summarized in 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     IMSID     IMSACT1   IMSACT2   IMSACT3  |
|         |IMSAPU    YEAR      MONTH     DAY       HOUR     |
|         |                                               |
|  WEEKS  |  N/A                                          |
|         |                                               |
|  MONTHS |SYSID     IMSID     IMSACT1   IMSACT2   IMSACT3  |
|         |IMSAPU    YEAR      MONTH     ZONE               |
|         |                                               |
|  YEARS  |SYSID     IMSID     IMSACT1   IMSACT2   IMSACT3  |
|         |IMSAPU    YEAR      ZONE                         |
|         |                                               |
+---------+-----------------------------------------------+
|  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. IMSIAC Time-Span Granularity Chart

5.2.4.2 IMSIAC 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, Apr 1, 2014

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
.D....E	HOUR	- Hour of Day
.D.MY.E	IMSACT1	- IMS Transaction Type
.D.MY.E	IMSAPU	- Application Unit Name

```
 .D.MY.E  IMSID    - IMS System Identification
 .D.M..E  MONTH    - Month of Year
 .D.MY.E  SYSID    - System Identifier
 .D....E  WEEK     - Week of Year
 .D.MY.E  YEAR     - Year of Century
 .D.MY.E  ZONE     - Time Zone

Common Data Elements

 .D....E  DAYNAME  - Name of Day of Week
 .D.MY.E  ENDTS    - End Time Stamp
 ......E  IMSREGIN - IMS Dependent Region Jobname
 .D.MY.E  IMSVER   - IMS Version
 .D.MY.E  STARTTS  - Start Time Stamp

Accumulated Data Elements

 .D.MY.   IACABEND - Abnormal Termination Occurrences
 .D.MY.E  IACCOST  - Processing Charges
 .D.MY.E  IACIMSGS - Number Of Input Messages
 .D.MY.   IACNOLOG - Number Of Recognized Signons
 .D.MY.E  IACSCHCT - Total Units of Work Scheduled
 .D.MY.E  IACTAPPC - Total APPC Transactions
 .D.MY.E  IACTOTHR - Total Other Transactions
 .D.MY.E  IACTOTMA - Total OTMA Transactions
 .D.MY.E  IACTRANS - Number Of Transaction Occurrences
 .D.MY.E  IACUOWCT - Total Units of Work Executed
```

5.2.4.3 IMSIAC Usage Considerations

This section identifies any special considerations or techniques related to using the IMSIAC file. Additionally, sample retrieval examples are provided to help you use this file.

In the examples, a SAS macro variable is used to specify the DDname part of the CA MICS file name. These macro variables are a standard part of CA MICS and are available for all files. The macro variable name has the form &diiit, where d is the database identifier, iii is the information area name, and t is the timespan. For the examples, a database identifier of P is used. The identifier is installation dependent, so you should find out what the identifiers are at your installation.

Special Considerations/Techniques

1. The following data elements are reserved in this record for future use:

   IACCOST - Processing Charges

2. Be careful using the special date and time data elements contained in each CA MICS file. As the IMSIAC file's granularity increases in higher timespans, the following fields lose significance and should not be used in the case described:

   - o HOUR should not be used in MONTHS and YEARS.
   - o DAY and DAYNAME should not be used in MONTHS or YEARS.
   - o WEEK should not be used in MONTHS or YEARS.
   - o MONTH should not be used in YEARS.

3. The STARTTS and ENDTS, when appearing in the DAYS, WEEKS, MONTHS, or YEARS timespans, mark the span of time over which the data has been summarized, with STARTTS being the lowest (earliest) date and time and ENDTS the highest (latest) date and time.

Retrieval Examples

1. Generate a horizontal bar graph of transaction executions by the first level of user identification:

```
PROC CHART DATA=&PIMSD..IMSIAC01;
```

```
HBAR IMSACT1 / SUMVAR=EXECUTES DESCENDING;
RUN;
```

2. Generate a frequency table of the occurrence of large input messages, by application unit. Use a part of yesterday's data as input.

```
OPTIONS OBS=1000;
DATA TEMP (KEEP=IMSAPU IACMXILN);
SET &PIMSD..IMSIAC01;
  IF IACMXILN GT 1000  THEN OUTPUT TEMP;
PROC FREQ DATA=TEMP;
   TABLES IMSAPU / NOROW NOCOL;
   RUN;
```

5.2.5 IMS Incident File (IMSINC)

The IMS Incident File contains data identifying problems in the operation, performance, or integrity of the IMS system.

All IMS incidents recorded on this file are reported as standard-format CA MICS exceptions. Therefore, this file is only maintained in the DETAIL timespan.

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

1 - IMSINC File Organization
2 - IMSINC Data Elements List
3 - IMSINC Usage Considerations

5.2.5.1 IMSINC File Organization

The table below identifies data elements by which the file is sequenced and summarized in 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     IMSID     INCCODE   YEAR      MONTH  |
|         |DAY       HOUR      ENDTS                      |
|         |                                               |
|  DAYS   |  N/A                                          |
|         |                                               |
|  WEEKS  |  N/A                                          |
|         |                                               |
|  MONTHS |  N/A                                          |
|         |                                               |
|  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. IMSINC Time-Span Granularity Chart

5.2.5.2 IMSINC 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		
X.....E	DAY	- Day of Month
X.....E	HOUR	- Hour of Day
X.....E	IMSID	- IMS System Identification
X.....E	INCCODE	- Incident Identifier
X.....E	MONTH	- Month of Year

```
 X.....E  SYSID    - System Identifier
 X.....E  WEEK     - Week of Year
 X.....E  YEAR     - Year of Century

Common Data Elements

 X.....E  DATABASE - Data Base Name
 X.....E  DAYNAME  - Name of Day of Week
 X.....E  ENDTS    - End Time Stamp
 X.....E  IMSVER   - IMS Version
 X.....E  LINE     - Terminal Line Identification
 X.....E  LTERM    - Logical Terminal Identification
 X.....E  PSBNAME  - PSB Name
 X.....E  PTERM    - Physical Terminal Identification
 X.....E  TRANSACT - Transaction Code
 X.....E  VTAMNODE - VTAM Node Name
 X.....E  ZONE     - Time Zone

Retained Data Elements

 X.....E  INCABEND - Abnormal Termination Code, If Present
 X.....   INCREGIN - Region Identifier
 X.....E  INCTEXT  - Incident Descriptive Text

Accumulated Data Elements

 X.....   INCCOUNT - Number Of Incident Occurrences
```

5.2.5.3 IMSINC Usage Considerations

This section identifies any special considerations or techniques related to using the IMSINC file. Additionally, sample retrieval examples are provided to help you use of this file.

In the examples, a SAS macro variable is used to specify the DDname part of the CA MICS file name. These macro variables are a standard part of CA MICS and are available for all files. The macro variable name has the form &diiit, where d is the database identifier, iii is the information area name, and t is the timespan. For the examples, a database identifier of P is used. The identifier is installation dependent, so you should find out what the identifiers are at your installation.

Special Considerations/Techniques

1. The following data elements only have meaning when using the IMSINC file in the DETAIL time-span as they lose significance once summarization has been performed:

```
IMSVER   - IMS Version
PTERM    - Physical Terminal Number
DATABASE - Data Base Name
LINE     - Terminal Line Identification
PSBNAME  - Program Name
TRANSACT - Transaction Name
LTERM    - Logical Terminal
INCREGIN - Region Identifier
INCABEND - Abnormal Termination Code
```

2. The data elements STARTTS and ENDTS have special meanings when used in the DETAIL time-span. Their purpose in the DETAIL time-span is described below:

   o STARTTS represents the monitored IMS incident start time, when available.

   o ENDTS represents the monitored IMS incident end time.

Retrieval Examples

1. Generate a horizontal bar graph of yesterday's incident counts, by hour:

```
PROC CHART DATA=&PIMSX..IMSINC01;
HBAR HOUR / SUMVAR=INCCOUNT DESCRETE;
```

```
    RUN;
```

2. Generate a frequency table of the occurrence of incidents by incident code. Use month-to-date data.

```
PROC FREQ DATA=&PIMSM..IMSINC00;
   TABLES INCCODE / NOROW NOCOL; WEIGHT INCCOUNT;
   RUN;
```

5.2.6 IMS User Activity File - Fast Path (IMS_IS)

The IMS User Activity File - Fast Path quantifies a user's IMS service (response), load, and usage.

The placement of observations is dependent only on the data source used and the scheduling mechanism involved.

SCHEDULING MECHANISM	DATA SOURCE	
	IMF	NON-IMF
EMH (Expedited Message Handling)	IMSISU	IMS_IS
Non-EMH (Message queue or BMP)	IMSISU	IMSISU

NOTE: If the NOFP option is specified in prefix.MICS.PARMS(IMSOPS) or in the LDEPARM data set, then transactions scheduled by the EMH will not be collected in the IMS_IS file.

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

1 - IMS_IS File Organization
2 - IMS_IS Data Elements List

5.2.6.1 IMS_IS File Organization

The table below identifies data elements by which the file is sequenced and summarized in 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     IMSID     IMSACT1   IMSACT2   IMSACT3  |
|         |YEAR      MONTH     DAY       HOUR             |
|         |                                               |
|  WEEKS  |  N/A                                          |
|         |                                               |
|  MONTHS |SYSID     IMSID     IMSACT1   IMSACT2   IMSACT3  |
|         |YEAR      MONTH     ZONE                       |
|         |                                               |
|  YEARS  |SYSID     IMSID     IMSACT1   IMSACT2   IMSACT3  |
|         |YEAR      ZONE                                 |
|         |                                               |
+---------+-----------------------------------------------+
|  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. IMS_IS Time-Span Granularity Chart

5.2.6.2 IMS_IS 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 &quot;XDWMYT&quot; 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, Apr 1, 2014

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

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


 Sequence/Summary Data Elements

  .D....E  DAY      - Day of Month
  .D....E  HOUR     - Hour of Day
  .D.MY.E  IMSACT1  - IMS Transaction Type
  .D.MY.E  IMSID    - IMS System Identification
  ......E  LTERM    - Logical Terminal Identification
```

```
 .D.M..E  MONTH    - Month of Year
 .D.MY.E  SYSID    - System Identifier
 ......E  TRANSACT - Transaction Code
 ......E  TRANTYPE - Transaction Relative Longevity Code
 .D....E  WEEK     - Week of Year
 .D.MY.E  YEAR     - Year of Century
 .D.MY.E  ZONE     - Time Zone

Common Data Elements

 .D....E  DAYNAME  - Name of Day of Week
 .D.MY.E  ENDTS    - End Time Stamp
 ......E  IMSAPU   - Application Unit Name
 .D.MY.E  IMSNODST - Number of Response Distributions
 ......E  IMSREGIN - IMS Dependent Region Jobname
 .D.MY.E  IMSRVALX - Response Distribution Limit x
 .D.MY.E  IMSVER   - IMS Version
 ......E  LINE     - Terminal Line Identification
 ......E  PSBNAME  - PSB Name
 ......E  PTERM    - Physical Terminal Identification
 .D.MY.E  STARTTS  - Start Time Stamp
 ......E  VTAMNODE - VTAM Node Name

Retained Data Elements

 .D.MY.   ISUFPNBA - FP Number of Buffers Allocated
 .D.MY.   ISUFPOBA - FP Overflow Buffers Allocated
 .D.MY.   ISUFPSRC - FP Sync Point Return Code

Accumulated Data Elements

 .D.MY.E  ISUABEND - Abnormal Termination Count
 .D.MY.E  ISUALT   - Alternate Terminal Output Length
 .D.MY.E  ISUBUFCP - Buffer Compactions
 .D.MY.E  ISUCDSTX - Count Conv. Responses Within Limit x
 .D.MY.E  ISUCONTM - Terminal Connect Time
 .D.MY.E  ISUCOST  - Processing Charge
 .D.MY.E  ISUCPCNT - Cnt Checkpoints/Syncpoints
 .D.MY.E  ISUCPUNI - Instructions Executed
 .D.MY.E  ISUCPUTM - Total CPU Time
 .D.MY.E  ISUCRSTM - Conv. Transaction Response Time
 .D.MY.E  ISUCTRN  - Conversational Transaction Count
 .D.MY.E  ISUDBDLT - Data Base Deletes
 .D.MY.E  ISUDBDNO - Number of Data Bases Accessed
 .D.MY.E  ISUDBGN  - Data Base Get Nexts
 .D.MY.E  ISUDBGU  - Data Base Get Uniques
 .D.MY.E  ISUDBIST - Data Base Inserts
 .D.MY.E  ISUDBOTH - Other Data Base Calls (System Service)
 .D.MY.E  ISUDBOTM - DL/I, Buffer, Open/Close CPU Time
```

```
.D.MY.E  ISUDBREP - Data Base Replaces
.D.MY.E  ISUDBTOT - Total Number Of Data Base Calls
.D.MY.E  ISUEAPPL - Application Elapsed Time
.D.MY.E  ISUEDB2  - DB2 Call Elapsed Time
.D.MY.E  ISUEDLDB - DL/I DB Call Elapsed Time
.D.MY.E  ISUEDLTM - DL/I TM Call Elapsed Time
.D.MY.E  ISUELDLI - Duration of Last DL/I Call
.D.MY.E  ISUEMQS  - MQSeries Call Elapsed Time
.D.MY.E  ISUEOESS - Other ESS Call Elapsed Time
.D.MY.E  ISUEOPCL - Data Base Open/Close Elapsed Time
.D.MY.E  ISUEREST - Excessive Transaction Residency Time
.D.MY.E  ISUERSTM - Excessive Transaction Response Time
.D.MY.E  ISUESYNC - Sunc Point Elapsed Time
.D.MY.E  ISUETMQN - Excessive Transaction Input Queue Time
.D.MY.E  ISUETRN  - Excessive Transaction Count
.D.MY.E  ISUE1STD - Sched-to-1st DL/I Call Elapsed Time
.D.MY.   ISUFPBQC - FP Balancing Queue Count
.D.MY.   ISUFPBQW - FP Balancing Queue Wait Time
.D.MY.E  ISUFPBUF - FP Buffers Used
.D.MY.   ISUFPCIC - FP CI Contentions
.D.MY.E  ISUFPDEC - FP DEDB Call Count
.D.MY.E  ISUFPDEP - FP DEDB Put Count
.D.MY.E  ISUFPDER - FP DEDB Read Count
.D.MY.E  ISUFPMSC - FP MSDB Call Count
.D.MY.   ISUFPOBL - FP Overflow Buffer Latch Waits
.D.MY.   ISUFPSDB - FP Seq Dep Buffer Gets
.D.MY.   ISUFPUIO - FP Utility I/O Counts
.D.MY.   ISUFPWFB - FP Buffer Waits
.D.MY.E  ISUILENG - Msg Input Length As Queued
.D.MY.E  ISUIMSGS - Terminal Input Message Count
.D.MY.E  ISUINCH  - Terminal Input Character Count
.D.MY.E  ISUINSPA - Input SPA Length
.D.MY.E  ISUKEYRD - ISAM/KSDS Key Reads Issued
.D.MY.E  ISUKEYWT - ISAM/KSDS Key Writes Issued
.D.MY.E  ISULDSTX - Count Long Responses Within Limit x
.D.MY.E  ISULRSTM - Long Transaction Response Time
.D.MY.E  ISULTRN  - Long Transaction Count
.D.MY.E  ISUMDSTX - Count Medium Responses Within Limit x
.D.MY.E  ISUMRSTM - Medium Transaction Response Time
.D.MY.E  ISUMSGGN - Msg Get Next Count
.D.MY.E  ISUMSGGU - Msg Get Unique Count
.D.MY.E  ISUMSGIS - Msg Insert Count
.D.MY.E  ISUMSGOT - Msg Other Count (sys Serv, Chkp, Stats)
.D.MY.E  ISUMSGPG - Msg Purge Count
.D.MY.E  ISUMSTOT - Total Number Of Message Calls
.D.MY.E  ISUMTRN  - Medium Transaction Count
.D.MY.E  ISUNIOA  - Alters to Data in Buffer w/o I/O
.D.MY.E  ISUNKEYR - OSAM/ESDS Non-Key Reads Issued
.D.MY.E  ISUNKEYW - OSAM/ESDS Non-Key Writes Issued
```

```
 .D.MY.E  ISUNOLOG - User Logons
 .D.MY.E  ISUNONIO - Data Found in Buffer w/o I/O
 .D.MY.E  ISUOLENG - Msg Output Length As Queued
 .D.MY.E  ISUOMSGS - Terminal Output Message Count
 .D.MY.E  ISUOTSPA - Output SPA Length
 .D.MY.E  ISUOUTCH - Terminal Output Character Count
 .D.MY.E  ISUPETTM - Pseudo Elapsed Time
 .D.MY.E  ISURESTM - Message Region Residency Time
 .D.MY.E  ISUSCHCT - Total Units of Work Scheduled
 .D.MY.E  ISUSDSTX - Count Short Responses Within Limit x
 .D.MY.E  ISUSRSTM - Short Transaction Response Time
 .D.MY.E  ISUSRU   - System Resource Units
 .D.MY.E  ISUSTRN  - Short Transaction Count
 .D.MY.E  ISUSUCTM - Dep Reg zIIP Eligible CPU on a CP
 .D.MY.E  ISUSWITH - Output Message Switch Length
 .D.MY.E  ISUTAPPC - Total APPC Transactions
 .D.MY.E  ISUTDSTX - Count Total Responses Within Limit x
 .D.MY.E  ISUTMCBF - Control Region Buffer Handler Time
 .D.MY.E  ISUTMCDL - Control Region DL/I Time
 .D.MY.E  ISUTMCP  - Dependent Region CP Time
 .D.MY.E  ISUTMCRO - Control Reg Overhead CPU Time
 .D.MY.E  ISUTMDBF - Dependent Region Buffer Handler Time
 .D.MY.E  ISUTMDCP - Dependent Region Processing Time
 .D.MY.E  ISUTMDDL - Dependent Region DL/I Time
 .D.MY.E  ISUTMDOC - Data Base Open and Close Time
 .D.MY.E  ISUTMDRO - Dependent Reg Overhead CPU Time
 .D.MY.E  ISUTMQIN - Msg Input Queue Time
 .D.MY.E  ISUTMSCH - Dependent Reg Sched/Term CPU Time
 .D.MY.E  ISUTMZAP - Dependent Region zAAP/zIIP Time
 .D.MY.E  ISUTOLKH - Tot Checkpoints/Syncpoints Locks Held
 .D.MY.E  ISUTOTHR - Total Other Transactions
 .D.MY.E  ISUTOTMA - Total OTMA Transactions
 .D.MY.E  ISUTRANS - Total Transaction Executions
 .D.MY.E  ISUTRSTM - Transaction Response Time
 .D.MY.E  ISUUOWCT - Total Units of Work Executed
 .D.MY.E  ISUXCSTM - CP CPU Time Minus zIIP/zAAP Eligible
 .D.MY.E  ISUZACTM - Dep Reg zAAP Eligible CPU on a CP

Maximum Data Elements

 .D.MY.E  ISUMXALT - Max Alternate Terminal Output Length
 .D.MY.E  ISUMXBFC - Max Buffer Compactions
 .D.MY.E  ISUMXCBF - Max Control Region Buffer Handler Time
 .D.MY.E  ISUMXCDL - Max Control Region DL/I Time
 .D.MY.E  ISUMXCP  - Max Dependent Region CP Time
 .D.MY.E  ISUMXCTM - Conv Transaction Response Time Max
 .D.MY.E  ISUMXDB  - Max Data Bases Accessed
 .D.MY.E  ISUMXDBF - Max Dependent Reg. Buffer Handler Time
 .D.MY.E  ISUMXDBO - Max DL/I, Buffer, Open/Close CPU Time
```

```
.D.MY.E  ISUMXDBT - Max Total Number Of Data Base Calls
.D.MY.E  ISUMXDCP - Max Dependent Region Processing Time
.D.MY.E  ISUMXDDL - Max Dependent Region DL/I Time
.D.MY.E  ISUMXDDT - Max Data Base Deletes
.D.MY.E  ISUMXDGN - Max Data Base Get Nexts
.D.MY.E  ISUMXDGU - Max Data Base Get Uniques
.D.MY.E  ISUMXDIS - Max Data Base Inserts
.D.MY.E  ISUMXDOC - Max Data Base Open and Close Time
.D.MY.E  ISUMXDOT - Max Other Data Base Calls (sysm Serv)
.D.MY.E  ISUMXDRP - Max Data Base Replaces
.D.MY.E  ISUMXETM - Max Excessive Response Time
.D.MY.E  ISUMXILN - Max Msg Input Length As Queued
.D.MY.E  ISUMXIQ  - Max Msg Input Queue Time
.D.MY.E  ISUMXISP - Max Input SPA Length
.D.MY.E  ISUMXKRD - Max ISAM/KSDS Key Reads Issued
.D.MY.E  ISUMXKWT - Max ISAM/KSDS Key Writes Issued
.D.MY.E  ISUMXLKH - Max Checkpoints/Syncpoints Locks Held
.D.MY.E  ISUMXLTM - Long Transaction Response Time Max
.D.MY.E  ISUMXMGN - Max Msg Get Next Count
.D.MY.E  ISUMXMGU - Max Msg Get Unique Count
.D.MY.E  ISUMXMIS - Max Msg Insert Count
.D.MY.E  ISUMXMOT - Max Msg Other Cnt (sys Serv/chkp/stats)
.D.MY.E  ISUMXMPG - Max Msg Purge Count
.D.MY.E  ISUMXMST - Max Total Number Of Message Calls
.D.MY.E  ISUMXMTM - Medium Transaction Response Time Max
.D.MY.E  ISUMXNIA - Max Alters to Data in Buffer w/o I/O
.D.MY.E  ISUMXNIO - Max Data Found in Buffer w/o I/O
.D.MY.E  ISUMXNKR - Max OSAM/ESDS Non-Key Reads Issued
.D.MY.E  ISUMXNKW - Max OSAM/ESDS Non-Key Writes Issued
.D.MY.E  ISUMXOLN - Max Msg Output Length As Queued
.D.MY.E  ISUMXOSP - Max Output SPA Length
.D.MY.E  ISUMXOSW - Max Output Message Switch Length
.D.MY.E  ISUMXSTM - Short Transaction Response Time Max
.D.MY.E  ISUMXSUC - Max Dep Reg zIIP Eligible CPU on a CP
.D.MY.E  ISUMXTRT - Max CPU Time
.D.MY.E  ISUMXTTM - Max Transaction Response Time
.D.MY.E  ISUMXXCS - Max CP Time Minus zIIP/zAAP Eligible
.D.MY.E  ISUMXZAC - Max Dep Reg zAAP Eligible CPU on a CP
.D.MY.E  ISUMXZAP - Max Dependent Region zAAP Time

Derived Data Elements

.D.MY.E  ISUAVCTM - Avg Conversational Response Time
.D.MY.E  ISUAVETM - Avg Excessive Response Time
.D.MY.E  ISUAVLKH - Avg Checkpoints/Syncpoints Locks Held
.D.MY.E  ISUAVLTM - Avg Long Response Time
.D.MY.E  ISUAVMTM - Avg Medium Response Time
.D.MY.E  ISUAVSTM - Avg Short Response Time
.D.MY.E  ISUAVTRT - Average CPU Time
```

```
 .D.MY.E  ISUAVTTM - Avg Response Time All Functions
 .D.MY.E  ISUPCTRX - Total Pct Resp Within Limit x
```

5.2.7 IMS Application Unit Activity File-Fast Path (IMS_IA)

The placement of observations is dependent only on the data source used and the scheduling mechanism involved.

```
+------------------------------------------------------------+
|                                     |      DATA SOURCE     |
|       SCHEDULING MECHANISM          |----------------------|
|                                     |    IMF    |  NON-IMF |
+------------------------------------------------------------+
|  EMH (Expedited Message Handling)  |  IMSIAU    |  IMS_IA  |
+------------------------------------------------------------+
|  Non-EMH (Message queue or BMP)    |  IMSIAU    |  IMSIAU  |
+------------------------------------------------------------+
```

NOTE: If the NOFP option is specified in prefix.MICS.PARMS(IMSOPS) or in the LDEPARM data set, then transactions scheduled by the EMH will not be collected in the IMS_IA file.

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

1 - IMS_IA File Organization
2 - IMS_IA Data Elements List
3 - IMS_IA Usage Considerations

5.2.7.1 IMS_IA File Organization

```
The table below identifies data elements by which the file is
sequenced and summarized in 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     IMSID     IMSAPU    YEAR      MONTH  |
|         |DAY       HOUR                                 |
|         |                                               |
|  WEEKS  |  N/A                                          |
|         |                                               |
|  MONTHS |SYSID     IMSID     IMSAPU    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.  IMS_IA Time-Span Granularity Chart
```

5.2.7.2 IMS_IA 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, Apr 1, 2014

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

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


Sequence/Summary Data Elements

 .D....E  DAY      - Day of Month
 .D....E  HOUR     - Hour of Day
 .D.M..E  IMSAPU   - Application Unit Name
 .D.M..E  IMSID    - IMS System Identification
 .D.M..E  MONTH    - Month of Year
 .D.M..E  SYSID    - System Identifier
```

```
 .D....E  WEEK     - Week of Year
 .D.M..E  YEAR     - Year of Century
 .D.M..E  ZONE     - Time Zone
```

Common Data Elements

```
 .D....E  DAYNAME  - Name of Day of Week
 .D.M..E  ENDTS    - End Time Stamp
 .D.M..E  IMSNODST - Number of Response Distributions
 ......E  IMSREGIN - IMS Dependent Region Jobname
 .D.M..E  IMSRVALX - Response Distribution Limit x
 .D.M..E  IMSVER   - IMS Version
 .D.M..E  STARTTS  - Start Time Stamp
```

Retained Data Elements

```
 .D.M..   IAUFPNBA - FP Number of Buffers Allocated
 .D.M..   IAUFPOBA - FP Overflow Buffers Allocated
 .D.M..   IAUFPSRC - FP Sync Point Return Code
```

Accumulated Data Elements

```
 .D.M..E  IAUABEND - Abnormal Termination Count
 .D.M..E  IAUALT   - Alternate Terminal Output Length
 .D.M..E  IAUBUFCP - Buffer Compactions
 .D.M..E  IAUCDSTX - Count Conv. Responses Within Limit x
 .D.M..   IAUCONTM - Terminal Connect Time
 .D.M..E  IAUCOST  - Processing Charge
 .D.M..E  IAUCPCNT - Cnt Checkpoints/Syncpoints
 .D.M..   IAUCPUNI - Instructions Executed
 .D.M..E  IAUCPUTM - Total CPU Time
 .D.M..E  IAUCRSTM - Conv. Transaction Response Time
 .D.M..E  IAUCTRN  - Conversational Transaction Count
 .D.M..E  IAUDBDLT - Data Base Deletes
 .D.M..E  IAUDBDNO - Number of Data Bases Accessed
 .D.M..E  IAUDBGN  - Data Base Get Nexts
 .D.M..E  IAUDBGU  - Data Base Get Uniques
 .D.M..E  IAUDBIST - Data Base Inserts
 .D.M..E  IAUDBOTH - Other Data Base Calls (System Service)
 .D.M..E  IAUDBOTM - DL/I, Buffer, Open/Close CPU Time
 .D.M..E  IAUDBREP - Data Base Replaces
 .D.M..E  IAUDBTOT - Total Number Of Data Base Calls
 .D.M..E  IAUEAPPL - Application Elapsed Time
 .D.M..E  IAUEDB2  - DB2 Call Elapsed Time
 .D.M..E  IAUEDLDB - DL/I DB Call Elapsed Time
 .D.M..E  IAUEDLTM - DL/I TM Call Elapsed Time
 .D.M..E  IAUELDLI - Duration of Last DL/I Call
 .D.M..E  IAUEMQS  - MQSeries Call Elapsed Time
 .D.M..E  IAUEOESS - Other ESS Call Elapsed Time
```

```
.D.M..E  IAUEOPCL - Data Base Open/Close Elapsed Time
.D.M..E  IAUERSTM - Excessive Transaction Response Time
.D.M..E  IAUESYNC - Sunc Point Elapsed Time
.D.M..E  IAUETRN  - Excessive Transaction Count
.D.M..E  IAUE1STD - Sched-to-1st DL/I Call Elapsed Time
.D.M..   IAUFPBQC - FP Balancing Queue Count
.D.M..   IAUFPBQW - FP Balancing Queue Wait Time
.D.M..E  IAUFPBUF - FP Buffers Used
.D.M..   IAUFPCIC - FP CI Contentions
.D.M..E  IAUFPDEC - FP DEDB Call Count
.D.M..   IAUFPDEP - FP DEDB Put Count
.D.M..   IAUFPDER - FP DEDB Read Count
.D.M..   IAUFPMSC - FP MSDB Call Count
.D.M..   IAUFPOBL - FP Overflow Buffer Latch Waits
.D.M..   IAUFPSDB - FP Seq Dep Buffer Gets
.D.M..   IAUFPUIO - FP Utility I/O Counts
.D.M..   IAUFPWFB - FP Buffer Waits
.D.M..E  IAUILENG - Msg Input Length As Queued
.D.M..E  IAUIMSGS - Terminal Input Messages Count
.D.M..E  IAUINCH  - Terminal Input Character Count
.D.M..E  IAUINSPA - Input SPA Length
.D.M..E  IAUKEYRD - ISAM/KSDS Key Reads Issued
.D.M..E  IAUKEYWT - ISAM/KSDS Key Writes Issued
.D.M..E  IAULDSTX - Count Long Responses Within Limit x
.D.M..E  IAULRSTM - Long Transaction Response Time
.D.M..E  IAULTRN  - Long Transaction Count
.D.M..E  IAUMDSTX - Count Medium Responses Within Limit x
.D.M..E  IAUMRSTM - Medium Transaction Response Time
.D.M..E  IAUMSGGN - Msg Get Next Count
.D.M..E  IAUMSGGU - Msg Get Unique Count
.D.M..E  IAUMSGIS - Msg Insert Count
.D.M..E  IAUMSGOT - Msg Other Count (sys Serv, Chkp, Stats)
.D.M..E  IAUMSGPG - Msg Purge Count
.D.M..E  IAUMSTOT - Total Number Of Message Calls
.D.M..E  IAUMTRN  - Medium Transaction Count
.D.M..E  IAUNIOA  - Alters to Data in Buffer w/o I/O
.D.M..E  IAUNKEYR - OSAM/ESDS Non-Key Reads Issued
.D.M..E  IAUNKEYW - OSAM/ESDS Non-Key Writes Issued
.D.M..   IAUNOLOG - User Logons
.D.M..E  IAUNONIO - Data Found in Buffer w/o I/O
.D.M..E  IAUOLENG - Msg Output Length As Queued
.D.M..E  IAUOMSGS - Terminal Output Messages Count
.D.M..E  IAUOTSPA - Output SPA Length
.D.M..E  IAUOUTCH - Terminal Output Character Count
.D.M..   IAUPETTM - Pseudo Elapsed Time
.D.M..E  IAURESTM - Message Region Residency Time
.D.M..E  IAUSCHCT - Total Units of Work Scheduled
.D.M..E  IAUSDSTX - Count Short Responses Within Limit x
.D.M..E  IAUSRSTM - Short Transaction Response Time
```

```
 .D.M..   IAUSRU   - System Resource Units
 .D.M..E  IAUSTRN  - Short Transaction Count
 .D.M..E  IAUSUCTM - Dep Reg zIIP Eligible CPU on a CP
 .D.M..E  IAUSWITH - Output Message Switch Length
 .D.M..E  IAUTAPPC - Total APPC Transactions
 .D.M..E  IAUTDSTX - Count Total Responses Within Limit x
 .D.M..E  IAUTMCBF - Control Region Buffer Handler Time
 .D.M..E  IAUTMCDL - Control Region DL/I Time
 .D.M..E  IAUTMCP  - Dependent Region CP Time
 .D.M..   IAUTMCRO - Control Reg Overhead CPU Time
 .D.M..E  IAUTMDBF - Dependent Region Buffer Handler Time
 .D.M..E  IAUTMDCP - Dependent Region Processing Time
 .D.M..E  IAUTMDDL - Dependent Region DL/I Time
 .D.M..E  IAUTMDOC - Data Base Open and Close Time
 .D.M..   IAUTMDRO - Dependent Reg Overhead CPU Time
 .D.M..E  IAUTMQIN - Msg Input Queue Time
 .D.M..   IAUTMSCH - Dependent Reg Sched/Term CPU Time
 .D.M..E  IAUTMZAP - Dependent Region zAAP/zIIP Time
 .D.M..E  IAUTOLKH - Tot Checkpoints/Syncpoints Locks Held
 .D.M..E  IAUTOTHR - Total Other Transactions
 .D.M..E  IAUTOTMA - Total OTMA Transactions
 .D.M..E  IAUTRANS - Total Transaction Executions
 .D.M..E  IAUTRSTM - Transaction Response Time
 .D.M..E  IAUUOWCT - Total Units of Work Executed
 .D.M..E  IAUXCSTM - CP CPU Time Minus zIIP/zAAP Eligible
 .D.M..E  IAUZACTM - Dep Reg zAAP Eligible CPU on a CP

Maximum Data Elements

 .D.M..E  IAUMXALT - Max Alternate Terminal Output Length
 .D.M..E  IAUMXBFC - Max Buffer Compactions
 .D.M..E  IAUMXCBF - Max Control Region Buffer Handler Time
 .D.M..E  IAUMXCDL - Max Control Region DL/I Time
 .D.M..E  IAUMXCP  - Max Dependent Region CP Time
 .D.M..E  IAUMXCTM - Conv Transaction Response Time Max
 .D.M..E  IAUMXDB  - Max Data Bases Accessed
 .D.M..E  IAUMXDBF - Max Dependent Reg. Buffer Handler Time
 .D.M..E  IAUMXDBO - Max DL/I, Buffer, Open/Close CPU Time
 .D.M..E  IAUMXDBT - Max Total Number Of Data Base Calls
 .D.M..E  IAUMXDCP - Max Dependent Region Processing Time
 .D.M..E  IAUMXDDL - Max Dependent Region DL/I Time
 .D.M..E  IAUMXDDT - Max Data Base Deletes
 .D.M..E  IAUMXDGN - Max Data Base Get Nexts
 .D.M..E  IAUMXDGU - Max Data Base Get Uniques
 .D.M..E  IAUMXDIS - Max Data Base Inserts
 .D.M..E  IAUMXDOC - Max Data Base Open and Close Time
 .D.M..E  IAUMXDOT - Max Other Data Base Calls (sysm Serv)
 .D.M..E  IAUMXDRP - Max Data Base Replaces
 .D.M..E  IAUMXETM - Max Excessive Response Time
```

```
 .D.M..E  IAUMXILN - Max Msg Input Length As Queued
 .D.M..E  IAUMXIQ  - Max Msg Input Queue Time
 .D.M..E  IAUMXISP - Max Input SPA Length
 .D.M..E  IAUMXKRD - Max ISAM/KSDS Key Reads Issued
 .D.M..E  IAUMXKWT - Max ISAM/KSDS Key Writes Issued
 .D.M..E  IAUMXLKH - Max Checkpoints/Syncpoints Locks Held
 .D.M..E  IAUMXLTM - Long Transaction Response Time Max
 .D.M..E  IAUMXMGN - Max Msg Get Next Count
 .D.M..E  IAUMXMGU - Max Msg Get Unique Count
 .D.M..E  IAUMXMIS - Max Msg Insert Count
 .D.M..E  IAUMXMOT - Max Msg Other Cnt (sys Serv/chkp/stats)
 .D.M..E  IAUMXMPG - Max Msg Purge Count
 .D.M..E  IAUMXMST - Max Total Number Of Message Calls
 .D.M..E  IAUMXMTM - Medium Transaction Response Time Max
 .D.M..E  IAUMXNIA - Max Alters to Data in Buffer w/o I/O
 .D.M..E  IAUMXNIO - Max Data Found in Buffer w/o I/O
 .D.M..E  IAUMXNKR - Max OSAM/ESDS Non-Key Reads Issued
 .D.M..E  IAUMXNKW - Max OSAM/ESDS Non-Key Writes Issued
 .D.M..E  IAUMXOLN - Max Msg Output Length As Queued
 .D.M..E  IAUMXOSP - Max Output SPA Length
 .D.M..E  IAUMXOSW - Max Output Message Switch Length
 .D.M..E  IAUMXSTM - Short Transaction Response Time Max
 .D.M..E  IAUMXSUC - Max Dep Reg zIIP Eligible CPU on a CP
 .D.M..E  IAUMXTRT - Max CPU Time
 .D.M..E  IAUMXTTM - Max Transaction Response Time
 .D.M..E  IAUMXXCS - Max CP Time Minus zIIP/zAAP Eligible
 .D.M..E  IAUMXZAC - Max Dep Reg zAAP Eligible CPU on a CP
 .D.M..E  IAUMXZAP - Max Dependent Region zAAP Time

Derived Data Elements

 .D.M..E  IAUAVCTM - Avg Conversational Response Time
 .D.M..E  IAUAVETM - Avg Excessive Response Time
 .D.M..E  IAUAVLKH - Avg Checkpoints/Syncpoints Locks Held
 .D.M..E  IAUAVLTM - Avg Long Response Time
 .D.M..E  IAUAVMTM - Avg Medium Response Time
 .D.M..E  IAUAVSTM - Avg Short Response Time
 .D.M..E  IAUAVTRT - Average CPU Time
 .D.M..E  IAUAVTTM - Avg Response Time All Functions
 .D.M..   IAUPCTRX - Total Pct Resp Within Limit x
```

5.2.7.3 IMS_IA Usage Considerations

This section identifies any special considerations or techniques related to using the IMS_IA file. Additionally, sample retrieval examples are provided to help you use this file.

In the examples, a SAS macro variable is used to specify the DDname part of the CA MICS file name. These macro variables are a standard part of CA MICS and are available for all files. The macro variable name has the form &diiit, where d is the database identifier, iii is the information area name, and t is the timespan. For the examples, a database identifier of P is used. The identifier is installation dependent, so you should find out what the identifiers are at your installation.

Special Considerations/Techniques

1. The following data elements are reserved in this record for future use:

```
IAUPETTM - Pseudo Elapsed Time
IAUSRU   - System Resource Units
IAUCOST  - Processing Charges
```

2. Use of the following data element is dependent upon the MIPS rate parameter of prefix.MICS.PARMS(SYSID). Its use should be within the frame of reference of the option's definition:

```
ISUCPUNI - Instructions Executed
```

3. Be careful using the special date and time data elements contained in each CA MICS file. As the IMS_IA file's granularity increases in higher timespans, the following fields lose significance and should not be used in the case described:

   - o HOUR should not be used in MONTHS.
   - o DAY and DAYNAME should not be used in MONTHS.
   - o WEEK should not be used in MONTHS.

4. The STARTTS and ENDTS, when appearing in the DAYS, WEEKS, MONTHS, or YEARS timespans, mark the span of time over which the data has been summarized, with STARTTS being the lowest (earliest) date and time and ENDTS the highest (latest) date and time.

Retrieval Examples

1. Produce a frequency distribution chart of application units executed last week showing the number of times each executed.

```
DATA TEMP (KEEP= IMSAPU IAUTRANS);
SET &PIMSW..IMS_IA01;
   IF IAUTRANS GT 0  THEN OUTPUT TEMP;
RUN;
PROC FREQ DATA=TEMP;
TABLES IMSAPU / NOROW NOCOL; WEIGHT IAUTRANS;
RUN;
```

2. Generate a horizontal bar graph of total database access by HOUR of the day using yesterday's data.

```
PROC CHART DATA=&PIMSD..IMS_IA01;
HBAR HOUR / SUMVAR = IAUDBTOT DISCRETE; RUN;
```

5.2.8 IMF Data Base Activity File (IMSIDB)

The IMF Data Base Activity file contains data identifying a data base used by an IMS transaction monitored by the IMF Event Collector and statistics on both which data base was used by the IMS transaction monitored by the IMF Event Collector and how much activity happened on the data base.

This file contains a large volume of data and is usually inactive in production environments, only being run for special studies.

The following sections describe the file's organization and list the data elements maintained.

1 - IMSIDB File Organization
2 - IMSIDB Data Elements List

5.2.8.1 IMSIDB File Organization

The table below identifies data elements by which the file is sequenced and summarized in 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	N/A
WEEKS	N/A
MONTHS	N/A
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. IMSIDB Time-Span Granularity Chart

5.2.8.2 IMSIDB 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.

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

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


Sequence/Summary Data Elements

 ......E  DATABASE - Data Base Name
 ......E  DAY      - Day of Month
 ......E  HOUR     - Hour of Day
 ......E  IMSID    - IMS System Identification
 ......E  MONTH    - Month of Year
 ......E  PSBNAME  - PSB Name
 ......E  SYSID    - System Identifier
```

```
 ......E  TRANSACT - Transaction Code
 ......E  WEEK     - Week of Year
 ......E  YEAR     - Year of Century
 ......E  ZONE     - Time Zone

Common Data Elements

 ......E  DAYNAME  - Name of Day of Week
 ......E  ENDTS    - End Time Stamp
 ......E  IMSVER   - IMS Version
 ......E  STARTTS  - Start Time Stamp

Retained Data Elements

 ......E  IDBDBORG - Data Base Organization

Accumulated Data Elements

 ......E  IDBCOUNT - Count of Transaction Accesses
 ......E  IDBDLET  - Data Base Deletes
 ......E  IDBGN    - Data Base Get Nexts
 ......E  IDBGU    - Data Base Get Uniques
 ......E  IDBISRT  - Data Base Inserts
 ......E  IDBKEYRD - ISAM/KSDS Key Reads Issued
 ......E  IDBKEYWT - ISAM/KSDS Key Writes Issued
 ......E  IDBNKEYR - OSAM/ESDS Non-Key Reads Issued
 ......E  IDBNKEYW - OSAM/ESDS Non-Key Writes Issued
 ......E  IDBNOIOA - Alters to Data in Buffer w/o I/O
 ......E  IDBNONIO - Data Found in Buffer w/o I/O
 ......E  IDBOTHER - Other Data Base Calls (System Service)
 ......E  IDBREPL  - Data Base Replaces

Maximum Data Elements

 ......E  IDBDMBSZ - Maximum DMB Buffer Pool Size
```

Chapter 6: DATA SOURCES

To help you understand this chapter, we suggest you begin by reading the $IMSNOCI and $IMSRESP data dictionary elements in Appendix B of this guide.

The CA MICS IMS Analyzer uses IMS Log Data to create files in the IMS Information Area of the CA MICS database. This data is directly available from IBM's IMS DASD Logging product and, in processed form, from the BMC MAINVIEW for IMS Online Event Collector. Consult with your organization's MVS system administrator to determine what records are available from your IMS system.

The Analyzer provides an assembler front-end (programs listed in section 10.3) to read the IMS log tapes.

The way these programs front-end SAS is to dynamically modify the SAS input IMS log DCB so that, whenever SAS issues a GET, control is given to the programs that, in turn, read the IMS log.

These assembler programs relieve SAS of cumbersome processing in DAY060 by formatting a x'FA' IMS record. This record has all the information from all the log records pertaining to an IMS transaction, from its initial input to the system, an x'01' record, to the final purge of the output message, an x'36' record.

Details about records used by this CA MICS product are discussed later in this chapter.

This section contains the following topics:

6.1 Data collector Considerations (see page 306)
6.2 Record Descriptions (see page 312)

6.1 Data collector Considerations

Before installing the IMS Analyzer, the CA MICS system administrator must address the data collection considerations that IMS requires, including DASD space considerations and the availability of the IMS data.

The CA MICS IMS Analyzer can accept data from three different sources:

- o Directly from the MVS/IMS Log Tape
- o From the MVS/IMS Log Tape preprocessed by BMC MAINVIEW for IMS Online
- o From the MVS/IMS Log Tape processed by the IBM IMS/VS DASD Logging product using the CA MICS IMS Log Data Extractor Option (LDE) as an exit

Figure 6-1 illustrates these options.

The IMS Analyzer does not process data collected from IMS systems at versions earlier than IMS Version 6.1.

The CA MICS IMS Log Data Extractor Option (LDE) processes IMS Log records and reduces the volume of data passed to the IMS Analyzer by:

- o Consolidating data from the IMS log records to create a transaction record for CA MICS
- o Eliminating data not used by the IMS Analyzer

LDE's reduction of the volume of data sent to the IMS Analyzer will reduce the Analyzer's run time by 15% to 80%.

In addition, CA MICS LDE reduces tape and system failures by:

- o Reading one DASD log at a time without mounting tapes
- o Writing its output to DASD rather than tape, eliminating the need to mount tapes during IMS Analyzer execution

If you do not process data collected by the BMC MAINVIEW for IMS Online Event Collector, the IMS Analyzer relies in part on the IMS product installation parameters. The most noteworthy example is the measures of CPU time provided by the IMS log accounting (type 7) records. The STIMER options for log data collection must be turned on to provide CPU time in these records.

The following figures illustrate the role of the assembly language programs for IMS LOG processing:

o Figure 6-2 illustrates how IMS log records are handled.

o Figure 6-3 illustrates how data flows from IMS through the assembly language programs when LDE is not used

o Figure 6-4 illustrates how data flows from IMS through the assembly language programs when LDE is used as an archive exit by the IMS Analyzer at the host site (IMS Analyzer is installed locally).

o Figure 6-5 illustrates how data flows from IMS through the assembly language programs when LDE is used as an archive exit by the IMS Analyzer at a remote site (LDE runs locally and sends data to the IMS Analyzer installed at a host site).

o Figure 6-6 illustrates the actions taken by the assembly language programs based on the records they encounter.

```
                +-----------+
                |           |
                |  IMS/VS   |
                |           |
                +-----------+
                      |
                 IMS Log Tape
                      |
            +-------------------+
            |                   |
            |                   |
      +-----------+       +-----------+
      |    IBM    |       |    BMC    |
      |  IMS/VS   |       |  MAINVIEW |
      |   DASD    |       |  for IMS  |
      |  LOGGING  |       |   Online  |
      +-----------+       +-----------+
      |  CA MICS  |       |  CA MICS  |
      | ASSEMBLY  |       | ASSEMBLY  |
      | LANGUAGE  |       | LANGUAGE  |
      | PROGRAMS  |       | PROGRAMS  |
      +-----------+       +-----------+
            |                   |
            |                   |
            +-------------------+
                      |
                      |
                +-----------+
                |  CA MICS  |
                |   IMS     |
                |   Daily   |
                |  Update   |
                +-----------+
```

Figure 6-1. Data Collector Paths

```
                                                                 LDR Program
Generic                                          (-------->)
Record           IMS or Mainview/IMS             or Generate      Log Data Reduction
Type             Record Types                       (=====>)      Program Output




Full Function    01,03,07,08,31,33,35            ===========>      FA00
                 36,56FA

Fast Path        5901,5903,5911,5916             ===========>      FA01
                 5936,5937,5938,5950
                 5953,5955,56FA

Mixed Mode       01,03,07,08,31,33,35            ===========>      FA00
                 36,5937,5950,56FA

Checkpoint       40                              ===========>      40FF

Mainview/IMS     F900, FAF1                      ----------->      F900, FAF1

Explicit APPC    0A07, 0A08,56FA                 ===========>      FA00

All              All applicable record           ----------->      01, 02, 03, 06, 07, 08, 0A07, 0A08, 10, 14, 15,
                 types.                                            16, 20, 21, 24, 31, 33, 35, 36, 40, 41, 42, 45,
                                                                   4C, 56FA, 5901, 5903, 6911, 5916, 5936, 5937,
                                                                   5938, 5950, 5953, 5955, 69, FA, F9
```

Figure 6-2. IMS Log Record Handling with Log Data Reduction

```
                               . .

                             . IMS .          DAY060                      DETAIL
                             . Log . ---+     +------------+              . . . . .
                             . Tape.    |     |    SAS     |-------------->| IMSISY01 |
                               . .      |     |------------|              |----------|
                                        +---->|  ASSEMBLY  |              | IMSetc   |
                                              |  Language  |              |          |
                                              |  Programs  |              . . . . .
                                              +------------+




                 . . . . = disk

                 ------- = data flow
```

Figure 6-3. DAY060 with Non-LDE Input

```
First    +----------+         . . . . .         +----------+        +----------+       +----------+        . . . . . .
Step     |    IMS   |        |          |       |          |        |          |       | ASSEMBLY |       |   FA00   |
         |    CNTL  |------->| Online   |------>| DFSUARC0 |------->| MALDEXIT |------>| Language |------>|   FA01   |
         |  REGION  |        | Log      |       |          |        |          |       | Programs |       |   F900   |
         +----------+        | Data Set |       +----------+        +----------+       +----------+       |   FAF1   |
                              . . . . .                                                                    . . . . . .


Second                         . . . . .           DAY060              DETAIL
Step                          |  FA00    |       +----------+         . . . . .
                              |  FA01    |       |    SAS   |        | IMSISY01 |
                              |  F900    |------>|----------|------->|----------|
                              |  FAF1    |       |  INFILE  |        | IMS etc. |
                               . . . . .         +----------+        |          |
                                                                      . . . . .


              . . . . = disk

              ------- = data flow
```

Figure 6-4. DAY060 with LDE Input as an Archive Exit

```
First    +----------+         . . . . .         +----------+        +----------+          .  . .
Step     |    IMS   |------->|          |------>|          |------->|          |------->.  IMS  .

         |    CNTL  |        | Online   |       | DFSUARC0 |        | MALDEXIT |        .  Log   .
         |  REGION  |        | Log      |       |          |        |          |         . Tape .
         +----------+        | Data Set |       +----------+        +----------+           . .
                              . . . . .


           . . .
Second   .  IMS  .       +----------+       +----------+       +----------+        . . . . . .
Step     .  Log  .       |          |       |          |       | ASSEMBLY |       |   FA00   |
          . Tape. ------>| MALDEDRV |------>| MALDEXIT |------>| Language |------>|   FA01   |
            . .          |          |       |          |       | Programs |       |   F900   |
                         +----------+       +----------+       +----------+       |   FAF1   |
                                                                                    . . . . . .


                                              DAY060              DETAIL
                              . . . . .     +----------+         . . . . .
Third                        |   FA00  |    |    SAS   |        |          |
Step                         |   FA01  |--->|----------|------->| IMSISY01 |
                             |   F900  |    |  INFILE  |        |          |
                             |   FAF1  |    +----------+         . . . . .
                              . . . . .

              . . . . = disk

              ------- = data flow
```

Figure 6-5. DAY060 with Standalone LDE Input

```
Data    TL  Log        Calculated
Present II  rec         Values /                              ASSEMBLY Language PGMs Internal
        MN  type       Preference                          -------  Ctl Blocks Affected --------
        EE              Priority   Action                  DRRN       TQUE      PSTX       TRANQ
----   ---------       ----------  ----------------------------------------------------------------
DRRNi   +  01           * 1     *  Allocate TQUE----------------------*TQUE01
NODE    |DCIN           |       |
SEQ#    |               |       |  Get  a DRRN slot via
        |               |       |  DRRNi ----------------------|
        |               |       |
        |               |       |  Link DRRN----------------DRRNBKWD=
        |               |       |  to TQUE                  A(TQUE01)
        |               |       |
        |               |       |  NODE ------------------------------TQUELINE+
        |               t       t                                     TQUEPTRM
        |               m       r
        |               q       s  SEQ # -----------------------------TQUEPTSQ
        |               i       t
        |               n       m  Timestamp (TRANINTS)-----------------*
        |               |       |
        |               |       |
DRRNi   +  35           |       |  Get A(TQUE01) via DRRNi  DRRNBKWD
        |NQSMB          |       |                           A(TQUE01)
        |               * 2     *  Timestamp (TRAN35TS)-----------------*
        |               |       |
        |               |       |
PST#    +  08           t       t  Get a PST slot via PST#----------------------|PSTX01
        |PGM            m       r
        |SCHED          q       s  CLASS/PRTY-------------------------------------*
        |               i       t
        |               n       m
PST#    +  31           |       |  Allocate TRANQ---------------------------------------*TRANQ01
DRRNi   |DLIGU          |       |
        |               *   *   |  Get a PST slot via PST#  ---------------------|PSTX01
        |                   |   |
        |                   |   |  Link PST with TRANQ and----------------------PSTXACHN= TRANPSTC=
        |                   r   t  Link TRANQ with PST                          A(TRANQ01) A(PSTX01)
        |                   e   r
        |                   s   s  Get TQUE addr via DRRNi  DRRNBKWD
        |                   t   t                           A(TQUE01)
        |                   m   m
        |                   |   |  Move CORR TQUE to TRANQ              X-------->----->----->X
        |                   |   |
        |                   |   |  Timestamp(STARTTS)--------------------------------------*
```

Figure 6-6. Actions Based on IMS Log Records Encountered (Part 1 of 2)

```
Data    TL  Log       Calculated
Present II  rec        Values /                            ASSEMBLY Language PGMs Internal
        MN  type      Preference                        -------  Ctl Blocks Affected --------
        EE             Priority    Action                 DRRN       TQUE      PSTX       TRANQ
----   ---------      ----------   ----------------------------------------------------------------
        |                  |   |
        |                  |   |
DRRNo   +  03              |   |   Via active PST chain -------------------------PSTXACHN-->TRANQ
NODE    |  DC              |   |   search for NODE & SEQ#
SEQ#    | OUT              |   |   in TRANQ ----------------------------------------------->TRANQ01
        |                  r   t
        |                  e   r
        |                  s   s   Get a DRRN slot via DRRNo--|
        |                  t   t
        |                  m   m   Link DRRN----------------DRRNBKWD=
        |                  |   |   to TRANQ                 A(TRANQ01)
        |                  |   |
        |                  |   |
DRRNo   +  35              |   |   Get A(TRANQ01) via DRRNo DRRNBKWD
        |NQCNT             |   |                            A(TRANQ01)
        |                  |  2*   Timestamp -(TRANQQTS)-------------------------------------*
        |                  |   |
        |                  |   |
PST#    +   07             |   |   Get A(TRANQ01) via PST # -------------------PSTXACHN --->TRANQ01
        |PGMEND            |   |
        |                  *  3*   Timestamp -(ENDTS)----------------------------------------*
        |                      |
        |                      |
DRRNo   +  31                  |   Get A(TRANQ01) via DRRNo  DRRNBKWD
        |COMM-GU               |                             A(TRANQ01)
        |                     1*   Timestamp -(TRANC31)--------------------------------------*
        |
        |
DRRNo   +  36                      Get A(TRANQ01) via DRRNo  DRRNBKWD
        |PURGE                                               A(TRANQ01)
        |                          Timestamp -(TRANOPTS)-------------------------------------*
        *
Multi output message transactions are purged after 07 record is read.
```

Figure 6-6. Actions Based on IMS Log Records Encountered (Part 2 of 2)

6.2 Record Descriptions

```
The following record types are processed by the CA MICS IMS
 Analyzer:

           Source:
           IMS log,
           IMF, or
    Type   both     Description
    -----  -------  -----------
    '01'X  IMS      Input Message
    '02'X  IMS IMF  System Reconfiguration
    '03'X  IMS      Output Message
    '06'X  IMS IMF  Log Open/Close
    '07'X  IMS IMF  Application Accounting
    '08'X  IMS      Application Schedule
  '0A07'X  IMS      CPI-C Driven End
  '0A08'X  IMS      CPI-C Driven Start
    '10'X  IMS IMF  Security Violation
    '14'X  IMS IMF  Dial Up Disconnected
    '15'X  IMS IMF  Dial Up Connected
    '16'X  IMS IMF  Sign On/Off
    '20'X  IMS IMF  Data Base Opened
    '21'X  IMS IMF  Data Base Closed
    '24'X  IMS IMF  Data Base I/O Error
    '31'X  IMS      DLI Communication's GU
    '32'X  IMS      Reject of Message
    '33'X  IMS      Free of Message
    '34'X  IMS      Cancel of Message
    '35'X  IMS      Enqueue of Message
    '36'X  IMS      Dequeue Save or Delete Message
    '38'X  IMS      Release Input Message
    '39'X  IMS      Release Output Message
    '4C'X  IMS IMF  Data Base Started/Stopped
    '40'X  IMS IMF  Checkpoint Record
    '41'X  IMS IMF  Application Checkpoint
    '42'X  IMS IMF  Begin New Log Tape
    '45'X  IMS IMF  Checkpoint Pool Statistics
    '47'X  IMS      Summary of Active Regions
..'56FA'X  IMS      Transaction Level Statistics
  '5901'X  IMS      Fast Path input message
  '5903'X  IMS      Fast Path output message
  '5911'X  IMS      Fast Path insert input message on EMHQ
  '5916'X  IMS      Fast Path insert output message on EMHQ
  '5921'X  IMS IMF  Fast Path DEDB ADS Open
  '5922'X  IMS IMF  Fast Path DEDB ADS Close
  '5923'X  IMS IMF  Fast Path DEDB ADS Status
  '5936'X  IMS      Fast Path output message deque
  '5937'X  IMS      Fast Path synch point complete
  '5938'X  IMS      Fast Path synch point failure
```

```
 '5950'X  IMS      Fast Path synch point by online
 '5953'X  IMS      Fast Path synch point by FP utilities
 '5955'X  IMS      Fast Path synch point seq buf obtained
   '69'X  IMS IMF  Unauthorized Dial Up
   '70'X  IMS      Online Change
 '7201'X  IMS      User Create
 '7202'X  IMS      User Delete
 '7203'X  IMS      User Modify
 '7204'X  IMS      LTERM Addition
 '7205'X  IMS      SMB Create
 '7206'X  IMS      LNB Create
 '7207'X  IMS      SMB Changed (Sharef Queues)
   'F9'X      IMF  IMF Program Log Record
   'FA'X  IMS IMF  Transaction Log Record
   'FE'X  IMS      Shared Queues Event Record
```

All IMS data is preprocessed by the CA MICS Log Data Reduction (LDR) input processing routines. These routines are treated as utility programs. They create two types of records: full function and Fastpath. In addition, they pass other records through without modification.

The formats of the full function and Fastpath records created by the utilities follow.

```
Full Function Transaction Record

             SAS
             Routine                    SAS
LDR Output   Input        Derived       Input
Field Name   Field Name   Element       Format          Description
----------   ----------   ----------    ----------      -----------

TRANTT       TRANRTYP                   $charzb1.       Transaction Record Type
TRANTT+1     TRANSTYP                   $charzb1.       Transaction Record Subtype
TRANLV       TRANLV                     $charzb1.       Record Log Data Reduction Version
TRANFV       TRANFV                     $charzb1.       Record File Services Version
TRANCDS      TRANSACT                   $charzb8.       Transaction Code
TRANLTRM     LTERM                      $charzb8.       Logical Terminal Name
TRANUSER     RACFUSID                   $char8.         RACF User ID
TRANMID      TRANMID                    $charzb8.       Message Input Descriptor
TRANNODE     WORKNODE     VTAMNODE,     $char8.         VTAM Node / Line / Physical Terminal Number
TRANLINE     WORKNODE     LINE,
TRANPTRM     WORKNODE     PTERM
TRANORI      ISUUOWOR                   $char16.        IMS Unit Of Work ID - Originating System
TRANPRO      ISUUOWPR                   $char16.        IMS Unit Of Work ID - Processing System
TRANMQUE     TRANMQUE                   $charzb1.       IMS Message Queueing Indicator
TRANSQPL     TRANSQPL                   $charzb1.       Shared Queues Process Location Indicator
TRANIDRR     TRANIDRR                   $char4.         Input Message Device Relative Record Number
TRANDRRN     TRANDRRN                   $char4.         Output Message Device Relative Record Number
TRANMASK     TRANMASK                   $charzb8.       Mask of Contributing IMS Log Records
                                                          Byte 1 = "I" Type 01 (Input Message)
                                                          Byte 2 = "Q" Type 35 (Message Enqueue)
                                                          Byte 3 = "S" Type 08 (Application Scheduled)
                                                          Byte 4 = "G" Type 31 (GU on Message Queue)
                                                          Byte 5 = "O" Type 03 (Output Message)
                                                          Byte 6 = "E" Type 35 (Enqueue of Message)
                                                          Byte 7 = "D" Type 36 (Dequeue Save or Delete Message)
                                                          Byte 8 = "A" Type 07 (Region Start / Application Terminated)
TRANPRFO     TRANPRFO                   pib2.           Output Message ID (MSGPREFO)
TRANPRFI     TRANPRFI                   pib2.           Switch Message ID (MSGPREFI)
TRANMTYP     TRANMTYP                   $char1.         Recoverable / Non-recoverable Message Indicator
TRANFSTA     TRANFSTA                   $char1.         Field Status Indicators
TRANWFII     TRANWFII                   $char1.         WFI AutoFlush Indicator
TRANSTAT     TRANSTAT                   $char1.         Transaction Status Indicators
TRANORG      TRANXORG                   $charzb1.       Transaction Origination Flag
TRANDST      TRANXDST                   $charzb1.       Transaction Destination Flag
TRANMSC      TRANXMSC     ISUTMQIN      $charzb1.       Multiple System Couple Transaction / Message Input
TRANLU6      TRANXLU6                   $charzb1.       LUType 6 Segment Present
TRANPSWP     TRANSWFR                   $char8.         Program-Program Switch Parent Transaction Code
TRANPSWC     ALTTRAN                    $char8.         Program-Program Switch Child Transaction Code
TRAN01TS     TRANINTS     ISUTMQIN      maimsdt12.      Transaction Arrival Time Stamp / Message Input Queue Time
TRAN35IN     TRAN35TS     ISUTMQIN      maimsdt12.      Transaction Start of Queue Time Stamp / Message Input Queue Time
TRAN08TS     TRAN08TS                   maimsdt12.      Transaction Schedule Read Time Stamp
```

Full Function Transaction Record (continued)

LDR Output Field Name	SAS Routine Input Field Name	Derived Element	SAS Input Format	Description
TRAN31IN	TRANIQTS	STARTTS	maimsdt12.	Transaction Message Queue Read Time Stamp / Start Time Stamp
TRAN03TS	TRANOQTS		maimsdt12.	Transaction Output Message Queue Time Stamp
TRAN35OT	TRAN35T2		maimsdt12.	Transaction Start of Output Queue Time / Message Output Queue Time
TRAN07TS	TRANENTS	ENDTS	maimsdt12.	Transaction End Time Stamp / End Time Stamp
TRAN31OT	TRANC31		maimsdt12.	Communication Type 31's Date and Time Stamp
TRAN36TS	TRANOPTS		maimsdt12.	Transaction Output Purge Time Stamp (Date)
TRANLATS	TRANLAST	ENDTS	pd4.	End Time Stamp
TRANSQ6T	TRANSQ6T		pib4.1	Subqueue 6 Residency Time (0.1 Sec)
TRANRT32	TRANSQ6A		pib4.4	Transaction Response Time Work (0.0001 Sec)
TRAN7CPU	ISUTMDCP		pib4.2	Dependent Region Processing Time
TRAN7MGU	ISUMSGGU		pib4.	Message Get Unique Count
TRAN7MGN	ISUMSGGN		pib4.	Message Get Next Count
TRAN7MIS	ISUMSGIS		pib4.	Message Insert Count
TRAN7MPG	ISUMSGPG		pib4.	Message Purge Count
TRAN7DG1	ISUGU	ISUDBGU	pib4.	Data Base GU / Data Base Get Uniques
TRAN7DG2	ISUGN	ISUDBGN	pib4.	Data Base GN / Data Base Get Nexts
TRAN7DG3	ISUGNP	ISUDBGN	pib4.	Data Base GNP / Data Base Get Nexts within Parent
TRAN7DG4	ISUGHU	ISUDBGU	pib4.	Data Base GHU / Data Base Get Hold Uniques
TRAN7DG5	ISUGHN	ISGUDBN	pib4.	Data Base GHN / Data Base Get Hold Nexts
TRAN7DG6	ISUGHNP	ISGUDBN	pib4.	Data Base GHNP / Data Base Get Hold Nexts within Parent
TRAN7DIS	ISUDBIST		pib4.	Data Base Inserts
TRAN7DDL	ISUDBDLT		pib4.	Data Base Deletes
TRAN7DRP	ISUDBREP		pib4.	Data Base Replaces
TRANIMSG	TRANIMSG		pib2.	Input Message Segment Count
TRANOUSG	TRANOMSG		pib2.	Output Message Segment Count
TRANINCH	TRANINCH	ISUINCH, ISUILENG	pib4.	Input Message Character Count Message Input Length as Queued
TRANOTCH	TRANOTCH	ISUOUTCH, ISUOLENG	pib4.	Output Message Character Count Message Output Length as Queued
TRANBMPC	TRANBMPC	ISUUOWCT	pib4.	BMP Count / Total Units of Work Executed
TRANABND	TRANABND	ISUABEND	$char4.	Transaction Abend Code / Abnormal Termination Occurrences
TRANRESP	DURATION		pib4.2	Recording Interval Time
TRANSYS	TRANSYS		$charzb8.	OrgSysId/IMSID
TRANIMS	TRANVER		$charzb2.	IMS Version
TRANAPOT	ISUAPPC		$char1.	APPC / OTMA Transaction Indicator
TRANPRTY	TRANPRTY		$char1.	Transaction Priority
TRANTYPE	TRANTYPE		$char1.	Transaction Type (From 07 Record)
TRANPST	ISUPSTNO		pib2.	PST Number
TRANMMSG	TRANMMSG		pib2.	Message Sequence Number in Schedule
TRANPTSQ	TRANPTSQ		pib2.	Transaction Sequence Number in Schedule
TRANPSB	PSBNAME		$charzb8.	Program Name

Full Function Transaction Record (continued)

LDR Output Field Name	SAS Routine Input Field Name	Derived Element	SAS Input Format	Description
TRANJOB	ISUREGID		$charzb8.	Job Name
TRANJOB	IMSREGIN		$charzb8.	Job Name
TRANSTEP	TRANUSR4		$charzb8.	Step Name
TRANDLTM	TRANDLTM		$charzb8.	Logical Terminal Destination
TRANMOD	TRANMOD		$charzb8.	Message Output Descriptor
TRANFPMK	TRANFPMK		$charzb10.	Mask of FP Contributing IMS Log Records
				Byte 1 = "Y" Type 5901 Record Processed
				Byte 2 = "Y" Type 5903 Record Processed
				Byte 3 = "Y" Type 5950 Record Processed
				Byte 4 = "Y" Type 5955 Record Processed
				Byte 5 = "Y" Type 5936 Record Processed
				Byte 6 = "Y" Type 5937 Record Processed
				Byte 7 = "Y" Type 5938 Record Processed
				Byte 8 = "Y" Type 5953 Record Processed
				Byte 9 = "Y" Type 5911 Record Processed
				Byte 10 = "Y" Type 5916 Record Processed
TRANCLAS	ISUCLASS		pib2.	Transaction Class
TRANFP50	ISUFPDEP		pib4.	Count of 5950 Records
TRANFPDC	ISUFPDEC		pib4.	Count of DEDB Calls
TRANFPDR	ISUFPDER		pib4.	Count of DEDB Read Operations
TRANFPMS	ISUFPMSC		pib4.	Count of MSDB Calls
TRANFPOF	ISUFPBUF		pib4.	Count of Overflow Buffers Used
TRANFPUW	ISUFPCIC		pib4.	Count of UOW Contentions
TRANFPBF	ISUFPWFB		pib4.	Count of Waits for DEDB Buffers
TRANFPOB	ISUFPOBL		pib2.	Number of Buffer Latch Waits
TRANFPRT	TRANFPRT		pib1.	Fastpath Region Type
TRANFPIO	ISUFPUIO		pib4.	Count of STIO (from 5953)
TRANFP55	ISUFPSDB		pib4.	Count of 5955 Records
TRANFPFL	ISUFPSRC		pib1.	Sync Point Failure Reason Code
TRANFPMM	TRANFPMM		$charzb1.	Mixed-Mode Transaction Indicator
TRANEXCP	TRANFSCH		$charzb1.	Tran Element Exception Indicator
TRANFLGS	TRANFLGS		$char1.	Transaction Element Processing Indicator Flags
TRANNCKP	ISUCPCNT		pib4.	Number of Checkpoints/Syncpoints
TRANMLKH	ISUMXLKH		pib4.	Max(Locks Held) between Checkpoints
TRANTLKH	ISUTOLKH		pib4.	Sum(Locks Held) for all Checkpoints
TRANSAFN	TRANSAFN		$char8.	SAF Name (RACF Group Name)
TRANPGM	TRANPGM		$char8.	Program Name
TRANDGU	ISUGU	ISUDBGU	pib4.	Data Base Get Uniques (GU)
TRANDGN	ISUGN	ISUDBGN	pib4.	Data Base Get Nexts (GN)
TRANDGNP	ISUGNP	ISUDBGN	pib4.	Data Base Get Nexts within Parent (GNP)
TRANDGHU	ISUGHU	ISUDBGU	pib4.	Data Base Get Hold Uniques (GHU)
TRANDGHN	ISUGHN	ISGUDBN	pib4.	Data Base Get Hold Nexts (GHN)

Full Function Transaction Record (continued)

LDR Output Field Name	SAS Routine Input Field Name	Derived Element	SAS Input Format	Description
TRANDGHNP	ISUGHNP	ISGUDBN	pib4.	Data Base Get Hold Nexts within Parent (GHNP)
TRANDISRT	ISUDBIST		pib4.	Data Base Inserts
TRANDDLET	ISUDBDLT		pib4.	Data Base Deletes
TRANDREPL	ISUDBREP		pib4.	Data Base Replaces
TRANCLCNT	ISUCLCNT		pib4.	Total of Previous Database Calls
TRANMGU	ISUMSGGU		pib4.	Message Get Unique Count
TRANMGN	ISUMSGGN		pib4.	Message Get Next Count
TRANMISRT	ISUMSGIS		pib4.	Message Insert Count
TRANMPURG	ISUMSGPG		pib4.	Message Purge Count
TRANTSTNQ	ISUTSTNQ		pib4.	Test Enqueues
TRANTSTWT	ISUTSTWT		pib4.	Waits on Test Enqueues
TRANTSTDQ	ISUTSTDQ		pib4.	Test Dequeues
TRANQCONQ	ISUQCONQ		pib4.	Q Command Enqueues
TRANQCOWT	ISUQCOWT		pib4.	Waits on Q Command Enqueues
TRANQCODQ	ISUQCODQ		pib4.	Q Command Dequeues
TRANSUPNQ	ISUSUPNQ		pib4.	Update Enqueues
TRANSUPWT	ISUSUPWT		pib4.	Waits on Update Enqueues
TRANSUPDQ	ISUSUPDQ		pib4.	Update Dequeues
TRANEXCNQ	ISUEXCNQ		pib4.	Exclusive Enqueues
TRANEXCWT	ISUEXCWT		pib4.	Waits on Exclusive Enqueues
TRANEXCDQ	ISUEXCDQ		pib4.	Exclusive Dequeues
TRANMCMD	ISUMCMD		pib4.	DL/I Message CMD Calls
TRANMGCMD	ISUMGCMD		pib4.	DL/I Message GCMD Calls
TRANMCHNG	ISUMCHNG		pib4.	DL/I Message CHNG Calls
TRANMAUTH	ISUMAUTH		pib4.	DL/I Message AUTH Calls
TRANMSETO	ISUMSETO		pib4.	DL/I Message SETO Calls
TRANSAPSB	ISUSAPSB		pib4.	DL/I APSB Calls
TRANSDPSB	ISUSDPSB		pib4.	DL/I DPSB Calls
TRANSGMSG	ISUSGMSG		pib4.	DL/I GMSG Calls
TRANSICMD	ISUSICMD		pib4.	DL/I ICMD Calls
TRANSRCMD	ISUSRCMD		pib4.	DL/I RCMD Calls
TRANSCHKP	ISUSCHKP		pib4.	DL/I CHKP Calls
TRANSXRST	ISUSXRST		pib4.	DL/I XRST Calls
TRANSROLB	ISUSROLB		pib4.	DL/I ROLB Calls
TRANSROLS	ISUSROLS		pib4.	DL/I ROLS Calls
TRANSSETS	ISUSSETS		pib4.	DL/I SETS Calls
TRANSSETU	ISUSSETU		pib4.	DL/I SETU Calls
TRANSINIT	ISUSINIT		pib4.	DL/I INIT Calls
TRANSINQY	ISUSINQY		pib4.	DL/I INQY Calls

Full Function Transaction Record (continued)

LDR Output Field Name	SAS Routine Input Field Name	Derived Element	SAS Input Format	Description
TRANSLOG	ISUSLOG		pib4.	DL/I LOG Calls
TRANDDEQ	ISUDDEQ		pib4.	DL/I DB Dequeue Calls
TRANVSAMR	ISUVSAMR		pib4.	VSAM IO Count (Reads)
TRANVSAMW	ISUVSAMW		pib4.	VSAM IO Count (Writes)
TRANOSAMR	ISUOSAMR		pib4.	OSAM IO Count (Reads)
TRANOSAMW	ISUOSAMW		pib4.	OSAM IO Count (Writes)
TRANTOTIO	ISUTOTIO		pib4.	Total DL/I IO Count (OSAM+VSAM)
TRANESAF	ISUESAF		pib4.	Total ESAF Calls
TRANFLD	ISUFLD		pib4.	Fastpath FLD Calls
TRANPOS	ISUPOS		pib4.	Fastpath POS Calls
TRANRLSE	ISURLSE		pib4.	RLSE Calls
TRANXSAVE	ISUXSAVE		pib4.	SAVE Calls (XQuery)
TRANXRSTR	ISUXRSTR		pib4.	RSTR Calls (XQuery)
TRANXCOPY	ISUXCOPY		pib4.	COPY Calls (XQuery)
TRANSICAL	ISUSICAL		pib4.	DL/I ICAL Calls
TRANDGUR	ISUDGUR		pib4.	DL/I DB GUR Calls
TRANCPUT	ISUNCPUT		pib8.6	CPU Execution Time (usec)
TRANDBIO	ISUDBIO		pd8.6	Elapsed DB IO Time (usec)
TRANDBPL	ISUDBPL		pd8.6	Elapsed DB Lock Time (usec)
TRANRT64	DURATION		pib8.6	Tran Response Time (usec)
TRANUR64	ISUURDUR		pib8.6	UOR Response Time (usec)
TRANCPID	ISUCPUID		$char8.	CPU ID
TRANSIDD	ISUSIDD		pib2.	Destination System ID
TRANSIDS	ISUSIDS		pib2.	Source System ID
TRANENDU	ISUURETS	ENDTS	maimsdt12.	UOR EndTimeStamp (UTC)
TRANCP	ISUTMCP		pib8.6	CP CPU Processing Time (usec)
TRANZAAP	ISUTMZAP		pib8.6	zAAP CPU Processing Time (usec)
TRANMINT	ISUEWINT		pib8.6	Wait Time for Intent Conflict
TRANMPOL	ISUEWPOL		pib8.6	Wait Time for Pool Space
TRANMSCH	ISUESCHD		pib8.6	Elapse Time for Sched Process
TRANQFLG	TRANQFLG		$char1.	Transaction Element Queue Flags
TRANTIND	TRANTIND		$char1.	TLS Record Indicator
TRANTTYP	TRANTTYP		$char1.	TLS Type Flags (from 56FA TPTYPE)
TRANLOGR	TRANLOGR		pib4.	Input Log Record Number Initiating FF Element
TRANSTCK	TRANSTCK		todstamp08.	IMS Log Record Suffix of Initiating Record - Store Clock
TRANSEQN	TRANSEQN		pib8.	IMS Log Record Suffix of Initiating Record - Sequence Number

Fastpath Transaction Record

```
             SAS
             Routine                  SAS
LDR Output   Input       Derived      Input
Field Name   Field Name  Element      Format         Description
----------   ----------  ----------   ----------     -----------

             TRANRTYP                 $charzb1.      Transaction Type
             TRANXXX                  $charzb3.
FPEMHBPT     TRANEMHB                 $charzb4.
FPMASK       TRANMASK    ISUTMQIN,    $char10.       Message Input Queue Time, Total Transaction Executions, Transaction
                         ISUTRANS,                    Response Time
                         ISUTRSTM
FPMFA        FPMFA                    $char1.        56FA Record Processed

'5901'X Record
--------------
FPBQCNT      ISUFPBQC                 pib2.          Fastpath Balancing Queue Count
FPBQTM       ISUFPBQW                 pib2.6         Fastpath Balancing Queue Limit Time
FPIMSEQN     FPIMSEQN                 pib2.
FPIRLINN\    WORKNODE    LINE,        $char8.        Line, Physical Terminal Number
FPIRTRMN/                PTERM
FPTRNCD      TRANSACT                 $char8.        Transaction Name
FPILTRM      LTERM                    $char8.        Logical Terminal
FPMIDNM      TRANMID                  $char8.
FPUSRID      USER                     $char8.        User Identification
FPIMSGL      ISUINCH                  pib2.          Terminal Input Character Count

'5903'X Record
--------------
FPPROCTM     ISURESTM                 pib2.6         Message Region Residency Time
FPMODNM      TRANMOD                  $char8.
FPOMSGL      ISUOUTCH                 pib2.          Terminal Output Character Count

'5950'X Record
--------------
FPPSTN       ISUPSTNO                 pib1.
FPPSBNM      PSBNAME                  $char8.        Program Name
FP50CNT      ISUFPDEP                 pib2.          Fastpath DEDB Put Count

'5938'X Record
--------------
FPSFAIL      ISUFPSRC                 pib1.          Fastpath Sync Point Return Code

'5953'X Record
--------------
FPSTIO       ISUFPUIO                 pib2.          Fastpath Utility Input/Output Count
```

Fastpath Transaction Record (continued)

```
             SAS
             Routine                  SAS
LDR Output   Input        Derived     Input
Field Name   Field Name   Element     Format          Description
----------   ----------   ----------  ----------      -----------

'5937'X Record
--------------
FPSPDATE\    ENDTS                    maimsdt12.      End Time Stamp
FPSPTIME/
FPDECL       ISUFPDEC                 pib2.           Fastpath DEDB Call Count
FPDERD       ISUFPDER                 pib2.           Fastpath DEDB Read Count
FPMSCL       ISUFPMSC                 pib2.           Fastpath MSDB Call Count
FPOVFN       ISUFPBUF                 ib2.            Fastpath Overflow Buffers Used
FPUOWC       ISUFPCIC                 pib2.           Fastpath Control Interval Contentions
FPBFWT       ISUFPWFB                 pib2.           Fastpath Buffer Waits
FPOBLW       ISUFPOBL                 pib1.           Fastpath Overflow Buffer Latch Units
FPRTYPE      TRANTYPE                 $char1.         Transaction Type

'5936'X Record
--------------
FPOQTM       ISUTMQOT                 pib2.6
FPOLTERM     FPOLTERM                 $char8.
FPORLINN     FPORLINN                 pib2.
FPORTRMN     FPORTRMN                 pib2.
FPOTM        FPOTM                    pib4.6

'5955'X Record
--------------
FP55CNT      ISUFPSDB                 pib2.           Fastpath Sequential Dependent Buffers
                                      $char2.
FPBMBS       FPBMBS                   $charzb1.
FPBMPT       FPBMPT                   $charzb1.
```

Fastpath Transaction Record (continued)

```
             SAS
             Routine                  SAS
LDR Output   Input        Derived      Input
Field Name   Field Name   Element      Format          Description
----------   ----------   ----------   ----------      -----------

Data from '56FA'X Record
------------------------
FPSAFN       FPSAFN                    $char8.         SAF Name (RACF Group Name)
FPPGM        FPPGM                     $char8.         Program Name
FPJOB        FPJOB                     $char8.         Dependent Region Jobname
FPSTEP       FPSTEP                    $char8.         Dependent Region Stepname
FPDGU        ISUGU        ISUDBGU      pib4.           Data Base Get Uniques (GU)
FPDGN        ISUGN        ISUDBGN      pib4.           Data Base Get Nexts (GN)
FPDGNP       ISUGNP       ISUDBGN      pib4.           Data Base Get Nexts within Parent (GNP)
FPDGHU       ISUGHU       ISUDBGU      pib4.           Data Base Get Hold Uniques (GHU)
FPDGHN       ISUGHN       ISGUDBN      pib4.           Data Base Get Hold Nexts (GHN)
FPDGHNP      ISUGHNP      ISGUDBN      pib4.           Data Base Get Hold Nexts within Parent (GHNP)
FPDISRT      ISUDBIST                  pib4.           Data Base Inserts
FPDDLET      ISUDBDLT                  pib4.           Data Base Deletes
FPDREPL      ISUDBREP                  pib4.           Data Base Replaces
FPCLCNT      FPCLCNT                   pib4.           Total of Previous Database Calls
FPMGU        ISUMSGGU                  pib4.           Message Get Unique Count
FPMGN        ISUMSGGN                  pib4.           Message Get Next Count
FPMISRT      ISUMSGIS                  pib4.           Message Insert Count
FPMPURG      ISUMSGPG                  pib4.           Message Purge Count
FPTSTNQ      FPTSTNQ                   pib4.           Test Enqueues
FPTSTWT      FPTSTWT                   pib4.           Waits on Test Enqueues
FPTSTDQ      FPTSTDQ                   pib4.           Test Dequeues
FPQCONQ      FPQCONQ                   pib4.           Q Command Enqueues
FPQCOWT      FPQCOWT                   pib4.           Waits on Q Command Enqueues
FPQCODQ      FPQCODQ                   pib4.           Q Command Dequeues
FPSUPNQ      FPSUPNQ                   pib4.           Update Enqueues
FPSUPWT      FPSUPWT                   pib4.           Waits on Update Enqueues
FPSUPDQ      FPSUPDQ                   pib4.           Update Dequeues
FPEXCNQ      FPEXCNQ                   pib4.           Exclusive Enqueues
FPEXCWT      FPEXCWT                   pib4.           Waits on Exclusive Enqueues
FPEXCDQ      FPEXCDQ                   pib4.           Exclusive Dequeues
FPMCMD       FPMCMD                    pib4.           DL/I Message CMD Calls
FPMGCMD      FPMGCMD                   pib4.           DL/I Message GCMD Calls
FPMCHNG      FPMCHNG                   pib4.           DL/I Message CHNG Calls
FPMAUTH      FPMAUTH                   pib4.           DL/I Message AUTH Calls
FPMSETO      FPMSETO                   pib4.           DL/I Message SETO Calls
FPSAPSB      FPSAPSB                   pib4.           DL/I APSB Calls
FPSDPSB      FPSDPSB                   pib4.           DL/I DPSB Calls
FPSGMSG      FPSGMSG                   pib4.           DL/I GMSG Calls
FPSICMD      FPSICMD                   pib4.           DL/I ICMD Calls
FPSRCMD      FPSRCMD                   pib4.           DL/I RCMD Calls
FPSCHKP      FPSCHKP                   pib4.           DL/I CHKP Calls
FPSXRST      FPSXRST                   pib4.           DL/I XRST Calls
```

Fastpath Transaction Record (continued)

```
             SAS
             Routine                  SAS
LDR Output   Input        Derived     Input
Field Name   Field Name   Element     Format          Description
----------   ----------   ----------  ----------      -----------

Data from '56FA'X Record (continued)
------------------------------------
FPSROLB      FPSROLB                  pib4.           DL/I ROLB Calls
FPSROLS      FPSROLS                  pib4.           DL/I ROLS Calls
FPSSETS      FPSSETS                  pib4.           DL/I SETS Calls
FPSSETU      FPSSETU                  pib4.           DL/I SETU Calls
FPSINIT      FPSINIT                  pib4.           DL/I INIT Calls
FPSINQY      FPSINQY                  pib4.           DL/I INQY Calls
FPSLOG       FPSLOG                   pib4.           DL/I LOG  Calls
FPDDEQ       FPDDEQ                   pib4.           DL/I DB Dequeue Calls
FPVSAMR      FPVSAMR                  pib4.           VSAM IO Count (Reads)
FPVSAMW      FPVSAMW                  pib4.           VSAM IO Count (Writes)
FPOSAMR      FPOSAMR                  pib4.           OSAM IO Count (Reads)
FPOSAMW      FPOSAMW                  pib4.           OSAM IO Count (Writes)
FPTOTIO      FPTOTIO                  pib4.           Total DL/I IO Count (OSAM+VSAM)
FPESAF       FPESAF                   pib4.           Total ESAF Calls
FPFLD        FPFLD                    pib4.           Fastpath FLD Calls
FPPOS        FPPOS                    pib4.           Fastpath POS Calls
FPRLSE       FPRLSE                   pib4.           RLSE Calls
FPXSAVE      FPXSAVE                  pib4.           SAVE Calls (XQuery)
FPXRSTR      FPXRSTR                  pib4.           RSTR Calls (XQuery)
FPXCOPY      FPXCOPY                  pib4.           COPY Calls (XQuery)
FPSICAL      FPSICAL                  pib4.           DL/I ICAL Calls
FPDGUR       FPDGUR                   pib4.           DL/I DB GUR  Calls
FPCPUT       ISUTMDCP                 pib8.6          CPU Execution Time   (usec)
FPDBIO       FPDBIO                   pd8.6           Elapsed DB IO Time   (usec)
FPDBPL       FPDBPL                   pd8.6           Elapsed DB Lock Time (usec)
FPRT64       FPRT64                   pib8.6          Tran Response Time   (usec)
FPUR64       FPUR64                   pib8.6          UOR Response Time    (usec)
FPCPID       FPCPID                   $char8.         CPU ID
FPSIDD       FPSIDD                   pib2.           Destination System ID
FPSIDS       FPSIDS                   pib2.           Source System ID
FPENDU       ENDTS                    maimsdt12.      UOR EndTimeStamp (UTC)
FPCP         FPCP                     pib8.6          CP   CPU Processing Time (usec)
FPZAAP       FPZAAP                   pib8.6          zAAP CPU Processing Time (usec)
FPMINT       FPMINT                   pib8.6          Wait Time for Intent Conflict
FPMPOL       FPMPOL                   pib8.6          Wait Time for Pool Space
FPMSCH       FPMSCH                   pib8.6          Elapse Time for Sched Process
FPIQTL       FPIQTL                   pib4.4          BALG Q-Time (Resol=1 Microsec)
FPPRTL       FPPRTL                   pib4.4          Appl Process Time (Microsec)
FPPRTSP      FPPRTSP                  pib4.4          5937/38 Process Time (Microsec)
FP#DEQ       FP#DEQ                   pib2            Number of FP DEQ Calls
FP#RLS       FP#RLS                   pib2            Number of FP RLSE Calls
FPDBN        FPDBN                    $charzb8.       Database Name      (From 5950)
FPDSID       FPDSID                   pib1.           Data Set I.D.      (From 5950)
FPDATID      FPDATID                  pib4.           RBA of 1st CI Byte (From 5950)
FPTTYP       FPTTYP                   $char1.         TLS Type Flags (from TPTYPE)
```

Chapter 7: PARAMETERS

This chapter describes how to define the parameters that are required for installing the CA MICS IMS Analyzer. The CA MICS System Administrator should use this chapter as a detailed reference in conjunction with the PIOM.

Defining CA MICS parameters requires you to gain the necessary understanding of your installation and its needs and translate that understanding into CA MICS parameters.

In particular, this chapter requests that you:

- o Arrive at a number of policy decisions
- o Fill out several worksheets
- o Translate the worksheet entries into the corresponding CA MICS parameter library member entries

These activities represent the major portion of the product installation process.

This chapter focuses on considerations that are unique to the IMS Analyzer. Chapters 2 and 3 of the CA MICS PIOM Guide 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 (see page 324)
7.2 Complex Level Parameters (see page 328)
7.3 Unit-Level Parameters (see page 341)

7.1 Environmental Considerations

Before coding product parameters, you need to know about the IMS environments at your data center. Before you specify parameters for the IMS Analyzer, do the following:

- o Review the default options for the parameters to determine their applicability to your site.
- o Review reporting requirements to determine whether you need to code MICF inquiries to satisfy the needs of the IMS group.
- o Review database unit specifications to determine which units should include IMS data.
- o Review the data source material in Chapter 6 of this guide. The transaction records differ according to data source. However, Section 6.2 lists the data elements (and their formats) available for use by logic you code in the exits described in Chapter 7.

Also, you will be required to code three SAS exits. These exits allow you to insert site-dependent logic into the CA MICS IMS Daily Format routine (DYIMSFM1).

The exits are:

IMSRLRT, the IMS Relative Longevity Code Exit
IMSACRT, the IMS Account Code Exit
IMSAURT, the IMS Application Unit Exit

They are explained in following sections of this guide.

Important Concepts About These Exits

The exits are invoked in the order shown above. This implies restrictions on your SAS logic. For example, the IMSACRT exit cannot reference data element values set by the IMSAURT exit for the same transaction because the IMSACRT exit is invoked first.

Each of the data elements contained in the IMS monitor data collection record are available to the exits. In addition, some temporary data elements, not normally kept on the CA MICS IMS database, are available for examination in these exits. The data elements available are discussed below.

Several ways to recognize interesting transactions are shown here. The following discussion assumes a general familiarity with IMS application design concepts.

```
Identifying the Current Transaction
-----------------------------------

The following data elements identify the current transaction
by the system, monitor, IMS version, and so on.

CTLFILE   - (numeric) The ordinal of the input file in
            CA MICS IMS daily processing.  The first file
            processed is noted by CTLFILE=1, the second file
            processed has CTLFILE=2, and so on.

CTLSYS    - (character, length 4) The original SYSID
            specified on the OPTIONS statement for this input
            file in the IMSOPS parameter member.

CTLIMS    - (character, length 4) The IMSID specified on the
            OPTIONS statement for this input file in the
            IMSOPS parameter member.

CTLMON    - (character, length to 6)
            NOCIMS - input is from the IMS log without
                     BMC MAINVIEW for IMS Online data
            IMF2   - input is from the IMS log with
                     BMC MAINVIEW for IMS Online data
                     present

CTLVER    - (character, length 3) The IMS version number
            specified on the OPTIONS statement for this input
            file in the IMSOPS parameter member.  Values may
            be 6.1 through 13.1.

MATYPE    - (character, length 2) For non-BMC MAINVIEW for
            IMS Online systems only.

            Set to indicate full-function or Fastpath data:
            FP - Fastpath (EMHB processed) transaction
            NF - non-Fastpath (non-EMHB processed)
                 transaction

ISUITYPE  - (character, length 1)
            M for MPP transactions
            B for BMP transactions
            C for conversational transactions
            F for Fastpath message driven transactions
```

```
              N for Fastpath non-message driven transacts
              U for Fastpath utilities
              E for Explicit APPC
              D for DBCTL transactions
              J for Java MPP transactions
              K for Java BMP transactions
              (blank) when the execution method cannot be
                      determined

TRANSACT  - (character, length 8) IMS transaction ID.

LTERM     - (character, length 8) IMS logical terminal
              identifier.

PSBNAME   - (character, length 8) IMS Program Specification
              Block (PSB) name.

ISUCLASS  - (numeric) The internal class of a transaction as
              specified to IMS on the TRANSACT or APPLCTN macro
              in the IMS generation.  IMS uses this to
              determine which processing region should be used
              to schedule the transaction.

ISUREGID  - (character) A temporary element containing the
              region identifier; available to user exits.

Identifying Switched Transactions
---------------------------------

This discussion applies only to non-BMC MAINVIEW for IMS
Online full-function transactions.

Assume transaction A switches to transaction B, and then B
switches to transaction C, which writes a final output to the
originating terminal.  Two data elements indicate the
switching flow for the current transaction:

TRANSWFR - (character, length 8) The transaction's parent;
             the name of the transaction that switched TO the
             current transaction.

ALTTRAN  - (character, length 8) The transaction's child; the
             name of the transaction TO WHICH the current
             transaction switched.

This table is based on the information above:

Transaction  TRANSWFR value  ALTTRAN value
-----------  --------------  -------------
```

```
     A          (blank)           B      (A was first in a
                                         switch chain, and
                                         switched to B)

     B             A              C      (B was switched to
                                         by A, and switched
                                         to C)

     C             B           (blank)   (C was switched to
                                         by b, and is last
                                         in the chain)
```

In the IMSRLRT exit (relative longevity code), these statements identify the following transactions:

```
IF TRANSWFR EQ ' ' AND ALTTRAN NE ' ' THEN ...
```

identifies the first transaction in a switch chain.

```
IF TRANSWFR NE ' ' AND ALTTRAN EQ ' ' THEN ...
```

identifies the last transaction in a switch chain.

```
IF TRANSWFR NE ' ' AND ALTTRAN NE ' ' THEN ...
```

identifies a transaction in a switch chain that is neither first nor last.

Identifying Multisystem Coupled (MSC) Transactions

This discussion applies only to non-BMC MAINVIEW for IMS Online full-function transactions.

Multisystem coupling allows an IMS system to process transactions that were entered by an operator on a terminal that is connected to another IMS system. The output of the transaction is usually sent back to the originating system for display on the originating terminal.

Transactions that are MSC-eligible have an extra segment in the type 01 input message log record that identifies the MSC activity. CA MICS makes the following temporary data element available for MSC identification:

TRANXMSC - (character, length 1)

Y - The transaction was executed on behalf of a terminal user connected to another IMS system.

L - The transaction is marked MSC-eligible and executed on an IMS system where MSC was active, but on behalf of a terminal user connected to this IMS system.

blank - The transaction has no MSC data.

7.2 Complex Level Parameters

This section shows you how to specify the complex level parameters that define the processing of the CA MICS IMS Analyzer. The following topics are covered:

1 - Analyzer Definition Statements (IMSGENIN)
2 - IMS Account Code Structure (IMSACCT)
3 - Code the IMS Account Code Exit (IMSACRT)

7.2.1 Generation Definition Statements (IMSGENIN)

The IMS Analyzer's generation definition statement member resides in sharedprefix.MICS.GENLIB(IMSGENIN). You should review the OPTION and COMPRESS statement definitions.

The OPTION Statement

The OPTION statement defines which data element clusters are included or excluded when generating the data element contents. You should change the definition to meet your needs, as described below.

OPTION statement keywords for the IMS Analyzer are:

```
    CIMS/NOCIMS - BMC MAINVIEW for IMS Online data elements
    ILOG/NOILOG - IMS log data elements
```

You must specify one keyword from each set.

The recommended OPTION for IMS in an installation using BMC MAINVIEW for IMS Online is:

```
    OPTION CIMS ILOG
```

The recommended OPTION for IMS in an installation that is not using BMC MAINVIEW for IMS Online is:

```
    OPTION NOCIMS ILOG
```

Note: The IMSGENIN member contains uppercase and lowercase characters. The keywords for the OPTION statement must be entered in uppercase.

The COMPRESS Statement

The SAS system gives you the option to create variable-length or fixed-length observations in a SAS data set. Variable-length observations differ from fixed-length observations in that the former are usually smaller because the blank spaces used to pad fixed-length observations are removed.

You instruct SAS to create variable length observations by specifying the COMPRESS= option. SAS data set compression can be implemented for individual data sets or across the entire SAS system by specifying COMPRESS= on either a DATA statement (for the individual data set named on the DATA statement) or an OPTIONS statement (for the entire system).

For more information on the COMPRESS= option, see the SAS Institute documentation.

All files in the IMS Analyzer are candidates for compression. Before compressing work files, be sure to read Section 2.1 of this guide, which explains the potential impacts of compressing work files.

Optional File for Event Collector Data

If you want to maintain database activity data as measured by the BMC MAINVIEW for IMS Online Event Collector, you should consider activating the Data Base Activity (IMSIDB) file.

If you elect to activate this file, understand the following:

- This file is only populated by BMC MAINVIEW for IMS Online data. Do not activate the file if you do not have the BMC MAINVIEW for IMS Online Event Collector active.

- A great number of observations will be written to this file. The DETAIL timespan does not have to be active to produce a DAYS timespan. If the DETAIL timespan is activated, each cycle on that timespan may be very large.

- Always test activating this file in an isolated environment BEFORE activating the file in your production IMS unit.

To activate the file in a timespan, see the instructions for the general topic in the CA MICS System Modification Guide. To activate the file in the DAYS timespan only, change the file statement to:

```
FILE IDB 00 1 N E N N N N N N Data Base Activity File
```

We do NOT recommend activating the DETAIL timespan due to data volume. If you want to keep IMSIDB file data from DETAIL granularity, write the output to an independent SAS data set as illustrated in the sample _USRXIDB exit in Section 10.2.4 of this guide.

7.2.2 IMS Account Code Structure (IMSACCT)

In CA MICS, data about IMS activity is stored by account number(s) in the following files:

```
IMS User Activity File                    (IMSISU)
IMS User Activity File - EMH Non-BMC      (IMS_IS)
MAINVIEW for IMS Online
IMS User Application Count File           (IMSIAC)
```

The parameters you are asked to specify in sharedprefix.MICS.PARMS(IMSACCT) define the number of account code fields that will be carried in the files listed above within the CA MICS IMS user database, the length of each field, and the SAS long names that are associated with each field. Note that once you have defined these fields, you must provide a routine that assigns them values (see Section 7.2.3).

PREPARATION

Each installation has its own method for associating the work performed through IMS transactions with the projects or departments within the organization that are responsible. Prior to defining the account code parameters required by CA MICS in this area, it is important to investigate your installation's accounting standards, in order to:

- o Identify the coding system (e.g. cost center coding system identifying the division, department, project, and employee).

- o Identify how the codes are specified. For example, the division and department may be determined by the first character of the IMS terminal identifier and the project from the first two characters of the IMS transaction ID.

- o Identify if, and how, the codes are verified to ensure that they correspond to a valid definition. We recommend that account code validation be performed in all cases, and that unidentified or invalid account codes be assigned to a special installation overhead account code (see Section 7.2.3). This approach provides two benefits. It filters out invalid codes from inclusion in the database and, therefore, requires less DASD space to hold the data in the IMS Information Area files. Also, it makes it easy to see how much of this unidentifiable activity is taking place.

Once you have determined the accounting structure, consider the following when determining the number of account fields (CA MICS supports from 1 to 9) required to meet your installation's reporting and analysis needs:

- o Account fields are part of the file keys for the files that support them. As such, at least one record is generated for each combination of values. (More than one record may be generated, because other fields also make up the file keys.) The trade-off you must make is between keeping a fine level of detail via the account code fields and, therefore, having a large database, and keeping a small level of detail and perhaps not meeting your reporting or analysis requirements.

- o If you anticipate needing to expand the account code structure in the future, establish an extra account code now to eliminate the need to retrofit the database later to add the new account code.

IMS account code fields have names in the form "IMSACTn", where 'n' is the sequential number of the IMS account code field. If three fields are defined, they will be IMSACT1, IMSACT2, and IMSACT3 (in your accounting structure, these might identify Division, Department, and Project, respectively). The sequential number is called the account code field "level" number. There are a maximum of nine (9) levels. A Sample IMS Account Code structure is provided in sharedprefix.MICS.PARMS(IMSACCT).

Figure 7-1 provides a worksheet for collecting the data. Once you have completed this form, code the contents of sharedprefix.MICS.PARMS(IMSACCT) as follows:

- o A separate statement is coded for each account code level.

- o 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 statement format is free-form, but positional. All parameters are required. The form of each statement is as follows:

```
       n m 'SAS long name to be assigned to IMSACTn'

o The parameters to be coded are:

       ACCOUNT LEVEL n

       The level of importance of each element is specified
       with Level 1 being the most important (major field)
       and the highest level number being least important
       (minor field).  From 1 to 9 levels can be specified.

       FIELD LENGTH m

       The length of the specified element.  The length may
       be in the range from 1-30.

       ACCOUNT CODE LEVEL DESCRIPTION

       The title that describes the Account Code field.
       The length of the title is limited to forty
       characters.

  A sample IMSACCT member is illustrated below:

       1 4 'APPLICATION'
       2 4 'DIVISION'
       3 3 'OPERATOR'
```

```
+--------------------------------------------------------------------------+
| INSTALLATION PREPARATION WORKSHEET: IMS Account Code Level Definition
|
|                                                                          |
| PARMS Library Member is IMSACCT                                          |
| Reference Sections: 7.2.2                                                |

+--------------------------------------------------------------------------+
|                                                                          |
|  ACCOUNT    FIELD                                                        |
| CODE LEVEL  LENGTH  ACCOUNT CODE LEVEL DESCRIPTION                       |
|   (1-9)                                                                  |
|                                                                          |
|    _        __    '________________________________________'             |
|                                                                          |
|    _        __    '________________________________________'             |
```

```
                           |                                                                    |
                           |    _       __    '________________________________________'        |
                           |                                                                    |
                           |    _       __    '________________________________________'        |
                           |                                                                    |
                           |    _       __    '________________________________________'        |
                           |                                                                    |
                           |    _       __    '________________________________________'        |
                           |                                                                    |
                           |    _       __    '________________________________________'        |
                           |                                                                    |
                           |    _       __    '________________________________________'        |
                           |                                                                    |
                           |    _       __    '________________________________________'        |
                           |                                                                    |
                           |                                                                    |
                           |                                                                    |
                           |                                                                    |
                           |                                                                    |
                           |                                                                    |
                           |                                                                    |
                           |                                                                    |
                           |                                                                    |
                           |                                                                    |
                           |                                                                    |
                           |                                                                    |
                           |                                                                    |
                           |                                                                    |

+----------------------------------------------------------------------------+
                           |
....5...10...15...20...25...30...35...40...45...50...55...60...65...70.. |

+----------------------------------------------------------------------------+
```

Figure 7-1. IMS Account Code Level Definition Worksheet

7.2.3 Code the IMS Account Code Exit (IMSACRT)

An IMS Account Code Derivation Routine is a user-written SAS routine, located in sharedprefix.MICS.PARMS(IMSACRT), that is invoked for each transaction processed. This routine builds the account code data elements defined in the previous section. For example, if the IMSACCT member in the sharedprefix.MICS.PARMS library defines four account code levels, this routine must build the data values for those four fields for each transaction processed.

While you are responsible for writing, testing, and ensuring the accuracy of the routine for your site's needs, the CA MICS IMS Analyzer provides a sample account code exit routine and a worksheet, shown in Figure 7-2, to help you.

In coding the routine, you can use each of the data elements contained in the IMS monitor data collection record. The data elements most often used to determine the account code value are:

```
TRANSACT  - The IMS transaction ID
RACFUSID  - The RACF user identification
LTERM     - The IMS logical terminal identifier
PSBNAME   - The IMS program specification block name
TRANTYPE  - C/S/M/L/X for conversational, short, medium,
            long and excessive transaction types
TRANUSER  - The transaction user (from type FA records)
ISUITYPE  - M for MPP transactions
            B for BMP transactions
            C for conversational transactions
            F for Fastpath message driven transactions
            N for Fastpath non-message driven transacts
            U for Fastpath utilities
            E for Explicit APPC (IMS 4.1 and higher)
            D for DBCTL transactions
            (blank) the execution method cannot be
               determined.
```

Type 1 log records for data created by the IMS FORMAT command report the message destination rather than the transaction identifier. In coding parameter exits, consider testing for format records (IF TRANXORG=F) and handling them by setting the transaction name to the transmission identifier (THEN TRANSACT=TRANSMID).

Assume that the installation has defined three account code levels in the IMSACCT member and they are derived as described below:

```
    IMSACT1 is the first 2 characters of the transaction ID
    IMSACT2 is the last character of the logical terminal ID
    IMSACT3 is the first 3 characters of PSBNAME
```

Furthermore, the values of IMSACT1 may only be 'DE', 'PR', or 'TS'.

The IMSACCT member for the account definition would be:

```
    1 2 'DIVISION'
    2 1 'REGION'
    3 3 'USER'
```

The SAS code defined for the user account code exit would be as follows:

```
* ABC'S  IMS ACCOUNT CODE DERIVATION EXIT
*
*  DIVISION IS BUILT FROM POSITIONS 1-2 OF THE TRANSID.
*  REGION IS BUILT FROM THE LAST POSITION OF THE TERMINAL ID.
*  USER IS BUILT FROM POSITIONS 1-3 OF THE PSBNAME.
*
*   IF THE DIVISION IS NOT EQUAL TO DE, PR, OR TS,
*       THE CODE IS INVALID AND THE ACCOUNT CODES SHOULD
*       BE SET TO THE INSTALLATION OVERHEAD ACCOUNT CODES.
*
*   IF NO TRANS ID, THEN ASSUME AN OVERHEAD TRANSACTION.
*
*
   ;
    IMSACT1=SUBSTR(TRANSACT,1,2) ;
    IF IMSACT1 NE 'DE' AND IMSACT1 NE 'PR'
    AND IMSACT1 NE 'TS' THEN GOTO ACCTOVHD ;
    LENTERM=LENGTH(LTERM) ;
    IMSACT2=SUBSTR(LTERM,LENTERM,1) ;
    IF IMSACT2=' ' OR IMSACT2='00'X THEN GOTO ACCTOVHD ;
    IMSACT3=SUBSTR(PSBNAME,1,3) ;
    GOTO ACCTRTEX ;

ACCTOVHD:
    IMSACT1='**' ;
    IMSACT2='*' ;
    IMSACT3='   ' ;
ACCTRTEX:
```

Users billing for batch jobs from the Batch and Operations Analyzer should exclude their IMS transactions that run as batch jobs, called BMPs, which also generate IMS transaction data.

The most effective process for excluding BMP activity is to include ISUITYPE in an IMSACTx field. Then, IMSACTx can be used by CA MICS Accounting and Chargeback to generate charges. It is possible to exclude charging for batch jobs in SMF if the IMS BMP jobname or account information is unique and identifiable.

The IMSISU and IMS_IS files are summarized at the DAYS and higher timespans and ISUITYPE, which identifies billable transactions (ISUITYPE = 'B'), is not summarized to these timespans.

Since ISUITYPE is not retained in the DAYS timespan as a sort and sequence variable, the element ISUITYPE must be assigned to an IMSACTn element in IMSACRT. You can keep this IMSACTn element at the DAYS level, if desired, or at all supported timespans, to identify billable transactions at all levels of CA MICS summarization.

To retain ISUITYPE in an IMSACTn element at only the DAYS timespan, include the additional account code definition with the TIMESPAN mask in the IMSACCT member, as follows:

```
  1           8 'Division'
  2           8 'Transaction Code'
  3 T(YYNNNY) 4 'B for BMP or blank'
```

The T(YYNNNY) parameter is described in Section 2.3.1.7 of the PIOM. The example above shows the third IMSACTn element being retained only at the DETAIL level (if turned on) and the DAYS timespan. The IMSACT3 element would not be present in the WEEKS, MONTHS, or YEARS timespans, if active.

Furthermore, if you want to activate the new element and only retain it through the DAYS timespan, you do not need to retrofit existing WEEKS "00" cycles (if activated) or MONTHS "00" cycles.

The required steps are:

1) Update the sharedprefix.MICS.PARMS(IMSACCT) member to include the additional IMS Account Code definition and the TIMESPAN mask.

2) Update sharedprefix.MICS.PARMS(IMSACRT) to assign IMSACTn's value to ISUITYPE if ISUITYPE = 'B' or set

```
    IMSACTn to blanks.

3) Submit sharedprefix.MICS.CNTL(IMSCGEN).

4) If the new IMS Account Code element is to be retained at
    any timespan higher than DAYS, the 00 cycles of WEEKS,
    MONTHS, and possibly YEARS must be retrofitted to include
    the new element in the file.  A simple DATA step to add
    the element with a default length would work.  If the
    element is to be retained only up to DAYS, no retrofit is
    required.  Refer to the CA MICS System Modification
    Guide, Section 6.3 for retrofit coding samples.
```

```
+------------------------------------------------------------------------+
| INSTALLATION PREPARATION WORKSHEET: IMS Account Code Routine Definition |
|                                                                        |
| PARMS Library Member is IMSACRT                                        |
| Reference Sections: 7.2.3                                              |
+------------------------------------------------------------------------+
|                                                                        |
| * VALIDATE FOR VALID ACCOUNT CODES, WHERE POSSIBLE ;                   |
|    IF account data is not valid GOTO ACCTOVHD ;                        |
| ______________________________________________________________________ |
| ______________________________________________________________________ |
| ______________________________________________________________________ |
| ______________________________________________________________________ |
| ______________________________________________________________________ |
| ______________________________________________________________________ |
| ______________________________________________________________________ |
| ______________________________________________________________________ |
| ______________________________________________________________________ |
| * BUILD ACCOUNT CODE FIELDS AS IN WORKSHEET 7-1;                       |
|    IMSACT1=field source 1 ;                                            |
```

```
                           |     IMSACTn=field source n ;                                    |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           |     GOTO ACCTRTEX ;                                             |
                           | * LINKED ROUTINE TO BUILD INSTALLATION OVERHEAD ACCOUNT CODES ;     |
                           | ACCTOVHD:                                                       |
                           |     IMSACT1='overhead category' ;                               |
                           |     IMSACTn='overhead category' ;                               |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           | ACCTRTEX:                                                       |

+------------------------------------------------------------------------+
                           |
....5...10...15...20...25...30...35...40...45...50...55...60...65...70.. |

+------------------------------------------------------------------------+
```

Figure 7-2. IMS Account Code Routine Definition Worksheet

7.3 Unit-Level Parameters

Unit-level parameters control CA MICS IMS Analyzer processing. These parameters are stored in the prefix.MICS.PARMS library associated with each database unit you define. The parameters are incorporated into the CA MICS system by the parameter generation process (IMSPGEN). Note that you must run the generation processes for these options to take effect.

Figure 7-3 identifies each of the system code generation processes for the IMS Analyzer, their PARMS member inputs, and the output MACROs (a member may contain the definition of more than one SAS MACRO) and FORMATs that they generate. The output libraries are at the database unit level (prefix) unless noted otherwise. The input PARMS members that must be completed prior to IMSPGEN execution are identified below.

- o Product Options Definition (IMSOPS)
- o Input DD statements for IMS (INPUTIMS)

```
 +-----------------+--------------------+-------------------+
 |prefix.MICS.PARMS|    USER.SOURCE     | prefix.MICS.PARMS |
 |  Input Member   | Output Members and |   Output Member   |
 |                 |  SAS MACRO Names   |                   |
 +-----------------+--------------------+-------------------+
 |  IMSOPS         | #IMSMSTR   IMSRVAL | WORKIMS           |
 |  INPUTIMS       |            IMSSUSC |                   |
 |                 |            IMSSUSI |                   |
 |                 |            IMSSUSO |                   |
 |                 |            IMSLOOP |                   |
 |                 |            IMS4512 |                   |
 |                 |            IMS4513 |                   |
 |                 |            IMS4521 |                   |
 |                 |            IMS4522 |                   |
 |                 |            IMS4531 |                   |
 |                 |            IMS4541 |                   |
 |                 |            CIMCODE |                   |
 |                 |            CODE136 |                   |
 |                 |            IMSWORK |                   |
 |                 |            ISFOUT  |                   |
 |                 |            ISWOUT  |                   |
 |                 |            _ISSORT |                   |
 |                 |            ISUSORT |                   |
 |                 |            _ISMERG |                   |
 |                 |            ISUMERG |                   |
 |                 |            _ISDEL  |                   |
 |                 |            ISUDEL  |                   |
 +-----------------+--------------------+-------------------+
```

Figure 7-3. IMSPGEN Code Generator Cross-Reference List

The sections that follow contain information on the unit-level parameters for the IMS Analyzer. The following topics are covered:

```
1 - Code the IMS Longevity Code Exit    (IMSRLRT)
2 - IMS Application Unit Definition
3 - Code the IMS Application Unit Exit  (IMSAURT)
4 - IMS Processing Options              (IMSOPS)
5 - Input DD Statements for IMS         (INPUTIMS)
6 - IMS Suspend File DD Statements      (IMSSPND)
7 - Database Space Modeling             (DBMODEL)
```

7.3.1 Code the IMS Relative Longevity Code Exit (IMSRLRT)

The CA MICS IMS Analyzer requires that you write an exit to assign a relative longevity code to each transaction as the transaction data is processed. The exit must be written in SAS and stored in prefix.MICS.PARMS(IMSRLRT). It assigns a value to the CA MICS data element TRANTYPE. A secondary function of this exit is to reset any response time data element in the transaction detail record according to site-dependent algorithms.

SETTING THE VALUE OF TRANTYPE

TRANTYPE is a 1-character field and will be set to S, M, L, C, or X for short, medium, long, conversational, or excessive, respectively. The existence of this code allows CA MICS to maintain separate response distributions for each type of transaction.

There are several approaches you might take to setting this code, including:

- Classification based on estimated resource usage

  This approach is more aligned to the resource management concepts associated with the MVS System Resource Manager, and classifies a transaction based on the transaction's resource consumption.

- Classification based on transaction identification

  Normally, this approach utilizes a table lookup of IMS transaction IDs to group the work. For example, transactions ABCD and WXYZ are always long transactions, while other transactions may be medium or short.

  Note that type 1 records for data created by the IMS FORMAT command do not contain a transaction identifier. Review the information about the FORMAT statement in the IMSOPS section of this chapter for more information about using data created by the IMS FORMAT command.

- Classification based on facility area

  This approach classifies work based on the service area exercised. For example, all transactions that execute as destination-attached may be of medium duration.

The relative longevity code routine is written in SAS. The testing and accuracy of modifications to the routine supplied on the distribution libraries is the responsibility of the user. The worksheet for coding the Relative Longevity Code Exit is shown in Figure 7-4.

When invalid input makes the proper assignment of the relative longevity code impossible, a default code, usually L (long), should be assigned. Failure to do this will significantly reduce the usability of the transaction group response time statistics.

RESPONSE TIME RECALCULATIONS

Some sites may find that the algorithms used by the IMS Analyzer to calculate response-oriented data elements may not reflect unusual configurations or reporting requirements. If response data elements, such as ISUTRANS, ISUTRSTM, ISURESTM, or any related data elements are candidates for modification, those data elements (or any others in the detail transaction work file record) may be modified by logic included in this exit routine. See Section 7.1 and Appendix B of this guide for more information.

Such logic typically recalculates response-oriented data elements based on different algorithms than those used by the distributed IMS Analyzer code for non-BMC MAINVIEW for IMS Online and non-Fastpath (non-EMHB-scheduled) transactions. The new algorithms usually differ for program-switched transactions.

The distributed algorithms for non-BMC MAINVIEW for IMS Online and non-EMHB transactions calculate response time as follows:

```
      Response time, transaction B (ISUTRSTM)
    |<-----------------------------------------------|
    |                                                |
    |Input queue time, transaction B                 |
    |(ISUTMQIN)                                      |
    |<----------------------------->|                |
    |                               |                |
    |Input queue                    |                |
    |time, tran A                   |                |
    |(ISUTMQIN)                     |                |
    |<---------->|                  |                |
    |            |                  |                |
    -------------------------------------------------time->
A:  01 35S (08)  31   03      31D/07|                |
                  |                 |                |
```

```
B:  ...............  +-> 35S  (08) 31D  03  ...    | 31D/07
                                        |          |
                                        +->  35C   31C .. 36
```

where the terminal user enters a transaction input message that is processed by transaction A, which switches to transaction B. Transaction B produces a final output message sent back to the originating terminal.

For transaction A, the following data elements are set on entry to the IMSRLRT exit logic:

LOG REC	DATA ELEMENT	CONTENTS
01	TRANINTS	Input message timestamp
35S	TRAN35TS	Timestamp of enqueue of input message on SMB for transaction A
	TRAN35T2	Timestamp of enqueue of input message on SMB for transaction A
(08)	TRAN08TS	Schedule timestamp for transaction A
31D	STARTTS	Timestamp of the initial Get Unique (GU) issued to retrieve an input message from the Message Queue
03	(N/A)	(Input message)
31D	ENDTS	Timestamp of either the initial GU issued by transaction A (31D) or end of schedule for transaction A (07)
35C	TRANOQTS	(SAS missing value)
31C	TRANC31	(SAS missing value)
36	TRANOPTS	(SAS missing value)
N/A	TRANSWFR	ID of the PARENT transaction, whose value is blank (transaction A was not switched to)
N/A	ALTTRAN	ID of the CHILD transaction, whose value is B (transaction A switched to transaction B)
N/A	ISURESTM	Transaction residency time, whose value is ENDTS - STARTTS
N/A	ISUTMQIN	Input queue time, to be STARTTS - TRANINTS if the input message timestamp is available and correct. If it is incorrect, for example, from an MSC transaction, the value is set to STARTTS - TRAN35TS
N/A	ISUTRSTM	Transaction response time, set to SAS missing value (transaction had no output message)
N/A	ISUTRANS	Response event count, set to a value of 0

```
                   (no response event occurred)
    N/A  ISUUOWCT  Unit of work count, set to a value of 1
                   (one unit of work was done)

For transaction B, the following data elements are set on
entry to the IMSRLRT exit logic:

    LOG  DATA      CONTENTS
    REC  ELEMENT
    ---  --------  ----------------------------------------
    03   TRANINTS  Timestamp of input message for transaction
                   A
         TRAN35TS  Timestamp  of  enqueue of input message on
                   SMB for transaction A
    35S  TRAN35T2  Timestamp of enqueue of input message on
                   SMB for transaction B
   (08)  TRAN08TS  Schedule timestamp for transaction B
    31D  STARTTS   GU timestamp of input message from queue
    03   (N/A)     (Input message timestamp is on output
                   message log record)
    31D ENDTS      Timestamp of GU of next input message from
                   queue for transaction B (31D), or end of
                   schedule for transaction B (07)
    35C  TRANOQTS  Enqueue of output message on destination
                   CNT
    31C  TRANC31   GU of output message by communications
    36   TRANOPTS  Output message purge (may be very much
                   later than the time of output message GU)
   01/03 TRANIMSG  Number of messages input to the
                   transaction

    N/A  TRANSWFR  ID of the PARENT transaction, whose value
                   is A (transaction A switched to this
                   transaction)
    N/A  ALTTRAN   ID of the CHILD transaction, whose value
                   is blank (transaction B did not switch to
                   another transaction)
    N/A  ISURESTM  Transaction residency time, whose value
                   is ENDTS - STARTTS
    N/A  ISUTMQIN  Input queue time, to be STARTTS - TRANINTS
                   if the input message timestamp is
                   available and correct.   If it is
                   incorrect, for example, from an MSC
                   transaction, the value is set to STARTTS -
                   TRAN35TS
    N/A  ISUTRSTM  Transaction response time, set to the
                   value TRANC31 - STARTTS + ISUTMQIN
    N/A  ISUTRANS  Response event count, set to the value 1
                   (one response event occurred)
```

```
    N/A  ISUUOWCT  Unit of work count, set to the value 1
                   (one unit of work was done)
```

The two transaction records made by the standard IMS Analyzer algorithms will represent what the terminal user sees as a single interaction. The response time for that interaction is carried with the last transaction in the chain, transaction B, and is the difference between the time the input message entered the IMS message queue and the time the output message was retrieved for output. Transaction A has no response time and is marked as not being a response event, so it does not enter into response time calculations.

If you put no response time recalculations in the IMSRLRT exit, the response time values shown above will be used in the IMS database.

If you install logic into the IMSRLRT exit to recalculate response time data element values, you must be familiar with the material in this section, with any IMS service agreements in place at your site, and with SAS coding.

One method of recalculation changes only the value of the input queue time, ISUTMQIN, for transactions in a program switch chain. This diagram shows the change:

```
      Response time, transaction B (ISUTRSTM)
    |<-------------------------------------------->|
    |                                              |
    |Input queue          input queue              |
    |time, tran A         time, tran A             |
    |(ISUTMQIN)           (ISUTMQIN)               |
    |<---------->|       |<-------->|              |
    |            |       |          |              |
    ------------------------------------------------time->
A:  01 35S (08)  31  03  |    31d/07|              |
                     |   |          |              |
B:  ..............  +-> 35S   (08) 31D  03  ...    | 31D/07
                                     |          |
                                     +->  35C   31C .. 36
```

The code necessary to make this change is illustrated in a distributed sample IMSRLRT exit. This sample is found in sharedprefix.MICS.HOLD.PARMS(IMSRLRT1). If you choose to use this template, do not modify that copy. Copy the sample into the prefix.MICS.PARMS(IMSRLRT) in your test database unit and modify it to your specifications. Test for the desired results before installing the exit into your production IMS database unit.

Another method of recalculation changes the values of input queue time, ISUTMQIN, and response time, ISUTRSTM, for the transactions in a program switch chain. This method recalculates response time for transactions in a program switch chain that produces terminal output, and input queue time for all transactions in the chain. This diagram shows the change:

```
                           response time,
                           transaction B
                           (ISUTRSTM)
                         |<------------------------->|
                         |                           |
     Input queue         |input queue                |
     time, tran A        |time, tran A               |
     (ISUTMQIN)          |(isutmqin)                 |
    |<---------->|       |<--------->|               |
    |            |       |           |               |
    -------------------------------------------------time->
A:  01 35S (08)  31  03  |    31d/07|               |
                     |   |           |               |
B:  ..............  +-> 35S   (08) 31D  03  ...    | 31D/07
                                        |          |
                                        +->  35C   31C .. 36
```

The code necessary to make this change is illustrated in a distributed sample IMSRLRT exit, found in sharedprefix.MICS.HOLD.PARMS(IMSRLRT2). If you choose to use this template, do not modify that copy. Copy the sample into the prefix.MICS.PARMS(IMSRLRT) in your test database unit and modify it to your specifications. Test for the desired results before installing the exit into your production IMS database unit.

The example in sharedprefix.MICS.HOLD.PARMS(IMSRLRT3) calculates response time using an algorithm distributed before PSP8810 (product change IMS4300). This algorithm is NOT recommended for new installations. If you choose to use this template, do not modify that copy. Copy the sample into the prefix.MICS.PARMS(IMSRLRT) in your test database unit and modify it to your specifications. Test for the desired results before installing the exit into your production IMS database unit.

The following example shows the calculation of relative longevity code based on a grouping of transaction IDs.

```
Certain transaction IDs are considered short, conversational,
or medium duration.  All transaction IDs not specifically
listed default to long.
```

```
* ABC'S  IMS RELATIVE LONGEVITY CODE DERIVATION ROUTINE
*
*
   ;
*
* THE FOLLOWING TRANSACTIONS WILL BE CLASSIFIED AS
* CONVERSATIONAL:
*
* TRANSID  APPLICATION
*  ----    ---------------------------------------
*  AUTH    APPLICATION AUTHORIZATION FUNCTION
*  RBAL    DEMAND DEPOSIT ACCOUNT BALANCE INQUIRY
*  TBAL    TIME DEPOSIT ACCOUNT BALANCE INQUIRY
*  UPAY    ADMINISTRATIVE PAYROLL FILE UPDATE
*
   ;
    IF
      TRANSACT = :'AUTH' OR TRANSACT = :'RBAL' OR
      TRANSACT = :'TBAL' OR TRANSACT = :'UPAY'
    THEN TRANTYPE = 'C';
*
* THE FOLLOWING TRANSACTIONS WILL BE CLASSIFIED AS
* SHORT:
*
* TRANSID  APPLICATION
*  ----    ---------------------------------------
*  RINQ    DEMAND DEPOSIT ACCOUNT VERIFICATION
*  TINQ    TIME DEPOSIT ACCOUNT VERIFICATION
*  INQU    CUSTOMER NAME AND ADDRESS INQUIRY
*  HELP    NEW USER TUTORIAL
*  IM--    (ANY TRANSACTION BEGINNING WITH 'IM')
*
   ;
    ELSE IF
      TRANSACT = :'RINQ' OR TRANSACT = :'TINQ' OR
      TRANSACT = :'INQU' OR TRANSACT = :'HELP' OR
      TRANSACT = :'IM'
    THEN TRANTYPE = 'S';
*
* THE FOLLOWING TRANSACTIONS WILL BE CLASSIFIED AS
* MEDIUM:
*
* TRANSID  APPLICATION
```

```
*  ----    ----------------------------------------
*  PRIN    TERMINAL PRINT SPOOLER
*  EVAL    ARITHMETIC UTILITIES
*  MEDM    ANOTHER MEDIUM TRANSACTION
*  ACCT    ACCOUNT CROSS INDEX
*  APAY    ADMINISTRATIVE PAYROLL TRIAL REPORT
*  R---    (ANY TRANSACTION BEGINNING WITH 'R')
*  T---    (ANY TRANSACTION BEGINNING WITH 'T')
*
 ;
    ELSE IF
      TRANSACT = :'PRIN' OR TRANSACT = :'EVAL' OR
      TRANSACT = :'MEDM' OR TRANSACT = :'ACCT' OR
      TRANSACT = :'APAY' OR TRANSACT = :'R' OR
      TRANSACT = :'T'
    THEN TRANTYPE = 'M';
*
* ALL OTHER TRANSACTIONS WILL BE CLASSIFIED LONG.
*
  ;
    ELSE TRANTYPE = 'L';
```

```
+-----------------------------------------------------------------------+
| INSTALLATION PREPARATION WORKSHEET: IMS Relative Longevity Code      |
|                                     Determination                     |
| PARMS Library Member is IMSRLRT                                       |
| Reference Sections: 7.3.1                                             |

+-----------------------------------------------------------------------+
|                                                                       |
| * VALIDATE FOR VALID SOURCE DATA, IF APPLICABLE:                      |
|                                                                       |
| IF                                                                    |
| (condition c-1)
____________________________________________________________  |
| (condition c-2)
____________________________________________________________  |
| (condition  . )
____________________________________________________________  |
| (condition  . )
____________________________________________________________  |
| (condition c-n)
____________________________________________________________  |
```

```
                         | THEN TRANTYPE = 'C';  /* CONVERSATIONAL TYPE */                    |
                         | ELSE IF                                                            |
                         | (condition s-1)
_______________________________________________________   |
                         | (condition s-2)
_______________________________________________________   |
                         | (condition  . )
_______________________________________________________   |
                         | (condition  . )
_______________________________________________________   |
                         | (condition s-n)
_______________________________________________________   |
                         | THEN TRANTYPE = 'S';  /* SHORT TYPE */                             |
                         | ELSE IF                                                            |
                         | (condition m-1)
_______________________________________________________   |
                         | (condition m-2)
_______________________________________________________   |
                         | (condition  . )
_______________________________________________________   |
                         | (condition  . )
_______________________________________________________   |
                         | (condition m-n)
_______________________________________________________   |
                         | THEN TRANTYPE = 'M';  /* MEDIUM TYPE */                            |
                         | ELSE TRANTYPE = 'L';  /* LONG TYPE */                              |
                         | (response data element adjustment logic, if any, goes here)        |

+--------------------------------------------------------------------------+
                         |
....5...10...15...20...25...30...35...40...45...50...55...60...65...70.. |

+--------------------------------------------------------------------------+
```

Figure 7-4. IMS Longevity Code Exit Worksheet

7.3.2 IMS Application Unit Definition

In CA MICS, data about IMS activity is stored by application unit identification in the following files:

```
IMS Application Unit Activity   -   (IMSIAU)
(transactions scheduled via standard IMS scheduling)

IMS Application Unit Activity   -   (IMS_IA)
(transactions scheduled via Fastpath EMH but Non-BMC
MAINVIEW for IMS Online)

IMS User Application Count File -   (IMSIAC)
```

The IMS application unit identifier is twelve bytes long and is named "IMSAPU". It is part of the key in the three above-mentioned files. Any information may be stored in this field by the application unit IMSAURT derivation exit, from the partial or full contents of any field in the IMS monitor data input to CA MICS (such as Transaction ID, Terminal ID, or PSBNAME).

The methods used for classification of IMS workload vary from installation to installation and may be based on one of the following approaches:

- o Classification by transaction identification

  Normally this approach utilizes a table lookup of IMS transaction ID to group the work. For example, transactions 'ABCD' and 'WXYZ' are always heavy resource drains, while other transactions are quick inquiry transactions.

- o Classification by service area requested

  This approach classifies work based on the service area exercised. For example, a bank may divide transactions into the application categories of demand deposits, time deposits, administrative services, and system support activity. This method typically identifies the application unit by a prefix of the IMS transaction ID (such as demand deposit transaction IDs all begin with the letter 'R').

- o Classification by user

  This approach classifies transaction data according to the user who requested the service. This method can use various ways to extract the identity of the requestor from the IMS terminal or line identifiers.

For example, you might define your application structure as having two parts, such as Project and Transaction Identifier, respectively. You might assign the first two bytes of the twelve byte IMSAPU field as Project Identification, and the next four bytes as the first four bytes of the IMS Transaction ID (the remaining bytes would be blank).

In this example, the actual values of the field might be:

```
         111
 123456789012   Project          Transaction
 ------------   ---------------  ------------------------
'DDRBAL      '  Demand Deposits  Account Balance Inquiry
'TDINQN      '  Time Deposits    Name and Address Inquiry
```

CA MICS does not support a means of changing the characteristics of the IMSAPU data element (by making it longer or shorter, for example).

Usage Notes:

1. There may be certain groups of transactions that are of more interest when considered as a group than when considered by individual transaction ID. Examples of such transactions are:

   o Transactions associated with purchased application packages, such as IBM Field Developed Programs.

   o Trivial applications, especially those frequently used, such as simple menu processors.

   The grouping together of such transaction data in this routine greatly decreases the amount of storage needed to represent Application Unit data in the CA MICS database.

2. Any data element that could be useful in later reporting from the Application Unit file MUST be coded into the application unit identifier if the data element is not contained in the rest of the record. An example is the data element TRANTYPE. It may be useful in some sites to be able to group application unit data by Short, Medium, Long, or Conversational transaction type. However, TRANTYPE is not normally part of the record in this file. It is therefore in your interest to consider saving TRANTYPE somewhere in the application unit ID.

These concepts apply to both the IMSIAU and IMS_IA files. The IMS_IA file is a CA MICS "parallel" file to the IMSIAU file and uses the same named elements and sequence fields. The IMSIAU file contains observations related to transactions utilizing normal IMS scheduling while the IMS_IA file contains observations for transactions utilizing Fastpath EMH scheduling.

7.3.3 Code the IMS Application Unit Exit (IMSAURT)

An IMS Application Unit Derivation Routine is a user-written routine, stored in prefix.MICS.PARMS(IMSAURT), that is invoked for each transaction processed. This SAS routine assigns a value to the IMSAPU data element discussed in the previous section. For example, if the IMSAPU data element is constructed from four different sources, this user routine has the responsibility of building the data value from those four fields for each transaction processed.

The user application unit routine is written in SAS. The testing and accuracy of the exit is the responsibility of the user. The worksheet for structuring the IMS Application Unit Derivation Routine is shown in Figure 7-5. However, the CA MICS IMS Analyzer provides a sample application unit derivation routine in member IMSAURT.

The application unit derivation routine has available for use each of the data elements contained in the IMS monitor data collection record. The data elements that are most often used to determine the application unit value are shown below:

```
TRANSACT  - The IMS transaction ID
LTERM     - The IMS terminal identifier
PSBNAME   - The IMS Program Specification Block name
TRANTYPE  - C/S/M/L/X for conversational, short, medium,
            long, or excessive transaction types
ISUITYPE  - M for MPP transactions
            B for BMP transactions
            C for conversational transactions
            F for Fastpath message driven transactions
            N for Fastpath non-message driven transactions
            U for Fastpath utilities
            E for Explicit APPC
            D for DBCTL transactions
            (blank) when the execution method cannot be
            determined.
```

The objective of the Application Unit derivation process is to build the data element IMSAPU from the data made available in the IMS transaction detail data.

CODING CONSIDERATIONS

Follow these guidelines for coding this CA MICS exit routine:

1. Validating the data to ensure correct application units is generally a prudent measure. When invalid

codes are encountered, they should be assigned to the application codes representing the site's overhead accumulator.

Note: Allowing invalid or garbage application units into the CA MICS database will significantly increase the number of records and therefore the DASD space requirements of the IMS Information Area files.

2. Ensure that all of the required fields are available for application unit construction. Here are examples:

   o Certain transactions may be executed without being attached to a terminal facility. This situation may occur for miscellaneous overhead transactions, such as certain BMP transactions. Such a data collection record would have no valid terminal identifier present.

   o Data created by the IMS FORMAT command reports the message destination identifier rather than the transaction identifier in the type 1 log record. You can use the IMSRLRT exit to set TRANSACT=TRANSMID when TRANXORG=F.

EXAMPLE

Assume that the installation has defined two application unit identification sources, and they are described as:

o Project is the first two characters of the terminal ID.
o Transaction is the transaction ID.

Furthermore, the values of Project may only be DD, TD, or AS. If this example were a banking application, these projects might be Demand Deposits, Time Deposits, and Administrative Services, respectively.

The SAS code defined for the user-application unit exit would be as follows:

```
* ABC'S  IMS APPLICATION UNIT DERIVATION EXIT
*
*   PROJECT IS BUILT FROM POSITIONS 1-2 OF THE TERMINAL ID.
*   TRANSACTION IS BUILT FROM THE INPUT TRANSACTION ID.
*
*   IF THE PROJECT IS NOT EQUAL TO DD, TD, OR AS,
*      THE CODE IS INVALID AND THE APPLICATION UNITS SHOULD
```

```
*       BE SET TO THE INSTALLATION OVERHEAD APPLICATION UNITS.
*
   ;
    IMSAPU = SUBSTR(LTERM,1,2) || SUBSTR(TRANSACT,1,4) ||
             '      ' ;  /* BLANK FILL */
    IF IMSAPU NE :'DD' AND IMSAPU NE :'TD'
    AND IMSAPU NE :'AS' THEN GO TO AURTOVHD ;
    GOTO AURTRTEX ;

AURTOVHD:
    IMSAPU = '**          ' ;
AURTRTEX:
```

```
+----------------------------------------------------------------------+
| INSTALLATION PREPARATION WORKSHEET: IMS Application Unit Routine    |
|                                      Definition                     |
| PARMS Library Member is IMSAURT                                     |
| Reference Section: 7.3.3                                            |

+----------------------------------------------------------------------+
|                                                                     |
| * VALIDATE FOR VALID APPLICATION UNITS, WHERE POSSIBLE ;            |
|     IF application data is not valid GOTO AURTOVHD ;                |
|
______________________________________________________________________ |
|
______________________________________________________________________ |
|
______________________________________________________________________ |
|
______________________________________________________________________ |
|
______________________________________________________________________ |
|
______________________________________________________________________ |
|
______________________________________________________________________ |
|
______________________________________________________________________ |
|
______________________________________________________________________ |
| * BUILD APPL. UNIT FIELDS;                                          |
```

```
                           |     IMSAPU =field source 1 ||                                     |
                           |            field source n ;                                       |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           |     GOTO AURTRTEX ;                                               |
                           | * LINKED ROUTINE TO BUILD INSTALLATION OVERHEAD APPLICATION UNITS;|
                           | AURTOVHD:                                                         |
                           |     IMSAPU ='overhead category' ;                                 |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           |
________________________________________________________________________ |
                           | AURTRTEX:                                                         |

+------------------------------------------------------------------------+
                           |
....5...10...15...20...25...30...35...40...45...50...55...60...65...70.. |

+------------------------------------------------------------------------+
```

Figure 7-5. IMS Application Unit Exit Worksheet

7.3.4 IMS Processing Options (IMSOPS)

This section shows you how to specify the operational statements that control CA MICS Analyzer Option for IMS processing.

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.                                             *
*************************************************************
```

CA MICS recognizes the IMS systems at your data center by the content of the prefix.MICS.PARMS(IMSOPS) library member that you code. It is possible to have multiple IMS systems at your data center, some with a significantly different environment from the standard. You must specify each system that you want CA MICS to process.

The IMSOPS member contains the following statements, described in detail below. A worksheet for recording the statement values for IMSOPS is shown in Figure 7-6. There

```
are two levels of options you must specify in IMSOPS.

Required Statements
-------------------
RESP Statement
OPTIONS Statement

Optional Statements
-------------------
IMSDUPS Statement
FORMAT/NOFORMAT Statement
TABLES Statement
WFI/NOWFI Statement
IMSALIAS Statement
WORK,MULTWORK, and NOMULT Statements
Internal Step Restart Statements
Incremental Update Statements
DETAIL Tape Processing Statements
```

7.3.4.1 RESP Statement

One RESP statement is required. This statement defines seven response-time threshold limits that are used by the IMS Analyzer for response-time distribution calculations.

The RESP statement has the following format:

```
RESP limit1 limit2 limit3 limit4 limit5 limit6 limit7
```

where:

```
limit1-limit7 = Each response time threshold limit is
                defined in seconds.  It can be one to four
                digits, with a maximum value of 3600.
                Sub-second response time limits are coded
                in the form .nnn.  The limits can be
                separated by one or more blanks.
```

Sample RESP Statement:

```
RESP 1 2 5 10 15 30 60
```

CA MICS accumulates response distribution counters for IMS interactions that are defined as follows:

```
Counter  Definition
-------  --------------------------------------------------
   1     Less than or equal to 1 second
   2     Greater than 1 second, but less than or equal to
         2 seconds
   3     Greater than 2 seconds, but less than or equal to
         5 seconds
   4     Greater than 5 seconds, but less than or equal to
         10 seconds
   5     Greater than 10 seconds, but less than or equal to
         15 seconds
   6     Greater than 15 seconds, but less than or equal to
         30 seconds
   7     Greater than 30 seconds, but less than or equal to
         60 seconds
   8     Greater than 60 seconds
```

DEFAULT: None

7.3.4.2 OPTIONS Statement

The OPTIONS statement is required and contains information that describes each IMS system the IMS Analyzer is to process. Below is an overview of all required and optional parameters associated with this statement.

```
+-----------------------------------------------------------+
| OPTIONS osysid imsid rel ddn int mon fp {optional parms } |
|                                  {BMP       | NOBMP     } |
|                                  {LDE       | NOLDE     } |
|                                  {FSCHED    | NOFSCHED  } |
|                                  {SQFE      | NOSQFE    } |
|                                  {WFI(n)    | NOWFI     } |
|                                  {FASTWFI   | NOFASTWFI } |
|                                  {FOLDUID   | NOFOLDUID } |
|                                  {IMSPLEX(xxxx)         } |
|                                  {USECPUOLD             } |
|                                  {+                     } |
+-----------------------------------------------------------+
```

The following parameters are REQUIRED:

```
  osysid = This is the 1-4 character original SYSID as
           specified in prefix.MICS.PARMS(SYSID). It
           identifies the computer system on which this IMS
           system executed.  The value of this identifier
           must match an ORGSYSID defined in
           prefix.MICS.PARMS(SYSID), but not all ORGSYSIDs in
           the SYSID member are required to have associated
           IMS systems.  The IMS Analyzer ignores IMS log
           data that is not defined through the OPTIONS and
           monitor statements.

           The IMS Analyzer AutoDetect Facility (ADF)
           can provide for automatic detection of the
           ORGSYSID parameter when the user is processing BMC
           MAINVIEW for IMS Online transaction log data.  By
           specifying the ORGSYSID parameter value as ????
           (4 question marks), the IMS Analyzer will extract
           the actual ORGSYSID value from the BMC MAINVIEW
           for IMS Online transaction log data.  This
           eliminates the need to modify the corresponding
           OPTIONS statement and run an IMSPGEN in the event
           the IMS region is relocated to a different
           operating system image.  If an IMS region is
           relocated, the requirement still exists that the
           ORGSYSID have a valid entry in the
           prefix.MICS.PARMS(SYSID) member; however, no
```

```
          changes would be required to the
          prefix.MICS.PARMS(IMSOPS) member.

imsid  = This value is used to uniquely identify an IMS
          system among all other IMS systems defined to the
          IMS Analyzer. The uniqueness of the definition is
          obtained by the combination of ORGSYSID and IMSID.
          That is, two IMS systems executing on two
          different computers may have the same IMSID, but
          the combination of the ORGSYSID and IMSID would be
          unique (the ORGSYSIDs are unique).  Two IMS
          systems running on the same computer must have
          unique IMSIDs if the ORGSYSID/IMSID combinations
          are to be different.  The value specified for
          IMSID may be any 1-4 character identifier.

          The IMS Analyzer AutoDetect Facility (ADF) can
          provide for automatic detection of the IMSID
          parameter whether you are processing BMC MAINVIEW
          for IMS Online transaction log data or not. By
          specifying the IMSID parameter value as ???? (4
          question marks), the IMS Analyzer will extract the
          ORGIMSID value from the BMC MAINVIEW for IMS
          Online transaction log data or IMS log records.
          The ORGIMSID extracted value is then assigned to
          the IMSID data element.  This eliminates the need
          to modify the OPTIONS statement and run an IMSPGEN
          in the event the IMS region ID is changed.  If the
          IMS region ID is changed and the user wants to
          maintain the existing IMSID for database
          continuity, the ORGIMSID can be mapped to the
          previous logical IMSID by using the IMSALIAS
          statement.

rel    = IMS data collection record formats may change from
          version to version of IMS. Specify the IMS version
          number in the form x.x. Currently supported
          versions are 6.1 through 13.1

          The IMS Analyzer AutoDetect Facility (ADF) can
          provide for automatic detection of the IMS release
          parameter whether you are processing BMC MAINVIEW
          for IMS Online transaction log data or not.  By
          specifying the IMS release parameter value as ???
          (3 question marks), the IMS Analyzer will extract
          the IMS release value from the BMC MAINVIEW for
          IMS Online transaction log data or IMS log
          records.  This eliminates the need to modify the
          OPTIONS statement and run an IMSPGEN when
```

```
          upgrading IMS regions to a new release of IMS.

ddn     = You must specify the source of the monitor data
          for this IMS system. Specify:

          ddname - The log data for this IMS system has been
                   recorded on a sequential file medium.
                   This ddname must match a ddname defined
                   in the INPUTIMS member of the
                   prefix.MICS.PARMS library used for JCL
                   generation, and must be unique among all
                   IMS systems defined (regardless of SMF
                   SYSID).  IMSDUMMY is a ddname reserved
                   for internal use and cannot be coded on
                   any OPTIONS statement.

int     = The default IMS checkpoint interval is the average
          number of minutes between IMS system checkpoints.
          The value specified here must be integer minutes:
          60 or less.  To find the value for your site,
          divide 1440 (the number of minutes in 24 hours) by
          the number of IMS system checkpoints taken per
          day.

mon     = You must specify the monitor that has collected
          data for this IMS system.  This parameter must be
          of the following form:

          IMF2   - BMC MAINVIEW for IMS Online is monitoring
                   this IMS system.

          NOCIMS - BMC MAINVIEW for IMS Online is either not
                   present, or, if present and active, is to
                   be ignored.  IMS data will be extracted
                   only from standard IMS log records.

          Notes: If any OPTIONS statement specifies NOCIMS
                 and does not specify LDE, the IMSSUS1 and
                 IMSSUS2 DD statements will be required in
                 the DAY060 step of the DAILY job JCL.

                 You must regenerate the DAILY job JCL for
                 the DAY060 step after the IMSPGEN has been
                 run if any OPTIONS statements have been
                 included as specified in the preceding
                 condition.

fp      = This parameter indicates whether Fastpath
          transactions from this IMS system are to be
```

included in the CA MICS IMS database. Code NOFP to exclude Fastpath database transaction statistics, FP to include transactions performing Fastpath database calls scheduled via the EMHB method or standard message scheduler, and MM to include all Fastpath database statistics for transactions scheduled via the standard message scheduling. Note that mixed mode statistics will be included in the IMSISU and IMSIAU files, while statistics for those transactions scheduled by the expedited message handler will be included in the IMS_IS and IMS_IA files.

Use the following table to determine this setting based on type of message queuing used and type of DB calls.

Message queuing is done via	Types of DB calls used		Code
	Full Function	Fastpath	
EMH only	not supported	yes	FP
Normal only	yes	yes	MM
Both	yes	no	NOFP
	no	yes	MM
	yes	yes	MM

The following parameters are NOT positional and can be specified in any order. If a parameter value is omitted, the default value will be used.

The following parameters are OPTIONAL:

BMP | NOBMP = This parameter indicates whether BMP transactions in this system are to be presummarized (collapsed) by the Log Data Reduction programs. Code BMP to activate presummarization only if the monitor specified is NOCIMS. Code NOBMP to prevent presummarization.

Coding NOBMP causes one transaction to be processed for each message that a message-driven BMP has executed. Specify BMP to collapse or presummarize message-driven BMP transactions, which summarize message-driven BMP activity by the unique combination of LTERM of the message terminal, transaction code, PSB name, and hour of day. Presummarizing such BMP transactions improves the performance of the IMS Analyzer's daily update.

DEFAULT: NOBMP

LDE | NOLDE = This parameter indicates if the input data came from an LDE source. If a value of LDE is specified, the IMS Analyzer assumes that the data has already been processed through the CA MICS IMS Log Data Extractor Option (LDE), a separate option. The CA MICS IMS Log Data Extractor Option Guide asks you to code LDE on the IMSOPS OPTIONS statement as part of the LDE installation procedure. NOLDE may be specified on the OPTIONS statement to indicate that the data has not been processed through LDE; however, this is not required since NOLDE is the default setting.

DEFAULT: NOLDE

FSCHED | NOFSCHED = This parameter indicates whether transaction records that are the result of "False Schedules" are to be output by the Log Data Reduction program. Specifying FSCHED will result in the output of False Schedule transactions to DAY060 processing. These transactions contain a CPU Time value even though there were no messages processed by the transaction. Specifying NOFSCHED will prevent the outputting of the False Schedule transactions.

DEFAULT: FSCHED

SQFE | NOSQFE = This parameter indicates whether Shared Queue "front-end" records are to be output by the Log Data Reduction programs. These records can be created when processing data from an IMS Shared Queues environment. This is a new transaction record type denoted by the presence of an x'FE' in byte one of the record. Specifying SQFE will result in the output of front-end transactions to DAY060 processing. Specifying NOSQFE will prevent the outputting of the front-end transaction records.

DEFAULT: NOSQFE

WFI(n) | NOWFI = This parameter on the OPTIONS statement indicates whether WFI AutoFlush will be activated; omitting this parameter from the IMSOPS member prevents WFI AutoFlush processing. This is a local (region specific) option that can be specified as either of the following:

OPTIONS ... WFI

OPTIONS ... WFI(n)

where n = a value from 1 to 65535

The WFI option is used to activate WFI AutoFlush processing. Adding an (n) after this parameter allows you to artificially lower the WFI AutoFlush horizon. For example, assume that there are no other "non-never ending" WFI transactions that have a PROCLIM greater than 10,000. By changing the AutoFlush Horizon to 10,000, transactions will be identified as being "never ending" at a much earlier point in time during processing.

Note: Since these transactions are now written to DAY060 more frequently, it may be necessary to increase the space requirements for the DAY060 WORK files.

DEFAULT: NOWFI

```
FASTWFI | NOFASTWFI = This parameter specifies whether the
                      immediate flushing of completed WFI
                      transactions will (FASTWFI) or will
                      not (NOFASTWFI) be enabled during
                      processing.  The FASTWFI feature is
                      for the benefit of users that process
                      large numbers of never-ending WFI
                      transactions which can cause serious
                      virtual storage constraints.

                      DEFAULT: NOFASTWFI


FOLDUID | NOFOLDUID = This parameter specifies whether the
                      RACFUSID will (FOLDUID) or will not
                      (NOFOLDUID) be translated to upper
                      case characters.

                      DEFAULT: FOLDUID


IMSPLEX(xxxx) = This parameter in the OPTIONS statement is
                used to provide the IMSplex Identification
                Name for the IMS region being defined.  The
                value of this parameter can be used to
                group logically related IMS data together.
                Although the most common usage for this
                value is to group IMS regions participating
                in an IMSplex, any type of logical grouping
                would be appropriate.  The value supplied
                by this parameter can be from 1 to 8
                characters in length.

                DEFAULT: None


USECPUOLD = This parameter forces DAY060 to read and use
            the pre-IMS V10.1 CPU time from the non-IMF
            transaction records. IMS V10.1 introduced the
            Transaction Level Statistics (TLS) collection
            to provide more accurate data for IMS
            transactions, particularly for WFI
            transactions. Prior to the TLS data, CPU time
            was only captured when the STIMER= option was
            set for IMS transactions. In addition, most
            users did not specify the STIMER= option for
            BMP type transactions which meant that no CPU
            time was collected for BMP transactions.
```

The pre-IMS V10.1 CPU time was captured in timer values (where 1 timer value equals approximately 26 microseconds.) With the introduction of the TLS records CPU time is now measured from the start of a transaction to the end of the transaction and is represented as a TOD clock value. The result of this is that the CPU time collection is much more granular and more accurate. The one draw back is that empirical observation shows the CPU time under the new method tends to reflect higher CPU times for transactions. Some users may want to continue utilizing the old CPU time collection method which can be accomplished by specifying the USEOLDCPU parameter on the OPTION statement for an IMS region.

DEFAULT: None

+ = Use the plus sign (+) as the last parameter on an OPTIONS statement set, in order to continue parameters onto successive input lines. The continuation character MUST be the last entry on a statement line. As many continuation lines can be specified as necessary.

Note: The continuation character may NOT be used to split and continue an individual parameter. All parameters prior to the continuation character must be completely specified.

DEFAULT: None

7.3.4.3 IMSDUPS Statement

This parameter is used to control whether duplicate logical IMS regions can be defined using the IMSALIAS statement (see below) mapping function. By default, duplicate logical IMS region definitions are not permitted. This is to prevent any potential corruption that could occur to the CA MICS database if multiple physical IMS regions were to be mapped to the same logical IMSID, which is stored in the database.

The IMSDUPS statement has the following format:

```
IMSDUPS(DISALLOW)
```

or

```
IMSDUPS(ALLOW)
```

Note: If you ever need to intentionally map multiple physical IMS regions to the same logical IMSID, specify the ALLOW option to avoid an error condition in IMSPGEN processing.

DEFAULT: DISALLOW

7.3.4.4 FORMAT/NOFORMAT Statement

Specifying FORMAT in this statement enables the CA MICS IMS Analyzer to process IMS FORMAT commands (/F formatname) from non-BMC MAINVIEW for IMS Online log data and store data representing that activity in the CA MICS database.

The FORMAT command is entered by a terminal operator. IMS retrieves the panel definition named in the format command and displays that panel on the operator's terminal. This activity does not cause a transaction to be scheduled, so no CPU or database resource use data is available. Also note that the type 1 record, which normally contains a transaction identifier, will contain a message destination identifier for FORMAT records.

The FORMAT command is represented by a transaction record created by the Log Data Reduction programs. Their CPU time and database resource use count data elements have a value of zero. Input queue time (ISUTMQIN) is equal to total response time (ISUTRSTM). The response transaction execution count (ISUTRANS) contains a value of 1, as does the executed unit of work count (ISUUOWCT).

The Scheduled Unit of Work Count, ISUSCHCT, represents the number of units of work for which IMS transaction schedule activity occurred. For FORMAT transactions, this element takes a value of zero. For all other transaction records, ISUSCHCT is identical in value to ISUUOWCT.

The FORMAT/NOFORMAT statement has the following format:

FORMAT

or

NOFORMAT

Coding the FORMAT statement causes FORMAT transactions to be added to the database as transaction records whose characteristics are explained above.

The NOFORMAT statement may be coded to prevent FORMAT transactions from being added to the database altogether.

Code only one FORMAT or NOFORMAT statement in IMSOPS. The statement may appear anywhere in the member.

DEFAULT: NOFORMAT

7.3.4.5 TABLES Statement

This statement is optional. It is used by the IMS Log Data Reduction (LDR) programs to calculate the sizes of various storage pools used during processing.

If you are using Mainview for IMS Online, and if IMF or IMFx is coded on all OPTIONS statements (see OPTIONS statement description below), the TABLES statement is required and will be checked for proper syntax. However, the information will not be used.

The IMS Log Data Reduction programs reduce IMS log data to produce IMS transaction records. These programs use storage pools for much of their processing. The default execution parameters define tables that should accommodate almost any standard IMS system's daily volume. You may elect to alter the table parameters to increase table sizes for larger systems, or to decrease table sizes for smaller systems in order to conserve virtual memory. If the Analyzer executes on an z/OS or higher system, the storage for the necessary tables will be obtained dynamically from above the 16MB line.

Use the TABLES statement to specify table sizes. The format of the TABLES statement is as follows.

For IMS Version 6.1 and above:

```
TABLES ldrrn sdrrn emhb rttbl trpool
```

where the parameters are:

```
 ldrrn  -  The number of long message queue records in the
           largest IMS system defined in the IMSOPS member
           with an OPTIONS statement.

           The minimum value for this parameter is 0 and the
           maximum value for this parameter is 999999.

           Notes: Set this parameter to 0 if you are using
                  Mainview for IMS Online.

                  The ldrrn pool is managed in such a way
                  that it will expand to meet increased
                  workload demand.  Therefore, the default
                  value is usually enough.

           DEFAULT: 5000

 sdrrn  -  The number of short message queue records in the
```

```
              largest IMS system defined in the IMSOPS member
              with an OPTIONS statement.

              The minimum value for this parameter is 0 and the
              maximum value for this parameter is 999999.

              Notes: Set this parameter to 0 if you are using
                     Mainview for IMS Online.

                     The sdrrn pool is managed in such a way
                     that it will expand to meet increased
                     workload demand.  Therefore, the default
                     value is usually enough.

              DEFAULT: 5000

    emhb   -  The number of EMHBs in the largest IMS system
              defined in the IMSOPS member by an OPTIONS
              statement.

              The minimum value for this parameter is 0 and the
              maximum value for this parameter is 999999.

              Note:  This parameter is no longer used and is
                     kept as a placeholder for compatibility
                     purposes.

              DEFAULT: 0

    rttbl  -  The largest number of fast-path recovery tokens in
              use at any one time by any IMS system defined in
              the IMSOPS member by an OPTIONS statement.

              This value varies based on the number of users and
              regions defined and the degree to which your
              system is tuned.  Consider using 3072 as an
              initial value and adjusting it based on the Normal
              Termination Report's FASTPATH RT TBL MAX USE
              value.

              Note:  When processing IMS Version 6.1 and above,
                     this parameter is no longer used. It should
                     be set to a value of 0 as a placeholder for
                     compatibility purposes.

              DEFAULT: 0

    trpool -  This value defines the number of TRAN cells that
              will be obtained in the primary allocation.  The
```

TRAN cells are used for construction of the transaction records that are created by the Log Data Reduction programs. It should typically be set to the largest number of transactions that can be active at any one time by any IMS system defined in the IMSOPS member by an OPTIONS statement.

This value varies based on the number of users and regions defined and the degree to which your system is tuned. Consider using the default as an initial value and adjusting it based on the Normal Termination Report's Section 5.3 Transaction Pool "High Water Mark" value.

The minimum value for this parameter is 0 and the maximum value for this parameter is 999999.

Note: Set this parameter to a number greater than 0 for IMS systems operating at IMS 6.1 or higher.

The TRAN pool is managed in such a way that it will expand to meet increased workload demand. Therefore, the default value is usually enough.

Caution should be exercised when setting the value of trpool. An extremely large value could cause GETMAIN failures because it exceeds the data-center-specified limit of above-the-16M-line storage allowed. This limit is set by the data center in the IEFUSI exit.

DEFAULT: 10000

7.3.4.6 WFI/NOWFI Statement

This optional parameter indicates whether WFI AutoFlush will be activated; omitting this parameter from the IMSOPS member prevents WFI AutoFlush processing. This is a global scope parameter and if specified, will apply to all IMS regions defined by OPTIONS statements within the IMSOPS member. The parameter can be specified as either:

WFI

or

WFI(n)

where n = a value from 1 to 65535

The WFI option is used to activate WFI AutoFlush processing. Adding the (n) after this parameter allows you to artificially lower the WFI AutoFlush horizon. For example, assume that there are no other "non-never ending" WFI transactions that have a PROCLIM greater than 10,000. By changing the AutoFlush Horizon to 10,000, transactions will be identified as being "never ending" at a much earlier point in time during processing.

Note: Since these transactions are now written to DAY060 more frequently, it may be necessary to increase the space requirements for the DAY060 WORK files.

DEFAULT: NOWFI

7.3.4.7 IMSALIAS Statement

This parameter is used in conjunction with the AutoDetect Facility (ADF). The ADF currently supports auto detection when processing BMC MAINVIEW for IMS Online transaction data and non-BMC MAINVIEW for IMS Online data that is fed directly to DAY060 (not via LDE). When ADF is in use, the ORGIMSID is extracted from the BMC MAINVIEW for IMS Online transaction data or the IMS log records. The ORGIMSID element is then used to establish the value of the IMSID element. If, for some reason, the existing value of the IMSID element is different from the ORGIMSID value, the IMSALIAS statement can be used to force a different value into the IMSID element. This would most typically occur as the result of an IMSID having changed over time, although the original value was maintained for consistency in the CA MICS database.

The IMSALIAS statement has the following format:

```
IMSALIAS(oimsid,imsid)
```

where:

```
oimsid = The physical IMSID as it would be extracted from the
         BMC MAINVIEW for IMS Online transaction data or IMS
         log records.

imsid  = The logical IMSID that is to be assigned to the
         IMSID data element in the CA MICS database.
```

Note: The mapping function of the IMSALIAS statement is only performed on BMC MAINVIEW for IMS Online log data that is being processed using the AutoDetect Facility. The log data for all IMS regions defined using the non-ADF OPTIONS statements is processed as before.

DEFAULT: None

7.3.4.8 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 two (2).
               The maximum is twenty (20).

        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:

- Run cccPGEN
- 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 parameters are specified:

```
MULTWORK ISW ISF IDB
```

The following files are eligible for multiple WORK support:

```
ISW    IMS Transaction Detail Work File
ISF    IMS FP Transaction Detail Work File
IDB    Database Activity File
```

The following section discusses changing the WORK option:

1 - Change the Number of Work Files

7.3.4.8.1 Change the Number of WORK Files

To change the number of work files used in the CA MICS IMS Analyzer processing in Step DAY060, 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.

7.3.4.9 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 three 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 and write IMSINC and IMSISY files to
                  DETAIL.


    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.

- 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.

- 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.

- 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:

  - SAS work data set,
    ```
    //cccXWORK DD DSN=prefix.MICS.cccXWORK,.....
    ```

  - 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.


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 - Enable Internal Step Restart

7.3.4.9.1 Enable Internal Step Restart

To enable the internal step restart in the CA MICS IMS 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.
```

```
+-----------------------------------------------------------------------------------------------
-------------+
         | INSTALLATION PREPARATION WORKSHEET: IMS Component Options Definition Worksheet
|
         |                                                                            |
         | PARMS Library Member is IMSOPS                                             |
         | Reference Sections: 7.3.4                                                  |

+-----------------------------------------------------------------------------------------------
-------------+
         |                                                                            |
         | FORMAT | NOFORMAT                                                          |
         |                                                                            |
         | IMSDUPS(________) ALLOW | DISALLOW                                         |
         |                                                                            |
         | IMSALIAS(______,______)                                                    |
         |        oimsid limsid                                                       |
         |                                                                            |
         | RESP _______ _______ _______ _______ _______ _______ _______               |
         |     Limit 1  Limit 2  Limit 3  Limit 4  Limit 5  Limit 6  Limit 7          |
         |                                                                            |
         | TABLES _____ _____ ____ _____ ______                                       |
         |       ldrrn  sdrrn  embh  rttbl  trpool                                    |
         |                                                                            |
         | TAPEISU                                                                    |
         |                                                                            |
         | TAPE_IS                                                                    |
         |                                                                            |
         | WFI | WFI(_____) | NOWFI                                                   |
         |                                                                            |
         |       +---------- positional parameters -----------+  +------------- optional parameters
--------------+ |
         |                                                 FP                              WFI(n)
|
         |          org          ims     log      int  IMF2      MM     BMP     LDE     FSCHED     SQFE
WFI            |
         |         sysid  imsid  rel    ddname   Min  NOCIMS  NOFP  NOBMP  NOLDE  NOFSCHED  NOSQFE
NOWFI  IMSPLEX(x) |
         |                                                                            |
```

```
         | OPTIONS  _____  _____  ___  ________  ___  ______  ____  _____  _____  ________  ______
______  __________ |
         |                                                                                       |
         | OPTIONS  _____  _____  ___  ________  ___  ______  ____  _____  _____  ________  ______
______  __________ |
         |                                                                                       |
         | OPTIONS  _____  _____  ___  ________  ___  ______  ____  _____  _____  ________  ______
______  __________ |
         |                                                                                       |
         | OPTIONS  _____  _____  ___  ________  ___  ______  ____  _____  _____  ________  ______
______  __________ |
         |                                                                                       |
         |                                                                                       |
         | MULTWORK | NOMULT   fff ... fff                                                       |
         | WORK     _______  n data_set_allocation_parameters                                    |
         | RESTART   _______  YES | NO                                                           |
         | INCRUPDATE _______  YES | NO                                                          |
         | INCRDB    _______  PERM | TAPE | DYNAM                                                |
         | INCRDETAIL _______  data_set_allocation_parameters                                    |
         | INCRDAYS  _______  data_set_allocation_parameters                                     |
         | INCRCKPT  _______  data_set_allocation_parameters                                     |
         | INCRSPLIT _______  YES | NO                                                           |
         |                                                                                       |

+-----------------------------------------------------------------------------------------------
-------------+
```

Figure 7-6. IMS Component Options Definition Worksheet

7.3.4.10 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):

- 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.

- 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.

- 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

- 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.

o 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.

o 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.

o 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.

o 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.

o 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.

o 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):

o Incremental update checkpoint file,
```
//IUCKPT   DD DSN=prefix.MICS.ccc.IUCKPT,.....
```

o Incremental update DETAIL
```
//IUDETAIL DD DSN=prefix.MICS.ccc.IUDETAIL,.....
```

o 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.

```
*************************************************************
*                                                           *
*  Note:  If your data center uses USRXfff exits or the     *
*         TAPEfff option, be sure to review the important   *
*         considerations in Section 10.1.2 of this          *
*         guide.                                            *
*                                                           *
*************************************************************
```

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.

- o 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.

- o 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.

- o 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.

- o 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).

o 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.

o 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.

o 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.
```

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

7.3.4.10.1 Implement Incremental Update

To implement incremental update in the CA MICS IMS Analyzer, follow the checklist provided below.

```
*************************************************************
*                                                           *
*  NOTE:  If you are using USRXfff exits, be sure to        *
*         review the important considerations in Section    *
*         10.1.2 of this guide before activating            *
*         incremental update.                               *
*                                                           *
*************************************************************


   ****************************************************
   *                                                  *
   *           IMPLEMENT INCREMENTAL UPDATE           *
   *                                                  *
   ****************************************************

___ 1.  Edit prefix.MICS.PARMS(cccOPS), where (ccc) is the
        component identifier:

        o  Specify the following:

           INCRUPDATE  YES

        o  If you want to store the incremental update
           database files on tape between incremental
           updates, specify this:

           INCRDB  TAPE  #gdgs

        o  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

        o  If you specified INCRDB TAPE or INCRDB DYNAM, then
           you must also specify this:

           INCRDETAIL  data_set_allocation_parameters
           INCRDAYS    data_set_allocation_parameters

        o  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

o  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).

- o 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.

- o 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.

7.3.4.11 DETAIL Tape 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:

o  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.

o  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)

o  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).
```

o 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.

o 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.

o 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.

o 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

7.3.4.11.1 IMS DETAIL Tape Supported Files

```
The CA MICS IMS Analyzer supports DETAIL tape processing for
the following files:

o IMSISU - IMS User Activity file
o IMS_IS - IMS User Activity File FP
```

7.3.4.11.2 DETAIL Tape JCL Customization Overview

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

+---------------------------+
| prefix.MICS.PARMS(JCLDEF) |
+---------------------------+
|                           |
| +----------------+        |
| |    TAPEPARM    |----------> Defaults for all tape
| |   TAPESMSPARM  |        |   data sets in unit
| +-------+--------+        |
|         |                 |
|         +--+              |
|            |              |
|            V              |   Defaults for all
|    +-------+---------+    |   DETAIL tape data sets
|    | DETAILTAPEPARM  |------> in unit.  Overrides
|    |DETAILTAPESMSPARM|    |   TAPEPARM and
|    +-------+---------+    |   TAPESMSPARM choices.
|            |              |
+------------|--------------+
             |
             |
             V
+---------------------------+
| prefix.MICS.PARMS(cccOPS) |
+---------------------------+
|                           |   Defaults for all
| +-----------------+       |   DETAIL tape data sets
| | DETAILTAPEPARM  |---------> for the component.
| |DETAILTAPESMSPARM|       |   Overrides all choices
| +-----------------+       |   made in (JCLDEF).
|          |                |
|          +--+             |
|             |             |
|             V             |    Individual data set
|     +-------+--------+    |    choices for one file
|     |    TAPEfff     |-------> (fff).  Overrides
|     |   TAPEfffSMS   |    |    all other tape
|     +----------------+    |    specifications.
|                           |
+---------------------------+
              |
```

```
          V

// DD statements and GDG generation
```

7.3.4.11.3 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.

7.3.4.11.4 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:

o Each parameter is described in detail below.

o 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.

o 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.

o 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.

o 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.

o 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.

o 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.

o 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.

o 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.

o 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.

o 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.

o 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.

7.3.4.11.5 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.

7.3.4.11.6 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.

7.3.4.11.7 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;
```

7.3.4.11.8 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.
```

7.3.5 Input DD Statements for IMS (INPUTIMS)

The input DD statements to define the IMS input files must be supplied in the INPUTIMS member of the prefix.MICS.PARMS library. A worksheet for coding this member is shown in Figure 7-7.

For example, if your IMS data were to be read from a data set named IMS.DAILY.DATA, input through ddname IMSSYS1 (ddnames are defined in CA MICS.PARMS(IMSOPS)), you would change the INPUTIMS member to contain the following:

```
//IMSSYS1 DD DISP=SHR,DSN=IMS.DAILY.DATA
```

There must be one DD statement in the INPUTIMS member for each IMS data source identified in the prefix.MICS.PARMS(IMSOPS) library member. The order in which the ddnames are specified is not important, but the order of data sets WITHIN a ddname must be chronological.

WARNING! Do not use a GDG base because the system will order the generations in the GDG base backwards, with the most current generation first. This condition will cause the IMS logs to be processed out of chronological order, the condition we want to avoid.

Note: Select the method of naming data sets carefully. Most online system monitors, when logging to tape, will have exclusive (DISP=NEW) use of the data set name of the file they are creating. If you are going to run the CA MICS update job while these monitors are running, you will have to use some other data set name and specify BLP (bypass label processing) in order to get around the standard tape label. In this case, you will have to construct a method to specify volume serial numbers for log tape input to CA MICS.

The IMS log record types needed for CA MICS to process can be stripped from the entire IMS log. Throwing away records that CA MICS does not need will make the IMS Analyzer run faster. The record types needed comprise about 15% of log tape for BMC MAINVIEW for IMS Online and 20% for NOCIMS, by volume.

```
       Source:
       IMS log,
       IMF, or
Type   both     Description
-----  -------  -----------
'01'X  IMS      Input Message
'02'X  IMS IMF  System Reconfiguration
'03'X  IMS      Output Message
```

```
   '06'X  IMS IMF  Log Open/Close
   '07'X  IMS IMF  Application Accounting
   '08'X  IMS      Application Schedule
 '0A07'X  IMS      CPI-C Driven End
 '0A08'X  IMS      CPI-C Driven Start
   '10'X  IMS IMF  Security Violation
   '14'X  IMS IMF  Dial Up Disconnected
   '15'X  IMS IMF  Dial Up Connected
   '16'X  IMS IMF  Sign On/Off
   '20'X  IMS IMF  Data Base Opened
   '21'X  IMS IMF  Data Base Closed
   '24'X  IMS IMF  Data Base I/O Error
   '31'X  IMS      DLI Communication's GU
   '32'X  IMS      Reject of Message
   '33'X  IMS      Free of Message
   '34'X  IMS      Cancel of Message
   '35'X  IMS      Enqueue of Message
   '36'X  IMS      Dequeue Save or Delete Message
   '38'X  IMS      Release Input Message
   '39'X  IMS      Release Output Message
   '4C'X  IMS IMF  Data Base Started/Stopped
   '40'X  IMS IMF  Checkpoint Record
   '41'X  IMS IMF  Application Checkpoint
   '42'X  IMS IMF  Begin New Log Tape
   '45'X  IMS IMF  Checkpoint Pool Statistics
   '47'X  IMS      Summary of Active Regions
..'56FA'X  IMS      Transaction Level Statistics
 '5901'X  IMS      Fast Path input message
 '5903'X  IMS      Fast Path output message
 '5911'X  IMS      Fast Path insert input message on EMHQ
 '5916'X  IMS      Fast Path insert output message on EMHQ
 '5921'X  IMS IMF  Fast Path DEDB ADS Open
 '5922'X  IMS IMF  Fast Path DEDB ADS Close
 '5923'X  IMS IMF  Fast Path DEDB ADS Status
 '5936'X  IMS      Fast Path output message deque
 '5937'X  IMS      Fast Path synch point complete
 '5938'X  IMS      Fast Path synch point failure
 '5950'X  IMS      Fast Path synch point by online
 '5953'X  IMS      Fast Path synch point by FP utilities
 '5955'X  IMS      Fast Path synch point seq buf obtained
   '69'X  IMS IMF  Unauthorized Dial Up
   '70'X  IMS      Online Change
 '7201'X  IMS      User Create
 '7202'X  IMS      User Delete
 '7203'X  IMS      User Modify
 '7204'X  IMS      LTERM Addition
 '7205'X  IMS      SMB Create
 '7206'X  IMS      LNB Create
 '7207'X  IMS      SMB Changed (Sharef Queues)
```

```
'F9'X      IMF  IMF Program Log Record
'FA'X  IMS IMF  Transaction Log Record
'FE'X  IMS      Shared Queues Event Record

Refer also to member $IMSINPT in Appendix B.
```

```
+----------------------------------------------------------------------+
| INSTALLATION PREPARATION WORKSHEET: INPUTIMS JCL Definitions         |
|                                                                      |
| PARMS Library Member is INPUTIMS                                     |
| Reference Section:  7.3.5                                            |
+----------------------------------------------------------------------+
|                                                                      |
|                                                                      |
| This definition is required to specify the DD statement for IMS data |
| which will be read by the DAILY CA MICS job.                         |
|                                                                      |
|   //@                                                                |
|   //@ WARNING: ALWAYS MAKE CHANGES IN PARMS(INPUTIMS) AND NOT        |
|   //@          &CNTL(DAILY).                                         |
|   //@          CHANGES MADE TO &CNTL(DAILY)                          |
|   //@          WILL BE GONE WHEN DAILY REGENERATED BY JCLGEN.        |
|   //@                                                                |
|  //inputims DD DISP=SHR,DCB=BUFNO=3,DSN=______________________       |
|  //         DD DISP=SHR,DCB=BUFNO=3,DSN=______________________       |
|                                                                      |
|                                                                      |
+----------------------------------------------------------------------+
```

Figure 7-7. INPUTIMS JCL Definition Worksheet

7.3.6 Input Needed to Generate IMS System Code (IMSPGEN)

The IMS CA MICS system code generation process is done via a SAS program executed as part of the job IMSPGEN. The applicable input prefix.MICS.PARMS members that must be completed prior to IMSPGEN execution are identified in the parentheses below for it to operate correctly.

- o IMS Processing Options Definition (IMSOPS)
- o Input DD statements for IMS (INPUTIMS)

Figure 7-7 identifies for the IMS CA MICS system code generation process, the prefix.MICS.PARMS members input, the output members and MACROs (a member may contain the definition of more than one SAS MACRO). The output libraries are at the database unit level (prefix).

7.3.7 IMS Suspend File DD Statements (IMSSPND)

The IMS suspend files (SUSPENDO and SUSPENDI) are used to hold IMS data for which a complete transaction cannot be constructed. Each file holds five tracks of data. The prefix.MICS.PARMS(IMSSPND) member is used to define the DD statements for these files. You must review these definitions to determine whether the default definitions are suitable for your installation. Consider the following:

1. Suspend files are NOT used when processing BMC MAINVIEW for IMS Online data or IMS LOG data that has gone through the CA MICS IMS Log Data Extractor Option.

2. You must edit the JCL for the SUSPENDI and SUSPENDO DD statements in prefix.MICS.PARMS(IMSSPND), specifying the UNIT= and VOL=SER= keywords to ensure that your IMS Analyzer suspend files are allocated to permanently allocated data sets.

   Remember that, by specifying VOL=SER, you must catalog the data sets because MVS will not do so automatically.

NOTE: This member contains CA MICS Generator Control Language statements in addition to the DD statements. These other statements should not be modified if you alter the DD statements.

A worksheet has been provided in Figure 7-8.

```
+------------------------------------------------------------------------+
                          | INSTALLATION PREPARATION WORKSHEET: IMSSPND JCL Definitions          |
                          |                                                                      |
                          | PARMS Library Member is IMSSPND                                      |
                          | Reference Section:  7.3.7                                            |

+------------------------------------------------------------------------+
                          |                                                                      |
                          | This definition is required to specify the DD statement for          |
                          | the IMS suspend files.                                               |
                          |                                                                      |
                          |                                                                      |
                          |                                                                      |
                          |                                                                      |
                          |                                                                      |
                          | //SUSPENDI DD DSN=&IMSSUS1,VOL=SER=______,                           |
SUSPENDI FILE DEFINED---> | //          DISP=(MOD,CATLG,CATLG),SPACE=(CYL,(2,2)),                |
```

```
                          | //        UNIT=________,DCB=(RECFM=VB,LRECL=512,BLKSIZE=6160)     |
                          |                                                                  |
                          |                                                                  |
                          | //SUSPEND0 DD DSN=&IMSSUS2,VOL=SER=______,                       |
SUSPENDO FILE DEFINED---> | //         DISP=(MOD,CATLG,CATLG),SPACE=(CYL,(2,2)),            |
                          | //        UNIT=________,DCB=(RECFM=VB,LRECL=512,BLKSIZE=6160)     |
                          |                                                                  |
                          |                                                                  |
                          |                                                                  |
                          |                                                                  |
                          |                                                                  |
                          |                                                                  |

+------------------------------------------------------------------------+
```

Figure 7-8. IMSSPND Suspend File DD Worksheet

7.3.8 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)

2 - DBMODEL Input Statements

7.3.8.1 Data Retention Specifications (FILE Statements)

Data retention specifications tell the CA MICS database how many cycles of each file, in each supported timespan, to save both online and in archive mode. Figure 7-9 is the worksheet for collecting this 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 will be 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 cut-off limit defined. The archive definitions have no impact on the size of the database and may be specified, whether or not 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 provides an underscored area for your definition, followed by the default value in parentheses. If the underscored area contains '00', the file is by default not active in the indicated timespan. Though you can activate files in these timespans (see the chapter entitled Database Tailoring Facility in the System Modification Guide), we recommend that you not do so due to the volume of data generated.

When specifying a retention limit, keep in mind that the number may never be less than 1 if the file has been defined to be active in the timespan. See the chapter entitled Database Tailoring Facility in the SMG.

EXAMPLE

The IMS Analyzer is comprised of one Information Area, IMS, consisting of seven files.

```
FILE IMS IMSISY 10 33 53 18 02 00 001 001
FILE IMS IMSISU 00 02 00 06 02 00 000 001
FILE IMS IMS_IS 00 02 00 06 02 00 000 001
FILE IMS IMSIAU 00 02 00 06 00 00 000 001
FILE IMS IMS_IA 00 02 00 06 00 00 000 001
FILE IMS IMSIAC 00 10 00 18 02 00 000 001
FILE IMS IMSINC 33 00 00 00 00 00 000 000
```

```
+------------------------------------------------------------------------+
| INSTALLATION PREPARATION WORKSHEET:Database Data Retention Definitions |
|                                                                        |
| PARMS Library Member is DBMODEL                                        |
| Reference Sections:  7.3.8.1                                           |
+------+-----------------------------------------------+-------------------+
|      |          Online Database Retention          |  Archive Cut-Off  |
| File |DETAIL    DAYS   WEEKS   MONTHS  YEARS  TABLES | WEEKS    MONTHS  |
| Name | __(NA)  __(NA)  __(NA)  __(NA)  _(NA)  __(NA) |___ (NA)  ___ (NA) |
+------+-----------------------------------------------+-------------------+
|IMSISY| __(10)  __(33)  __(09)  __(06)  _(1)  00(00) |___ (053) ___ (024)|
|IMSISU| 00(00)  __(02)  __(00)  __(02)  _(1)  00(00) |___ (000) ___ (024)|
|IMS_IS| 00(00)  __(02)  __(00)  __(02)  _(1)  00(00) |___ (000) ___ (024)|
|IMSIAU| 00(00)  __(02)  __(00)  __(02)  _(0)  00(00) |___ (000) ___ (024)|
|IMS_IA| 00(00)  __(02)  __(00)  __(02)  _(0)  00(00) |___ (000) ___ (024)|
|IMSIAC| 00(00)  __(10)  __(00)  __(06)  _(1)  00(00) |___ (000) ___ (024)|
|IMSINC| __(33)  00(00)  00(00)  00(00)  0(0)  00(00) |000 (000) 000 (000)|
+------+-----------------------------------------------+-------------------+
|....5...10...15...20...25...30...35...40...45...50...55...60...65...70.. |
+------------------------------------------------------------------------+
```

Figure 7-9. Database Data Retention Worksheet

7.3.8.2 DBMODEL Input Statements

The DBMODEL member of prefix.MICS.PARMS provides the input to the Database Space Modeling Facility.

Update the DBMODEL member using the information collected on the worksheet in Figure 7-9. To actually perform the space modeling, submit the jobs as described in Section 2.3.4.2 of the PIOM.

Chapter 8: INSTALLATION

CA MICS IMS Analyzer installation is performed by following the instructions in the PIOM. Chapter 7 provides instructions for the correct definition of parameters specific to the IMS Analyzer. The SYSID, SITE, ZONE and other parameter files used by more than one CA MICS product are defined in Chapter 2 of the PIOM. Section 3.8 of the PIOM provides step-by-step checklists that you must follow to ensure the successful installation of IMS Analyzer. The CA MICS IMS Log Data Extractor Option (LDE) guide gives you the step-by-step checklist for installing LDE.

Chapter 9: PROCESSING

The processing information in this chapter provides an overview of how data from the CA MICS IMS Analyzer becomes part of the database.

This section contains the following topics:

9.1 Processing Overview (see page 451)
9.2 Daily Update Processing Flow (see page 452)

9.1 Processing Overview

The IMS Analyzer makes use of the standard database update and summarization facilities of CA MICS to maintain its data in the online and offline databases. IMS data is supplied to CA MICS in the DAY060 step of the DAILY database update job.

The daily update step:

- o Reads and formats the raw data
- o Maintains data integrity by eliminating duplicate data
- o Summarizes activity
- o Adds new cycles to the DETAIL and DAYS timespans
- o Updates the week-to-date and month-to-date cycles

A more detailed description of DAY060 processing is presented in the next section.

Weekly processing is performed by the WEEK060 and WEEK300 steps. The WEEK060 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 MONTH060 and MONTH300 steps. The MONTH060 step splits the month-to-date files into a new month-to-date and a new monthly '01' cycle. It also appends data to the year-to-date file. The MONTH300 step creates the monthly offline database files.

The optional yearly processing is performed by the YEAR060 step that splits the year-to-date files into a new year-to-date and a new cycle '01'.

9.2 Daily Update Processing Flow

The DAY060 step of the DAILY job processes IMS information.
Figure 9-1 illustrates the IMS Analyzer's processing flow.

```
       /---------------\
       |     START     |                                            +-------------+
       \/                                              |             |
               |                             DECODING  |         |                        +---+
PREPARATION   |                        PHASE    |        +-----------------------------------------|
A |
PHASE          |                                               |            |  TYPE = '01'X  Input
Message            +---+
               |                                               |            |        '03'X  Output
Message
               |                                           |           |        '07'X  Application
Accounting
               |                                           |           |        '08'X  Application
Schedule
               |                                               |            |       '0A07'X  CPI-C
Driven Terminate
       +---------------+                                       |            |       '0A08'X  CPI-C
Driven Start
       |  Delete Work  |                                        |            |         '31'X  DLI
Communication's GU
       |     Files     |                                        |            |        '35'X  Enqueue
of Message
       +---------------+                                        |            |        '36'X  Dequeue
Save or Delete
               |                                              |            |               Message
       +---------------+                                        |            | '59nn'X  Fast Path
records
       | Define Files, |                                          |             |
       |    Fields,    |                                          |             |
       | Lengths, and  |                          |         |                        +---+
       | Data Elements |                  |        +-----------------------------------------|
B |
       +---------------+                                   |           |  TYPE = '41'X  Application
Checkpoint   +---+
               |                                               |            |        '20'X  Data
Base Opened
       +---------------+                                       |            |        '21'X  Data
Base Closed
       |  Set Internal |                                       |            |        '24'X  Data
Base I/O Error
       |   Variables   |                                       |            |        '4C'X  Data
Base Started/Stopped
       +---------------+                                     |            |        '10'X  Security
Violation
```

```
               |            +---+                              |            |         '14'X  Dial
Up Disconnected
               +-------------| A |                              |            |         '15'X  Dial
Up Connected
INPUT          |            +---+                              |            |         '02'X  System
Reconfiguration
PHASE          |                                               |            |         '06'X  Log
Open/Close
       +---------------+                                       |            |         '42'X  Begin
New Log Data Set
       | Read Assembly |                                  |           |        '69'X  Unauthorized
Dial Up
       |    routine    |                                  |           |        '07'X  Application
Accounting
       |    Record     |                                       |            |         '16'X  Sign
On/Off
       +---------------+   +-------------+             |         |                         +---+
               |     At EOF  |    Print    |    /------\          |
+-----------------------------------------| C |
               +-------------|    Count    |----| STOP |          |            |  TYPE = 'FA'X IMF
Transaction Log       +---+
               |            |  Statistics |    \/          |            |         'F9'X IMF Program
Log
       *****************     +-------------+                      |            |
       *    _USRSEL    *                                          |            |
       *     exit      *                                          |            |
       ****************+                          |         |                         +---+
               |                             |       +---------------------------------------|
D |
               |                                          |           |  TYPE = '40'X  Checkpoint
Record       +---+
               |                                                  |            |
               |                                   |         |                         +---+
               +--------------------------------------------------+
+-----------------------------------------| E |
                                                                                  TYPE = '45'X
Checkpoint Pool          +---+

Statistics
```

Figure 9-1. IMS Analyzer Processing Flow Diagram (Part 1 of 5)

```
                                             DATA INPUT          /---\
                                             PHASE               | B |
                                                                 \/
                                                                   |
                                                                   |
                                                            +---------------+
```

```
                                                            |   Read Data   |
                                                            |    Elements   |
                                                            +---------------+
                                                                   |
                                                            +---------------+
                                                            | Set Incident  |
                                                            | Code and Text |
                                                            +---------------+
                                                                   |
                                                            +---------------+
                                                            | Derive Common |
                                                            |     Fields    |
                                                            +---------------+
                                                                   |
                                                            *****************
                                                            *   _USRSINC    *
                                                            *     Exit      *
                                                            *****************
                                                                   |
                                                            +---------------+
                                                            |   Output to   |
                                                            |    IMSINC     |
                                                            |     file      |
                                                            +---------------+
                                                                   |
                                                                   |
                                                                 +-+-+
                                                                 | A |
                                                                 +---+


Figure 9-1.  IMS Analyzer Processing Flow Diagram (Part 2 of 5)
                           /---\
                           | C |
                           \/
                             |                            +------------------------------+
                     +---------------+                    |                              |
                     |   Read Data   |                    |                              |
                     |    Elements   |                   |                     +---------------+
                     +---------------+                   |                     | Derive Common |
                             |                           |                     |     Fields    |
                     +---------------+                   |                     +---------------+
                     | Compute Data  |                   |                               |
                     |   Elements    |                   |                     *****************
                     +---------------+                   |                     *    Execute    *
                             |                           |                     *    IMSRLRT    *
                     +---------------+                   |                     *    Routine    *
                     |  Accumulate   |                   |                     *****************
```

```
                     |    Counts     |                     |                              |
                     +---------------+                     |                       ****************
                             |                             |                       *    _USRRLI    *
                             |                             |                       *     Exit      *
                             |                             |                       ****************
                             |                             |
                             |                             |                              |
                             |                             |                       ****************
                             |                             |                       *    Execute    *
                             |                             |                       *    IMSACRT    *
                             |                             |                       *    Routine    *
                             |                             |                       ****************
                             |                             |                              |
                             |                             |                       ****************
                             |                             |                       *    Execute    *
                             |                             |                       *    IMSAURT    *
                             |                             |                       *    Routine    *
                             |                             |                       ****************
                     ****************                      |                              |
                     *   _USRSINC    *                     |                       ****************
                     *     Exit      *                     |                       *   _USRSISY    *
                     ****************                      |                       *     Exit      *
                             |                             |                       ****************
                     +---------------+                     |                              |
                     |   Output to   |                     |                       +---------------+
                     |    IMSINC     |                     |                       |   Output to   |
                     |     file      |                     |                       |    IMSISY     |
                     +---------------+                     |                       |     file      |
                             |                             |                       +---------------+
                             |                             |                              |
                             +-----------------------------+                            +-+-+
                                                                                        | A |
                                                                                        +---+
```

Figure 9-1. IMS Analyzer Processing Flow Diagram (Part 3 of 5)

```
                           /---\
                           | D |
                           \/
                             |
                     +---------------+
                     |     Read      |
                     |    Subtype    |
                     +---------------+
                             |                                        +---------------+
                             |                                        |     Read      |    +---+
                             +----------------------------------------|     Data      |----| A |
                             | SUBTYPE = '01'X  Checkpoint Header     |   Elements    |    +---+
```

```
                             |                                       +---------------+
                             |
                             |                                       +---------------+
                             |                                       |     Read      |    +---+
                             +---------------------------------------|     Data      |----| A |
                             | SUBTYPE = 'FF'X  Assembly RTN         |   Elements    |    +---+
                             |                  CNT & SMB Stats      +---------------+
                             |
                             |                                       +---------------+
                             |                                       |     Read      |
                             +---------------------------------------|     Data      |
                               SUBTYPE = '98'X  Checkpoint Trailer   |   Elements    |
                                                                     +---------------+
                                                                             |
                                                                     +---------------+
                                                                     |   Calculate   |
                                                                     |   DURATION    |
                                                                     |  and STARTTS  |
                                                                     +---------------+
                                                                             |
                                                                     *****************
                                                                     *   _USRSISY    *
                                                                     *     Exit      *
                                                                     *****************
                                                                             |
                                                                     +---------------+
                                                                     |   Output to   |
                                                                     |    IMSISY     |
                                                                     |     file      |
                                                                     +---------------+
                                                                             |
                                                                     +---------------+
                                                                     |     Reset     |
                                                                     | Data Elements |
                                                                     +---------------+
                                                                             |
                                                                           +-+-+
                                                                           | A |
                                                                           +---+
Figure 9-1.   IMS Analyzer Processing Flow Diagram (Part 4 of 5)
                           /---\
                           | E |
                           \/
                             |
                     +---------------+
                     |     Read      |
                     |    Subtype    |
                     +---------------+
```

```
|                                       +----------------+
|                                       |      Read      |     +---+
+---------------------------------------|      Data      |----| A |
  SUBTYPE = '01'X  Dynamic Log Stats    |    Elements    |     +---+
            '02'X  Message Queue Poll   +----------------+
                     Statistics
            '03'X  MFS Buffer Pool Stats
            '04'X  ISAM/OSAM Buffer Pool
                     Statistics
            '05'X  DMB/PSB/CIOP Pool
                     Statistics
            '06'X  Scheduling Activities
                     Statistics
            '08'X  VSAM Sub Pool
                     Statistics
            '09'X  Program Isolation
                     Statistics
            '0A'X  Latch Conflict
                     Statistics
            '0B'X  Dispatching Storage
                     Statistics
            '0E'X  Fixed Pool Statistics
            '0F'X  Dispatcher Statistics
```

Figure 9-1. IMS Analyzer Processing Flow Diagram (Part 5 of 5)

Step DAY060 consists of the following phases:

1 - Preparation Phase
2 - Input Phase
3 - Decoding Phase
4 - Data Input Phase
5 - Data Summarization
6 - Assembly Language Program Flow

9.2.1 Preparation Phase

During the Preparation Phase the IMS Analyzer defines its output files with a DATA statement. Constants are defined and set to their initial values along with internal control data elements, data elements and formats.

9.2.2 Input Phase

During the Input Phase, the IMS Analyzer reads the assembly language routines' record (see list of routines in section 10.3). At End-of-File, a count of statistics is printed.

9.2.3 Decoding Phase

During the Decoding Phase the IMS 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 IMS Analyzer reads the data elements from the assembly language routines' record (see list of routines in section 10.3) and performs computations to scale and accumulate data.

9.2.5 Data Summarization

The DAY060 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 Assembly Language Program Flow

The assembly language programs (see list of routines in Section 10.3) reduce IMS log data to produce IMS transaction records.

PART 1

- Initialize the program. Get the call parameter and test its contents. Decode the IMSOPS TABLES statement for table sizes, DDNAME, and IMSID. Check the presence of the DD statements in the execution JCL by doing a RDJFCB on the input and output file DCBs just identified. If anything is wrong with the format of the DDNAME passed or if the DD statements are not present, generate abend code 0001.

  Establish the ESTAE exit for the program's abnormal termination and snap dump routine.

  Establish the interface with SAS through an address displacement in the input DCB. Get storage for the working tables and initialize the tables. Open the suspend input file. Read transaction records from the suspend input file into the working Transaction Table at one entry per transaction record read. Close the suspend input file.

PART 2

- Process the IMS log input. Get a record from the input file. Decide, by translating the IMS log record type, if the record should be processed. Skip records CA MICS does not process. Records are processed by routines that bear the name LOGxx, where xx is the hexadecimal value of the IMS log record type, or by the routine COPYREC, which passes the log record directly to SAS for subsequent processing.

  Pass control to and from SAS using the routine called FROMSAS when SAS requests a record; the routine called TOSAS is entered from other parts of the program when a record is passed to SAS. These routines handle such functions as register save/restore, DCB read address pointer switching, and routine internal calling sequence maintenance.

PART 3

- Individual record type processing routines.

```
PART 4

 - Service routines.

PART 5

  - IMS log input end-of-file processing routine.  Either
    pass the entries from the working Transaction Table to
    the SAS logic as transaction record images or write the
    records to the suspend output file as suspended
    transactions.

    Decision logic is:

     o Entries go to the summary log output file if
       accounting apportionment has been done (code A in the
       processed records mask), or if the entry is more than
       one day old (the Julian date of the record that caused
       the last change of mask status is more than one and
       less than the Julian date of the last mask changing
       record of the current run).

     o All entries go to the suspend file if they do not meet
       the above summary log output criteria.

    The transaction table entries are processed through the
    old-to-new chain.  This method automatically preserves
    the aging of table entries when suspended records are
    input to the following processing cycle.

**********************************************************
*                                                        *
* IMS Log Data Reduction Utility Program (IMSLOGV6)      *
* Transaction Record Format (Full-Function X'FA00')      *
*                                                        *
**********************************************************


-------- ---------------- -----------------------------------
Name     Format           Contents
-------- ---------------- -----------------------------------
FFTRAN   DSECT
TRANPFX  DS    0F         Start of Record Prefix
TRANTT   DS    XL2        Record Transaction Type
TRANLV   DS    XL1        Record Log Utility Version
TRANFV   DS    XL1        Record File Services Version
         DS    XL4        Reserved
TRANENT  DS    0F         Start of Record Definition
TRANCDS  DS    CL8        Transaction Code
```

```
TRANLTRM DS    CL8        Logical Terminal - Origination
TRANUSER DS    CL8        User ID
TRANMID  DS    CL8        Message Input Descriptor
TRANNODE DS    0CL8       VTAM Node
TRANLINE DS    F          .. Physical Line Number
TRANPTRM DS    F          .. Physical Terminal Number
*
TRANUOW  DS    0CL34      Unit Of Work ID
TRANUOWS DS    0CL32      Unit Of Work ID for Locate
TRANUOWO DS    0CL16      Originating System
TRANORID DS    CL8        Originating System - IMSID
TRANORTK DS    CL8        Originating System - Store Clock
TRANUOWP DS    0CL16      Processing System
TRANPRID DS    CL8        Processing System - IMSID
TRANPRTK DS    CL8        Processing System - Store Clock
TRANUOWF DS    0CL2       Unit of Work ID Flags
TRANFLG1 DS    XL1        Unit of Work Flag Byte 1
TRANF1PT EQU   X'80'      Message Associated with CQSPUT
TRANF1RD EQU   X'40'      Message Associated with CQSREAD
TRANFLG2 DS    XL1        Unit of Work Flag Byte 2
TRANF2DL EQU   X'80'      Message Associated with CQSDEL
TRANF2MV EQU   X'40'      Message Associated with CQSMOVE
TRANUOWL EQU   *-TRANUOW  L' Unit Of Work ID
*
TRANMQUE DS    CL1        IMS Message Queueing
TRANMQGQ EQU   C'G'       .. Global Queues
TRANMQLQ EQU   C'L'       .. Local Queues
TRANSQPL DS    CL1        Shared Queues Processing Location
TRANPLLQ EQU   C' '       .. No Shared Message Queues
TRANPLFE EQU   C'F'       .. Front-End Location
TRANPLLA EQU   C'L'       .. Local-Affinity Location
TRANPLPR EQU   C'P'       .. Process Location
TRANPLRS EQU   C'R'       .. Response Location
TRANPLLS EQU   C'S'       .. Local-Select Location
*
TRANIDRR DS    XL4        Inbound Device Relative Record
TRANDRRN DS    XL4        Outbound Device Relative Record
*
TRANMASK DS    0CL8       FF Byte Mask of Records Processed
TRANMRCV DS    CL1        .. I - 01  Record Processed
TRANMIEQ DS    CL1        .. Q - 35  Record Processed
TRANMSCH DS    CL1        .. S - 08  Record Processed
TRANMGUE DS    CL1        .. G - 31  Record Processed
TRANMSND DS    CL1        .. O - 03  Record Processed
TRANMOEQ DS    CL1        .. E - 35  Record Processed
TRANMDEQ DS    CL1        .. D - 36  Record Processed
TRANMACT DS    CL1        .. A - 07  Record Processed
*
TRANSEQ  DS    0F         Transaction Set Sequencer
```

```
TRANPRFO DS    H          Output Number (reset for GU)
TRANPRFI DS    H          Number of Pgm-Pgm Switches
*
TRANMTYP DS    CL1        Message Type Qualifier
TRANMTRC EQU   C'R'       .. Message is Recoverable
TRANMTNR EQU   C'N'       .. Message is Non-recoverable
TRANFSTA DS    XL1        Field Status Indicators
TRANFSLV EQU   X'80'      .. LTERM Field Is Valid
TRANFSTV EQU   X'40'      .. TRANSACT Field Is Valid
TRANFSNV EQU   X'20'      .. VTAMNODE Field Is Valid
TRANFSUV EQU   X'10'      .. USERID Field Is Valid
*        EQU   X'08'      .. Reserved
*        EQU   X'04'      .. Reserved
*        EQU   X'02'      .. Reserved
*        EQU   X'01'      .. Reserved
TRANWFI  DS    CL1        WFI AutoFlush Indicator
TRANWFIA EQU   C'W'       .. Transaction AutoFlushed
TRANSTAT DS    XL1        Transaction Message Queue Status
TRANSTIN EQU   X'80'      .. Message Queue Input Status
TRANSTOT EQU   X'40'      .. Message Queue Output Status
TRANSTRB EQU   X'20'      .. Message Queue Rollback Status
*        EQU   X'10'      .. Reserved
*        EQU   X'08'      .. Reserved
*        EQU   X'04'      .. Reserved
*        EQU   X'02'      .. Reserved
*        EQU   X'01'      .. Reserved
TRANORG  DS    CL1        Origination Flag
TRANORGC EQU   C'C'       .. Origin is CNT
TRANORGF EQU   C'F'       .. Origin is Format
TRANORGN EQU   C'N'       .. Origin is Non-recoverable
TRANORGS EQU   C'S'       .. Origin is SMB
TRANDST  DS    CL1        Destination Flag
TRANDSTC EQU   C'C'       .. Destination is CNT
TRANDSTF EQU   C'F'       .. Destination is Format
TRANDSTN EQU   C'N'       .. Destination is Non-recoverable
TRANDSTS EQU   C'S'       .. Destination is SMB
TRANMSC  DS    CL1        Multiple System Couple Flag
TRANMSCY EQU   C'Y'       .. Orig/Dest are different
TRANMSCL EQU   C'L'       .. MSC with local execute
TRANLU6  DS    CL1        LU6 Segment Flag
TRANLU6Y EQU   C'Y'       .. Segment is present
TRANPSPT DS    CL8        Pgm-Pgm Switch Parent Trancode
TRANPSCT DS    CL8        Pgm-Pgm Switch Child Trancode
*
TRAN01TS DS    0CL12      Message Arrival DateTime Stamp
TRAN01DT DS    CL4        .. Message Arrival Date (01)
TRAN01TM DS    CL8        .. Message Arrival Time (01)
*
TRAN35IN DS    0CL12      Message Enqueue DateTime Stamp
```

```
TRAN35D1 DS    CL4        .. Message Enqueue Date (35 In)
TRAN35T1 DS    CL8        .. Message Enqueue Time (35 In)
*
TRAN08TS DS    0CL12      Application Schedule DateTime Stamp
TRAN08DT DS    CL4        .. Appl Schedule Date (08)
TRAN08TM DS    CL8        .. Appl Schedule Time (08)
*
TRAN31IN DS    0CL12      DLI Caller DateTime Stamp (31 Out)
TRAN31D1 DS    CL4        .. DLI Caller Date (31 Out)
TRAN31T1 DS    CL8        .. DLI Caller Time (31 Out)
*
TRAN03TS DS    0CL12      Message Output DateTime Stamp
TRAN03DT DS    CL4        .. Message Output Date (03)
TRAN03TM DS    CL8        .. Message Output Time (03)
*
TRAN35OT DS    0CL12      Originating Tran DateTime Stamp
TRAN35D2 DS    CL4        .. Originating Tran Date (35 In)
TRAN35T2 DS    CL8        .. Originating Tran Time (35 In)
*
TRAN07TS DS    0CL12      Application End DateTime Stamp
TRAN07DT DS    CL4        .. Application End Date (07/31 Out)
TRAN07TM DS    CL8        .. Application End Time (07/31 Out)
*
TRAN31OT DS    0CL12      Comm Caller DateTime Stamp (31 Out)
TRAN31D2 DS    CL4        .. Comm Caller Date (31 Out)
TRAN31T2 DS    CL8        .. Comm Caller Time (31 Out)
*
TRAN36TS DS    0CL12      Message Dequeue DateTime Stamp
TRAN36DT DS    CL4        .. Message Dequeue Date (36)
TRAN36TM DS    CL8        .. Message Dequeue Time (36)
*
TRANLATS DS    0CL12      Last Activity DateTime Stamp
TRANLADT DS    CL4        .. Last Activity Date
TRANLATM DS    CL8        .. Last Activity Time
*
TRANSQ6T DS    F          Subqueue 6 Residency Time (0.1 Sec)
TRANSQ6A DS    F          Accumulated SUBQ 6 Time (0.1 Sec)
*
TRANBKTS DS    0F         Resource Usage Buckets
TRAN7CPU DS    F          .. CPU TIME
TRAN7MGU DS    F          .. MSG GU
TRAN7MGN DS    F          .. MSG GN
TRAN7MIS DS    F          .. MSG ISRTS
TRAN7MPG DS    F          .. MSG DLETS
TRAN7DG1 DS    F          .. DB GU
TRAN7DG2 DS    F          .. DB GN
TRAN7DG3 DS    F          .. DB GNP
TRAN7DG4 DS    F          .. DB GHU
TRAN7DG5 DS    F          .. DB GHN
```

```
TRAN7DG6 DS    F          .. DB GHNP
TRAN7DIS DS    F          .. DB INSERTS
TRAN7DDL DS    F          .. DB DELETES
TRAN7DRP DS    F          .. DB REPLACES
TRANBKTL EQU   *-TRANBKTS L' Resource Usage Buckets
*
TRANINSG DS    H          Input Message Segment Count
TRANOUSG DS    H          Output Message Segment Count
TRANINCH DS    F          Input Message Character Count
TRANOUCH DS    F          Output Message Character Count
TRANBMPC DS    F          BMP Type Transaction Count
TRANABND DS    0XL4       Transaction ABEND Code
TRANAFLG DS    XL1        .. ABEND Flag Byte
TRANAFAB EQU   X'80'      .. .. Application ABEND'ed
TRANAFBF EQU   X'40'      .. .. Dynamic Backout Failed
TRANACDE DS    XL3        .. ABEND Code (System Format)
TRANRESP DS    F          Transaction Response Time (.01 Sec)
*
TRANKEY  DS    0CL10      Transaction Key Information
TRANSYS  DS    CL8        .. OrgSysId/IMSID
TRANIMS  DS    CL2        .. IMS Version
*
TRANAPOT DS    CL1        APPC/OTMA Transaction Indicator
TRANAPPC EQU   C'A'       .. Transaction is APPC
TRANOTMA EQU   C'O'       .. Transaction is OTMA
TRANPRTY DS    CL1        Transaction Priority (From 07)
TRANCLAS DS    CL1        Transaction Class (From 07)
TRANTYPE DS    CL1        Transaction Type (From 07)
TRANPST  DS    H          PST Number
TRANMMSG DS    H          Transaction Sequence Number
TRANPTSQ DS    H          Message Sequence Number
*
TRANPSB  DS    CL8        PSB Name
TRANJOB  DS    CL8        Dependent Region Jobname
TRANSTEP DS    CL8        Dependent Region Stepname
TRANDLTM DS    CL8        Logical Terminal - Destination
TRANMOD  DS    CL8        Message Output Descriptor
*
TRANFPMK DS    0CL10      FP Byte Mask of Records Processed
TRANFM01 DS    CL1        .. 5901 Record Processed
TRANFM03 DS    CL1        .. 5903 Record Processed
TRANFM50 DS    CL1        .. 5950 Record Processed
TRANFM55 DS    CL1        .. 5955 Record Processed
TRANFM36 DS    CL1        .. 5936 Record Processed
TRANFM37 DS    CL1        .. 5937 Record Processed
TRANFM38 DS    CL1        .. 5938 Record Processed
TRANFM53 DS    CL1        .. 5953 Record Processed
TRANFM11 DS    CL1        .. 5911 Record Processed
TRANFM16 DS    CL1        .. 5916 Record Processed
```

```
         DS    XL2        Reserved
TRANFP50 DS    F          K' 5950 Records
TRANFPDC DS    F          K' DEDB Calls
TRANFPDR DS    F          K' DEDB Read Operations
TRANFPMS DS    F          K' MSDB Calls
TRANFPOF DS    F          K' Overflow Buffers Used
TRANFPUW DS    F          K' UOW Contentions
TRANFPBF DS    F          K' Waits for DEDB Buffers
TRANFPOB DS    H          N' Buffer Latch Waits
TRANFPRT DS    XL1        Fastpath Region Type
         DS    XL1        Reserved
TRANFPIO DS    F          K' STIO (from 5953)
TRANFP55 DS    F          K' 5955 Records
TRANFPFL DS    XL1        Sync Point Failure Reason Code
TRANFPMM DS    CL1        Mixed-Mode Transaction Indicator
TRANMM   EQU   C'M'       .. Transaction is Mixed-Mode
TRANFSCH DS    CL1        False Schedule Indicator
TRANFS   EQU   C'F'       .. Transaction is False Schedule
TRANFLGS DS    XL1        Tran Element Flags
TRANONGQ EQU   X'80'      .. Element is on Global Queue
TRANOFGQ EQU   FF-TRANONGQ.. Remove from Global Queue
TRANONLQ EQU   X'40'      .. Element is on Local Queue
TRANONSQ EQU   X'20'      .. Element is on Staging Queue
TRANONMQ EQU   X'10'      .. Element is on Message Queue
TRANENQB EQU   X'08'      .. LU62 Enqueue Bypassed (No 35/36)
TRANLATE EQU   X'04'      .. Late 03 rec (arrived after 07)
*        EQU   X'02'      .. Reserved
*        EQU   X'01'      .. Reserved
TRANLOGR DS    F          Log record initiating FF element
TRANNCKP DS    F          N' Checkpoints/Syncpoints
TRANMLKH DS    F          Max(Locks Held) between CPs
TRANTLKH DS    F          Sum(Locks Held) for all CPs
TRANRTID DS    0CL16      Recovery Token ID
TRANRKEY DS    0CL12      Recovery Token - Search Key
TRANIID  DS    CL8        Recovery Token - IMSID
TRANSCH  DS    F          Recovery Token - Schedule Number
TRANCOM  DS    F          Recovery Token - Commit Number
TRANRTL  EQU   *-TRANRTID L' Recovery Token
*
TRANSTCK DS    XL8        Standard Suffix Store Clock
TRANSEQN DS    XL8        Standard Suffix Sequence Number
*
TRANRECL EQU   *-FFTRAN   L' FA00 Tran Record
```

Chapter 10: MODIFICATION

At times, additional system customizing is needed to tailor CA MICS to your installation. Many user exit points are provided within CA MICS. Each of these points corresponds to a position in the CA MICS logic where user modification:

- Is likely to occur, based on customer experience with the product.

- Presents only a slight possibility of compromising database or operational integrity.

- Is relatively easy to document and understand.

Using the CA MICS exit facilities to augment CA MICS processing logic is the safest method of system modification. Generally, the CA MICS System Administrator has four levels or methods by which CA MICS can be augmented, changed, and enhanced:

- CA MICS Standard Option and Parameter Definitions

  The diverse installation and definition options provide most users with adequate provisions for customizing CA MICS.

- Modification Through User Exits

  Often, installation-dependent requirements are not adequately addressed through the standard options and parameters. In these cases, you can use one or more of the user exits provided with CA MICS to insert user-written routines that satisfy the requirements.

- Extension Through User-Written Products

  Although most users do not at first consider this as a way of modifying CA MICS, the development of user-written products may be the most advantageous way of addressing the need to modify a standard CA MICS product. For example, many times it may be better to write a user product to handle additional SMF data than to attempt to modify the logic of the SMF Analyzer.

o System Code Modification

   Finally, if all else fails, you may be able to satisfy your installation's requirements by implementing a source code change.

This chapter explains the user exits that are provided with the IMS Analyzer. You must carefully explore whether it is necessary to develop a user exit routine. You should first ensure that the requirement cannot be satisfied through one of the standard options or definitions. To help you decide which process to use, contact the CA MICS Product Support Group.

BEFORE ATTEMPTING TO ACTIVATE AN EXIT, you should read and fully understand the information contained in Section 4.4 of the CA MICS System Modification Guide, User Exit Facilities. The following material is intended to supplement, not replace, that discussion.

The design, coding, testing, and implementation of CA MICS user exit routines should be approached with caution because errors may result that can corrupt the data. You should meticulously define and validate the exit routines to ensure that system integrity and performance will not be adversely affected.

The following sections identify the user exits available for IMS Analyzer processing, provide a general overview of product processing logic, and describe in detail each of the user exits.

This section contains the following topics:

10.1 Parameter Modification (see page 468)
10.2 Standard User Exits (see page 473)
10.3 Program Modifications to the Assembler Routines (see page 488)

10.1 Parameter Modification

This section provides details for tailoring the IMS Analyzer. The following topics are discussed:

1 - Modifying Parallel Files
2 - Incremental Update Considerations

10.1.1 Modifying Parallel Files

The IMS User Activity (IMSISU) and IMS Application Unit Activity (IMSIAU) files make use of parallel files. When you tailor either the IMSISU or IMSIAU file, you must make the corresponding changes in their parallel files. Those files are:

CA MICS File	Parallel File	Parallel Interim Work File
IMSISU	IMS_IS	IMSISW
		IMSISR
		IMSISF
IMSIAU	IMS_IA	none

To add or delete elements, follow the instructions in Section 6.2 of the System Modification Guide.

10.1.2 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:

USRXfff exit considerations with incremental update:

- o DETAIL tape files created in USRXfff exits
- o DASD files created in USRXfff exits

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.

10.2 Standard User Exits

Two types of user exits can be used to modify CA MICS logic: the general exits, which apply to all the installed products, and the product exits, which apply only to the product for which they are provided.

The general exits are briefly described in this guide. They are described in more detail in Section 4.3, User Exit Facilities, in the CA MICS System Modification Guide.

The product exits are classified according to their purpose and include product input, 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 database.

The IMS Analyzer provides the input exit,   _USRSEL. This exit can be used to select or exclude input data that meets special installation-defined criteria, to add data elements, or to modify record fields as they are read.

One output exit routine is provided for each product file. This output exit routine may 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.

The product parameter-related exits are also user exits, but they are defined as part of the standard CA MICS installation process. They are normally associated with other parameters or options.

The user exits for the IMS Analyzer are identified below and discussed in the sections noted:

1 - General Exits
2 - Input Exits
3 - Parameter-Related Exits
4 - Output Exits

10.2.1 General Exits

There are no general exits for the IMS Analyzer.

10.2.2 Input Exits

This section provides a description of the input exit that is shared by IMS with the other installed CA MICS products.

The exit description includes the name and title, a description of its purpose, when it is invoked, and whether or not it has an interface to the CA MICS Accounting and Chargeback product. It also shows which data elements are available, the special considerations to note, and a sample user exit.

```
+---------------+
| _ U S R S E L |  Input Record Selection Exit (_USRSEL)
+---------------+

DESCRIPTION:
   The _USRSEL exit provides the ability to select records
   that may be processed by the IMS input format routine.  It
   is similarly invoked to provide data selection for each
   CA MICS product.

INVOCATION:
   The  _USRSEL exit gains control during the input format
   phase of the IMS daily update process step (DAY060).  It
   is invoked after the account data SYSID header and other
   common fields have been read, but before the front-end
   record processing.  See Chapter 9 of this guide for more
   information.

ACCOUNTING INTERFACE:
   No interface is provided.

USES:
   This exit may be used to exclude records from processing
   based on their source, type, or origin.

ELEMENTS AVAILABLE:
   This exit is referenced by many different CA MICS
   products.  To help identify the caller, the ROUTINE
   variable is initialized with the module name.  The element
   SKIP_REC is initialized to zero just prior to the exit.
   If the exit code sets SKIP_REC to one, that record will be
   bypassed.

CODING RESTRICTIONS:
   Refer to the System Modification Guide, Section 4.3.2.1.

SAMPLE:
```

```
MACRO _USRSEL
  IF ROUTINE = 'DYIMSFMT' THEN
  IF IMSID = 'IMS1' OR IMSID = 'IMS2' THEN
  IMSID = 'PIMS';/* COMBINE BOTH PROD IMS SYSTEMS */
%
```

10.2.3 Parameter-Related Exits

This section provides a description of the parameter-related exits of the IMS Analyzer.

The exit description includes the name and title, a description of its purpose, when it is invoked, and whether or not it has an interface to the CA MICS Accounting and Chargeback product. It also shows which data elements are available, the special considerations to note, and a sample user exit.

```
+---------------+
| I M S A C R T |  IMS Account Code Derivation (IMSACRT)
+---------------+
```

DESCRIPTION:
   The IMSACRT exit provides the ability to derive the account code data elements described in sharedprefix.MICS.PARMS(IMSACCT).

INVOCATION:
   The IMSACRT exit gains control during the input format phase of the IMS daily update process step (DAY060). It is invoked while processing each unique data set.

ACCOUNTING INTERFACE:
   No interface is provided.

USES:
   This exit sets the values of the IMSACTx data elements.

ELEMENTS AVAILABLE:
   All data elements are available at this exit point.

CODING RESTRICTIONS:
   Refer to the System Modification Guide, Section 4.3.1.

```
EXAMPLE:
   See Section 7.2.3 of this guide for an example of code
   for a IMSACRT exit.


+---------------+
| I M S A U R T |  IMS Application Unit Derivation (IMSAURT)
+---------------+

DESCRIPTION:
   The IMSAURT exit provides the ability to derive the
   application unit data element IMSAPU.

INVOCATION:
   The IMSAURT exit gains control during the input format
   phase of the IMS daily update process step (DAY060).  It
   is invoked while processing each unique data set.

ACCOUNTING INTERFACE:
   No interface is provided.

USES:
   This exit sets the value of the IMSAPU data element.

ELEMENTS AVAILABLE:
   All data elements are available at this exit point.

CODING RESTRICTIONS:
   Refer to the System Modification Guide, Section 4.3.1.

EXAMPLE:
   See Section 7.3.3 of this guide for an example of code
   for a IMSAURT exit.

+---------------+
| I M S R L R T |  IMS Longevity Code Derivation (IMSRLRT)
+---------------+

DESCRIPTION:
   The IMSRLRT exit provides the ability to derive the value
   of the longevity code data element TRANTYPE.

INVOCATION:
   The IMSRLRT exit gains control during the input format
   phase of the IMS daily update process step (DAY060).  It
   is invoked while processing each unique data set.
```

```
ACCOUNTING INTERFACE:
   No interface is provided.

USES:
   This exit sets the value of the TRANTYPE data element.

ELEMENTS AVAILABLE:
   All data elements are available at this exit point.

CODING RESTRICTIONS:
   Refer to the System Modification Guide, Section 4.3.1.

EXAMPLE:
   See Section 7.3.1 of this guide for an example of code
   for a IMSRLRT exit.
```

10.2.4 Output Exits

```
Output exits are invoked just prior to adding the observation
to the DETAIL timespan of the file.  These exits can be used
to modify the value of elements or prevent selected
observations from being added.


+-----------------+
| _ U S R S f f f |
+-----------------+

DESCRIPTION:
   The _USRSfff exit provides the ability to modify or select
   observations immediately prior to output.  The files
   available (fff) are:

          ISY             _IA
          ISU             IAC
          _IS             INC
          IAU             IDB

INVOCATION:
   These exits are invoked in the information area processing
   phase of the DYIMSFM1 or #fffDSUM routines immediately
   before output of the file.  See Chapter 9 of this guide
   for more information.

ACCOUNTING INTERFACE:
   No interface is provided.
```

```
USES:
   The exit allows elements to be modified and observations
   to be excluded from processing.

ELEMENTS AVAILABLE:
   All elements in the file are available.

CODING RESTRICTIONS:
   See the System Modification Guide, Section 4.3.2.2.



+-----------------+
| _ U S R D f f f |
+-----------------+

DESCRIPTION:
   The _USRDfff exit provides the ability to calculate the
   cost data elements immediately prior to output.  The files
   and elements available are:

          File      Element
          ----      -------
          ISU       ISUCOST
          _IS       ISUCOST
          IAC       IACCOST

INVOCATION:
   These exits are invoked in the information area processing
   phase of the #fffDSUM routine immediately before output of
   the file.  See Chapter 9 of this guide for more
   information.

ACCOUNTING INTERFACE:
   No interface is provided.

USES:
   The exit allows the ISUCOST and IACCOST data elements to
   be calculated.

ELEMENTS AVAILABLE:
   All elements in the file are available.  Only the value of
   the fffCOST data element may be modified.

CODING RESTRICTIONS:
   See the System Modification Guide, Section 4.3.2.2.
```

```
+-----------------+
| _ U S R R L I   |
+-----------------+

This exit is obsolete.  The IMSRLRT exit is available at the
same invocation point and should contain any logic previously
held in _USRRLI.


+-----------------+
| _ U S R X f f f |
+-----------------+

DESCRIPTION:
   CA MICS does not support the DETAIL timespan directly for
   files that can have many observations.  These files are:

     ISU, _IS, IAU, _IA, IAC, IDB

   In the _USRXfff macro, user exits can be coded to retain
   detail observations when detail data is needed.  Detail
   data for these files can be written to the DETAIL timespan
   or to a separate user-defined data set on DASD or on tape.

*************************************************************
*                                                           *
*  NOTE:  If Incremental Update is active, be sure to       *
*         review the special considerations in Section      *
*         10.1.6.1 of this guide before invoking            *
*         USRXfff exits.                                    *
*                                                           *
*************************************************************

AUXILIARY MACROS FOR USE WITH USRXfff MACROS:
   Since there is such a large amount of data that is needed
   when processing the detail level observations, the IMS
   Analyzer divides the observations into two work files:

   o  The IMSISF work file contains only Fastpath (FP)
      EMH-scheduled transaction data for non-BMC MAINVIEW for
      IMS Online systems.

   o  The IMSISW work file contains full function (FF) and
      mixed (MM) transaction data for non-BMC MAINVIEW for
      IMS Online systems.  It contains all transaction data
      for non-BMC MAINVIEW for IMS Online systems.
```

In each example given in the checklist below, the %WRKMERG macro is used in the SET statement with values ISF or ISW assigned to WRK for the work files IMSISF or IMSISW.

INVOCATION:

To write DETAIL level data to the DETAIL timespan, use the checklist below.

___ 1. If the detail level file is to be created in each IMS unit for the complex, then expand the macro in sharedprefix.MICS.SOURCE(#IMSEXIT). If the detail level file is to be written only in some IMS units, then code the macro in the #IMSEXIT member of each prefix.MICS.USER.SOURCE library that requires it. In these cases the macro should be coded after the %INCLUDE SOURCE(#IMSEXIT) call.

In each example given below, the detail level file is written to the DETAIL timespan with the ddname "&IMSX.". However, the detail level file can be written to a user-defined file on DASD or on tape, requiring a special ddname in place of "&IMSX." and a corresponding DD statement in the JCL.

___ 2. Make backup copies of the #IMSEXIT members to be modified.

___ 3. Review the descriptions of the FILE statement as provided in Section 4.2.4.2 of the System Modification Guide (SMG).

___ 4. In sharedprefix.MICS.GENLIB(IMSGENIN), update the FILE statement for each file to be activated in the DETAIL timespan. Change the file status from "N" to "Y". See the System Modification Guide (SMG), Section 6.2.2.2. To write the file to a user-defined library, code "N" in the DETAIL timespan and "E" for the DAYS timespan.

NOTE: To write detail observations for any of the files, IMSIAC, IMSIAU, IMSISU, IMS_IA, or IMS_IS, the DAYS timespan must be active for that file. The DAYS timespan can be made active by coding an "E" in the DAYS position of the FILE statement.

___ 5. Update the NAME/NAMX statements in the IMSGENIN member of sharedprefix.MICS.GENLIB to activate or deactivate data elements in the DETAIL timespan of each file that will be activated. Elements that are in the IMSISU file but not in the IMSIAU and/or IMSIAC files can be added to either of these files by copying the NAME or NAMX statements that follow the IMSISU file statement to a position under the File statement for IMSIAU or IMSIAC. The prefix of the element name will need to be IAU or IAC, depending on where the element is to be placed. Thus, the ISUINCH element would become IACINCH in the IMSIAC file. In the same way, elements under the File IMSISF can be defined in the IMS_IA (with prefix IAU) or under IMS_IS (with prefix ISU).

For elements to be active at the detail level of IMSIAC or IMSIAU, they must be active in the DAYS timespan of the same file, and the corresponding elements must be active in the DAYS timespan of the IMSISW file. Also, for elements to be active in the detail timespan of IMS_IA, they must be active in the DAYS timespan of IMS_IA and IMSISF.

When an element is not active in the IMSISU file and its corresponding elements in the IMSIAC and IMSIAU files are not active, then it should be deactivated under the IMSISW file statement to save DASD space. When an element is not active in the IMS_IS or IMS_IA files, then its corresponding element should be turned off under the IMSISF file to save DASD space. Also, by turning off such summarizing elements as averages, minima, maxima, and response time distributions at the detail level, additional DASD space can be saved.

___ 6. Submit shareprefix.MICS.CNTL(IMSCGEN).

___ 7. To write to the DETAIL.IMSISU file on disk, use one of the following examples as a model for the code to be inserted within the _USRXISU macro in #IMSEXIT from sharedprefix.MICS.SOURCE or from prefix.MICS.USER.SOURCE.

```
/***************************************************/
/***               EXAMPLE ONE                   ***/
/***                                             ***/
/*** This will write the file in compressed format ***/
/*** (if compression is on) and will use the KEEP  ***/
/*** macro for the IMSISW file.                  ***/
/***************************************************/

MACRO _USRXISU
/*       CREATE DETAIL USER ACTIVITY FILE - FF       */
DATA &IMSX..IMSISU00(KEEP=%%ISWKEEP(TS=DETAIL)
                     COMPRESS=%%INTRST(CCC=IMS)
                     LABEL="&ISUSFDF");
  SET %%WRKMERG(WRK=ISW,CCC=IMS);
  BY %%ISUSEQ(TS=DETAIL);
  %%ISULEN(TS=DETAIL);
  %%ISUFMT(TS=DETAIL);
  %%ISULBL;
  RUN;
  %

/***************************************************/
/***               EXAMPLE TWO                   ***/
/***                                             ***/
/*** Write DETAIL.IMSISU to disk forcing the      ***/
/*** output to compressed format regardless of the ***/
/*** compression option and still using the KEEP   ***/
/*** macro for the IMSISW file.  If compression is ***/
/*** not desired, then change YES to NO for the    ***/
/*** COMPRESS keyword or eliminate the COMPRESS    ***/
/*** keyword altogether.                         ***/
/***************************************************/

MACRO _USRXISU
/*       CREATE DETAIL USER ACTIVITY FILE - FF       */
DATA &IMSX..IMSISU00(KEEP=%%ISWKEEP(TS=DETAIL)
                     COMPRESS=YES LABEL="&ISUSFDF");
  SET %%WRKMERG(WRK=ISW,CCC=IMS);
  BY %%ISUSEQ(TS=DETAIL);
  %%ISULEN(TS=DETAIL);
  %%ISUFMT(TS=DETAIL);
  %%ISULBL;
  RUN;
  %
```

```
/****************************************************/
/***              EXAMPLE THREE                 ***/
/***                                            ***/
/***     CREATE DETAIL USER ACTIVITY FILE - FF  ***/
/*** Write DETAIL.IMSISU to disk providing a    ***/
/*** user-written KEEP list, again using file   ***/
/*** compression.  Any elements in the KEEP list ***/
/*** must be active in the IMSISW file.  To turn ***/
/*** off compression, code COMPRESS=NO.         ***/
/****************************************************/

MACRO _USRXISU
/*       CREATE DETAIL USER ACTIVITY FILE - FF        */
DATA &IMSX..IMSISU00
     (KEEP=IMSID PSBNAME TRANSACT STARTTS ENDTS
           ISUTRSTM ISUTRANS ISUCPUTM COMPRESS=YES
           LABEL="&ISUSFDF");
  SET %%WRKMERG(WRK=ISW,CCC=IMS);
  BY %%ISUSEQ(TS=DETAIL);
  %%ISULEN(TS=DETAIL);
  %%ISUFMT(TS=DETAIL);
  %%ISULBL;
  RUN;
  %
```

___ 8. Use the following as a model for the code to write the IMS_IS00 file at the detail level. (Techniques from Step 7 could be used to enhance this macro.)

```
MACRO _USRX_IS
/*       CREATE DETAIL USER ACTIVITY FILE - FP        */
DATA &IMSX..IMS_IS00(%%_ISFILE(OP=FILEOPTS,TS=DETAIL)
                     LABEL="&_ISSFDF");
  SET %%WRKMERG(WRK=ISF,CCC=IMS);
  BY %%_ISSEQ(TS=DETAIL);
  %%_ISLEN(TS=DETAIL);
  %%_ISFMT(TS=DETAIL);
  %%_ISLBL;
  RUN;
  %
```

```
___ 9.  Code the _USRXIAU macro to write the detail data
        for IMSIAU00 as follows.  (Techniques from Step 7
        could be used to enhance this macro.)

   MACRO _USRXIAU
   /*         CREATE DETAIL APPL UNIT FILE - FF         */
   DATA &IMSX..IMSIAU00(%%IAUFILE(OP=FILEOPTS,TS=DETAIL)
                        LABEL="&IAUSFDF");
     SET %%WRKMERG(WRK=ISW,CCC=IMS,R=IAUREN);
     BY %%IAUSEQ(TS=DETAIL);
     %%IAULEN(TS=DETAIL);
     %%IAUFMT(TS=DETAIL);
     %%IAULBL;
     RUN;
     %

___ 10. Code the _USRX_IA macro to write the detail data
        for IMS_IA00 as follows.  (Techniques from Step 7
        could be used to enhance this macro.)

   MACRO _USRX_IA
   /*         CREATE DETAIL APPL UNIT FILE - FP         */
   DATA &IMSX..IMS_IA00(%%_IAFILE(OP=FILEOPTS,TS=DETAIL)
                        LABEL="&_IASFDF");
     SET %%WRKMERG(WRK=ISF,CCC=IMS,R=IAUREN);
     BY %%_IASEQ(TS=DETAIL);
     %%_IALEN(TS=DETAIL);
     %%_IAFMT(TS=DETAIL);
     %%_IALBL;
     RUN;
     %

___ 11. To write detail level data for IMSIAC00, code the
        _USRXIAC macro as follows.  (Techniques from Step
        7 could be used to enhance this macro.)

   MACRO _USRXIAC
   /*          CREATE DETAIL USER APPL COUNT            */
   DATA &IMSX..IMSIAC00(%%IACFILE(OP=FILEOPTS,TS=DETAIL)
                        LABEL="&IACSFDF");
     SET %%WRKMERG(WRK=ISW,CCC=IMS,R=IACREN)
         %%WRKMERG(WRK=ISF,CCC=IMS,R=IACREN);
     BY %%IACSEQ(TS=DETAIL);
     %%IACLEN(TS=DETAIL);
     %%IACFMT(TS=DETAIL);
     %%IACLBL;
     RUN;
     %
```

```
___ 12. Code the _USRXIDB macro to write detail level data
        for the IMSIDB00 file.  (Techniques from Step 7
        could be used to enhance this macro.)

   MACRO _USRXIDB
   /*         CREATE DETAIL DATABASE ACTIVITY          */
   DATA &IMSX..IMSIDB00(%%IDBFILE(OP=FILEOPTS,TS=DETAIL)
                     LABEL="&IDBSFDF");
     SET %%WRKMERG(WRK=IDB,CCC=IMS);
     BY %%IDBSEQ(TS=DETAIL);
     %%IDBLEN(TS=DETAIL);
     %%IDBFMT(TS=DETAIL);
     %%IDBLBL;
     RUN;
     %

   ****************************************************
   *  Repeat the following steps for each database    *
   *  unit containing the IMS Analyzer.               *
   ****************************************************

___ 13. Adjust the retention values for the DETAIL cycle
        for each IMS file in prefix.MICS.PARMS(DBMODEL) so
        that the right number of cycles will be retained.
        If the detail cycle is to be written to a user-
        defined SAS data library, then 00 should be coded
        for the detail cycle.  See Section 7.3.8.

___ 14. Submit the job in prefix.MICS.CNTL(CYCLEGEN).
```

ACCOUNTING INTERFACE:
No interface is provided.

USES:
The exits allow the DETAIL fff files to be created along with specialized data selection to be done. (See SELECTION CONSIDERATIONS below.)

ELEMENTS AVAILABLE:
All elements in the files are available.

CODING RESTRICTIONS:
See the System Modification Guide, Section 4.3.1.

```
SELECTION CONSIDERATIONS:
   The %ISWSET macro may be called by user exits to reduce
   the summarized versions of the IMSISU, IMSIAC, or IMSIAU
   files by reducing the IMSISW work file first.  Likewise,
   the %ISFSET macro can subset the IMSISF work file to
   reduce the number of transactions in the summarized
   timespans of the IMS_IS, IMSIAC, or IMS_IA files.  After
   the transactions in the work file are reduced, they will
   be reduced in each summary file that is populated from it.
   Here is the processing order for the files populated from
   IMSISW:

     first      - IMSIAC (subset in the _USRXIAC exit)
     second     - IMSISU (subset in the _USRXISU exit)
     third      - IMSIAU (subset in the _USRXIAU exit)
     last       - IMSISY

   The processing order for files populated from IMSISF is:

     first      - IMSIAC (subset in the _USRXIAC exit)
     second     - IMS_IS (subset in the _USRX_IS exit)
     third      - IMS_IA (subset in the _USRX_IA exit)
     last       - IMSISY

   If subsetting (deleting observations from the IMSISW file)
   is done in the _USRXIAC exit, then all the files IMSIAC,
   IMSISU, and IMSIAU will have a reduced number of
   observations.  However, if subsetting takes place in the
   _USRXIAU macro, then the IMSIAC and IMSISU files will have
   all the observations while the IMSIAU file will have a
   reduced number of observations.  This same logic applies
   to the IMSISF work file selection as well.

   Furthermore, the transaction-related fields in the IMSISY
   file are populated from a summarization of either the
   DAYS.IMS_IS file (if it exists) or the DAYS.IMS_IA file
   (if the DAYS.IMSISU file does not exist).

   The indirect exit method as explained in the CA MICS
   System Modification Guide, Section 4.3.1.2, activates the
   selection logic for the %ISWSET and %ISFSET macros.  The
   exit identifier is ISWSEL for %ISWSET and ISFSEL for
   %ISFSET.  The following examples show how they are used:
```

```
Example 1. Code this in prefix.MICS.USER.SOURCE(#IMSEXIT):

     MACRO _USRXIAU
       %%ISWSET;
     %
     %LET ISWSEL = USRSEL1;

  USRSEL1 is the name of a member of the same library and
  contains conditional logic such as the following:

     IF IMSAPU NE TESTAPPL;

Example 2. Code this in prefix.MICS.USER.SOURCE(#IMSEXIT):

     MACRO _USRX_IA
       %%ISFSET;
     %
     %LET ISFSEL = USRSEL2;

  USRSEL2 is the name of a member of the same library and
  contains conditional logic such as the following:

     IF IMSAPU NE TESTAPPL;
```

10.3 Program Modifications to the Assembler Routines

The assembler language programs in CA MICS that process IMS log records and construct a single record representing the composite picture of a transaction's activity are:

IMSLOGV6 (IMS 6.1 through IMS 9.1)
IMSLDR20 (IMS 10.1 and above)

To understand the modification descriptions in these sections, you must be familiar with IMS terms such as MPP, BMP, and PSB. Modification of any of the assembler language routines (listed above) should be done by a programmer familiar with IBM assembler code.

After modifying any of the assembler programs, reassemble them using the CA MICS IMSASM job.

Discuss any modifications to these programs with CA Technical Support before implementing them.

Typical modifications to these programs are identified and discussed in the following sections:

1 - Volume Processing Modifications
2 - CPU Time Validation Modifications
3 - Apportionment Algorithm Modifications

10.3.1 Volume Processing Modifications

There are two facilities in the CA MICS IMS Analyzer for handling high-volume IMS transactions. They are:

o BMP Collapse

o WFI AutoFlush

These features, described below, provide varying degrees of detailed information about IMS transactions through CA MICS, and reduce stress on the assembler routines' internal tables, decreasing their resource use ("de-stressing" the program).

Note: None of these features apply to processing CA MICS IMS data collected by BMC MAINVIEW for IMS Online Event Collector. That is, if the IMSOPS OPTIONS statement specifies IMF2, these features are not available.

BMP Collapse

This is the only feature selectable by a parameter option in prefix.MICS.PARMS(IMSOPS). Specifying BMP Collapse will cause the assembler programs to presummarize message-driven BMP transaction activity to the unique combination of LTERM of the message terminal, transaction code, PSB name, and hour of the day.

The presummarized records are held until an IMS accounting record (type 7) is found. Data from that record is apportioned over all the transaction executions shown by the presummarized data. Presummarizing response time data severely inhibits the usefulness of IMS service analysis data elements on the CA MICS database by aggregating response and input queue times before being processed by SAS logic.

Using presummarization destresses the assembler programs by combining multiple transaction execution statistics into a single internal table entry. (Without BMP Collapse, each entry in the table is used to contain one single transaction's execution statistics.)

BMP Collapse is activated by the BMP/NOBMP parameter of the OPTIONS statement in prefix.MICS.PARMS(IMSOPS) and the IMSPGEN process. For more information on coding the parameter and the IMSPGEN process, see Section 7.3.4 of this guide. When activated, this option presummarizes data for all message-driven BMP transactions. This option is not selectable by transaction code and does not apply to MPP WFI transactions.

This feature is most useful at sites where all of the following are true:

- One or more message-driven BMPs are active.

- Any number of terminals execute a large number of these transactions each.

- IMS transaction service analysis is performed on an aggregate basis or not at all.

WFI AutoFlush

WFI AutoFlush allows the assembler programs to pass a transaction record directly to SAS (or the intermediate output file for LDE). Output message queue time is ignored. Rather than saving individual transaction records until the IMS accounting (type 7) record is found, all resources accounted for by the type 7 record are put into the transaction record for the last transaction executed by the schedule.

This option destresses the assembler programs by allowing the statistics for individual transaction executions to occupy entries in the programs' internal tables for as short a period of time as possible. Data on individual transaction executions is provided, but with compromised resource use data.

This feature is most useful at sites where all of the following are true:

- Multiple WFI PSBs are simultaneously active (BMP or MPP).

- A large number of terminals execute a small number of these transactions each.

- IMS transaction accounting is done based on the count of transactions executed, and not resources consumed.

To activate the WFI AutoFlush feature, see Section 7.3.4.2.

10.3.2 CPU Time Validation Modifications

There are several IMS product maintenance issues that cause the CPU time field (DLRTIME) of the IMS log type 7 record to become corrupted. It is possible to cause CA MICS processing to ignore these corrupted values by modifying the appropriate Log Data Reduction (LDR) processing routines (listed in section 10.3).

Note: None of the material in this section applies to processing CA MICS IMS data collected by BMC MAINVIEW for IMS Online Event Collector. Also, none of the material here discusses the specifics of IBM IMS APARs or maintenance that explains or cures the problems with CPU time measurements. Consult INFO/MVS or IBMLINK for authorized information on these specifics.

DLRTIME FIELD CORRUPTION

DLRTIME is a fullword value of CPU time at offset X'18' in the type 7 IMS log record. The value is given in timer units where, for example:

```
X'00000001' = .00002604166667 seconds
X'10000000' =  6990.5067 seconds =  1:56:30.51 (hhmmssth)
X'40000000' = 27962.0267 seconds =  7:46:02.03
X'4FFFFFFF' = 34951.6385 seconds =  9:42:31.63
X'C0000000' = 83886.08   seconds = 23:18:06.08
X'F0000000' = 104K       seconds = 29:07:37.60
```

Although several problems have been reported with CPU time measures, the contents of the DLRTIME field typically become corrupted in one of the following two ways.

First, DLRTIME may contain a value in the spectrum of 24 hours, due to confused use of STIMER/TTIMER. In this case, DLRTIME will have a value greater than X'C0000000'.

Second, DLRTIME's collection area may be overlaid (this is regardless of the bit flags defined by IBM in the high order byte). Types of collection area overlays that have been observed include, but are not limited to, the Transaction Code or PSB Name due to a problem in Automated Operator Initiation or other processing routines. In this case, the contents of DLRTIME will be determined by the names given to transactions and PSBs at your site.

o If these names can be less than five bytes long, DLRTIME will contain X'40404040'.

o If the names are always five bytes long or more, DLRTIME may contain the EBCDIC value of characters 5-8 of the name. For example, transaction name "AZP142" overlaid into DLRTIME will produce a DLRTIME value of X'F4F24040'.

DLRTIME is defined as a signed algebraic data item, therefore, the value of the field cannot exceed X'4FFFFFFF'.

The object of modifying the LDR program is to correct DLRTIME before bad values get into the CA MICS IMS database. Usually, this means setting DLRTIME to zero because an algorithm to find the real CPU time used is not available.

Determine the possible contents of the corrupted DLRTIME field from IBM APARs or by examining the records. Also, determine the maximum reasonable DLRTIME value that could represent actual data. It is safe to set DLRTIME to zero if both of these are true:

o if DLRTIME takes a value greater than X'40000000'

o if it is reasonable to assume that no properly operating IMS MPP or BMP could use more than 7 hours and 46 minutes of CPU time during a single schedule

Such a reasonableness test may depend on your site's use of a multi-engine CPU complex. It would hardly be expected that small, single-threaded inquiry transactions would exceed 7 hours of CPU time in a schedule. However, a multitasking stress analysis program running under IMS may keep two or more processors very busy, especially considering the length of a schedule or BMP execution.

MODIFICATIONS FOR CPU TIME ADJUSTMENT

You can insert logic to examine criteria for recognizing corrupted contents of the DLRTIME field and to set the CPU time value CA MICS accepts for the transaction into the LDR program(s). It is not always practical to test the validity of data in the DLRTIME field in any SAS logic after a LDR program (listed in section 10.3) has apportioned CPU time over all transactions in a schedule.

Before making modifications, follow these steps:

1. Make a complete record of your modifications.

2. Copy the program code from sharedprefix.MICS.ASM to sharedprefix.MICS.LOCALMOD.CNTL to save an original copy of the logic.

3. Review any further CA MICS IMS maintenance for changes to the LDR program(s) that may interfere with these modifications. Resolve any line collision issues with help from CA Technical Support.

The CPU time validation criteria check is located by browsing the LDR program(s) and finding the character string CPUVALIDATION. The check is of the form:

```
*       CLI   LOG07CPU,X'80'      CHECK FOR BAD CPU TIME
*       BL    CPUOK               CPU TIME PROBABLY NOT BAD
        MVC   LOG07CPU,=F'0'      ZERO OUT BAD CPU TIME
```

Examining and resetting CPU time can be modified. Reset the CPU time saved in the apportionment staging variable LOG07CPU to the value intended if your conditions are met.

o Example 1: Enable the check by un-commenting the lines.

```
      CLI   LOG07CPU,X'80'      CHECK FOR BAD CPU TIME
      BL    CPUOK               CPU TIME PROBABLY NOT BAD
      MVC   LOG07CPU,=F'0'      ZERO OUT BAD CPU TIME
```

o Example 2: Set CPU time to 1 timer unit if the DLRTIME field is larger than X'40000000':

```
       CLC   LOG07CPU,=A(X'40000000')
       BL    CPUOK
       MVC   LOG07CPU,=F'1'
```

After modifying the LDR program(s), reassemble using the CA MICS IMSASM job.

10.3.3 Apportionment Algorithm Modifications

The BMC MAINVIEW for IMS Online Event Collector produces transaction records that contain resource time measures for all the resources used by each IMS transaction.

Beginning with IMS Version 10.1, and the introduction of the Transaction Level Statistics (TLS) log record, CPU time and other resource measurements can be captured at the transaction level. If TLS record generation is active, then the following discussion regarding CPU time and other resource apportionment is not longer applicable.

Without either BMC MAINVIEW for IMS Online or the presence of the TLS log records beginning with IMS Version 10.1, resource usage information is not presented by individual transaction. Rather, resource use statistics are contained in the type 07 log record. The type 07 log record is only produced by IMS at the end of a schedule, during which one or many transactions may have been processed.

Consider the following diagram, showing two transactions being processed in a schedule.

```
                 Residency time,
                 transaction A
                 (ISURESTM)
                |<---------------->|
                |                  |
     Input queue |    | Input queue | Residency
     time, tran A|    | time, tran B| time, tran B
     (ISUTMQIN)  |    | (ISUTMQIN)  | (ISURESTM)
    |<---------->|    |<----------->|<------------>|
    |            |    |             |              |
    -------------------------------------------------time->
    01 35S  08   31D  01 35S  03    31D    03      07

A:  01.35S.......31D.........03....31D

B:  ..................01.35S........31D....03......07
```

The input message for transaction A arrives first in the diagram. It enqueues on the transaction's SMB (35S, or a type 35 SMB enqueue record). IMS schedules the transaction (type 08 record) and processing begins.

Transaction A's input message is read by the application program (type 31D, Get Unique (GU) from the message queue by DLI). Meanwhile, transaction B's input message arrives (01) and enqueues on the same SMB (35S). Transaction A produces an output message (03), and finishes executing.

When the application program is ready to process the next transaction, it issues another GU from the IMS message queue (the second 31D record), getting transaction B's input. The program processes transaction B, produces an output message (the second type 03 record), and finishes.

The application program then performs another GU from the message queue. This time, there are no input messages waiting, so IMS terminates the application. After the application is terminated and the message processing region is quiesced, IMS writes the application accounting record (type 07).

The resource data in the type 07 log record represents resources used over the entire schedule. There is one measure of CPU time in this example: the sum of CPU time used by transactions A and B.

The CA MICS IMS Analyzer apportions the resources in a type 07 log record by the ratios of residency times of the transactions that executed in a schedule as illustrated below.

- Residency time for transaction A is 2 seconds.

- Residency time for transaction B is 4 seconds.

- Thus, the total residency time for both transactions was 6 seconds.

- The type 07 log record indicates that 3 seconds of CPU time were used by the application program during the schedule.

- Transaction A is given its "share" of the CPU time, which is 3 CPU seconds times 2 residency seconds divided by 6 residency seconds, or

  3 CPU sec * (2 res sec / 6 res sec) = 1 CPU second

- Transaction B is given its "share" of the CPU time, which is 3 CPU seconds times 4 residency seconds divided by 6 residency seconds, or

  3 CPU sec * (4 res sec / 6 res sec) = 2 CPU seconds

The theory behind this apportionment algorithm is that transactions that took longer to execute must have used more resources than their faster companions.

This method worked well when first introduced because IMS transaction residency times were larger due to the slower computers of the day. However, with the faster hardware and improved performance of later versions of IMS software, residency time apportionment is less meaningful. The theory is just as valid, but in practice there is a flaw in the method.

Residency time is calculated from the differences between two timestamps. For transaction A in the example, residency time is the difference between the timestamp on the first type 31D record and the timestamp on the second 31D. For transaction B, residency is the difference between the timestamps on the second type 31D record and the type 07 log record.

IMS presents all these timestamps in .1 second precision. Modern IMS systems can process many transactions in the same tenth of a second. Thus, many transactions processed by the IMS Analyzer are observed to have ZERO residency time.

There is an alternate method available for performing resource apportionment. This method uses the transaction count as the basis for apportionment. If n number of transactions executed during the schedule, then each transaction gets 1/n amount of the resource.

To use the alternate apportionment algorithm in the Log Data Reduction (LDR) program(s) (listed in section 10.3), find the SETC statement that defines the macro variable APPORTN. This variable may take only two values:

- o The first value performs apportionment by the ratios of residency time, as follows:

  ```
  &APPORTN SETC 'TRANRESP'
  ```

- o The second value performs apportionment by the number of transactions executed, as follows:

  ```
  &APPORTN SETC 'TRANBMPC'
  ```

Before making modifications, follow these steps:

1. Make a complete record of your modifications.

2. Copy the program code from sharedprefix.MICS.ASM to sharedprefix.MICS.LOCALMOD.CNTL to save an original copy of the logic.

3. Review any further CA MICS IMS maintenance for changes to the LDR program(s) that might interfere with your planned modifications. Resolve any line collision issues with help from CA Technical Support.

After modifying the LDR program(s), reassemble using the CA MICS IMSASM job.

Appendix A: MESSAGES

Messages

This appendix lists the messages generated by the CA MICS Analyzer Option for IMS. The messages are printed in both the MICSLOG and SAS log data sets. When reviewing the output of a job, first look at the MICSLOG data set because it will contain fewer lines of information, making it easier to determine whether a job or job step completed as expected. If the MICSLOG message does not provide enough information, consult this appendix for more information about the message. If you still need more information, consult the SAS log to help debug the problem.

The format of a MICSLOG message is:

```
hh:mm:ss.hs cccnnnnns ttttttttttttttttttttttttttttttt
```

where:

```
hh:mm:ss.hs      The time the message was issued.

cccnnnnns        The message identifier.  The message
                 identifier consists of three parts:

                  ccc    Component identifier

                  nnnnn  Message number

                  s      Severity identifier:

                           I = Information
                           W = Warning
                           E = Error

ttt...ttt         The message text.  If the text spans
                  more than one line, the message
                  identifier is repeated.
```

In addition to the message identifier and text, this appendix presents the reason for the message, suggests actions to take to resolve the problem, and refers you to additional sources of information to help you understand the problem and its resolution.

The CA MICS Analyzer Option for IMS gives other messages not printed on MICSLOG. The SAS log, or the MAPRINT DD in LDE output, contains output printed by one (or more) of the Log Data Reduction (LDR) programs (listed in section 10.3 of the CA MICS Analyzer Option for IMS Guide). This output is particularly interesting for analyzing the actions performed when processing the IMS log. The report indicates which monitor source was selected (BMC MAINVIEW for IMS Online or not) and the types of IMS log records input, records dropped, and transaction records created or passed.

Under catastrophic circumstances, LDE or a Log Data Reduction program may abend with a user 001 or 200 abend code. These abends are always accompanied by information on the SAS log or MAPRINT DD that indicates the cause of the problem and corrective action.

```
*********
* U0001 *
*********
A U0001 abend can be issued by MALDEXIT or IMSLOGV6.

The MAPRINT data set provides corrective actions, like the
following:

 o IMS VERSION ON THE PARM IS WRONG

   The LDEPARM data set is coded incorrectly.  Possible
   errors resulting in this message are:

     -  The version is not 61, 71, 81, 91, 10, or 11.
     -  The positional parameters are in the wrong columns.

 o NOT ENOUGH MEMORY

   The REGION size specified on the JOB or EXEC card is too
   small.  Increase the REGION size and rerun the job.

 o SPANNED RECORDS ON LOG INPUT

   IMS does not write the log file using RECFM=VBS (Variable
   Blocked Spanned).  To ensure that LDE and IMS Analyzer
   users input an IMS log data set (as opposed to an SMF
   data set) the code checks for spanned records.  If this
   abend occurs, correct the input data set and rerun the
   job.

*********
* U0200 *
*********
A U0200 abend can be issued by MALDEXIT or IMSLOGV6.

When MALDEXIT issues the message, either the release or
option specified in a LDEPARM member is incorrect.

When IMSLOGV6 issues the message, either a short or long
message table overflowed or the Fastpath EMHB table
overflowed.

The MAPRINT data set provides corrective actions like the
following:

   xxxxxxxx TABLE OVERFLOW,
   CORRECT PARMS(IMSOPS) TABLES STMT,
   RERUN IMSPGEN BEFORE DAILY RESTART
```

```
  The 'xxxxxxxx' in this message identifies the LDE TABLE
  that was specified as being too small.  See the IMSOPS
  documentation in Chapter 7 of the Analyzer Option for IMS
  Guide for more information about the IMSOPS TABLES
  statement.  If you are running at a non-CA MICS site,
  contact Technical Support at http://ca.com/support.


In addition, the SAS program can produce extended record
count statistics, useful in debugging some data source
problems.  The report is controlled by a SAS macro variable
called DEBUG.  The DEBUG variable may be set by adding the
following line to prefix.MICS.PARMS(EXECDEF):

   USERDEF IMSDEBUG YES

+-----------------+
| I M S 0 0 1 0 0 |
+-----------------+

   TEXT:        --------------------------------------------
                Record Type Summary for DDNAME: IMSE

                                           Records    Records
                Log Record                   Added    Deleted
                --------------------------------------------

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                headers for the data that follows.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 1 0 1 |
+-----------------+

   TEXT:        01-Input Message........:  %LOGC01    %LOGD01

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of input messages processed.
```

```
   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 1 0 2 |
+-----------------+

   TEXT:        02-System Reconfig......:  %LOGC02    %LOGD02

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of system-reconfiguration actions
                processed.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 1 0 3 |
+-----------------+

   TEXT:        03-Output Message.......:  %LOGC03    %LOGD03

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of output messages processed.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 1 0 6 |
+-----------------+

   TEXT:        06-Log Open or Close....:  %LOGC06    %LOGD06

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of log-open or log-close actions
```

```
                processed.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 1 0 7 |
+-----------------+

   TEXT:        07-Appl Terminate.......:  %LOGC07    %LOGD07

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of region-start and
                application-termination actions processed.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 1 0 8 |
+-----------------+

   TEXT:        08-Appl Schedule........:  %LOGC08    %LOGD08

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of application-schedule actions
                processed.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 1 1 0 |
+-----------------+

   TEXT:        0A-CPI-CI Start/Term....:  %LOGC0A    %LOGD0A

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
```

```
                the DEBUG data element is set.  Shows the
                number of application-schedule actions for
                explicit APPC transactions processed.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 1 1 6 |
+-----------------+

   TEXT:        10-Security Violation...:  %LOGC10    %LOGD10

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of terminal-security violations
                processed.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 1 2 0 |
+-----------------+

   TEXT:        14-Dial-Up Disconnect...:  %LOGC14    %LOGD14

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of dial-up disconnected actions
                processed.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 1 2 1 |
+-----------------+

   TEXT:        15-Dial-Up Connected....:  %LOGC15    %LOGD15

   TYPE:        Information
```

```
   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of dial-up connected actions
                processed.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 1 2 2 |
+-----------------+

   TEXT:        16-Sign On/Off Event....:  %LOGC16    %LOGD16

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of terminal signon and signoff records
                processed.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 1 3 2 |
+-----------------+

   TEXT:        20-Database Open........:  %LOGC20    %LOGD20

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of database-open actions processed.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 1 3 3 |
+-----------------+

   TEXT:        21-Database Close.......:  %LOGC21    %LOGD21
```

```
   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of database-close actions processed.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 1 3 6 |
+-----------------+

   TEXT:        24-Database I/O Error...:  %LOGC24    %LOGD24

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of database I/O errors processed.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 1 4 9 |
+-----------------+

   TEXT:        31-Message Get Unique...:  %LOGC31    %LOGD31

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of GUs on the message queue.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 1 5 3 |
+-----------------+

   TEXT:        35-Message Enqueue......:  %LOGC35    %LOGD35

   TYPE:        Information
```

```
   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of message enqueues.

   ACTION:      None

   REFERENCES:  None

+----------------+
| I M S 0 0 1 5 4 |
+----------------+

   TEXT:        36-Message Dequeue......:  %LOGC36    %LOGD36

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of dequeue save or delete messages
                processed.

   ACTION:      None

   REFERENCES:  None

+----------------+
| I M S 0 0 1 6 4 |
+----------------+

   TEXT:        40-Checkpoint Records...:  %LOGC40    %LOGD40

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of checkpoint records processed.

   ACTION:      None

   REFERENCES:  None

+----------------+
| I M S 0 0 1 6 5 |
+----------------+

   TEXT:        41-Batch Checkpoint.....:  %LOGC41    %LOGD41

   TYPE:        Information
```

```
   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of application checkpoints processed.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 1 6 6 |
+-----------------+

   TEXT:        42-Log Buffer Control...:  %LOGC42    %LOGD42

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of new log tapes used.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 1 6 9 |
+-----------------+

   TEXT:        45-IMS Statistics.......:  %LOGC45    %LOGD45

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of checkpoint-pool-statistic records
                processed.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 1 7 6 |
+-----------------+

   TEXT:        4C-Database Start/Stop..:  %LOGC4C    %LOGD4C

   TYPE:        Information
```

```
   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of database started or stopped
                actions processed.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 2 0 5 |
+-----------------+

   TEXT:        69-Unauthorized Dial-Up.:  %LOGC69    %LOGD69

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of unauthorized dial-up actions
                processed.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 2 4 9 |
+-----------------+

   TEXT:        F9-CIMS Program Acct....:  %LOGCF9    %LOGDF9

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of BMC MAINVIEW for IMS Online program
                records processed.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 2 5 0 |
+-----------------+

   TEXT:        FA-CIMS Transaction.....:  %LOGCFA    %LOGDFA
```

```
   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of BMC MAINVIEW for IMS Online
                transaction records processed.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 2 5 4 |
+-----------------+

   TEXT:        FE-SMQ Front-End........:  %LOGCFE    %LOGDFE

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of shared-message-queue front-end
                transactions generated.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 2 5 5 |
+-----------------+

   TEXT:        FF-LDR Synchronizer.....:  %LOGCFF    %LOGDFF

   TYPE:        Information

   REASON:      Printed at the end of IMS DAILY processing if
                the DEBUG data element is set.  Shows the
                number of LDE Synchronizer records that were
                passed from the Log Data Reduction Utility.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 2 5 6 |
+-----------------+
```

```
   TEXT:         --------------------------------------------
                    Totals..............: %LOGCTOT   %LOGDTOT
                 --------------------------------------------


   TYPE:         Information

   REASON:       Printed at the end of IMS DAILY processing if
                 the DEBUG data element is set.  Shows the
                 total numbers of added and deleted records.

   ACTION:       None

   REFERENCES:   None

+-----------------+
| I M S 0 0 3 0 0 |
+-----------------+

   TEXT:         DYIMSFMT Processing input data:
                  FileSet = %CTLFILE
                   DDName = %CTLDDN
                 Data set = %CTLDSN
                    SYSID = %CTLSYS
                    IMSID = %CTLIMS
                   OrgIMS = %CTLORG
                  IMSplex = %CTLPLX
                  Monitor = %CTLMON
                  Version = %CTLVER
                   Source = %CTLSRC

   TYPE:         Information

   REASON:       Printed at the beginning of each input DD
                 processed to describe the input options
                 specified in IMSOPS.

   ACTION:       None

   REFERENCES:   None

+-----------------+
| I M S 0 0 3 0 1 |
+-----------------+

   TEXT:         IMS SYSTEM %CTLIMS RECORD COUNT = %RECOUNT

   TYPE:         Information
```

```
   REASON:      The CTLIMS and RECORD COUNT shown in the
                message show the type of data input and the
                number of records processed.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 3 0 2 |
+-----------------+

   TEXT:        INVALID TRANTYPE= %TRANTYPE FOR PSBNAME=
                %PSBNAME TRANSACT= %TRANSACT
                EXPECTING TRANTYPE=S, M, L, C, OR X.

   TYPE:        Warning

   REASON:      An invalid transaction type was returned by
                the IMSRLRT user exit.  Valid types are S, M,
                L, C, and X.

   ACTION:      Correct prefix.MICS.PARMS(IMSRLRT) to assign
                TRANTYPE to a value of S, M, L, C, or X.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.3

+-----------------+
| I M S 0 0 3 0 3 |
+-----------------+

   TEXT:        DYIMSFMT PROCESSING INPUT DATA FROM:
                  DDNAME= %CTLDDN
                   SYSID= %CTLSYS
                   IMSID= %CTLIMS
                 MONITOR= %CTLMON
                 VERSION= %CTLVER
                  SOURCE= %CTLSRC

   TYPE:        Information

   REASON:      Printed at the beginning of each input DD
                being processed to describe the input options
                specified in IMSOPS.

   ACTION:      None
```

```
   REFERENCES:  None

+-----------------+
| I M S 0 0 3 0 4 |
+-----------------+

   TEXT:        %LOGUTMSG

   TYPE:        Information

   REASON:      Display of various information messages
                produced by the Log Data Reduction programs.
                Normally contains termination statistics.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 3 0 5 |
+-----------------+

   TEXT:        %LOGUTMSG

   TYPE:        Error

   REASON:      Display of various error messages produced by
                the Log Data Reduction programs.  Will
                display reasons and suggested actions for
                abnormal terminations.

   ACTION:      Follow recommendation in termination text.

   REFERENCES:  None

+-----------------+
| I M S 0 0 3 0 6 |
+-----------------+

   TEXT:        The IMS Log Infile User Exit processed:
                %MSGGET GET requests and %MSGPUT PUT requests

   TYPE:        Information

   REASON:      Printed at the end of each input DD being
                processed whose source is not LDE.  Displays
                the input and output requests processed by
                the IMS log IFUE.
```

```
   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 3 0 7 |
+-----------------+

   TEXT:        %RECOUNT Records processed for system %CTLIMS

   TYPE:        Information

   REASON:      Printed at the end of each input DD processed
                regardless of source.  Displays the count of
                records processed for each IMSID.

   ACTION:      None

   REFERENCES:  None

+-----------------+
| I M S 0 0 3 0 8 |
+-----------------+

   TEXT:        >>>>> DYIMSFMT ABNORMAL TERMINATION <<<<<
                IMS VERSION ON PARM IS WRONG

   TYPE:        Error

   REASON:      The IMS version specified on the OPTIONS
                statement in prefix.MICS.PARMS(IMSOPS) does
                not match the IMS version in use on the
                system.

   ACTION:      Correct the OPTIONS statement and rerun
                IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 0 4 0 0 |
+-----------------+

   TEXT:        IMS AutoDetection Facility

   TYPE:        Information

   REASON:      Printed at the beginning of AutoDetection
```

```
                LookAhead processing.

   ACTION:      None

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 0 4 0 1 |
+-----------------+

   TEXT:        IMF LookAhead processing results for:
                    FileSet = %FILESET
                     DDName = %DDNAME
                    Dataset = %DSNAME
                     OrgSYS = %ORGSYS
                     OrgIMS = %ORGIMS
                     CtlIMS = %CTLIMS
                     OrgVER = %LNGVER
                    IMS4510 = %GEN4510
                    IMS4571 = %GEN4571
                    IMS4551 = %GEN4551

   TYPE:        Information

   REASON:      Printed for each CA MICS Analyzer Option for
                IMS data source that has caused invocation of
                the AutoDetection LookAhead facility. This
                displays information about the data
                processed.

   ACTION:      None

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 0 4 0 2 |
+-----------------+

   TEXT:        >>> DYIMSFMT Abnormal Termination <<<
                    AutoDetect failed for DDname=%DDNAME
                    No records containing %AUTOFLD detected.

   TYPE:        Error

   REASON:      This indicates that AutoDetection LookAhead
                processing failed to detect any of the
                requested CA MICS Analyzer Option for IMS
```

```
                 OPTIONS fields during LookAhead processing.
                 The possible fields are being searched for
                 include ORGSYSID, ORGIMSID, and/or IMS
                 version information.

    ACTION:      None

    REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                 Section 7.3.4

 +-----------------+
 | I M S 0 0 4 0 3 |
 +-----------------+

    TEXT:        >>> DYIMSFMT Abnormal Termination <<<
                 AutoDetection found an invalid IMS version.
                 Valid versions are 6.1 through 13.1,
                 version detected=%LNGVER

    TYPE:        Error

    REASON:      This indicates that AutoDetection LookAhead
                 processing found an unsupported IMS version
                 value during processing of the IMS data
                 source.

    ACTION:      Remove the IMS log data with the unsupported
                 version from the input stream and rerun the
                 DYIMSFMT job step.

    REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                 Section 7.3.4

 +-----------------+
 | I M S 0 0 4 0 4 |
 +-----------------+

    TEXT:        IMS LookAhead processing results for:
                     FileSet = %FILESET
                      DDName = %DDNAME
                     Dataset = %DSNAME
                      OrgSYS = %ORGSYS
                      OrgIMS = %ORGIMS
                      CtlIMS = %CTLIMS
                      OrgVER = %LNGVER
                     IMS4510 = %GEN4510
                     IMS4571 = %GEN4571
                     IMS4551 = %GEN4551
```

```
   TYPE:        Information

   REASON:      Printed for each CA MICS Analyzer Option for
                IMS data source that has caused invocation of
                the AutoDetection LookAhead facility. This
                displays information about the data
                processed.

   ACTION:      None

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 0 4 0 6 |
+-----------------+

   TEXT:        LDE LookAhead processing results for:
                    FileSet = %FILESET
                     DDName = %DDNAME
                    Dataset = %DSNAME
                     OrgSYS = %ORGSYS
                     OrgIMS = %ORGIMS
                     CtlIMS = %CTLIMS
                     OrgVER = %LNGVER
                    IMS4510 = %GEN4510
                    IMS4571 = %GEN4571
                    IMS4551 = %GEN4551

   TYPE:        Information

   REASON:      Printed for each CA MICS Analyzer Option for
                IMS data source that has caused invocation of
                the AutoDetection LookAhead facility. This
                displays information about the data
                processed.

   ACTION:      None

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 0 0 0 |
+-----------------+

   TEXT:        IMSPGEN GENERATION STARTED.

   TYPE:        Information
```

```
   REASON:      The IMSPGEN process has entered its main
                program.

   ACTION:      None

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 0 0 1 |
+-----------------+

   TEXT:        USING %VALUE FAST PATH WORK FILE PAIRS.

   TYPE:        Information

   REASON:      This identifies work file allocation for
                Fastpath transaction detail processing.

   ACTION:      None

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 0 0 2 |
+-----------------+

   TEXT:        USING %VALUE FULL FUNCTION WORK FILE PAIRS.

   TYPE:        Information

   REASON:      This identifies work file allocation for
                full-function transaction detail processing.

   ACTION:      None

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 0 0 3 |
+-----------------+

   TEXT:        NOTE:  IMF DATA REDUCTION STATUS IS %KEYWORK

   TYPE:        Information
```

```
   REASON:      This identifies whether BMC MAINVIEW for IMS
                Online processing will be ACTIVE or INACTIVE
                in CA MICS DAILY IMS processing.

   ACTION:      None

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 0 0 4 |
+-----------------+

   TEXT:        NOTE:  NON-IMF DATA REDUCTION STATUS IS
                %KEYWORK

   TYPE:        Information

   REASON:      This identifies whether non-BMC MAINVIEW for
                IMS Online processing will be ACTIVE or
                INACTIVE in CA MICS DAILY processing.

   ACTION:      None

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 0 1 0 |
+-----------------+

   TEXT:        IMSOPS INPUT LINE--> %LINE

   TYPE:        Information

   REASON:      This prints the image of an input line from
                the prefix.MICS.PARMS(IMSOPS) member.

   ACTION:      None

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 0 9 8 |
+-----------------+

   TEXT:        IMSPGEN GENERATION ABNORMALLY TERMINATED.
                CORRECT ERRORS NOTED ABOVE AND EXECUTE AGAIN.
```

```
   TYPE:        Error

   REASON:      This message closes the MICSLOG output of the
                IMSPGEN if specification errors have
                occurred.

   ACTION:      Make the changes identified by previous
                MICSLOG messages and resubmit the IMSPGEN
                job.  Note that more than one error may have
                been identified in previous messages and ALL
                OF THE ERRORS must be corrected before
                successfully completing IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 0 9 9 |
+-----------------+

   TEXT:        IMSPGEN COMPLETED SUCCESSFULLY.

   TYPE:        Information

   REASON:      This identifies successful completion of the
                IMSPGEN process and successful generation of
                all necessary material.

   ACTION:      Continue any checklist you may be following.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 1 0 1 |
+-----------------+

   TEXT:        PARMS(INPUTIMS) DDNAME SPECIFIED MORE THAN
                ONCE, DDNAME=%KEYWORK

   TYPE:        Error

   REASON:      A ddname in the INPUTIMS member has been
                defined two or more times.  While this may
                not cause the CA MICS IMS DAILY job to
                abnormally terminate, it is incorrect.

   ACTION:      Either comment out or remove the incorrect
```

```
                JCL statements for the listed ddname in
                INPUTIMS; then resubmit the IMSPGEN job.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 1 0 2 |
+-----------------+

   TEXT:        PARMS(INPUTIMS) NO VALID DDNAMES SPECIFIED.

   TYPE:        Error

   REASON:      No valid JCL DD statements were found in the
                INPUTIMS member.  While this may not cause
                the CA MICS IMS DAILY job to abnormally
                terminate with a JCL error, it will cause
                DAILY SAS logic to abend.

   ACTION:      Install DD statements into INPUTIMS to
                identify the input file for every ddname used
                in an OPTIONS statement in
                prefix.MICS.PARMS(IMSOPS); then resubmit the
                IMSPGEN job.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 0 1 |
+-----------------+

   TEXT:        PARMS(IMSOPS) KEYWORD NOT RECOGNIZED,
                KEYWORD=%KEYWORK

   TYPE:        Error

   REASON:      A keyword has been misspelled.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 0 2 |
+-----------------+
```

```
   TEXT:        PARMS(IMSOPS) STATEMENT=WORK ERROR FOUND:
                FAST PATH WORK FILE PAIRS NOT IN RANGE 0-20,
                SPECIFICATION=%KEYWORD2

   TYPE:        Error

   REASON:      The specification either is not a number or
                is a number less than zero or greater than
                20.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 0 3 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=WORK ERROR FOUND:
                NORMAL WORK FILE PAIRS NOT IN RANGE 1-20,
                SPECIFICATION=%KEYWORD3

   TYPE:        Error

   REASON:      The specification either is not a number or
                is a number less than one or greater than 20.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 1 0 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=RESP ERROR FOUND:
                RESPONSE VALUE NUMBER %K NOT SPECIFIED.

   TYPE:        Error

   REASON:      Exactly seven numbers must be specified on
                the RESP statement.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4
```

```
+-----------------+
| I M S 0 3 2 1 1 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=RESP ERROR FOUND:
                RESPONSE VALUE NUMBER %K MUST BE POSITIVE,
                LESS THAN 3600.  SPECIFICATION=%KEYWORK

   TYPE:        Error

   REASON:      The response distribution threshold specified
                either is not a number or is not within the
                indicated bounds.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 1 2 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=RESP ERROR FOUND:
                RESPONSE VALUE NUMBER %K MUST BE GREATER THAN
                PREVIOUS VALUE.
                SPECIFICATION=%KEYWORK PREVIOUS
                VALUE=%LASTVAL

   TYPE:        Error

   REASON:      The response distribution threshold limit
                printed is out of order.  The limit numbers
                must be specified in ascending value.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 1 3 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=RESP ERROR FOUND:
                MORE THAN 7 RESPONSE VALUES SPECIFIED.

   TYPE:        Error
```

```
   REASON:      More than seven parameter words were found on
                the RESP statement.  Since only seven limits
                are supported, the IMSPGEN is aborted rather
                than accepting an eighth limit as a confusing
                comment.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 2 0 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=TABLES ERROR FOUND:
                LESS THAN 7 PARAMETER VALUES SPECIFIED.

   TYPE:        Error

   REASON:      The TABLES statement has too few values.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 2 1 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=TABLES ERROR FOUND:
                LONG DRRN TABLE COUNT MUST BE 1-999999.
                SPECIFICATION=%KEYWORD3

   TYPE:        Error

   REASON:      The value specified either is not a number or
                is not within the indicated bounds.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 2 2 |
+-----------------+
```

```
   TEXT:        PARMS(IMSOPS) STATEMENT=TABLES ERROR FOUND:
                SHORT DRRN TABLE COUNT MUST BE 1-999999.
                SPECIFICATION=%KEYWORD4

   TYPE:        Error

   REASON:      The value specified either is not a number or
                is not within the indicated bounds.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 2 3 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=TABLES ERROR FOUND:
                EMHB TABLE COUNT MUST BE 1-999999.
                SPECIFICATION=%KEYWORD4

   TYPE:        Error

   REASON:      The value specified either is not a number or
                is not within the indicated bounds.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 2 4 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=TABLES ERROR FOUND:
                RT TABLE COUNT MUST BE 1-999999.
                SPECIFICATION=%KEYWORD5

   TYPE:        Error

   REASON:      The value specified either is not a number or
                is not within the indicated bounds.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
```

```
                Section 7.3.4

+-----------------+
| I M S 0 3 2 2 6 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=TABLES ERROR FOUND:
                RT TABLE COUNT MUST BE GREATER THAN 0 IF
                ANY IMS RELEASE IS EQUAL TO 6.1

   TYPE:        Error

   REASON:      The OPTIONS statement indicates that data
                is from IMS release 6.1, but the TABLES
                statement indicates that data is from a
                release other than 6.1.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 3 0 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=OPTIONS ERROR FOUND:
                ORIGINAL SYSID LENGTH MUST BE 1-4.
                SPECIFICATION=%KEYWORD2

   TYPE:        Error

   REASON:      The value specified is longer than the
                maximum allowable length of 4 characters.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 3 1 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=OPTIONS ERROR FOUND:
                IMSID LENGTH MUST BE 1-4.
                SPECIFICATION=%KEYWORD3

   TYPE:        Error
```

```
   REASON:      The value specified is longer than the
                maximum allowable length of four characters.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 3 2 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=OPTIONS ERROR FOUND:
                ORGSYSID IMSID COMBINATION MUST ONLY APPEAR
                ON ONE OPTIONS STATEMENT.
                SPECIFIED ORGSYSID=%KEYWORD2 IMSID=%KEYWORD3

   TYPE:        Error

   REASON:      The combination of original SYSID and IMSID
                has been found on two or more OPTIONS
                statements.  This may be due to inadvertent
                duplication of a statement or typographical
                errors in the specified names of other
                OPTIONS statements.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 3 3 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=OPTIONS ERROR FOUND:
                MAXIMUM OPTIONS STATEMENTS PROCESSED, CONTACT
                CA MICS PRODUCT SUPPORT.

   TYPE:        Error

   REASON:      The current maximum number of OPTIONS
                statements is 50.  More than 50 OPTIONS
                statements were found in this IMSOPS member.
                Some OPTIONS statements must be removed.
                This may require installing other IMS
                database units, which will improve the
                overall performance of IMS data reduction by
```

```
                providing parallel processing of high volume
                data.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 3 4 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=OPTIONS ERROR FOUND:
                DDNAME MUST ONLY APPEAR ON ONE OPTIONS
                STATEMENT.
                SPECIFICATION=%KEYWORD5

   TYPE:        Error

   REASON:      Two or more OPTIONS statements have the same
                input ddname.  This is not allowed because
                the IMS log does not have the original SYSID
                available and does not have the IMSID
                available in all record types.  Thus, CA MICS
                associates these identifiers with input data
                by assigning the identifiers to all data read
                from a single input source.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 3 5 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=OPTIONS ERROR FOUND:
                DDNAME NOT SPECIFIED IN PARMS(INPUTIMS).
                SPECIFICATION=%KEYWORD5

   TYPE:        Error

   REASON:      The ddname specified is not defined in the
                JCL for input data definition.  The SAS daily
                logic will not find that INFILE identifier
                and will abend.

   ACTION:      Either correct the statement to the correct
```

```
                 ddname or add that ddname to the JCL in the
                 INPUTIMS member; then rerun IMSPGEN.

   REFERENCES:   CA MICS Analyzer Option for IMS Guide,
                 Section 7.3.4

+-----------------+
| I M S 0 3 2 3 6 |
+-----------------+

   TEXT:         PARMS(IMSOPS) STATEMENT=OPTIONS ERROR FOUND:
                 DDNAME LENGTH MUST BE 1-8, NAME FORMAT.
                 SPECIFICATION=%KEYWORD5

   TYPE:         Error

   REASON:       The ddname specified either is too long or is
                 not a proper ddname (that is, does not begin
                 with a letter or national character).

   ACTION:       Correct the statement and rerun IMSPGEN.

   REFERENCES:   CA MICS Analyzer Option for IMS Guide,
                 Section 7.3.4

+-----------------+
| I M S 0 3 2 3 7 |
+-----------------+

   TEXT:         PARMS(IMSOPS) Statement=OPTIONS warning:
                 IMS release specified is not supported,
                 OPTIONS statement will be bypassed.
                 Specification=%TOKEN4

   TYPE:         Warning

   REASON:       There is a typographical error in the IMS
                 version specification, or the version is no
                 longer supported or is not yet supported by
                 CA MICS.  For example, IMS version 1.2 is no
                 longer supported by the CA MICS Analyzer
                 Option for IMS.  The OPTIONS statement
                 containing the error is bypassed by IMSPGEN
                 and no code is generated to process the IMS
                 data specified by the OPTIONS statement.

   ACTION:       Either correct the statement in error and
                 rerun IMSPGEN or remove the OPTIONS statement
                 to avoid future warning messages.
```

```
   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 3 8 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=OPTIONS ERROR FOUND:
                MONITOR SPECIFIED MUST BE IMF2 OR NOCIMS.
                SPECIFICATION=%KEYWORD7

   TYPE:        Error

   REASON:      An incorrect monitor selection has been
                specified.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 3 9 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=OPTIONS ERROR FOUND:
                COLLECTION TIME INTERVAL MUST BE 1-60
                MINUTES.
                SPECIFICATION=%KEYWORD6

   TYPE:        Error

   REASON:      The value specified either is not a number or
                is not within the indicated bounds.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 4 0 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=OPTIONS ERROR FOUND:
                FAST PATH SWITCH MUST BE FP, MM OR NOFP.
                SPECIFICATION=%KEYWORD8
```

```
   TYPE:        Error

   REASON:      A selection other than those listed was
                specified.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 4 1 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=OPTIONS ERROR FOUND:
                BMP COLLAPSE SWITCH MUST BE BMP OR NOBMP.
                SPECIFICATION=%KEYWORD9

   TYPE:        Error

   REASON:      A selection other than those listed was
                specified.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 4 2 |
+-----------------+

   TEXT:        PARMS(IMSOPS) OPTIONS STATEMENT REQUIRED BUT
                NOT SPECIFIED.

   TYPE:        Error

   REASON:      No OPTIONS statement was recognized in the
                IMSOPS member processed.  At least one
                OPTIONS statement is required.

   ACTION:      Add the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 4 3 |
+-----------------+
```

```
   TEXT:        PARMS(IMSOPS) RESP STATEMENT REQUIRED BUT NOT
                SPECIFIED.

   TYPE:        Error

   REASON:      No RESP statement was recognized in the
                IMSOPS member processed.  One RESP statement
                is required.

   ACTION:      Correct the statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 4 4 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=OPTIONS ERROR FOUND:
                DDNAME IMSDUMMY IS A RESERVED NAME.
                CHANGE THE DDNAME AND RERUN IMSPGEN.

   TYPE:        Error

   REASON:      The ddname IMSDUMMY is a reserved name for
                internal use and is not allowed to be used in
                IMSOPS.

   ACTION:      Change the ddname and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 4 5 |
+-----------------+

   TEXT:        PARMS(IMSOPS) Statement=TABLES Warning:
                  TRAN cell count parameter missing.
                  Using default=%TRTBL

   TYPE:        Warning

   REASON:      The TRAN cell count size parameter value is
                missing from the TABLES statement. This is a
                warning that the default value of 10,000 will
                be used.
```

```
   ACTION:      The TRAN value setting may be added to the
                TABLES statement and IMSPGEN can be rerun.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 4 6 |
+-----------------+

   TEXT:        PARMS(IMSOPS) Statement=OPTIONS error found:
                  Invalid optional parameter, keyword=%PNUM,
                  specification=%KEYWORK

   TYPE:        Error

   REASON:      The keyword parameter specified in the
                message is in error. The specification
                value is invalid and must be corrected.

   ACTION:      Correct the specified parameter value on the
                OPTIONS statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 4 7 |
+-----------------+

   TEXT:        PARMS(IMSOPS) Statement=WFI error found:
                  AutoFlush Horizon must be 1-65535
                  Specification=%KEYWORD1

   TYPE:        Error

   REASON:      The WFI AutoFlush Horizon value is invalid.
                The value must be within the range of 1 to
                65535.

   ACTION:      Change the WFI AutoFlush Horizon value and
                rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 4 8 |
+-----------------+
```

```
   TEXT:        PARMS(IMSOPS) Statement=OPTIONS error found:
                  WFI AutoFlush Horizon value invalid
                  keyword=%PNUM specification=%KEYWORK
                  AutoFlush Horizon must be 1-65535

   TYPE:        Error

   REASON:      The WFI AutoFlush Horizon value is invalid.
                The value must be within the range of 1 to
                65535.

   ACTION:      Change the WFI AutoFlush Horizon value and
                rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 4 9 |
+-----------------+

   TEXT:        PARMS(IMSOPS) Statement=IMSDUPS error found:
                Invalid parameter specification on statement.
                Valid values are "ALLOW" or "DISALLOW".

   TYPE:        Error

   REASON:      IMSPGEN detected an invalid option value on
                the IMSDUPS parameter statement.

   ACTION:      Correct the IMSDUPS value on the parameter
                statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 5 0 |
+-----------------+

   TEXT:        PARMS(IMSOPS) Statement=IMSALIAS error found:
                ORGIMSID positional parameter is missing.

   TYPE:        Error

   REASON:      The ORGIMSID parameter value was omitted on
                the IMSALIAS statement. It is a required
                parameter.
```

```
   ACTION:      Add the ORGIMSID value on the IMSALIAS
                statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 5 1 |
+-----------------+

   TEXT:        PARMS(IMSOPS) Statement=IMSALIAS error found:
                Length of ORGIMSID value .gt. 4 characters.
                Specification=%KEYWORD2

   TYPE:        Error

   REASON:      The length of the ORGIMSID parameter on the
                IMSALIAS statement was greater than the
                maximum allowed 4 characters.

   ACTION:      Correct the ORGIMSID value on the IMSALIAS
                statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 5 2 |
+-----------------+

   TEXT:        PARMS(IMSOPS) Statement=IMSALIAS warning:
                Duplicate ORGIMSID value was encountered.
                First alias set values will be in effect.
                Specification=%KEYWORD2

   TYPE:        Warning

   REASON:      A duplicate ORGIMSID parameter value was
                detected on an IMSALIAS statement. The
                warning is issued because, if allowed to
                exist, only the first encountered alias
                specification will be used for region
                mapping.

   ACTION:      If the duplicate specification is, in fact,
                an error, correct the ORGIMSID parameter
                value and rerun IMSPGEN.
```

```
   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 5 3 |
+-----------------+

   TEXT:        PARMS(IMSOPS) Statement=IMSALIAS error found:
                IMSID positional parameter is missing.

   TYPE:        Error

   REASON:      The IMSID parameter value was omitted on the
                IMSALIAS statement. It is a required
                parameter.

   ACTION:      Add the IMSID value on the IMSALIAS statement
                and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 5 4 |
+-----------------+

   TEXT:        PARMS(IMSOPS) Statement=IMSALIAS error found:
                Length of IMSID value .gt. 4 characters.
                Specification=%KEYWORD3

   TYPE:        Error

   REASON:      The length of the IMSID parameter on the
                IMSALIAS statement was greater than the
                maximum 4 characters allowed.

   ACTION:      Correct the IMSID value on the IMSALIAS
                statement and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 5 5 |
+-----------------+

   TEXT:        PARMS(IMSOPS) Statement=IMSALIAS error found:
                Duplicate IMSID value was encountered.
                Possible conflict/corruption of database
```

```
                 could result.
                 Specification=%KEYWORD3

   TYPE:         Error

   REASON:       A duplicate IMSID parameter value was
                 detected on an IMSALIAS statement. The error
                 is issued because mapping of two or more IMS
                 regions to the same logical IMSID could cause
                 undesired corruption of the database files.

   ACTION:       Correct the duplicate IMSID value on the
                 IMSALIAS statement and rerun IMSPGEN.

   REFERENCES:   CA MICS Analyzer Option for IMS Guide,
                 Section 7.3.4

+-----------------+
| I M S 0 3 2 5 6 |
+-----------------+

   TEXT:         PARMS(IMSOPS) Statement=OPTIONS error found:
                 Invalid parameter combination was specified.
                 AutoDetection may only be specified with the
                 IMF2 monitor.

   TYPE:         Error

   REASON:       AutoDetection processing was requested for
                 one or more parameters on the OPTIONS
                 statement.  This facility is only supported
                 for BMC MAINVIEW for IMS Online transaction
                 data.

   ACTION:       Correct the "monitor" parameter on the
                 OPTIONS statement and rerun IMSPGEN.

   REFERENCES:   CA MICS Analyzer Option for IMS Guide,
                 Section 7.3.4

+-----------------+
| I M S 0 3 2 5 8 |
+-----------------+

   TEXT:         PARMS(IMSOPS) Statement=OPTIONS error found:
                 Continuation character is not the last value
                 on the statement.

   TYPE:         Error
```

```
REASON:      The continuation character, a plus (+) sign,
             was detected on an OPTIONS statement set.
             When specified, the continuation character
             must be the last value on a given line.

ACTION:      Correct the placement of the continuation
             character on the OPTIONS statement and rerun
             IMSPGEN.

REFERENCES:  CA MICS Analyzer Option for IMS Guide,
             Section 7.3.4

+-----------------+
| I M S 0 3 2 5 9 |
+-----------------+

TEXT:        PARMS(IMSOPS) Statement=OPTIONS error found:
             Expected continuation not found. A control
             keyword was encountered during parsing.
             Specification=%KEYWORD9

TYPE:        Error

REASON:      During execution of continuation processing
             on an OPTIONS statement, a control command
             was encountered. Parsing will terminate for
             the continued statement and the encountered
             control command will be processed.

ACTION:      Correct the continuation specification on the
             OPTIONS statement in error and rerun IMSPGEN.

REFERENCES:  CA MICS Analyzer Option for IMS Guide,
             Section 7.3.4

+-----------------+
| I M S 0 3 2 6 2 |
+-----------------+

TEXT:        PARMS(IMSOPS) Statement=OPTIONS error found:
             SKIPLOG value must be 0-999999999.
             Parameter=n, Specification=n

TYPE:        Error

REASON:      The value of the SKIPLOG parameter is greater
             than the maximum allowed.
```

```
   ACTION:      Correct the value specified for the SKIPLOG
                parameter on the OPTIONS statement in error
                and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 2 6 3 |
+-----------------+

   TEXT:        PARMS(IMSOPS) Statement=OPTIONS error found:
                ENDLOG value must be 0-999999999.
                Parameter=n, Specification=n

   TYPE:        Error

   REASON:      The value of the ENDLOG parameter is greater
                than the maximum allowed.

   ACTION:      Correct the value specified for the ENDLOG
                parameter on the OPTIONS statement in error
                and rerun IMSPGEN.

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4

+-----------------+
| I M S 0 3 5 0 0 |
+-----------------+

   TEXT:        PARMS(IMSOPS) STATEMENT=WORK/OPTIONS WARNING:
                NO OPTIONS STATEMENTS SPECIFY NOCIMS.
                NUMBER OF FAST PATH WORK FILES RESET TO ZERO.

   TYPE:        Warning

   REASON:      All OPTIONS statements specify IMF2 as the
                monitor data source, so the IMS_IS and IMS_IA
                files will contain no data.  A non-zero
                number of Fastpath work files was specified
                on the WORK statement, but has been reset to
                zero (work files are not used when BMC
                MAINVIEW for IMS Online is the data source)
                to improve the DASD allocation performance of
                the daily process.

   ACTION:      No action is required, but you should review
                the specifications to make sure the intended
```

```
               configuration is accurately specified.

   REFERENCES: CA MICS Analyzer Option for IMS Guide,
               Section 7.3.4

+-----------------+
| I M S 0 3 5 0 1 |
+-----------------+

   TEXT:       PARMS(IMSOPS) STATEMENT=WORK/OPTIONS WARNING:
               NO OPTIONS STATEMENTS SPECIFY FP.
               NUMBER OF FAST PATH WORK FILES RESET TO ZERO.

   TYPE:       Warning

   REASON:     All OPTIONS statements specifying NOCIMS as
               the monitor method also specify NOFP or MM.
               Thus, Fastpath EMHB transactions will not be
               passed to the CA MICS Analyzer Option for
               IMS, and the IMS_IS and IMS_IA files will
               contain no data.  A non-zero number of
               Fastpath work files was specified on the WORK
               statement; if generated, the work files would
               not be used.  Therefore, the number of work
               files has been reset to zero, improving the
               DASD allocation performance of the daily
               process.

   ACTION:     No action is required, but you should review
               the specifications to make sure the intended
               configuration is accurately specified.

   REFERENCES: CA MICS Analyzer Option for IMS Guide,
               Section 7.3.4

+-----------------+
| I M S 0 3 5 0 2 |
+-----------------+

   TEXT:       PARMS(IMSOPS) STATEMENT=WORK/OPTIONS WARNING:
               OPTIONS STATEMENTS SPECIFIES NOCIMS AND FP.
               NUMBER OF FAST PATH WORK FILES RESET TO ONE.

   TYPE:       Warning

   REASON:     One or more OPTIONS statements specifying
               NOCIMS as the monitor method also specified
               FP.  Thus, Fastpath EMHB transactions will be
               passed to the CA MICS Analyzer Option for
```

```
                    IMS, and the IMS_IS and IMS_IA files may
                    contain data.  Zero Fastpath work files were
                    specified on the WORK statement, but if
                    generated would not prevent Fastpath EMHB
                    transaction data from populating those
                    database files.  Thus, the number of work
                    files has been set to one, enabling data to
                    flow into those files.

      ACTION:       No action is required, but you should review
                    the specifications to make sure the intended
                    configuration is accurately specified.

      REFERENCES:   CA MICS Analyzer Option for IMS Guide,
                    Section 7.3.4

   +-----------------+
   | I M S 0 3 5 0 3 |
   +-----------------+

      TEXT:         PARMS(IMSOPS) IMSCGEN AGREEMENT WARNING:
                    THE IMS_IS AND IMS_IA FILES ARE INACTIVE.
                    NUMBER OF FAST PATH WORK FILES RESET TO ZERO.

      TYPE:         Warning

      REASON:       The IMS_IS and IMS_IA files have been
                    tailored to inactive in the IMSCGEN process,
                    and thus will contain no data.  A non-zero
                    number of Fastpath work files was specified
                    on the WORK statement, but if generated would
                    not be used and would expend considerable
                    work DASD resource allocations.  Thus, the
                    number of work files has been set to zero,
                    improving the DASD allocation performance of
                    the daily process.

      ACTION:       No action is required, but you should review
                    the specifications to make sure the intended
                    configuration is accurately specified.  This
                    includes the possibility of tailoring the IMS
                    database specifications in GENLIB(IMSGENIN).

      REFERENCES:   CA MICS Analyzer Option for IMS Guide,
                    Section 7.3.4
                    System Modification Guide, Chapter 6

   +-----------------+
   | I M S 0 3 5 0 4 |
```

```
+-----------------+

   TEXT:        PARMS(IMSOPS) IMSCGEN AGREEMENT WARNING:
                ALL OPTIONS STATEMENTS SPECIFY IMF2.  THE
                IMS_IS OR IMS_IA FILES ARE ACTIVE BUT UNUSED
                FOR IMF.  REVIEW OPTIONS STATEMENTS IN
                IMSOPS, OR TAILOR THE IMS_IS AND IMS_IA FILES
                TO INACTIVE STATUS.

   TYPE:        Warning

   REASON:      All OPTIONS statements specify IMF2 as the
                monitor data source.  Thus, the IMS_IS and
                IMS_IA files will contain no data.  One or
                both of these files are still active in
                component generator file tailoring.  These
                files cannot be populated, so may be tailored
                to inactive.  This will save some resources
                during the DAILY IMS processing and will save
                some database space.

   ACTION:      No action is required, but you should review
                the specifications to make sure the intended
                configuration is accurately specified.  This
                includes the possibility of tailoring the IMS
                database specifications in GENLIB(IMSGENIN).

   REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                Section 7.3.4
                System Modification Guide, Chapter 6

+-----------------+
| I M S 0 3 5 0 5 |
+-----------------+

   TEXT:        PARMS(IMSOPS) IMSCGEN AGREEMENT WARNING:
                THE IMS_IA OR IMS_IS FILE IS ACTIVE BUT THE
                NUMBER OF FAST PATH WORK FILES IS SET TO
                ZERO.  REVIEW OPTIONS STATEMENTS IN IMSOPS,
                OR TAILOR THE IMS_IS AND IMS_IA FILES TO
                INACTIVE STATUS.

   TYPE:        Warning

   REASON:      No OPTIONS statements that specify NOCIMS as
                the monitor data source also specify FP to
                activate Fastpath processing.  Thus the
                IMS_IS and IMS_IA files will contain no data.
                One or both of these files are still active
```

```
                  in component generator file tailoring.  These
                  files cannot be populated, so may be tailored
                  to inactive.  This will save some resources
                  during the DAILY IMS processing, and will
                  save some database space.

     ACTION:      No action is required, but you should review
                  the specifications to make sure the intended
                  configuration is accurately specified.  This
                  includes the possibility of tailoring the IMS
                  database specifications in GENLIB(IMSGENIN).

     REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                  Section 7.3.4
                  System Modification Guide, Chapter 6

  +-----------------+
  | I M S 0 3 5 0 6 |
  +-----------------+

     TEXT:        PARMS(IMSOPS) STATEMENT=OPTIONS WARNING:
                  NO OPTIONS STATEMENT FOUND WITH
                  DDNAME=%KEYWORK WHICH WAS DEFINED IN
                  PARMS(INPUTIMS).

     TYPE:        Warning

     REASON:      A ddname has been defined in INPUTIMS for the
                  purpose of allocating a data set during the
                  DAILY processing of IMS data.  However, no
                  corresponding ddname appears in an OPTIONS
                  statement in IMSOPS.  This may be intentional
                  (in support of some user modification to the
                  process) or it may be unintentional,
                  indicating, for example, that a newly-removed
                  IMS system OPTIONS statement has had its
                  input allocation left in the JCL.

     ACTION:      No action is required, but you should review
                  the specifications to make sure the intended
                  configuration is accurately specified.

     REFERENCES:  CA MICS Analyzer Option for IMS Guide,
                  Section 7.3.4
```

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.