

# CA MICS<sup>®</sup> Resource Management

## System Reliability Analyzer Option Guide

Release 12.9



This Documentation, which includes embedded help systems and electronically distributed materials, (hereinafter referred to as the "Documentation") is for your informational purposes only and is subject to change or withdrawal by CA at any time. This Documentation is proprietary information of CA and may not be copied, transferred, reproduced, disclosed, modified or duplicated, in whole or in part, without the prior written consent of CA.

If you are a licensed user of the software product(s) addressed in the Documentation, you may print or otherwise make available a reasonable number of copies of the Documentation for internal use by you and your employees in connection with that software, provided that all CA copyright notices and legends are affixed to each reproduced copy.

The right to print or otherwise make available copies of the Documentation is limited to the period during which the applicable license for such software remains in full force and effect. Should the license terminate for any reason, it is your responsibility to certify in writing to CA that all copies and partial copies of the Documentation have been returned to CA or destroyed.

TO THE EXTENT PERMITTED BY APPLICABLE LAW, CA PROVIDES THIS DOCUMENTATION "AS IS" WITHOUT WARRANTY OF ANY KIND, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NONINFRINGEMENT. IN NO EVENT WILL CA BE LIABLE TO YOU OR ANY THIRD PARTY FOR ANY LOSS OR DAMAGE, DIRECT OR INDIRECT, FROM THE USE OF THIS DOCUMENTATION, INCLUDING WITHOUT LIMITATION, LOST PROFITS, LOST INVESTMENT, BUSINESS INTERRUPTION, GOODWILL, OR LOST DATA, EVEN IF CA IS EXPRESSLY ADVISED IN ADVANCE OF THE POSSIBILITY OF SUCH LOSS OR DAMAGE.

The use of any software product referenced in the Documentation is governed by the applicable license agreement and such license agreement is not modified in any way by the terms of this notice.

The manufacturer of this Documentation is CA.

Provided with "Restricted Rights." Use, duplication or disclosure by the United States Government is subject to the restrictions set forth in FAR Sections 12.212, 52.227-14, and 52.227-19(c)(1) - (2) and DFARS Section 252.227-7014(b)(3), as applicable, or their successors.

Copyright © 2014 CA. All rights reserved. All trademarks, trade names, service marks, and logos referenced herein belong to their respective companies.

## Contact CA Technologies

### Contact CA Support

For your convenience, CA Technologies provides one site where you can access the information that you need for your Home Office, Small Business, and Enterprise CA Technologies products. At <http://ca.com/support>, you can access the following resources:

- Online and telephone contact information for technical assistance and customer services
- Information about user communities and forums
- Product and documentation downloads
- CA Support policies and guidelines
- Other helpful resources appropriate for your product

### Providing Feedback About Product Documentation

If you have comments or questions about CA Technologies product documentation, you can send a message to [techpubs@ca.com](mailto:techpubs@ca.com).

To provide feedback about CA Technologies product documentation, complete our short customer survey which is available on the CA Support website at <http://ca.com/docs>.



# Contents

---

<b>Chapter 1: OVERVIEW</b>	<b>11</b>
1.1 Primary Areas of Application.....	13
1.2 Reporting and Inquiry Facilities.....	14
1.3 Technical Information .....	15
<b>Chapter 2: USAGE GUIDELINES</b>	<b>17</b>
2.1 CA MICS Information Center Facility (MICF) .....	17
<b>Chapter 3: REPORTS</b>	<b>19</b>
3.1 MICF Inquiries .....	22
3.1.1 System Reliability Summary Report .....	23
3.1.2 System Software Malfunction Summary Report.....	30
3.1.3 Module Failure Trend Analysis Report .....	34
3.1.4 Abend Trend Analysis Report .....	37
3.1.5 Equipment Reliability Summary Report .....	40
3.1.6 Device Reliability Trend Report.....	43
3.1.7 Magnetic Tape Media Reliability Report.....	46
3.1.8 Direct Access Media Reliability Report .....	49
3.1.9 Description of Run-time Options .....	52
3.2 Standard Analysis Reports.....	64
3.2.1 System Reliability Summary Report .....	65
3.2.2 System Software Malfunction Summary Report.....	67
3.2.3 Module Failure Trend Analysis Report .....	69
3.2.4 Abend Trend Analysis Report .....	71
3.2.5 Equipment Reliability Summary Report .....	73
3.2.6 Device Reliability Trend Report.....	76
3.2.7 Magnetic Tape Media Reliability Report.....	78
3.2.8 Direct Access Media Reliability Report .....	81
3.2.9 Generating System Reliability Reports.....	84
<b>Chapter 4: EXCEPTIONS</b>	<b>99</b>
4.1 Exception Process Overview .....	100
4.2 Setting Exception Values .....	103
4.3 Detailed Exception Descriptions.....	104

5.1 Data Element Naming Conventions .....	147
5.2 SRL Channel Reliability (SRLCRL) File .....	148
5.2.1 SRLCRL File Organization .....	149
5.2.2 SRLCRL Data Elements List .....	150
5.2.3 SRLCRL Usage Considerations .....	154
5.2.4 SRLCRL Retrieval Example .....	155
5.3 SRL DASD Media Reliability (SRLDMMR) File .....	155
5.3.1 SRLDMMR File Organization .....	156
5.3.2 SRLDMMR Data Elements List .....	157
5.3.3 SRLDMMR Usage Considerations .....	159
5.3.4 SRLDMMR Retrieval Example .....	159
5.4 SRL DASD Device Reliability (SRLDRL) File .....	160
5.4.1 SRLDRL File Organization .....	161
5.4.2 SRLDRL Data Elements List .....	163
5.4.3 SRLDRL Usage Considerations .....	166
5.4.4 SRLDRL Retrieval Example .....	167
5.5 SRL Magnetic Tape Media Reliability (SRLMMR) File .....	167
5.5.1 SRLMMR File Organization .....	168
5.5.2 SRLMMR Data Elements List .....	169
5.5.3 SRLMMR Usage Considerations .....	171
5.5.4 SRLMMR Retrieval Example .....	171
5.6 SRL Magnetic Tape Device Reliability (SRLMRL) File .....	172
5.6.1 SRLMRL File Organization .....	173
5.6.2 SRLMRL Data Elements List .....	174
5.6.3 SRLMRL Usage Considerations .....	180
5.6.4 SRLMRL Retrieval Example .....	180
5.7 SRL Processor Reliability (SRLPRL) File .....	181
5.7.1 SRLPRL File Organization .....	182
5.7.2 SRLPRL Data Elements List .....	183
5.7.3 SRLPRL Usage Considerations .....	187
5.7.4 SRLPRL Retrieval Example .....	187
5.8 SRL Reliability Incident (SRLRNC) File .....	188
5.8.1 SRLRNC File Organization .....	189
5.8.2 SRLRNC Data Elements List .....	190
5.8.3 SRLRNC Usage Considerations .....	191
5.8.4 SRLRNC Retrieval Examples .....	192
5.9 SRL System Software Diagnostic (SRLSSD) File .....	192
5.9.1 SRLSSD File Organization .....	193
5.9.2 SRLSSD Data Elements List .....	194
5.9.3 SRLSSD Usage Considerations .....	203

---

5.9.4 SRLSSD Retrieval Examples .....	204
5.10 User Software Diagnostic (SRL_UD) File.....	204
5.10.1 SRL_UD File Organization.....	205
5.10.2 SRL_UD Data Elements List .....	206
5.10.3 SRL_UD Usage Considerations .....	215
5.10.4 SRL_UD Retrieval Examples .....	216
5.11 SRL System Software Malfunction Summary (SRLSSM) File.....	216
5.11.1 SRLSSM File Organization.....	217
5.11.2 SRLSSM Data Element List.....	219
5.11.3 SRLSSM Usage Considerations .....	221
5.11.4 SRLSSM Retrieval Examples .....	221
5.12 User Software Malfunction (SRL_UM) File.....	222
5.12.1 SRL_UM File Organization.....	223
5.12.2 SRL_UM Data Elements List .....	225
5.12.3 SRL_UM Usage Considerations .....	227
5.12.4 SRL_UM Retrieval Examples.....	227
5.13 SRL Storage Reliability (SRLSTR) File.....	228
5.13.1 SRLSTR File Organization .....	229
5.13.2 SRLSTR Data Elements List .....	230
5.13.3 SRLSTR Usage Considerations .....	234
5.13.4 SRLSTR Retrieval Example .....	234
5.14 SRL TP Device Reliability (SRLTRL) File.....	235
5.14.1 SRLTRL File Organization .....	236
5.14.2 SRLTRL Data Elements List .....	237
5.14.3 SRLTRL Usage Considerations .....	239
5.14.4 SRLTRL Retrieval Example .....	240
5.15 SRL Unit Record Device Reliability (SRLXRL) File .....	240
5.15.1 SRLXRL File Organization .....	241
5.15.2 SRLXRL Data Elements List .....	242
5.15.3 SRLXRL Usage Considerations .....	246
5.15.4 SRLXRL Retrieval Example .....	247
5.16 SRL Communications Controller Rel. (SRLNTC) File.....	247
5.16.1 SRLNTC File Organization .....	248
5.16.2 SRLNTC Data Elements List.....	249
5.16.3 SRLNTC Usage Considerations.....	251
5.16.4 SRLNTC Retrieval Example .....	254

## Chapter 6: DATA SOURCES

**255**

6.1 Data Collector Considerations.....	256
6.2 Record Descriptions .....	256
6.2.1 Channel Check Handler Record (CCH) .....	259

---

6.2.2 Machine Check Record (MCH) .....	259
6.2.3 Outboard Recorder Record (OBR) .....	260
6.2.4 Software Error Record (SFT) .....	260
6.2.5 System Initialization Record (IPL) .....	261
6.2.6 Miscellaneous Data Record (MDR) .....	261
6.2.7 Missing Interrupt Handler Record (MIH) .....	262
6.2.8 Recovery/Termination Record (EOD) .....	262
6.2.9 Dynamic Device Reconfiguration Record (DDR) .....	262
6.2.10 Recording Channel Report Word Record (CRW) .....	262
6.2.11 Recording Subchannel Logout Handler Record (SLH) .....	263

## **Chapter 7: DEFINING PARAMETERS** **265**

7.1 Environmental Considerations .....	266
7.2 Complex Level Parameters .....	266
7.2.1 Analyzer Definition Statements (SRLGENIN) .....	267
7.3 Unit Level Parameters .....	267
7.3.1 SRL System Code Generation (SRLPGEN) .....	267
7.3.2 SRL Processing Options (SRLOPS) .....	269
7.3.3 SRL Device Definitions (SRLDEVS) .....	295
7.3.4 SRL Input DD Statements (INPUTSRL) .....	301
7.3.5 Database Space Modeling (DBMODEL) .....	302

## **Chapter 8: INSTALLATION** **305**

## **Chapter 9: PROCESSING** **307**

9.1 Processing Overview .....	307
9.2 Daily Update Processing Flow .....	309
9.2.1 Preparation Phase .....	309
9.2.2 Input Phase .....	309
9.2.3 Decoding Phase .....	309
9.2.4 Data Input Phase .....	310
9.2.5 Data Summarization Phase .....	310
9.2.6 Termination Phase .....	310

## **Chapter 10: MODIFICATION** **313**

10.1 Parameter Modification .....	313
10.1.2 Alter Derived Element Support .....	314
10.1.3 Change Active Time-spans for an Element .....	314
10.1.4 Alter the Active Time-spans for a File .....	315
10.1.5 Parameter Modification Checklists .....	315

---

10.2 Standard User Exits .....	317
10.2.1 Available User Exits .....	318
10.2.2 General Exits .....	320
10.2.3 Output Processing Exits.....	322
10.3 File and Data Element Customization .....	330
10.4 Testing Modifications to the Analyzer Product .....	331
10.5 Change the Number of Work Files for DAY070 .....	332
10.6 Enable Internal Step Restart.....	335
10.7 Implement Incremental Update.....	337

**Appendix A: MESSAGES** **341**

Messages.....	341
---------------	-----



# Chapter 1: OVERVIEW

---

In today's computer installations, the systematic planning, monitoring, control, and evaluation of system hardware and software reliability has become increasingly important. The CA MICS Resource Management System Reliability Analyzer Option provides a unified and easily understood approach to tracking operational problems and performing in depth analysis of hardware and software problems by processing raw data from the Error Recording Data Set (ERDS) about hardware failures, including those that recover and software abnormal terminations (abends). It also provides a set of management and operational reports that you can use as is or tailor to your organization's needs and offers online data analysis through retrieval and reporting functions.

The System Reliability Analyzer Option is part of the CA MICS IS Management Support System. 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 indispensable to corporate financial management.

CA MICS is comprised of Data Integration Applications (one of which is the System Reliability Analyzer Option), Management Support Applications, Field Developed Applications, and application extensions. Simply put, Data Integration Applications validate, interpret, consolidate, and format data from diverse sources and locations and store the subsequent information in the CA MICS database. 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.

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 System Reliability Analyzer Option is stored in a unified CA MICS database, you can combine System Reliability Analyzer Option data with any other data that CA MICS stores. For example, ERDS information is processed and formatted so that it can be easily combined with other data in the CA MICS database. The encoded values in the input data are interpreted so that information is immediately usable in a logical form, without requiring further conversion and/or translation.

The System Reliability Analyzer Option includes usage guidelines for applying System Reliability Analyzer Option information, a wide range of standard exits that allow you to tailor the analyzer to your specific needs, and a data dictionary that describes the information stored by the System Reliability Analyzer Option and how it was derived.

The following benefits can be realized by using the CA MICS System Reliability Analyzer Option:

- o Eases the resolution of operating system, program product, and application system failures, which produce costly software outages.
- o Gives the user the vehicle for quantification of impact of temporary and permanent errors occurring on processors, channels, devices, and media. This information can be used to isolate hardware "problem areas" that continually cause decreases in throughput.
- o Assists in problem determination of device failures by examining the available device sense information.
- o Provides an integrated database for use in:
  - Day-to-day operations reporting
  - Periodic and ad hoc MIS reporting
  - Trending

This section contains the following topics:

- [1.1 Primary Areas of Application](#) (see page 13)
- [1.2 Reporting and Inquiry Facilities](#) (see page 14)
- [1.3 Technical Information](#) (see page 15)

## 1.1 Primary Areas of Application

The CA MICS System Reliability Analyzer provides data and reporting capabilities that help you manage MVS, VSE, or VM systems:

- o Performance Management--The System Reliability Analyzer maintains a data base that provides information you can use to determine cause-and-effect relationships between failures and response time.
- o Service Levels--The System Reliability Analyzer reports help you establish service level objectives and make any changes needed to meet those objectives. The System Reliability Analyzer reports that show current resource performance help you decide how realistic your goals are, investigate possible causes when goals are missed (e.g., failure of a critical resource), and report the causes of missed objectives to the affected management area.
- o Capacity Planning--The System Reliability Analyzer helps you determine which devices require redundant capacity to meet IS requirements, and therefore justify the purchase of additional equipment based on the extra costs incurred when service levels are not met due to lost hardware.
- o System Reliability Reporting--The System Reliability Analyzer helps you monitor reliability in the following areas:
  - Channels
  - DASD
  - Magnetic tape
  - Processors
  - Storage
  - Incident tracking
  - System software
  - User software
  - Teleprocessing
  - Unit record devices

Users can group and summarize information directly from the data base to create useful management reporting measures. They can use standard reports that are distributed with the system, or they can use online facilities to easily create custom reports. Additional tools allow you to resummairize data when the summarized data does not directly address reporting needs.

## 1.2 Reporting and Inquiry Facilities

The System Reliability Analyzer reporting and inquiry facilities include MICF Inquiries, Standard Analysis Reports, and Exception Reports.

Descriptive information is written to the system error recording data set (for example, SYS1.LOGREC under MVS) for failures that occur in the system hardware and software, for statistical information on device usage, and for a number of events that affect the system environment. The operating system software includes modules and routines for detecting exceptional conditions, attempting recovery where possible, and for logging the significant details of the conditions on the error recording data set.

The recorded error data can be analyzed to determine specific areas of reliability that need more detailed study. Data on hard failures, such as unrecoverable machine checks or permanent errors on devices, can assist in locating and resolving the failure that caused an error condition to occur. Data on soft failures, or failures that were successfully recovered, can be examined as early indications of future problems or permanent errors.

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

The System Reliability Analysis reports, available under MICF (CA MICS Information Center Facility) and in batch, can be classified under four major categories:

- o System Reliability Analysis Reports
- o Software Reliability Analysis Reports
- o Hardware Reliability Analysis Reports
- o Media Reliability Analysis Reports

The CA MICS System Reliability Analyzer provides the capability to use the MICF and standard SAS language interface to create ad hoc reports. CA MICS provides these interactive capabilities that allow fast response to complex requests so that users have the requisite information to manage an IS organization on a daily basis.

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

- o Standard SAS Language Interface - The CA MICS Workstation Facility (MWF) provides an online environment that supports the standard SAS language interface in both interactive and batch modes. SAS allows easy data manipulation and statistical analysis and provides coding facilities for programmers who are conducting extensive analysis efforts or designing new reports for IS business applications.

Standard Analysis Reports provide concise information in the form of graphs, tables, charts, or plots, and are run on a daily weekly, and/or monthly basis as part of the standard CA MICS processing. These reports summarize hardware and software problems and help you track hardware and software reliability.

## 1.3 Technical Information

The System Reliability Analyzer runs in a CA MICS environment operating under MVS, MVS/XA, or MVS/ESA. It processes Error Recording Data Set (ERDS) data from MVS/SP, MVS/XA, MVS/ESA, VM/SP, VM/XA, VM/ESA, and VSE operating systems.



# Chapter 2: USAGE GUIDELINES

---

Data from the CA MICS System Reliability Analyzer lends significant value to the use of other CA MICS products. These uses are described briefly in the following sections. For more detailed information refer to the individual product guides.

This section contains the following topics:

[2.1 CA MICS Information Center Facility \(MICF\)](#) (see page 17)

## 2.1 CA MICS Information Center Facility (MICF)

The CA MICS Information Center Facility (MICF), accessible from the CA MICS Workstation Facility (MWF) is a powerful tool that enables you to create, view and modify inquiries using the data from the CA MICS System Reliability Analyzer. In addition, a number of inquiries pertaining to the System Reliability Analyzer are available. They are organized under the reporting group of RELIABLE. Using MICF you can build inquiries that meet your site's reporting requirements. For information on how to use MICF, please refer to the CA MICS MICF User Guide.

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



# Chapter 3: REPORTS

---

The CA MICS System Reliability Analyzer produces reports using the batch and interactive reporting facilities of the CA MICS I/S Management Support System. The reports can be categorized as MICF inquiry, standard analysis, and exception reports.

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

CA MICS standard analysis reports provide a concise representation of an installation's workload, resource use, and response to the workload.

Exception reports contain an 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.

The Standard Reports available under MICF can be classified under four main categories. They are:

- o System Reliability Analysis
- o Software Reliability Analysis
- o Hardware Reliability Analysis
- o Media Reliability Analysis

## SYSTEM RELIABILITY ANALYSIS

One report makes up this category: the System Reliability Summary Report. The System Reliability Summary Report provides an overview of the key errors and events that have occurred for the processor, associated storage and channels, and the software, hardware devices, and magnetic media. Counts of the number of failures and other significant events are provided by a unique system identifier.

### SOFTWARE RELIABILITY ANALYSIS

The reports contained within this category are the System Software Malfunction Summary Report, the Module Failure Trend Analysis Report, and the Abend Trend Analysis Report.

The System Software Malfunction Summary Report summarizes the software failures occurring on each system by both system and user completion code. The report includes information such as job name, module name, CSECT name, and functional recovery routine name. In addition, an indication is provided if the job or module has been designated as critical to the installation. A textual description of the system completion code is also provided.

The Module Failure Trend Analysis Report provides a history of software failures by module over a user specified period of time, such as seven days. This allows you to track modules which repeatedly fail over some period of time.

The Abend Trend Analysis Report provides a history of software failures by system abend code over a user specified period of time, such as seven days. This allows you to track failures of the same type that repeatedly occur over some period of time.

### HARDWARE RELIABILITY ANALYSIS

The reports within this category are the Equipment Reliability Summary Report and the Device Reliability Trend Report.

The Equipment Reliability Summary Report provides a summary of equipment failures by device class and device type for the current period and a specified previous period of time. The comparison provides a usage count (SIO operations, seeks, ...), a permanent and temporary error count, and the ratio of usage to permanent and temporary errors for the two periods.

The Device Reliability Trend Report provides a trend history of the temporary failures that have occurred by specific device address over a period of time up to 10 days. The temporary error failure history is reported by device class (DASD), device type (3350), and device address (254) over the selected period.

#### MEDIA RELIABILITY ANALYSIS

The reports in this category are the Magnetic Tape Media Reliability Report and the Direct Access Media Reliability Report.

The Magnetic Tape Media Reliability Report provides a summary of tape media usage statistics and failures by volume for the current period and comparative failure counts for a specified previous period of time. The usage statistics include number of mounts, Start I/O count, and number of permanent read and write errors. The comparative failure data includes the number of temporary read and write errors and the ratio of Start I/O operations to temporary errors.

The Direct Access Media Reliability Report provides a summary of disk media usage statistics and failures by volume for the current period and comparative failure counts for a specified previous period of time. The usage statistics include number of seeks and millions of bytes read and the failure data includes the number of seek checks, number of reads recovered by a retry operation, and the number of reads recovered by the error checking and correction circuitry. The three failure counts represent temporary read errors which were corrected by the hardware or software. The comparative failure data includes the ratio of seeks to seek checks and the ratio of temporary errors to millions of bytes read.

This section contains the following topics:

[3.1 MICF Inquiries](#) (see page 22)

[3.2 Standard Analysis Reports](#) (see page 64)

## 3.1 MICF Inquiries

The MICF inquiries provided with the System Reliability Analyzer are listed in Figure 3-1.

MICF inquiry names follow the form cccptn, where:

ccc is the three-character component identifier.

p is the type of graphic output. Valid values are C (color graphics), L (printed report), or P (printer graphics).

t is the report frequency. Valid values are X (detail), D (days), W (weeks), M (months), and Y (years).

n is an alphanumeric character that differentiates this inquiry from others.

For some of the SRL Standard Analysis inquiries, the value of 't', the report frequency, is always set to 'S' since those reports can be run with a variable frequency.

For example: an inquiry named SRLCDA would be interpreted as:

```

SRLCDA
---|||+- differentiates this inquiry
| || from other color graphics
| || inquiries run at the DAYS
| || time-span
| ||+- may be run daily
| |+ a color graphics inquiry
|+- a System Reliability Analyzer inquiry
    
```

MICF Distributed Inquiries

Report Class	Report Name	Report Identifier		
		Color Graphics	List	Printer Graphics
Reliability	System Reliability Summary		SRLLD1	
	System Software Malfunction Summary		SRLLD2	
	Module Failure Trend Analysis		SRLLD3	
	Abend Trend Analysis		SRLLD4	
	Equipment Reliability Summary		SRLLS1	
	Device Reliability Trend		SRLLS2	
	Magnetic Tape Media Reliability		SRLLS3	
	Direct Access Media Reliability		SRLLS4	

Figure 3-1. MICF Distributed Inquiries

If you want to run the System Reliability Analyzer MICF inquiries, access them through the Data Base Inquiries option of MICF, which is part of the CA MICS Workstation Facility (MWF). For more information on how to use the CA MICS Workstation facility, see the CA MICS MICF User Guide.

Standard Analysis inquiries are directed towards the reliability of the entire system--the CPU or processor, storage, channels, devices, software, and magnetic media. The reports select information from several CA MICS files and summarize the data by system identification (SYSID) to present a consolidated view of the whole system environment.

The Standard Analysis inquiries are described in the following sections:

- 1 - System Reliability Summary Report
- 2 - System Software Malfunction Summary Report
- 3 - Module Failure Trend Analysis Report
- 4 - Abend Trend Analysis Report
- 5 - Equipment Reliability Summary Report
- 6 - Device Reliability Trend Report
- 7 - Magnetic Tape Media Reliability Report
- 8 - Direct Access Media Reliability Report

### 3.1.1 System Reliability Summary Report

The System Reliability Summary Report provides a method of tracking and analyzing the overall reliability of an entire system, based on a single system identification (SYSID). Data is gathered from a number of the System Reliability (SRL) files and is summarized under the following categories:

- o Processor Reliability Indicators
- o Software Reliability Indicators
- o Device Reliability Indicators
- o Media Reliability Indicators
- o Special Reliability Indicators

The objective of the report is to present data that can be used to identify areas where problems have occurred during the reporting period and to show the trend of failures in specific areas over a number of days. For each indicator, the counts of key system events or summaries of significant error conditions are provided for one or more days. The key system events include failures or conditions such as machine checks, channel checks, or processor wait states. The significant error conditions include counts such as the number of temporary and permanent failures by device class and the number of system software errors.

The indicators should be reviewed with respect to the standards and procedures being followed in your installation. The policies and procedures used in each installation clearly affect the use and interpretation of the reliability indicators.

#### PROCESSOR RELIABILITY INDICATORS

Processor reliability indicators generally reflect the status of the processor and its associated storage and channels. Failures in this area can result in degradations or, in the case of a serious failure, to interruptions to the services provided by the system.

The processor reliability indicators examine errors and conditions which either degrade services or interrupt the processing of the entire system. The trend over the time period selected is a first indication of whether the system is doing better or worse than before.

The following indicators are provided:

- 01.IPLS - the number of times the processor was IPLed. Each IPL potentially represents an interruption to service.

This count may be higher than the count from SMF. The SMF IPL record is only written if SMF is successfully started during the IPL process. If an IPL occurs and the system fails or is IPLed again before SMF is started, the reliability value and SMF value will disagree.

IPLs scheduled for maintenance, testing, etc. should be taken into consideration.

02.TERMINATION EVENTS - the number of times the system went through the 'End of Day' processing.

If your installation requires that the system is shut down in an orderly fashion, that is, that the Z EOD command is used at all normal shutdowns, then this value may be used with the number of IPLs as a key reliability indicator. If unscheduled IPLs occurred and this value is 0, then you can assume that the system has crashed or has come down as the result of an error.

03.PROCESSOR CHECKS - the number of times a machine check was encountered on the processor.

04.STORAGE CHECKS - the number of times a machine check involving processor storage was encountered.

05.CHANNEL CHECKS - the number of times a channel check occurred.

Channel checks are all indicators of hardware problems that either degraded or interrupted the system. If the number of IPLs is zero or all represent scheduled IPLs, then these errors degraded the system.

06.I/O SUPVR WAIT STATES - the number of times that the processor was stopped or halted by an error during an Input/Output operation.

I/O supervisor wait states represent a system degradation if the error was recognized as a wait state. If the wait was not recognized, then the system may have been IPLed, interrupting all services.

#### SOFTWARE RELIABILITY INDICATORS

Software reliability indicators reflect the status of the operating system software and the status of user software which logs information to the system error recording data set. Software errors can result in degradation or interruptions to the services provided by the system.

They represent the quantity or volume of errors that have occurred in the software. The overall size of a number is an indication of whether further analysis of the software failures is required.

The following indicators are provided:

- 01.MACHINE CHECK RELATED - the number of failures encountered by software modules or routines that were related to machine checks.
- 02.OPERATOR DETECTED - the number of failures detected and logged as the result of an system operator action.
- 03.ABENDS,PGM INTERRUPTS - the number of failures encountered by software modules or routines that were the result of an abend or program interrupt.
- 04.LOST RECORDS - the number of records that were lost or not recorded on the system error recording data set.

LOST RECORDS is an indication that some number of records could not be written to the error recording data set. If any value appears here, efforts should be made to determine what type of condition caused the lost records. A large number of channel failures, for example, could have caused a lost record condition because the mode of transmission was the cause of loss.

## DEVICE RELIABILITY INDICATORS

Device reliability indicators reflect the status of the devices, by device class, attached to the processor. Device errors can result in many different failures, depending on the use of the device and the severity of the error.

They represent the overall reliability of the devices attached to the system. The size of a number or error count is an indication of whether further analysis of the device detail information is required.

The following indicators are provided:

01.MISSING INTERRUPT EVENTS - the number of times that an I/O interrupt has been missed or dropped by a device.

02.RECONFIGURATION EVENTS - the number of times that a permanent error on direct access or magnetic tape has resulted in a dynamic device reconfiguration or swap to an alternate device.

RECONFIGURATION EVENTS represent permanent errors that caused a dynamic device reconfiguration or swap to an alternate device. One or more permanent errors should appear in the direct access or magnetic tape values.

nn.Permanent Errors - the number of permanent errors encountered by devices within each of the following device classes:

- 03. DASD (direct access)
- 04. TAPE (magnetic tape)
- 05. TP (teleprocessing)
- 06. U/R (unit record)

06.Permanent Errors (U/R) is an indication of unrecoverable errors that occurred. This is an indication that further analysis is required.

nn.TEMPORARY ERRORS - the number of temporary errors encountered by devices within each of the following device classes:

- 07. DASD (direct access)
- 08. TAPE (magnetic tape)
- 09. TP (teleprocessing)
- 10. U/R (unit record)

10.TEMPORARY ERRORS (U/R) is an indication of recoverable errors that occurred. If the numbers are large, further analysis is required.

#### SPECIAL RELIABILITY INDICATORS

Special reliability indicators reflect the status of special reliability events or errors that have occurred. These counts generally provide a more detailed review of indicators for specific devices attached to the system.

They represent errors and conditions that are being tracked specifically by the installation.

The following indicator is provided:

01.LASER PRINTER ERRORS - the number of permanent or significant errors which have occurred on laser printer devices.

01.LASER PRINTER ERRORS represent the number of temporary errors and permanent errors related specifically to the laser printers attached to the system. Large values are an indication that further analysis is required.

INQUIRY ID:

SRLLD1

DATA SOURCE (file/timespan):

SRLDRL, SRLMRL, SRLTRL, SRLXRL and SRLRNC at the  
DETAIL timespan.

DATA ELEMENTS USED:

The data elements used for this inquiry are the following:

FILE	DATA ELEMENTS
SRLDRL	DRLPRMCT DRLTMPCT
SRLMRL	MRLLOGTY MRLPRMCT MRLTMPCT MRLMTS
SRLTRL	TRLPRMCT
SRLXRL	XRLPRMCT
SRLRNC	RNCTYPE

		FAILURE SUMMARY							
		01MAY08	02MAY08	03MAY08	04MAY08	05MAY08	06MAY08	07MAY08	TOTAL
		NO. OF ERRORS	NO. OF ERRORS	NO. OF ERRORS	NO. OF ERRORS	NO. OF ERRORS	NO. OF ERRORS	NO. OF ERRORS	NO. OF ERRORS
RELIABILITY INDICATORS	FAILURE CATEGORIES								
A. PROCESSOR	01. IPLS	1	2	1	1	3	3	3	14
	05. CHANNEL CHECKS	12	10	4	2	3	4	4	39
B. SOFTWARE	03. ABENDS, PGM INTERRUPTS	3	15	7	10	12	.	.	47
	04. LOST RECORDS	.	2	1	4	3	1	1	12
C. DEVICE	01. MISSING INTERRUPT EVENTS	8	1	.	.	62	.	.	71
	02. RECONFIGURATION EVENTS	.	2	1	.	.	.	.	3
	03. PERMANENT ERRORS-DASD	5	10	4	4	15	5	5	48
	04. PERMANENT ERRORS-TAPE	5	8	4	7	12	.	.	36
	05. PERMANENT ERRORS-TP	3	63	1	1	7	.	.	75
	06. PERMANENT ERRORS-U/R	8	9	11	6	13	3	.	50
	07. TEMPORARY ERRORS-DASD	11	16	7	6	2	3	.	45
	09. TEMPORARY ERRORS-TP	5	5	9	6	6	.	.	31
	10. TEMPORARY ERRORS-U/R	19	11	10	12	15	7	.	74
D. SPECIAL	01. LASER PRINTER ERRORS	19	11	10	12	15	7	.	74
TOTAL ERRORS		81	145	60	60	219	25	3	593

Figure 3-2. System Reliability Summary Report

### 3.1.2 System Software Malfunction Summary Report

The System Software Malfunction Summary Report summarizes the software failures occurring on each system by both system and user completion code. The objective of the report is to present a consolidated list of the software errors by system and user abend code for each system.

Software failure data is summarized by job name, module name, CSECT name, and functional recovery routine name. An indication is provided if the job or module has been designated as critical to the installation. This indication is set based on what is specified in SRLOPS for the CMOD control statement.

See Section 7.3.2 for more information on the CMOD control statement.

In reviewing the System Software Malfunctions Summary Report, you must pay particular attention to failures which occur more than one time and to failures in jobs and modules known to be critical to the operation of the system.

The following information is provided in the System Software Malfunction Summary Report:

SYSTEM - the unique name of the system (SYSID) on which the error occurred.

CPU SERIAL - the CPU or processor serial number being used when the error occurred. This is provided to assist in isolating a failure that may be related to the processor being used. In some cases, a software system may be used on more than one CPU or processor.

JOBNAME - the name of the job being executed when the error occurred. The jobname may be blank if the error occurs in the system software and no specific job can be associated with the failure. Jobs known to be critical to the system or to a critical application must be reviewed in more detail. Critical jobs may have already been specified to CA MICS and, if so, are indicated by '\*\*\*' under CRITICAL JOB.

CRITICAL JOB/MOD - indicates whether the job and/or module has been identified as being critical to the installation. The indication '\*\*\*' may appear for either or both jobname and module name.

MODULE NAME - the name of the module or routine being executed at the time of the failure. Modules known to be critical to the system or to a critical application should be reviewed in more detail. Critical modules may have already been specified to CA MICS and, if so, are indicated by an \* under CRITICAL MODULE.

See Section 7.3.2 for information on how to define a module as critical to CA MICS.

CSECT NAME - the name of the control section (CSECT) being executed at the time of the failure.

RECOVERY ROUTINE - the name of the functional recovery routine (FRR) used to assist in the recovery of the failure.

COMPLETION CODE - provides the system and user completion or abend code for the software failure. The system code generally indicates a failure occurred that was detected by the operating system or the processor hardware. The system abnormally ended the job or module being executed at the time of the error. For a user code, the job or module being executed determined that an error had occurred and requested that the operating system terminate its processing.

Important completion codes can be determined from the text under DESCRIPTION. Examples are:

222 for jobs cancelled by the operators  
913 for security violations

DESCRIPTION - provides a text translation of the system completion code. For a user code, the description will indicate that the program issued a user abend.

FAILURE COUNT - counts the number of times that the same failure occurred in a combination of the job name, CSECT name, and recovery routine name. The count is a key indication that a recurring failure is occurring on the system. Any large number of failures must be reviewed.

The standards and procedures in your installation play an important role in interpreting the data on the report. The job naming convention, for example, may let you recognize jobs which are important to the system and, similarly, to those that are not important.

INQUIRY ID:

SRLLD2

DATA SOURCE (file/timespan):

SRLSSM at the DETAIL timespan.

DATA ELEMENTS USED:

The data elements used for this inquiry are:

FILE	DATA ELEMENTS
SRLSSM	SSMJOB SSMCSECT SSMFRRTN SSMSCMPC SSMUCMPC SSMUCMPC SSMCMOD SSMFCT

CA										PAGE	1
CA MICS I/S MANAGEMENT SUPPORT SYSTEM											
SYSTEM (S008)			SYSTEM SOFTWARE MALFUNCTION SUMMARY					REPORT DATE: MON, MAY 5, 2008			
								RUN DATE: SUN, MAY 4, 2008			
CPU SERIAL	JOBNAME	CRITICAL JOB MOD	MODULE NAME	CSECT NAME	RECOVERY ROUTINE	COMPLETION CODE SYSTEM USER	DESCRIPTION			FAILURE COUNT	
029604	AML585E3	**	IEFW21SD	IEFAB4E8		222 -	SYSTEM OPERATOR CANCELLED JOB/SESSION			1	
029604	DWT11941	**	IEFW21SD	IEFDB402		138 -	ERROR DURING EXECUTION OF ENQ MACRO			1	
029604	EGX929		IGC002F	IGC002F		33E -	DETACH MACRO ISSUED/SUBTASK NOT COMPLETE			1	
029604	EGX929		IGC0013I	ICVDS03	ICVCM02	33E -	DETACH MACRO ISSUED/SUBTASK NOT COMPLETE			1	
029604	INIT					213 -	ERROR DURING DIRECT ACCESS OPEN MACRO			1	
029604	INIT	**	IEFW21SD	IEFAB4DD		0B0 -	UNCORRECTABLE ERROR DETECTED BY SWA MGR			1	
029604	JES2	** **	HASJES20			800 -	PROGRAM ISSUED USER ABEND			5	
029604	NONE-FRR		IEAVSY50	IGC001	IGC002	402 -	ERROR DURING EXECUTION OF POST MACRO			2	
029604	NONE-FRR		IEEVSYS0	IGC001	IGC002	0C4 -	VIRTUAL ADDRESS TRANSLATION EXCEPTION			1	
029604	NONE-FRR		IKTIOM03	IKTIIMLU2	IKTIOFRR	0AB -	VTIIOC ENCOUNTERED AN ERROR FOR TSO/VTAM			4	
029604	*MASTER*	**	ILRTERMR	ILRTERMR	TERMRFR	C0D -	ROUTINE ENCOUNTERED UNEXPECTED CONDITION			2	

Figure 3-3. System Software Malfunction Summary Report

### 3.1.3 Module Failure Trend Analysis Report

The Module Failure Trend Analysis Report provides a history of software failures by module over a user specified period of time, such as seven days. This lets you track modules which repeatedly fail over some period of time.

The Module Failure Trend Analysis Report lets you observe failure patterns by module, such as an abnormally large number of failures or a recurring number of failures in a specific module.

The following information is provided in the Module Failure Trend Analysis Report:

SYSTEM IDENTIFIER - the unique name of the system on which the failures occurred.

FAILING MODULE - the name of the specific module encountering a failure. The name may be the name of a system routine or a problem program routine which has failed.

DATE - the day, month, and year on which the failures occurred.

NO. OF ERRORS - a count of the number of errors occurring in the module on the DATE listed.

TOTAL NO. OF ERRORS - the total number of errors the module encountered during the period of time being analyzed.

Further analysis should be required for any of the following conditions:

- o High total number of errors for any module
- o High daily number of errors for any module
- o Increase in the number of errors for any module

INQUIRY ID:

SRLLD3

DATA SOURCE (file/timespan):

SRLSSM at the DETAIL timespan.

DATA ELEMENTS USED:

Following is the data element used for this inquiry:

FILE	DATA ELEMENTS
SRLSSM	SSMSCMPC SSMFCT

CA CA MICS I/S MANAGEMENT SUPPORT SYSTEM								09:25 FRIDAY, MAY 09, 2008	1
MODULE FAILURE TREND ANALYSIS									
System Identifier S008									
FAILING MODULE	FAILURE HISTORY								TOTAL
	02MAY08	03MAY08	04MAY08	05MAY08	06MAY08	07MAY08	08MAY08		
	NO. OF ERRORS	NO. OF ERRORS	NO. OF ERRORS	NO. OF ERRORS	NO. OF ERRORS	NO. OF ERRORS	NO. OF ERRORS	NO. OF ERRORS	
HASJES20	.	.	2	.	.	.	.	2	
IEAVEDS0	1	.	.	1	.	.	.	2	
IEAVSY50	1	.	.	.	1	.	.	2	
IECVPST	.	.	.	.	.	.	1	1	
IEFW21SD	2	.	2	1	2	.	1	8	
IFG0TC0A	.	.	.	.	1	.	.	1	
IGC0002F	.	.	.	.	1	.	.	1	
IGC0005A	1	.	.	.	.	.	.	1	
IGC0012F	.	.	.	.	.	.	1	1	
IGC0013I	2	.	.	.	4	1	2	9	
IGG0CLCA	2	.	.	.	3	.	2	7	
IKTIOM02	.	.	.	.	3	1	3	7	
IKTIOM03	13	.	.	4	4	3	5	29	
ILRTERMR	.	.	1	.	.	1	.	2	
TOTAL ERRORS	22	.	5	6	19	6	15	73	

Figure 3-4. Module Failure Trend Analysis Report

### 3.1.4 Abend Trend Analysis Report

The Abend Trend Analysis Report provides a history of software failures by system abend code over a user specified period of time, such as seven days. This lets you track failures of the same type that repeatedly occur over some period of time.

The Abend Trend Analysis Report lets you observe failure patterns by completion code, such as an abnormally large number of failures or a recurring number of failures of a specific type.

The following information is provided in the Abend Trend Analysis Report:

SYSID - the unique name of the system on which the failures occurred.

ABEND CODE - the system completion code representing a failure that has occurred.

DATE - the day, month, and year on which the failures occurred.

NO. OF ERRORS - a count of the number of errors of the same completion code on the DATE listed.

TOTAL NO. OF ERRORS - the total number of errors of the same completion code for the period of time being analyzed.

Further analysis is required for any of the following conditions:

- o High total number of errors for any completion code
- o High daily number of errors for any completion code
- o Increase in the number of errors for any completion code

INQUIRY ID:

SRLLD4

DATA SOURCE (file/timespan):

SRLSSM at the DETAIL timespan.

DATA ELEMENTS USED:

Following is the data element used for this inquiry:

FILE	DATA ELEMENTS
SRLSSM	SSMSCMPC SSMFCT

CA		09:10 THURSDAY, MAY 8, 2008					1
CA MICS I/S MANAGEMENT SUPPORT SYSTEM							
ABEND TREND ANALYSIS							
SYSTEM IDENTIFIER TS01							
ABEND CODE AND DESCRIPTION	FAILURE HISTORY					TOTAL	
	03MAY08	04MAY08	05MAY08	06MAY08	07MAY08		
	NO. OF ERRORS	NO. OF ERRORS	NO. OF ERRORS	NO. OF ERRORS	NO. OF ERRORS		
00D Routine Encountered Unexpected Condition	.	1	14	.	.	15	
0AB VTI0C Encountered an Error For TSO/VTAM	1	11	4	7	18	41	
0A9 Error Occurred Executing a VTAM Module	1	3	1	5	.	10	
0C4 Virtual Address Translation Exception	.	1	2	2	.	5	
0F8 Error During Issue of an SVC	3	5	4	2	1	15	
001 Input/Output Error Encountered	1	4	3	2	4	14	
002 Error Processing Seq/Direct/Indexed Data	.	.	4	.	.	4	
028 Paging I/O Error Encountered	.	.	42	.	.	42	
200 EXCP Encountered an Invalid I/O Request	1	.	2	.	1	4	
213 Error During Direct Access OPEN Macro	1	3	1	1	1	7	
222 System Operator Cancelled Job/Session	.	3	.	.	2	5	
33E DETACH Macro Issued/Subtask Not Complete	.	2	1	4	1	8	
622 Initiation of Task from TSO Terminated	.	1	.	.	.	1	
913 Security Violation Occurred During OPEN	.	.	8	.	1	9	
TOTAL ERRORS	2	19	76	17	24	138	

Figure 3-5. Abend Trend Analysis Report

### 3.1.5 Equipment Reliability Summary Report

The Equipment Reliability Summary Report provides an overview of hardware reliability by device class and device type for the current period and a specified previous period of time. The objective of the report is to provide comparison counts and statistics for the hardware attached to the system for a current period and a previous period of time. The comparison provides a starting point for further analysis of the equipment reliability.

The comparison provides a usage count (for example, SIO operations and seeks) a permanent and temporary error count, and the ratio of the usage count to the number of permanent and temporary errors for the current period and a specified previous period of time.

In reviewing the Equipment Reliability Summary Report, the error ratios can be used as an indication of how well the equipment is performing. In general, a small ratio indicates that the equipment is not performing well. If the ratio for the current period is less than the ratio for the previous period, you can assume that the error rate is increasing for the devices.

If the reliability figures indicate a problem or potential problem, the device reliability trend report can be used to help pinpoint the device or devices that are failing.

The following information is provided in the Equipment Reliability Summary Report:

DEVICE CLASS - the equipment hardware class, for example, magnetic tape or direct access

DEVICE TYPE - the type of equipment within the class, for example, 3330 or 3350 devices within direct access

The following information appears for the current period and a specified previous period:

USAGE COUNT - a measure of usage for the device type.  
In general, this will be number of Input/Output operations (SIOs). For direct access devices, the count will be the number of seek operations.

PERMANENT ERRORS - the number of unrecoverable errors that occurred

TEMPORARY ERRORS - the number of recoverable or correctable errors that occurred

RATIO OF xxx - the ratio of device usage to permanent or temporary errors.

INQUIRY ID:

SRLLS1

DATA SOURCE (file/timespan):

SRLDRL, SRLMRL, SRLTRL, SRLXRL at the DETAIL or DAYS timespan.

DATA ELEMENTS USED:

The data elements used for this inquiry are the following:

FILE	DATA ELEMENTS
SRLDRL	DRLPRMCT DRLTMPCT DRLLGCT DRLSEKCT
SRLMRL	MRLPRMCT MRLTMPCT MRLSIOCT
SRLTRL	TRLPRMCT TRLTMPCT
SRLXRL	XRLPRMCT XRLTMPCT

CA CA MICS I/S MANAGEMENT SUPPORT SYSTEM EQUIPMENT RELIABILITY SUMMARY														
											RUN DATE: TUE, MAY 7, 2008			
DEVICE CLASS	DEVICE TYPE	WED 07MAY08 - WED 07MAY08						TUE 29APR08 - MON 05MAY08						
		USAGE COUNT	ERROR PERM	COUNTS TEMP	RATIO OF USAGE /		USAGE COUNT	ERROR PERM	COUNTS TEMP	RATIO OF USAGE /				
					PERM	TEMP	ERR	TEMP	ERR					
DIRECT ACCESS	3330	1	1	1		0	0			1	0	1	0	0
	3330-11	1	0	22		0	0			1	0	7	0	0
	3350	1	78	1621		0	0			1	26	2182	0	0
	3380	1	0	0		0	0			1	0	6	0	0
MAGNETIC TAPE	3480	1	5	0		0	0			1	2	0	0	0
UNIT RECORD	2540-P	1	6	0		0	0			1	70	0	0	0
	2540-R	1	0	0		0	0			1	14	0	0	0
	3211	1	0	22		0	0			1	1	9	0	0
	3800	1	0	1		0	0			1	0	2	0	0

Figure 3-6. Equipment Reliability Summary Report

### 3.1.6 Device Reliability Trend Report

The Device Reliability Trend Report provides a detailed history of the temporary error failure patterns for one or more devices within a device class and type; for example, direct access and 3350. The trend in temporary errors is provided by device address for a specified period of time, such as ten days.

Temporary errors can be an indication of a deterioration in the reliability of a device and a warning of permanent errors in the future. In examining the values in the Device Reliability Trend Report, any increase in the temporary error trend is a sign of potential problems. In addition, large values in any one day may be an indication of problems.

The following information is provided in the Device Reliability Trend Report:

DEVICE CLASS - the equipment hardware class, for example, magnetic tape or direct access

DEVICE TYPE - the type of equipment within the class, for example, 3350 or 3380 devices within direct access

DEVICE ADDRESS - the four hexadecimal character address of the device, for example, 0256 or 04A5.

TEMPORARY SUM - provides a count of the number of temporary errors for the DATE specified

TOTAL COUNT - is the total number of temporary errors for the device over the entire selected period.

INQUIRY ID:

SRLLS2

DATA SOURCE (file/timespan):

SRLDMR at the DETAIL or DAYS timespan.

DATA ELEMENTS USED:

Following is the data element used for this inquiry:

FILE	DATA ELEMENTS
SRLDMR	DMRSEKCT DMRUCDCK DMRCODCK DMRSEKCT DMRBYTCT

		TEMPORARY ERROR FAILURE HISTORY									
		01MAY08	02MAY08	03MAY08	04MAY08	05MAY08	06MAY08	07MAY08	08MAY08	09MAY08	TOTAL
		TMPCT	TMPCT	TMPCT	TMPCT	TMPCT	TMPCT	TMPCT	TMPCT	TMPCT	TMPCT
		SUM	SUM	SUM	SUM	SUM	SUM	SUM	SUM	SUM	SUM
DEVICE TYPE	ADDRESS										
3380	0256	.	24	.	103	.	.	129	649	.	905
	0257	.	224	.	1205	.	.	64	.	.	1493
	0258	.	.	.	.	.	.	.	2	.	2
	0259	.	.	.	.	.	.	1	2	.	3
	03EC	.	.	.	.	.	1	.	.	.	1
	05E5	.	1	.	.	.	.	.	.	.	1
	03E8	.	.	.	.	.	.	15	14	.	29
	03F0	1	1	.	.	1	2	.	2	.	7
	03F3	2	3	.	.	.	1	1	.	.	7
	0349	.	.	.	.	.	.	.	1	.	1
	0360	3	6	.	2	.	1	.	1	.	13
	0366	.	2	.	1	.	14	.	.	.	17
	04AC	1	.	.	.	.	.	.	.	.	1
	04A5	.	.	.	.	.	1	.	.	.	1
	04B0	.	.	.	.	1	1	.	.	.	2
	04B3	.	.	1	.	.	.	.	.	.	1

Figure 3-7. Device Reliability Trend Report

### 3.1.7 Magnetic Tape Media Reliability Report

The Magnetic Tape Media Reliability Report provides a concise report of the tape volumes that have encountered permanent or temporary errors during a selected current period and a previous period of time. The objective of the report is to highlight the tape media failures that have occurred and that some corrective action can be taken.

The following information is provided in the Magnetic Tape Media Reliability Report:

VOLUME SERIAL - the six-character volume serial number for the magnetic tape volume

NO. OF MOUNTS - the number of times the volume was mounted during the selected current period of time

SIO COUNT - the number of Start I/O operations issued to the volume.

PERMANENT ERRORS - the number of permanent read and write errors during the current period. Any permanent failure indicates that an unrecoverable error has occurred. The volume could be bent or crimped or the oxide surface could be worn.

The following information appears for the current period and a specified previous period:

TEMPORARY ERRORS - the number of temporary read and write errors during the period. Only temporary errors that are not associated with permanent errors are shown. If a number of temporary errors occurred, followed by a permanent error, only the permanent error will be counted.

SIO CT/TEMP ERR - the ratio of the Start I/O count to the total number of temporary read and write errors for the period. A small number for the ratio of SIO operations to temporary errors is generally an indication of a media problem.

INQUIRY ID:

SRLLS3

DATA SOURCE (file/timespan):

SRLMMR at the DETAIL or DAYS timespan.

DATA ELEMENTS USED:

Following is the data element used for this report:

FILE	DATA ELEMENTS
SRLMMR	MMRMTS MMRTEMPR MMRTEMPW MMRPERMR MMRPERMW MMRSIOCT

CA											09:15	TUESDAY, MAY 6, 2008	1
CA MICS I/S MANAGEMENT SUPPORT SYSTEM													
MAGNETIC TAPE MEDIA RELIABILITY													
DEVICE TYPE		3480											
VOLUME SERIAL	NO. OF MOUNTS	SIO COUNT	PERMANENT ERRORS		TUE 06MAY08 - TUE 06MAY08			TUE 29APR08 - MON 05MAY08			SIO CT /		
			READ	WRITE	READ	WRITE	TEMP ERR	READ	WRITE	TEMP ERR			
AG3543	12	28501	0	0	2	0	14251	0	0	0			
AJI522	12	10878	2	0	2	0	5439	6	0	4563			
GR5132	2	7010	0	0	26	0	270	0	0	0			
X24571	2	975	0	0	43	0	23	0	0	0			
X25378	3	310	0	0	0	2	155	0	1	340			
X37642	1	4649	0	0	1	1	4649	0	0	0			
X50272	1	2995	0	0	0	17	176	0	0	0			

Figure 3-8. Magnetic Tape Media Reliability Report

### 3.1.8 Direct Access Media Reliability Report

The Direct Access Media Reliability Report provides a summary of the reliability of direct access volumes based on the ratio of volume usage to the number of errors encountered on the volume. The usage is measured in both accesses or seeks and the number of bytes transferred or read from the volume. The objective of the report is to highlight the volumes that have a low ratio of usage to errors.

The error ratios provide a calculated measure of the failure rate based on the type of usage per failure. For example, a low ratio of seeks per seek error could be an indication of a problem.

The information provided in the Direct Access Media Reliability Report includes the following:

VOLUME SERIAL - the six-character serial number of the direct access volume.

LOGICAL ADDRESS - the four hexadecimal character logical address of the device used for the volume. This will be the last logical address used for the volume serial.

USAGE COUNTS - the number of seek accesses performed on the volume (in 000s) and the number of data bytes read from the volume (in 000000s).

ERROR COUNTS - the number of seek checks, read retries, and ECC correctable errors for the volume. The number of seek checks is the number of times a seek operation was incomplete as the result of an error. Read retries counts the number of times a read error was corrected by a retry of the read operation. ECC correctable errors counts the number of times a read operation was corrected by the error checking and correction hardware.

A potential problem is indicated by any large number of seek checks, read retries, or ECC correctable errors. The read retry count and ECC error count represent recoverable read errors.

The following information is provided for the current and a previous period of time:

NO. OF SEEKS/SEEK CK - is the ratio of the number of seek operations performed to the number of seek errors encountered.

TEMP ERRORS/MB READ - is the ratio of the number of temporary errors (total read retries plus ECC correctable errors) to the number of bytes read.

INQUIRY ID:

SRLLS4

DATA SOURCE (file/timespan):

SRLDMR at the DETAIL or DAYS timespan.

DATA ELEMENTS USED:

Following is the data element used for this inquiry:

FILE	DATA ELEMENTS
SRLDMR	DMRSERCT DMRUCDCK DMRCODCK DMRSEKCT DMRBYTCT

CA											11:01 TUESDAY MAY 6, 2008	1
CA MICS I/S MANAGEMENT SUPPORT SYSTEM												
DIRECT ACCESS MEDIA RELIABILITY												
DEVTYPE TYPE	3380											
VOLUME SERIAL	LOGICAL ADDRESS	USAGE COUNTS		ERROR COUNTS				TUE 06MAY08 - TUE 06MAY08		TUE 29APR08 - MON 05MAY08		
		SEEKS	MB/READ	SEEK CK	RD RETRY	ECC CORR	NO. OF SEEKS /	MB READ /	NO. OF SEEKS /	MB READ /		
							SEEK CK	TEMP ERR	SEEK CK	TEMP ERR		
PAG440	0440	20054	707.85	0	6	0	0	117.98	0	225.62		
TMPDEV	0340	162560	218.10	0	0	8	0	27.26	0	57.32		
TS0176	09D2	14	0.80	1	0	0	14	0.00	0	0.49		
SYMPA	02A1	15760	135.94	0	0	1	0	135.94	0	0.00		
XMP482	0958	32512	186.65	0	0	55	0	3.39	0	5.93		

Figure 3-9. Direct Access Media Reliability Report

### 3.1.9 Description of Run-time Options

The System Reliability Analyzer Option's Standard Analysis Reports are controlled by MICF run-time options. After you have selected an inquiry for execution, you are presented with one or more screens of execution-time override options. While most of these values are optional or use default values, you can use them to tailor the data that appears on the final reports.

This section describes each override. The function and syntax of each option is described and examples are provided.

The general format of each override option is shown in the example below:

```
Enter the CPU serial numbers to be reported or leave  
blank to report all.
```

```
-----
```

The text describes the function of the option and the syntax of the two operands to be entered. In this example, the option can be used to report only on selected CPU serial numbers. Defaults are provided where applicable.

MICF lets you specify default output line and page sizes. If you choose a line size less than 132, ensure that the value you specify is large enough to accommodate the heading and title lines that appear on each page.

MICF page size defaults (the number of lines per page) cannot be changed. If you choose a page size less than 23, the value is forced to 23.

For each of the execution-time override options described on the following pages, note that some options apply to all inquiries while others apply to one or two specific inquiries.

Enter one or more database IDs for the databases you want to process.

Function: Specify the CA MICS Unit database ID (DBID) from which the data for this report should be extracted. The value coded must specify a unit containing the SRL information area. You can enter a question mark (?) to obtain a list of the valid units for your installation. Check with your CA MICS Administrator if you have further questions or problems.

Usage: Required.

Operand 1: Specify one or more 1-character Unit database IDs (DBID) to use to obtain data for this report. The default value can be specified as a MICF option.

Operand 2: Not used.

Example: Run a report using data from the San Francisco office. Data from that office resides in Unit database ID (DBID) S.

Entry: S

Enter a range of CA MICS File Cycles to be processed.

Function: Specify the cycles of CA MICS SRL data to use as input to this report. Cycle 01 of a CA MICS file at the DAYS timespan represents yesterday's processing, while cycle 02 represents processing from two days ago, and so forth.

Usage: Required.

Operand 1: Specify a numeric cycle number 01 through 99 to be used as the beginning cycle number to include in this report. The default value can be specified as a MICF option.

Operand 2: Specify a numeric cycle number 01 through 99 to be used as the ending cycle number to include in this report. If this is not specified, only a single cycle (the beginning cycle) is used.

Example: Run a report using SRL data starting with cycle 01 and ending with cycle 05.

Entry: 01 - 05

Enter the SYSID(s) to be reported on or leave blank to report all.

Function: Lets you include or exclude SRL information based on the System Identifier. See CA MICS data dictionary element SYSID for more information.

Usage: Optional.

Operand 1: Specify up to 9 SYSIDs on which to report. Information for only the specified SYSIDs is processed. If a SYSID is not specified, information for all systems is used.

Operand 2: Continuation of Operand 1.

Example: Include information from System Identifier PROD and TEST.

Entry: PROD TEST

---

Enter ending date to be reported for current period. (e.g. 01JUL08).

Function: Specify the ending date for the current report processing period.

Usage: Optional.

Operand 1: Specify an ending date in the form ddmonyy. If this option is not specified, the inquiry uses yesterday's date as the ending date.

Operand 2: Not used.

Example: Include information from August 1st, 2008.

Entry: 01AUG08

Enter date ranges to be reported for current period. (e.g. 01JUL08).

Function: Specify a range of dates for the current report processing period. If a single date is present, it is used as the starting and ending date for the report. If two dates are present, the report programs select data based on the specified dates, where the first date is the start date and the second date is the end date. If left blank, the inquiry uses yesterday's date as the ending date and calculates a starting date, if one is required, based on the requested report.

Usage: Optional.

Operand 1: Specify a starting date in the form ddmonyy.

Operand 2: Specify an ending date in the form ddmonyy.

Example: Include information from August 1st through the 7th, 2008.

Entry: 01AUG08 - 07AUG08

Specify number of consecutive days of data to be selected (DAYRANGE).

Function: Specify the number of consecutive days of data to be selected from the CA MICS database. The value ranges from 1 to 99. This parameter is used to set a default number of previous days to select for reports having a current and previous period. For example, the specification DAYRANGE 14 would set a default of 14 days for reports using comparisons. If the parameter is not specified, a default number will be used based on the report(s) selected.

Usage: Optional.

Operand 1: Specify the number of days.

Operand 2: Not used.

Example: Report on 10 days of data.

Entry: 10

Enter SELECT or EXCLUDE for options below.

Function: Indicates that the run time options following this option are used to SELECT data meeting the criteria or to EXCLUDE data meeting the criteria.

Usage: Optional.

Operand 1: Specify SELECT or EXCLUDE. The default is SELECT.

Operand 2: Not used.

Example: Exclude data based on the options following this run time option.

Entry: EXCLUDE

---

Enter the CPU serial numbers to be reported or leave blank to report all.

Function: Lets you specify up to 9 CPU/processor serial numbers on which to report. If this option is not specified, information for all systems will be used. NOTE that for processors having more than 1 serial number, all of the serial numbers must be specified to ensure that all data is reported. This includes AP and MP systems and systems of the IBM 308x class (dyadic processors).

Usage: Optional.

Operand 1: Specify the CPU serial numbers separated by blanks.

Operand 2: Continuation of Operand 1.

Example: Report on the CPUs whose serial numbers are 070216 and 170216.

Entry: 070216 170216

Enter date ranges to be reported for previous period. (e.g. 01JUL91)

Function: Specify an ending date or, where required, a range of dates for the previous report processing period. If a single date is present, it is used as the starting and ending date for the period. If two dates are present, the inquiry selects data based on the specified dates, where the first date is the start of the period and the second date is the end of the period. If this option is not specified, the inquiry calculates a previous period based on the values of the Current Period and DAYRANGE options.

Usage: Optional.

Operand 1: Specify a starting date in the form ddmonyy.

Operand 2: Specify an ending date in the form ddmonyy.

Example: Include information from August 1st through 7th, 2008.

Entry: 01AUG08 - 07AUG08

Specify num of software failures that must occur before entry is reported.

Function: Specify the number of software failures that must occur before an entry appears on the software reports. Valid values range from 1 through 365 and are used to exclude data that does not meet the given value. The specification FAILURES 25 indicates that only software failures occurring 25 or more times will appear on the report.

Usage: Optional.

Operand 1: Specify a number between 1 and 365.

Operand 2: Not used

Example: Produce report only if software failures occurred 15 or more times.

Entry: 15

---

Enter the load module names to be reported or leave blank to report all.

Function: Specify up to 7 module names for reporting. Each name ranges from 1 to 8 characters in length. Information for only the specified module names is reported. If this option is not specified, information for all modules is used.

If a specification ends with an asterisk (\*), the preceding characters are assumed to be a prefix value. All modules beginning with the prefix value are included in the report. For example, the specification IEF\* will result in the selection of all modules beginning with the characters IEF.

Usage: Optional.

Operand 1: Specify up to 7 module names on which to report.

Operand 2: Continuation of Operand 1.

Example: Report on all modules that start with IEF and on a module called ILRTEMR.

Entry: IEF\* ILRTEMR

Enter JOBNAME(s) to be reported or leave blank to report all JOBNAMEs.

Function: Lets you specify up to 7 job names on which to report. Each name may be from 1 to 8 characters in length and should be a valid job name. Information for only the specified job names will be reported. If this option is not specified, information for all jobs is used.

If a parameter ends with an asterisk (\*), the preceding characters are used as a prefix value. All job names beginning with the prefix value are selected and processed. For example, specifying CSD\* results in selecting all job names beginning with the characters CSD.

Usage: Optional.

Operand 1: Specify up to 7 job names on which to report, separated by blanks.

Operand 2: Continuation of Operand 1.

Example: Report on all job names that start with MSI and DSI.

Entry: MSI\* DSI\*

Specify System ABEND code(s) to be reported or leave blank to report all.

Function: Specify up to 9 system completion codes on which to report. Each code is a 3 hexadecimal character value, such as 0C4 or A03. Information for only the specified system completion codes is used. If this option is not specified, information for all system completion codes is used.

Usage: Optional.

Operand 1: Specify up to 9 system completion codes on which to report, separated by blanks.

Operand 2: Continuation of Operand 1.

Example: Report on all 222 and 322 abends that occurred.

Entry: 222 322

---

Enter DETAIL or DAYS for the timespan to be reported.

Function: Specify the timespan on which you want to report. Only those inquiries that can report against multiple timespans have this option. If nothing is specified, the default displayed will be used.

Usage: Optional.

Operand 1: Specify either DETAIL or DAYS.

Operand 2: Not used.

Example: Use the DETAIL timespan for the inquiry.

Entry: DETAIL

Enter num. of temporary errors that must occur before entry is reported.

Function: Specify the number of temporary errors that must occur before an entry appears on the hardware reports. Valid values range from 1 through 1000 and are used to exclude data that does not meet the given value. The specification ERRORS 128 indicates that only temporary errors occurring 128 or more times will appear on the report.

Usage: Optional.

Operand 1: Specify a value between 1 and 1000.

Operand 2: Not used.

Example: Write the entry only if the number of temporary errors is 100 or greater.

Entry: 100

Enter Device classes to be reported or leave blank to report all classes.

Function: Specify the device classes on which to report. The valid classes are DASD, TAPE, UNIT-REC, and COMMGEAR. Information for only the specified device classes will be used. The default is to report on all device classes.

Usage: Optional.

Operand 1: Specify one or more of the following values: DASD TAPE UNIT-REC and COMMGEAR.

Operand 2: Not used.

Example: Report on DASD only.

Entry: DASD

Enter device type(s) to be reported. Blank to report all device types.

Function: Specify up to 7 device types on which to report. Each device type is a 4- to 8-digit identifier for a group of devices within a class of devices, such as 3380 or 3390 within DASD devices. Information for only the specified device types is used. If this option is not specified, all device types are reported.

Usage: Optional.

Operand 1: Specify up to 7 device types to be reported on.

Operand 2: Not used.

Example: Report on 3390 DASD devices only.

Entry: 3390

Enter the address(es) to be reported on or leave blank to report all.

Function: Specify up to 7 device address entries, where each entry represents an address, a string of addresses, or an address range. An entry of the form 'cuuu' represents a single device at the channel and unit address given by 'cuuu'. An entry of the form 'cuuX' represents the string of 16 devices attached to channel 'c' and control unit 'u'. If this option is not specified, then all devices are reported.

Usage: Optional.

Operand 1: Specify up to 7 device address entries.

Operand 2: Not used.

Example: Report on all devices starting with 03F.

Entry: 03FX

Enter the volume(s) to be reported or leave blank to report all volumes.

Function: Specify up to 9 volumes (for magnetic tape or direct access) on which to report. Each entry is the 6-character volume serial number of a magnetic tape or direct access volume. Information for only the specified volumes is used. If this option is not specified, information for all volumes is reported.

If a parameter ends with an asterisk (\*), the preceding characters are assumed to be a prefix value. All volumes beginning with the prefix value are selected and processed. For example, specifying TS0\* results in selecting all volumes beginning with the characters TS0.

Usage: Optional.

Operand 1: Specify up to 9 Volume Serial numbers separated by a blank.

Operand 2: Continuation of Operand 1.

Example: Report on all Volumes starting with TS0.

Entry: TS0\*

## 3.2 Standard Analysis Reports

Standard analysis reports are directed towards the reliability of the entire system--the CPU or processor, storage, channels, devices, software, and magnetic media. The reports select information from several CA MICS files and summarize the data by system identification (SYSID) to present a consolidated view of the whole system environment.

Standard analysis reports, which run in batch mode, are described in the following sections:

- 1 - System Reliability Summary Report
- 2 - System Software Malfunction Summary Report
- 3 - Module Failure Trend Analysis Report
- 4 - Abend Trend Analysis Report
- 5 - Equipment Reliability Summary Report
- 6 - Device Reliability Trend Report
- 7 - Magnetic Tape Media Reliability Report
- 8 - Direct Access Media Reliability Report
- 9 - Generating System Reliability Reports

### 3.2.1 System Reliability Summary Report

The System Reliability Summary Report provides an overview of the key errors and events that have occurred for the processor and associated storage and channels and the software, hardware devices, and the magnetic media. Counts of the number of failures and other significant events are provided by unique system identifier.

See Section 3.1.1 for more information on this report.

#### REPORT FORMAT:

See Section 3.1.1 for an example of the output generated by the System Reliability Summary Report.

#### DATA SOURCE (file/time-span):

SRLDRL, SRLMRL, SRLTRL, SRLXRL and SRLRNC at the  
DETAIL time-span.

#### DATA ELEMENTS USED:

The data elements used for this report are:

FILE	DATA ELEMENTS
SRLDRL	DRLPRMCT DRLTMPCT
SRLMRL	MRLLOGTY MRLPRMCT MRLTMPCT MRLMTS
SRLTRL	TRLPRMCT
SRLXRL	XRLPRMCT
SRLRNC	RNCTYPE

REPORT DEFAULTS AND CONSIDERATIONS

The following table summarizes the keywords which may be used for the System Reliability Summary Report and gives their default values.

A complete list of keywords and their descriptions can be found in Section 3.2.9.

KEYWORD	DEFAULT
-----	-----
CURRENT enddate	yesterday's date
TIMESPAN DETAIL	DETAIL
CYCLES nn	DAYRANGE+1
DAYRANGE n	7
SYSID list	all SYSIDs
CPUSER list	all CPUSERS
EXCLUDE YES	EXCLUDE NO
REPORT RELSM	-
-----	-----

Notes:

1. Only the enddate is used from the CURRENT parameter. If a startdate is specified, it is ignored.
2. The only valid TIMESPAN value is DETAIL. The Reliability Incident file is used and it is only maintained in the DETAIL timespan.
3. CYCLES may have any value, however, data will only be used from the dates contained in the period  
    enddate-DAYRANGE+1 to enddate
4. The maximum DAYRANGE value is 7 days.
5. CPUSER may be used to limit data selected. It does not appear on the report.
6. If other keywords are used, they MAY AFFECT the report. They are NOT ignored by the report.

### 3.2.2 System Software Malfunction Summary Report

The System Software Malfunction Summary Report provides an overview of all system software failures that have occurred during the reporting period by system identification (SYSID). Software failure data is summarized by jobname, CSECT name, recovery routine name, and the system and user completion codes. The report also includes an indication of whether the failure occurred in a module or job identified as being critical to the installation, as specified during the CA MICS generation and installation process. See Section 3.1.2 for more information on this report, as well as an example of the output generated.

#### REPORT FORMAT:

See Section 3.1.2 for an example of the output generated by the System Software Malfunction Summary Report.

#### DATA SOURCE (file/time-span):

SRLSSM at the DETAIL time-span.

#### DATA ELEMENTS USED:

The data elements used for this report are:

FILE	DATA ELEMENTS
SRLSSM	SSMJOB SSMCSECT SSMFRRTN SSMSCMPC SSMUCMPC SSMUCMPC SSMCMOD SSMFCT

#### REPORT DEFAULTS AND CONSIDERATIONS

The following table summarizes the keywords which may be used for the System Software Malfunction Summary Report and gives their default values.

A complete list of keywords and their descriptions can be found in Section 3.2.9.

KEYWORD	DEFAULT
-----	-----
CURRENT aaa,bbb	yesterday's date
TIMESPAN DETAIL	DETAIL
CYCLES nn	2
DAYRANGE n	0
SYSID list	all SYSIDs
CPUSER list	all CPUSERS
JOBNAME list	all JOBNAMEs
MODULE list	all MODULEs
SCC list	all SCCs
UCC list	all UCCs
FAILURES nnn	1
EXCLUDE YES	EXCLUDE NO
REPORT SFWSM	-

-----  
Notes:

1. CURRENT may specify a single date or range of dates. The default is to process data from yesterday only.
2. The only valid TIMESPAN value is DETAIL.
3. CYCLES may have any value, however, data will only be used from the dates contained in the period startdate to enddate
4. DAYRANGE may be used to establish a default startdate that is different than the value established by CURRENT. If DAYRANGE is used, it will override the value specified in CURRENT. The value of startdate will be set from the expression enddate - DAYRANGE + 1
5. The keywords SYSID, CPUSER, JOBNAME, MODULE, SCC, and UCC may be used to limit the data to be selected.
6. If other keywords are used, they MAY AFFECT the report. They are NOT ignored by the report.

### 3.2.3 Module Failure Trend Analysis Report

The Module Failure Trend Analysis Report provides a chart of the number of failures which have occurred by module over a specified period of time, for example, 5 days. The failure trend will allow you to track and analyze software errors in one or more specific modules or routines. See Section 3.1.3 for more information.

#### REPORT FORMAT:

See Section 3.1.3 for an example of the output generated by the Module Failure Trend Analysis Report.

#### DATA SOURCE (file/time-span):

SRLSSM at the DETAIL time-span.

#### DATA ELEMENTS USED:

The data elements used for this report are:

FILE	DATA ELEMENTS
SRLSSM	SSMSCMPC SSMFCT

#### REPORT DEFAULTS AND CONSIDERATIONS

The following table summarizes the keywords which may be used for the Module Failure Trend Analysis and gives their default values.

A complete list of keywords and their descriptions can be found in Section 3.2.9.

KEYWORD	DEFAULT
-----	-----
CURRENT enddate	yesterday's date
TIMESPAN DETAIL	DETAIL
CYCLES nn	DAYRANGE+1
DAYRANGE n	7
SYSID list	all SYSIDs
CPUSER list	all CPUSERS
MODULE list	all MODULEs
FAILURES nnn	1
EXCLUDE YES	EXCLUDE NO
REPORT MODTR	-

-----  
Notes:

1. Only the enddate is used from the CURRENT parameter. If a startdate is specified, it is ignored.
2. The only valid TIMESPAN value is DETAIL.
3. CYCLES may have any value, however, data will only be used from the dates contained in the period  
    enddate-DAYRANGE+1 to enddate
4. The maximum DAYRANGE value is 7 days.
5. The keywords SYSID, CPUSER and MODULE may be used to limit the data to be selected.
6. If other keywords are used, they MAY AFFECT the report. They are NOT ignored by the report.

### 3.2.4 Abend Trend Analysis Report

The Abend Trend Analysis Report provides a chart of the number of failures which have occurred by system completion code over a specified period of time. For example, 6 days. The failure trend will allow you to track and analyze software errors of the same type that have occurred during the period of time being examined. See Section 3.1.4 for more information on this report.

#### REPORT FORMAT:

See Section 3.1.4 for an example of the output generated by the Abend Trend Analysis Report.

#### DATA SOURCE (file/time-span):

SRLSSM at the DETAIL time-span.

#### DATA ELEMENTS USED:

The data elements used for this report are:

FILE	DATA ELEMENTS
SRLSSM	SSMSCMPC SSMFCT

#### REPORT DEFAULTS AND CONSIDERATIONS

The following table summarizes the keywords which may be used for the Abend Trend Analysis and gives their default values.

A complete list of keywords and their descriptions can be found in Section 3.2.9.

KEYWORD	DEFAULT
-----	-----
CURRENT enddate	yesterday's date
TIMESPAN DETAIL	DETAIL
CYCLES nn	DAYRANGE+1
DAYRANGE n	7
SYSID list	all SYSIDs
CPUSER list	all CPUSERS
SCC list	all SCCs
UCC list	all UCCs
FAILURES nnn	1
EXCLUDE YES	EXCLUDE NO
REPORT ABDTR	-

Notes:

1. Only the enddate is used from the CURRENT parameter. If a startdate is specified, it is ignored.
2. The only valid TIMESPAN value is DETAIL.
3. CYCLES may have any value, however, data will only be used from the dates contained in the period enddate-DAYRANGE+1 to enddate
4. The maximum DAYRANGE value is 7 days.
5. The keywords SYSID, CPUSER, SCC, and UCC may be user to limit the data to be selected.
6. If other keywords are used, they MAY AFFECT the report. They are NOT ignored by the report.

### 3.2.5 Equipment Reliability Summary Report

The Equipment Reliability Summary Report provides an overview of the failure history of the equipment by class and type of device. The failure history includes a usage count, the number of permanent and temporary errors, and the ratio of the usage count to the number of permanent and temporary errors for the current period and a specified previous period of time. See Section 3.1.5 for more information on this report.

#### REPORT FORMAT:

See Section 3.1.5 for an example of the output generated by the Equipment Reliability Summary Report.

#### DATA SOURCE (file/time-span):

SRLDRL, SRLMRL, SRLTRL, SRLXRL at the DETAIL or DAYS time-span.

#### DATA ELEMENTS USED:

The data elements used for this report are:

FILE	DATA ELEMENTS
SRLDRL	DRLPRMCT DRLTMPCT DRLLGCT DRLSEKCT
SRLMRL	MRLPRMCT MRLTMPCT MRLSIOCT
SRLTRL	TRLPRMCT TRLTMPCT
SRLXRL	XRLPRMCT XRLTMPCT

#### REPORT DEFAULTS AND CONSIDERATIONS

The following table summarizes the keywords which may be used for the Equipment Reliability Summary Report and gives their default values.

A complete list of keywords and their descriptions can be found in Section 3.2.9.

KEYWORD	DEFAULT
-----	-----
CURRENT aaa,bbb	yesterday's date
PREVIOUS aaa,bbb	7 days prior to yesterday's date
TIMESPAN x,d	DAYS
CYCLES nn	DAYRANGE+1
DAYRANGE nn	7
SYSID list	all SYSIDs
CPUSER list	all CPUSERS
ERRORS nnn	1
CLASS ccc	all CLASSEs
TYPE ttt	all TYPEs
EXCLUDE YES	EXCLUDE NO
REPORT EQPSM	-

Notes:

1. CURRENT may specify a single date or range of dates. The default is to process data from yesterday only.
2. PREVIOUS may specify a single date or range of dates. The default is to process data from the week prior to yesterday.
3. Valid TIMESPAN values are DETAIL and DAYS. The default is DAYS.
4. CYCLES may have any value. Note that the report will attempt to select data from the date ranges created by processing the CURRENT, PREVIOUS, and DAYRANGE parameters.
5. DAYRANGE can have any value up to its maximum allowed value. The default is 7 days.
6. The keywords SYSID and CPUSER may be used to limit the data to be selected.
7. The keywords CLASS and TYPE may be used to limit the report to specific equipment classes and types, such as 3380.
8. If other keywords are used, they MAY AFFECT the report. They are NOT ignored by the report.



### 3.2.6 Device Reliability Trend Report

The Device Reliability Trend Report provides a detailed history of the temporary error failure patterns for one or more devices within a device class and type; for example, direct access and 3350. The trend in temporary errors is provided by device address for a specified period of time, such as ten days. See Section 3.1.6 for more information.

**REPORT FORMAT:**

See Section 3.1.6 for an example of the output generated by the Device Reliability Trend Report.

**DATA SOURCE (file/time-span):**

SRLDMR at the DETAIL or DAYS time-span.

**DATA ELEMENTS USED:**

The data elements used for this report are:

FILE	DATA ELEMENTS
SRLDMR	DMRSEKCT DMRUCDCK DMRCODCK DMRSEKCT DMRBYTCT

## REPORT DEFAULTS AND CONSIDERATIONS

The following table summarizes the keywords which may be used for the Device Reliability Trend report and gives their default values.

A complete list of keywords and their descriptions can be found in Section 3.2.9.

KEYWORD	DEFAULT
-----	-----
CURRENT enddate	yesterday's date
TIMESPAN x,d	DAYS
CYCLES nn	DAYRANGE+1
DAYRANGE n	10
SYSID list	all SYSIDs
CPUSER list	all CPUSERS
ERRORS nnn	1
CLASS list	all CLASSEs
TYPE list	all TYPEs
ADDRESS list	all ADDRESSes
EXCLUDE YES	EXCLUDE NO
REPORT DEVSM	-
-----	-----

## Notes:

1. Only the enddate is used from the CURRENT parameter. If a startdate is specified, it is ignored.
2. Valid TIMESPAN values are DETAIL and DAYS. The default is DAYS.
3. CYCLES may have any value, however, data will only be used from the dates contained in the period enddate-DAYRANGE+1 to enddate
4. The maximum DAYRANGE value is 10 days.
5. The keywords SYSID and CPUSER may be used to limit the data to be selected.
6. The keywords CLASS, TYPE, and ADDRESS may be used to limit the report to specific equipment classes, types, or unique device addresses.
7. If other keywords are used, they MAY AFFECT the report. They are NOT ignored by the report.

### 3.2.7 Magnetic Tape Media Reliability Report

The Magnetic Tape Media Reliability Report provides an overview of the failure history of the magnetic tape media by volume serial number. The failure history includes the number of volume mounts, the number of Start I/O (SIO's) operations, the number of permanent and temporary errors, and the ratio of SIO count to the number of temporary errors for the current period and a specified previous period of time. See Section 3.1.7 for more information.

**REPORT FORMAT:**

See Section 3.1.7 for an example of the output generated by the Magnetic Tape Media Reliability Report.

**DATA SOURCE (file/time-span):**

SRLMMR at the DETAIL or DAYS time-span.

**DATA ELEMENTS USED:**

The data elements used for this report are:

FILE	DATA ELEMENTS
SRLMMR	MMRMTS MMRTEMPR MMRTEMPW MMRPERMR MMRPERMW MMRSIOCT

**REPORT DEFAULTS AND CONSIDERATIONS**

The following table summarizes the keywords which may be used for the Magnetic Tape Media Reliability Report and gives their default values.

A complete list of keywords and their descriptions can be found in Section 3.2.9.

KEYWORD	DEFAULT
-----	-----
CURRENT aaa,bbb	yesterday's date
PREVIOUS aaa,bbb	7 days prior to yesterday's date
TIMESPAN x,d	DAYS
CYCLES nn	DAYRANGE+1
DAYRANGE nn	7
SYSID list	all SYSIDs
CPUSER list	all CPUSERS
ERRORS nnn	1
TYPE ttt	all TYPEs
ADDRESS list	all ADDRESSes
VOLUME list	all VOLUMEs
EXCLUDE YES	EXCLUDE NO
REPORT MEDMT	-

-----

Notes:

1. CURRENT may specify a single date or range of dates. The default is to process data from yesterday only.
2. PREVIOUS may specify a single date or range of dates. The default is to process data from the week prior to yesterday.
3. Valid TIMESPAN values are DETAIL and DAYS. The default is DAYS.
4. CYCLES may have any value. Note that the report will attempt to select data from the date ranges created by processing the CURRENT, PREVIOUS, and DAYRANGE parameters.
5. DAYRANGE can have any value up to its maximum allowed value. The default is 7 days.
6. The keywords SYSID and CPUSER may be used to limit the data to be selected.
7. The keywords TYPE and ADDRESS may be used to limit the data to be selected.
8. The keyword VOLUME may be used to select one or more volumes to be processed.
9. If other keywords are used, they MAY AFFECT the report. They are NOT ignored by the report.

The processing dates and ranges are calculated in the following manner:

CURRENT period	<p>if the CURRENT keyword is not used, the current period consists of the data from yesterday's date.</p> <p>if CURRENT enddate is specified, the current period consists of the data from the specified enddate.</p> <p>if CURRENT startdate,enddate is specified the current period consists of the data in the range startdate to enddate.</p>
PREVIOUS period	<p>if the PREVIOUS keyword is not used, the previous enddate is set to the date before yesterday's date.</p> <p>if PREVIOUS enddate is specified, it is used as the previous enddate.</p> <p>startdate is calculated by subtracting the value for DAYRANGE. The previous period is</p> <p style="margin-left: 40px;">startdate-DAYRANGE+1 to enddate</p> <p>if PREVIOUS startdate, enddate is specified, it is used as the previous period.</p>

The current and previous periods must not overlap. If the parameters cause an overlap to occur, data will be selected for the current period first and then the previous period.

### 3.2.8 Direct Access Media Reliability Report

The Direct Access Media Reliability Report provides a summary of the reliability of direct access volumes for a selected current period and a previous period of time. The report provides a measure of the media reliability in terms of the usage per failure encountered on the volume. See Section 3.1.8 for more information.

**REPORT FORMAT:**

See Section 3.1.8 for an example of the output generated by the Direct Access Media Reliability Report.

**DATA SOURCE (file/time-span):**

SRLDMR at the DETAIL or DAYS time-span.

**DATA ELEMENTS USED:**

The data elements used for this inquiry are:

FILE	DATA ELEMENTS
SRLDMR	DMRSECT DMRUCDCK DMRCODCK DMRSEKCT DMRBYTCT

REPORT DEFAULTS AND CONSIDERATIONS

The following table summarizes the keywords which may be used for the Direct Access Media Reliability report and gives their default values.

A complete list of keywords and their descriptions can be found in Section 3.2.9.

KEYWORD	DEFAULT
-----	-----
CURRENT aaa,bbb	yesterday's date
PREVIOUS aaa,bbb	7 days prior to yesterday's date
TIMESPAN x,d	DAYS
CYCLES nn	DAYRANGE+1
DAYRANGE nn	7
SYSID list	all SYSIDs
CPUSER list	all CPUSERS
ERRORS nnn	1
TYPE ttt	all TYPEs
ADDRESS list	all ADDRESSes
VOLUME list	all VOLUMEs
EXCLUDE YES	EXCLUDE NO
REPORT MEDDA	-

-----  
Notes:

1. CURRENT may specify a single date or range of dates. The default is to process data from yesterday only.
2. PREVIOUS may specify a single date or range of dates. The default is to process data from the week prior to yesterday.
3. Valid TIMESPAN values are DETAIL and DAYS. The default is DAYS.
4. CYCLES may have any value. Note that the report will attempt to select data from the date ranges created by processing the CURRENT, PREVIOUS, and DAYRANGE parameters.
5. DAYRANGE can have any value up to its maximum allowed value. The default is 7 days.
6. The keywords SYSID and CPUSER may be used to limit the data to be selected.
7. The keywords TYPE and ADDRESS may be used to limit the data to be selected.
8. The keyword VOLUME may be used to select one or more volumes to be processed.
9. If other keywords are used, they MAY AFFECT the report. They are NOT ignored by the report.

The processing dates and ranges are calculated in the following manner:

CURRENT period	if the CURRENT keyword is not used, the current period consists of the data from yesterday's date.
	if CURRENT enddate is specified, the current period consists of the data from the specified enddate.
	if CURRENT startdate,enddate is specified the current period consists of the data in the range startdate to enddate.

PREVIOUS period      if the PREVIOUS keyword is not used, the previous enddate is set to the date before yesterday's date.

                          if PREVIOUS enddate is specified, it is used as the previous enddate.

                          startdate is calculated by subtracting the value for DAYRANGE. The previous period is

                          startdate-DAYRANGE+1 to enddate

                          if PREVIOUS startdate,enddate is specified, it is used as the previous period.

The current and previous periods must not overlap. If the parameters cause an overlap to occur, data will be selected for the current period first and then the previous period.

### 3.2.9 Generating System Reliability Reports

This section describes the considerations in generating the various System Reliability reports. The areas discussed are:

- o Process Flow
- o JCL Requirements
- o Report Options

#### PROCESS FLOW

The System Reliability reports are created in a one step process consisting of reading and processing user supplied parameters and control statements, selecting, sorting, and where required, summarizing the reliability data from one or more cycles and files of the data base, and producing the requested reports, tables, or charts.

During control statement processing, MACROs are built containing logic to select the appropriate data from the Reliability files. Based on the requested reports, SAS %INCLUDE statements are generated to load and execute the report logic.

### JCL REQUIREMENTS

To execute the System Reliability reports, the MICSSHRx JCL procedure is used, where 'i' is the single character identifier for the CA MICS Data Base containing the SRL files. This section describes the additional JCL required to execute the reports.

Two additional DD statements must be used with the MICSSHRx procedure, one to select the control statement processing routine and the other to specify the parameters and control statements for the reports.

Figure 3-10 shows a sample of the JCL used to execute the reports. In the example, the control statements are included in the submitted job. As an alternative, the control statements could be stored in a library on direct access.

```
//jobname JOB ...
//S1 EXEC MICSSHRx
//MICS.SYSIN DD DSN=sharedprefix.MICS.SOURCE(SRLRPT00),
// DISP=SHR
//MICS.CTLIN DD *
... control statements ...
/*
```

Figure 3-10. Sample Report JCL

A detailed description of the allowable parameters and control statements is provided in the following section.

### REPORT OPTIONS

The System Reliability reports are controlled through the use of keywords and parameters on control statements entered via the CTLIN DD statement as shown in Figure 3-10. The general rules for the syntax of the statements are:

1. Control statements are composed of keywords, value parameters, and lists of values.
2. Each statement consists of a keyword value followed by one or more values.
3. Columns 1-72 are scanned for input. Columns 73-80 are ignored.

4. Keywords may not be abbreviated.
5. Comments may not appear on the control statements.  
Any statement with \* as the first character will be considered a comment and the statement will be ignored.
6. A keyword value and its list must be completed on one line. No continuation lines are allowed.
7. All keywords associated with a REPORT statement are ANDed together, that is, all selection tests must be met for data to be passed to the report routine.
8. The order of the keywords is not significant.

The following topics on the report options are discussed:

- o Report Control Statements
- o Report Keyword Syntax Specifications
- o Usage and Examples

#### REPORT CONTROL STATEMENTS

The System Reliability reports and the data to be selected and presented in the reports are controlled through the use of parameters or control statements. No reports are generated as part of the normal CA MICS update or processing cycles. However, any report may be produced at any time by executing the report generation routine.

The control statements allow you to select one or more reports to be produced and to tailor or control the data used in the reports. The control statement is:

```
REPORT rrrrrrr
```

where rrrrrrr is the name of the report to be produced. If no other parameters are specified, then report 'rrrrrrr' will be produced using the default values for that specific report. The default values are described by report in the sections entitled 'Report Defaults and Considerations'.

The keywords available and a brief description of each one is listed in Figure 3-11.

KEYWORD	DESCRIPTION
CURRENT	specifies an ending date and possibly a starting date for the current period to be selected and reported
PREVIOUS	specifies a starting date and an ending date for the previous period to be selected and reported
TIMESPAN	specifies a CA MICS timespan value used to select files from the data base.
CYCLES	specifies the number of cycles or range of cycles of data to be selected from the data base.
DAYRANGE	specifies the number of consecutive days of data to be selected from the data base for reports having comparative information.
SYSID	specifies from 1 to 9 SYSIDs to be selected and reported
CPUSER	specifies from 1 to 9 CPU/processor serial numbers to be selected and reported
JOBNAME	specifies from 1 to 7 MVS job names to be selected and reported
MODULE	specifies from 1 to 7 module names to be selected and reported

SCC	specifies from 1 to 9 system completion codes to be selected and reported
UCC	specifies from 1 to 9 user completion codes to be selected and reported
FAILURES	specifies a value for the number of software failures which must occur before an entry appears on software reports.
ERRORS	specifies a value for the number of temporary errors which must occur before an entry appears on hardware reports.
CLASS	specifies from 1 to 7 classes of devices to be selected and reported (e.g., DASD)
TYPE	specifies from 1 to 7 types of devices to be selected and reported (e.g., 3380)
ADDRESS	specifies an address, a string, or range of device addresses to be selected and reported
VOLUME	specifies from 1 to 9 volume serial numbers to be selected and reported
EXCLUDE	specifies that the control statements are to be used to exclude data and not select data to be reported
REPORT	specifies from 1 to 7 names of reports to be produced using the previous parameter or control statements.

Figure 3-11. Report Options

## REPORT KEYWORD SYNTAX SPECIFICATIONS

CURRENT enddate  
CURRENT startdate,enddate

The CURRENT parameter specifies an ending date or where required, a range of dates, for the current report processing period. If a single date is present, it is assumed to be the starting and ending date for the report. If two dates are present, a date range will be assumed, of the form startdate,enddate. The report programs will select data based on the specified dates. If CURRENT is not specified, the programs will use yesterday's date as the ending date and will calculate a starting date, if one is required, based on the requested report.

EXAMPLES: CURRENT 01MAR83  
CURRENT 01JAN82,07JAN82

PREVIOUS enddate  
PREVIOUS startdate,enddate

The PREVIOUS parameter specifies an ending date or where required, a range of dates, for the previous report processing period. If a single date is present, it is assumed to be the starting and ending date for the period. If two dates are present, a range of dates will be assumed, in the format startdate,enddate. The report programs will select data based on the specified dates. If PREVIOUS is not specified, the programs will calculate a previous period based on the values of CURRENT and DAYRANGE.

EXAMPLES: PREVIOUS 01MAR83  
PREVIOUS 01JAN82,07JAN82

### TIMESPAN tttttt

The TIMESPAN parameter specifies a CA MICS timespan value used to select files from the data base. For the standard reports, the value may be DETAIL or DAYS. If specified, only data from the given time-span will be used. If the TIMESPAN parameter is not specified, a default time-span will be used based on the report(s) selected.

EXAMPLES:   TIMESPAN DAYS  
              TIMESPAN DETAIL

### CYCLES nn,nn

The CYCLES parameter specifies the number of cycles or range of cycles of data to be selected from the CA MICS data base. CYCLES may be specified as a single value or a pair of values in the range 1 to 99. If a single value is specified, it is assumed to be the number of cycles to select, beginning with the first cycle (01) and continuing to the cycle specified. If a pair of values is specified, the values are assumed to be a range of cycles beginning with the first value specified and ending with the second value specified. For a pair of values, the second value must be greater than or equal to the first value. This parameter is used with the TIMESPAN parameter to choose an appropriate timespan and number of cycles to process. If the parameter is not specified, a default number will be used based on the report(s) selected.

EXAMPLES:   CYCLES 5  
              CYCLES 3,10

**DAYRANGE nn**

The DAYRANGE parameter specifies the number of consecutive days of data to be selected from the CA MICS Data Base for reports having comparative information. The value may be from 1 to 99. This parameter is used to set a default number of previous days to select for reports having a current and previous period. For example, the specification DAYRANGE 14 would set a default of 14 days for reports using comparisons. If the parameter is not specified, a default number will be used based on the report(s) selected.

EXAMPLES: DAYRANGE 7  
DAYRANGE 14

**SYSID aaaa,bbbb,cccc,...**

The SYSID parameter specifies up to 9 system IDs to be selected and processed. Information for only the specified system IDs will be processed. If no SYSID parameter is present, information for all systems will be used.

EXAMPLES: SYSID X084  
SYSID PRD1,PRD2,PRD3

**CPUSER nnnnnn,nnnnnn,nnnnnn,...**

The CPUSER parameter specifies up to 9 CPU/processor serial numbers to be selected and processed. Information for only the specified CPUs/processors will be used. If no CPUSER parameter is present, information for all systems will be used. NOTE that for processors having more than 1 serial number, all of the serial numbers must be specified to be sure that all data is reported. This includes AP and MP systems and systems of the IBM 308x class (dyadic processors).

EXAMPLES: CPUSER 049604,044130  
CPUSER 020081,220081

JOBNAME mmmmmmm,mmmmmm,...

The JOBNAME parameter specifies up to 7 MVS job names to be selected and processed. Each name may be from 1 to 8 characters in length and should be a valid MVS job name. Information for only the specified job name(s) will be used. If no JOBNAME parameter is present, information for all jobs will be used.

If a parameter ends with the character \*, the preceding characters are assumed to be a prefix value. All job names beginning with the prefix value will be selected and processed. For example, the specification JOBNAME CSD\* will result in the selection of all job names beginning with the characters CSD.

EXAMPLES: JOBNAME JES2,MSI\*,NET  
JOBNAME GRP4133

MODULE mmmmmmm,mmmmmm,...

The MODULE parameter specifies up to 7 module names to be selected and processed. Each name may be from 1 to 8 characters in length. Information for only the specified module name(s) will be used. If no MODULE parameter is present, information for all modules will be used.

If a parameter ends with the character \*, the preceding characters are assumed to be a prefix value. All modules beginning with the prefix value will be selected and processed. For example, the specification MODULE IEF\* will result in the selection of all modules beginning with the characters IEF.

EXAMPLE: MODULE IKTIOM03,ILRTERMR

SCC hhh,hhh,hhh,...

The SCC parameter specifies up to 9 system completion codes to be selected and processed. Each code is a 3 hexadecimal character value, such as 0C4 or A03. Information for only the specified system completion code(s) will be used. If no SCC parameter is present, information for all system completion codes will be used.

EXAMPLES: SCC 0C4,B37,E37  
          SCC 122,222,322,522

UCC hhh,hhh,hhh,...

The UCC parameter specifies up to 9 user completion codes to be selected and processed. Each code is a 3 hexadecimal character value, such as 200 or 800. Information for only the specified user completion code(s) will be used. If no UCC parameter is present, information for all user completion codes will be used.

EXAMPLES: UCC 200,800  
          UCC 720

FAILURES nnn

The FAILURES parameter specifies the number of software failures which must occur before an entry appears on the software reports using this parameter. The value may be between 1 and 365 and is used to drop report lines below a given value. The specification FAILURES 25 indicates that only software failures occurring 25 or more times are to appear on the report.

EXAMPLE: FAILURES 15

ERRORS nnnn

The ERRORS parameter specifies the number of temporary errors which must occur before an entry appears on the hardware reports using this parameter. The value may be between 1 and 1000 and is used to drop report lines below a given value. The specification ERRORS 128 indicates that only temporary errors occurring 128 or more times are to appear on the report.

EXAMPLE: ERRORS 100

CLASS ccccccc,ccccccc,...

The CLASS parameter specifies up to 7 device classes to be selected and processed. The valid classes are DASD, TAPE, UNIT-REC, and COMMGEAR. Information for only the specified device class(es) will be used. If no CLASS parameter is present, information for all device classes will be used.

EXAMPLES: CLASS DASD  
CLASS TAPE,COMMGEAR

TYPE ttttttt,ttttttt,...

The TYPE parameter specifies up to 7 device types to be selected and processed. Each device type is a 4 to 8 numeric character identifier for a group of devices within a class of devices, such as 3350 or 3380 within DASD devices. Information for only the specified device type(s) will be used. If no TYPE parameter is present, information for all device types will be used.

EXAMPLES: TYPE 2400,3400  
TYPE 3350,3380

ADDRESS aaa,aaa,aaa,...

The ADDRESS parameter specifies up to 7 device address entries, where each entry may represent an address, a string of addresses, or an address range. An entry of the form 'cuuu' represents a single device at the channel and unit address given by 'cuuu'. An entry of the form 'cuuX' represents the string of 16 devices attached to channel 'c' and control unit 'u'. An entry of the form 'cuuu-cuuu' represents all of the devices from the first address to the second address. The address range is assumed to be within a range of 16 addresses, that is, the first three hexadecimal digits of both addresses must be the same. The range 03A2-03AC is a valid address range. The range 03A2-03BC is not valid, since the first 3 digits of both addresses are not the same. Information for only the specified address, string, or range of addresses will be used. If no ADDRESS parameter is present, information for all devices will be used.

EXAMPLES: ADDRESS 0256,065X,075X  
ADDRESS 0250-0259,0360,0365,0A80

VOLUME vvvvvv, vvvvvv, vvvvvv, ...

The VOLUME parameter specifies up to 9 volumes (for magnetic tape or direct access) to be selected and processed. Each entry is the 6-character volume serial number of a magnetic tape or direct access volume. Information for only the specified volume(s) will be used. If no VOLUME parameter is present, information for all volumes will be used.

If a parameter ends with the character \*, the preceding characters are assumed to be a prefix value. All volumes beginning with the prefix value will be selected and processed. For example, the specification VOLUME TSO\* will result in the selection of all volumes beginning with the characters TSO.

EXAMPLES: VOLUME 795007, DSK906  
VOLUME TS0805

EXCLUDE yes

The EXCLUDE parameter specifies that all of the previous control statements are to be used to exclude data and not to select data to be reported. The EXCLUDE parameter allows data to be dropped from the standard report(s) for one or more of the following keywords:

SYSID	CPUSER	JOBNAME	MODULE
SCC	UCC	CLASS	TYPE
ADDRESS	VOLUME		

If no EXCLUDE parameter is present, all of the specified parameters will be used to select data to be included.

EXAMPLE: EXCLUDE YES

REPORT rrrrr,rrrrr,...

The REPORT parameter specifies the name of up to 7 reports or report groups to produce using the previous parameter statements or the report default values. The possible values are:

SFWSM	Software Malfunction Summary Report
MODTR	Module Failure Trend Analysis Report
ABDTR	Abend Trend Analysis Report
ALLSW	Produce All Software Reports
RELSM	Reliability Summary Report
EQPSM	Equipment Reliability Summary Report
DEVSM	Device Reliability Analysis Report
ALLHW	Produce All Hardware Reports
MEDMT	Magnetic Tape Media Reliability Report
MEDDA	Direct Access Media Reliability Report
ALLME	Produce All Media Reports

The same report may be specified more than one time, using the default or specified parameters.

EXAMPLES: REPORT MODTR,DEVSM,MEDDA  
REPORT ALLME

## USAGE AND EXAMPLES

The control statements and parameters allow the reports to be selected both individually and in groups and the data contained in the reports to be included or excluded based on values specified for various keywords. For doing studies of the reliability data, the parameters allow you to specify sets or subsets of information to process.

For standard reporting, a set of defaults may be established and stored as a member of a partitioned data set. Report requests using the default control statements will always produce a standard series of reports, based on the requirements of your installation. For other studies, the control statements can be included as part of the instream JCL.

## EXAMPLE 1.

Produce an abend and module trend report for the production systems only. The production systems have system IDs (SYSIDs) of PRD1, PRD2, and PRD3. Use the standard report defaults for all other parameters.

```
SYSID PRD1,PRD2,PRD3  
REPORT ABDTR,MODTR
```

## EXAMPLE 2.

Produce a system software malfunction summary report for the online system (SYSID ONLN) and limit the report to those modules failing 10 times or more.

```
SYSID ONLN  
FAILURES 10  
REPORT SFWSM
```

### EXAMPLE 3.

Create a device reliability analysis report for the string of 3380 direct access devices at addresses 0250-025F.

```
CLASS DASD  
TYPE 3380  
ADDRESS 025X  
REPORT DEVSM
```

### EXAMPLE 4.

Print a media reliability report for any direct access volume beginning with the characters TSO and having more than 250 temporary errors.

```
ERRORS 250  
VOLUME TSO*  
REPORT MEDDA
```

# Chapter 4: EXCEPTIONS

The CA MICS System Reliability Analyzer supports the standard CA MICS exception process. CA MICS exception processing enables the I/S organization to focus on problems impacting its effectiveness with respect to availability, service, workload, standards, security, and performance for the different areas of responsibility (such as batch, TS0, or IMS).

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 the default values to meet your installation's standards.

Number	Severity	Management Area	Exception Description
07001	Critical	Availability	Software Failure in Critical System Task
07002	Critical	Availability	Software Failure in Critical System Module
07051	Critical	Availability	Software Failure in Critical User Function
07052	Critical	Availability	Software Failure in Critical User Module
07053	Warning	Availability	Job Cancelled By Loader Failure - Possible DASD Error
07200	Critical	Availability	System Terminated Due to Machine Check
07201	Impacting	Availability	Soft Machine Check Has Occurred
07203	Impacting	Availability	Failure Has Occurred in Clock Comparator
07204	Impacting	Availability	Failure Has Occurred in CPU Timer
07205	Impacting	Availability	Failure Has Occurred in Time-of-Day Clock
07206	Impacting	Availability	System Degraded by High Speed Buffer Failure
07207	Impacting	Availability	System Degraded by External Damage
07208	Impacting	Availability	System Degraded by Hardware Instruction Retry
07209	Impacting	Availability	System Wait State Due to Check Stop Switch
07210	Impacting	Availability	System Wait State Due to Machine Check
07300	Impacting	Availability	System Degraded by Storage Error(s)
07400	Critical	Availability	Recoverable Channel Check(s) Occurred
07500	Critical	Availability	Permanent Error(s) Occurred - Critical DASD Device
07501	Impacting	Availability	Permanent Error(s) Occurred on DASD Device
07502	Warning	Availability	Temporary Error(s) Exceed Maximum for DASD Device
07600	Critical	Availability	Permanent Error(s) Occurred - Critical Tape Device
07601	Impacting	Availability	Permanent Error(s) Occurred on Tape Device
07602	Warning	Availability	Temporary Read Error(s) Exceed Maximum for Tape
07603	Warning	Availability	Temporary Write Error(s) Exceed Maximum for Tape
07700	Critical	Availability	Permanent Error(s) Occurred - Critical U/R Device
07701	Impacting	Availability	Permanent Error(s) Occurred on U/R Device
07800	Critical	Availability	Permanent Error(s) Occurred - Critical TP Device
07801	Impacting	Availability	Permanent Error(s) Occurred on TP Device
07950	Warning	Availability	Temporary Read Error(s) Exceed Maximum for Volume
07951	Warning	Availability	Temporary Write Error(s) Exceed Maximum for Volume

Figure 4-1. System Reliability Analyzer Exception List

This section contains the following topics:

[4.1 Exception Process Overview](#) (see page 100)

[4.2 Setting Exception Values](#) (see page 103)

[4.3 Detailed Exception Descriptions](#) (see page 104)

## 4.1 Exception Process Overview

The CA MICS exception process consists of the individual exceptions, 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 the occurrence of an event which merits visibility and attention. It may be an occurrence that is a distinct problem (e.g., CICS abended at 2:00 p.m.) or one that may be a problem and 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 the following:

- 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 EXCEPTION REPORTS

The standard exception reports provide a concise, integrated method for problem reporting. 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). See 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 you can use 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 Mgmt. 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 CA MICS product 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). See 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 CA MICS product is contained in sharedprefix.MICS.SOURCE(DYcccEXC), where ccc is the product identifier. When the DAY200 step invokes the test routines, it does so by using %INCLUDE for the DYcccEXC member from prefix.MICS.USER.SOURCE. As distributed, that member then uses %INCLUDE for the member from sharedprefix.MICS.SOURCE. See Section 4.2 of this guide, Setting Exception Values, for more information on DYcccEXC.

### EXCEPTION VALUE ANALYSIS ROUTINE

Each CA MICS product has an exception value analysis (EVA) routine that you can use 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 product 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 conditions and definitions that classify the exception for reporting and analysis. The following is a sample exception test:

```
*
** 03002
** BATCH JOB ELAPSED TIME EXCEEDED LIMIT
*;
  IF JOBGROUP=1 AND JOBEXCTM > '00:01:00'T
  OR JOBGROUP=2 AND JOBEXCTM > '00:30:00'T
  OR JOBGROUP=3 AND JOBEXCTM > '00:59:99'T
  THEN DO;
    EXCCODE='14002';
    SEVERITY='I';
    MGMTAREA='PERFORMANCE';
    EXCDDESC1='JOB ELAPSED TIME EXCEEDED LIMIT';
    EXCDDESC2='JOBGROUP=' || PUT(JOBGROUP,3.)
              || ' ELAPSED TIME(H:M:S)='
              || PUT(PJBEXCTM,TIME.);
    LINK HIT;
  END;
```

This exception test is processed for each observation that is in the latest cycle of the DETAIL Batch User Job Activity File (BATJOB). The test is positive only when the value of the JOBGROUP element is one, two, or three and the JOBEXCTM element exceeds the associated time limit. For jobs in group one, the duration must be greater than one minute. For jobs in group two, the duration must be greater than 30 minutes, and for jobs in group three, the duration must be greater than or equal to one hour.

When the test is positive, the exception is categorized by providing the appropriate values for EXCCODE, SEVERITY, and MGMTAREA. EXCDDESC1 provides a consistent label for the exception. EXCDDESC2 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 eventually to be written to the Exception Activity File (ADMEXC) for later processing by the standard reports or MICF inquiries.

For most organizations, the exception limits used here would either cause too many exceptions or too few exceptions to be reported, which defeats one of the purposes of exception processing: to report on "out of the ordinary" conditions that warrant attention. Therefore, each organization must determine and set its own exception values.

Furthermore, the values for some 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, which 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.

The CA MICS Data Base provides a most useful information base for analyzing historical performance. The exception value analysis routine uses the CA MICS Data Base to produce a statistical analysis of the values 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 your own analysis of data element behavior, you can determine how to modify each exception test for your environment. 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 System Reliability Analyzer standard exception available in the exception report process. The exceptions are organized by number and appear sequentially, starting with exception 07000.

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

**07001: Software Failure in Critical System Task**

FILE: System Software Diagnostic File  
SAS FILE NAME: DETAIL.SRLSSD01  
SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Critical (SEVERITY='C')  
MANAGEMENT AREA: Availability (MGMTAREA='AVAILABILITY')

PURPOSE: Identify Software Failures in Critical System Functions

RATIONALE: Software failures in critical system functions may result in costly interruptions to online services and reruns of batch systems. A failure in a system function usually results in degradation or loss of the services provided by the function. The entire system may or may not be affected by the failure. By tracking critical functions, you may be able to identify, isolate, and resolve problems that are impacting the services provided by your installation.

DEFINITION: This exception is created when a failure is detected in any system function identified as being critical to the system. A critical function is specified with a job name in the CJOB statement as part of the System Reliability options and is described in Chapter 7.

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:

```
*****;
*
** 07001
** SOFTWARE FAILURE IN CRITICAL SYSTEM TASK
*;
IF SSDCJOB = 'C'
  THEN DO;
  EXCCODE='07001'; SEVERITY='C'; MGMTAREA='AVAILABILITY';
  EXCDESC1='SOFTWARE FAILURE IN CRITICAL SYSTEM FUNCTION';
  EXCDESC2='FUNCTION= ' || SSDJOB;
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: No modifications are required. To change the system functions identified as being critical, modify the CJOB statements specified as part of SRLOPS. This is described in Chapter 7.

**07002: Software Failure in Critical System Module**

FILE: System Software Diagnostic File  
SAS FILE NAME: DETAIL.SRLSSD01  
SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Critical (SEVERITY='C')  
MANAGEMENT AREA: Availability (MGMTAREA='AVAILABILITY')

PURPOSE: Identify Software Failures in Critical System Modules

RATIONALE: Software failures in critical system modules may result in costly interruptions to online services and reruns of batch systems. A failure in a system module may result in degradation or loss of the services provided by the entire function. The system may or may not be affected by the failure. By tracking critical modules, you may be able to identify, isolate, and resolve problems that are impacting the services provided by your installation.

**DEFINITION:** This exception is created when a failure is detected in any system module identified as being critical to the system. A critical module is specified with a program name in the CMOD statement as part of the System Reliability options and is described in Chapter 7.

**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:

```
*****;
*
** 07002
** SOFTWARE FAILURE IN CRITICAL SYSTEM MODULE
*;
IF SSDCMOD = 'C'
  THEN DO;
  EXCCODE='07002'; SEVERITY='C'; MGMTAREA='AVAILABILITY';
  EXCDESC1='SOFTWARE FAILURE IN CRITICAL SYSTEM MODULE';
  EXCDESC2='MODULE=' || MODULE;
  LINK HIT;
END;
```

**THRESHOLD MODIFICATION:** No modifications are required. To change the system modules identified as being critical, modify the CMOD statements specified as part of SRLOPS. This is described in Chapter 7.

#### **07051: Software Failure in Critical User Function**

FILE: User Software Diagnostic File  
 SAS FILE NAME: DETAIL.SRL\_UD01  
 SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Critical (SEVERITY='C')  
 MANAGEMENT AREA: Availability (MGMTAREA='AVAILABILITY')

PURPOSE: Identify Software Failures in Critical User Functions

**RATIONALE:** Software failures in critical user functions may result in costly interruptions to online services or reruns of applications systems. The failures usually do not affect the entire system but may have serious impact on business operations. By tracking critical user functions, you may be able to identify, isolate, and resolve problems impacting the services provided by your installation.

**DEFINITION:** This exception is created when a failure is detected in any user function identified as being critical to the installation. A critical function is specified with a job name in the CJOB statement as part of the System Reliability options and is described in Chapter 7.

**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:

```
*****;  
*  
** 07051  
** SOFTWARE FAILURE IN CRITICAL USER FUNCTION  
*;  
IF SSDCJOB = 'C'  
  THEN DO;  
    EXCCODE='07051'; SEVERITY='C'; MGMTAREA='AVAILABILITY';  
    EXCDESC1='SOFTWARE FAILURE IN CRITICAL USER FUNCTION';  
    EXCDESC2='FUNCTION= ' || SSDJOB;  
    LINK HIT;  
  END;
```

**THRESHOLD MODIFICATION:** No modifications are required. To change the user functions identified as being critical, modify the CJOB statements specified as part of SRLOPS. This is described in Chapter 7.

**07052: Software Failure in Critical User Module**

FILE: User Software Diagnostic File  
 SAS FILE NAME: DETAIL.SRL\_UD01  
 SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Critical (SEVERITY='C')  
 MANAGEMENT AREA: Availability (MGMTAREA='AVAILABILITY')

PURPOSE: Identify Software Failures in Critical User Modules

RATIONALE: Software failures in critical user modules may result in costly interruptions to online services or reruns of applications systems. The failures usually do not affect the entire system but may have serious impact on business operations. By tracking critical user modules, you may be able to identify, isolate, and resolve problems impacting the services provided by your installation.

DEFINITION: This exception is created when a failure is detected in any user module identified as being critical to the installation. A critical module is specified with a program name in the CMOD statement as part of the System Reliability options and is described in Chapter 7.

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:

```
*****;
*
** 07052
** SOFTWARE FAILURE IN CRITICAL USER MODULE
*;
IF SSDCMOD = 'C'
  THEN DO;
  EXCCODE='07052'; SEVERITY='C'; MGMTAREA='AVAILABILITY';
  EXCDESC1='SOFTWARE FAILURE IN CRITICAL USER MODULE';
  EXCDESC2='MODULE=' || MODULE;
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: No modifications are required.  
To change the user modules identified as being critical,  
modify the CMOD statements specified as part of SRLOPS.  
This is described in Chapter 7.

**07053: Job Cancelled by Loader Failure - Possible DASD Error**

FILE: User Software Diagnostic File  
SAS FILE NAME: DETAIL.SRL\_UD01  
SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Warning (SEVERITY='W')  
MANAGEMENT AREA: Availability (MGMTAREA='AVAILABILITY')

PURPOSE: Identify Possible DASD Errors Based on Errors  
Encountered by the Program Loader

RATIONALE: When an uncorrectable I/O error or an error in  
the load module is encountered by the control program while  
attempting to fetch a program into virtual storage, a 106-F  
ABEND is issued. This can be an indication of a direct access  
error on a volume containing one or more program libraries.

DEFINITION: This exception is created when a 106-F system  
ABEND is detected in any program being loaded for processing  
by the system.

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:

```
*****;  
*  
** 07053  
** JOB CANCELLED BY LOADER FAILURE - POSSIBLE DASD ERROR  
*;  
IF SSDSCMPC = '106' AND SSDGR15 = '0000000F'X  
THEN DO;  
  EXCCODE='07053'; SEVERITY='W'; MGMTAREA='AVAILABILITY';  
  EXCDDESC1='JOB CANCELLED BY LOADER FAILURE -  
    - POSSIBLE DASD ERROR';  
  LINK HIT;  
END;
```

THRESHOLD MODIFICATION: The user may wish to restrict this exception to a specific task. In this case, the following can be added before the THEN of the IF statement:

name-1 - the name of the specific task or function to be included in the exception is specified. A task named GRP400 would appear as:

```
AND SSDJOB = 'GRP400'
```

You may also wish to add the statement:

```
EXCDESC2='JOB NAME= ' || SSDJOB;
```

to allow the specific jobname having the failure to appear when full exceptions are requested.

#### **07200: System Terminated Due To Machine Check**

FILE: Processor Reliability File  
SAS FILE NAME: DETAIL.SRLPRL01  
SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Critical (SEVERITY='C')  
MANAGEMENT AREA: Availability (MGMTAREA='AVAILABILITY')

PURPOSE: Identify System Failures and Outages Due To Machine Checks

RATIONALE: System failures and outages result in costly interruptions to online systems and reruns of batch system. By examining all data related to a system failure, you may be able to identify, isolate, and resolve problems which are impacting the services provided by your installation. This exception indicates that an overall system failure has taken place and provides a starting point for your problem analysis.

DEFINITION: This exception is created when a value greater than zero is found in the system terminated indicator within a machine check 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:

```
*****;  
*  
** 07200  
** SYSTEM TERMINATED DUE TO MACHINE CHECK  
*;  
IF PRLSYST  
  THEN DO;  
    EXCCODE='07200'; SEVERITY='C'; MGMTAREA='AVAILABILITY';  
    EXCDISC1='SYSTEM TERMINATED DUE TO MACHINE CHECK';  
    LINK HIT;  
  END;
```

THRESHOLD MODIFICATION: No modifications are required.

**07201: Soft Machine Check Has Occurred**

FILE: Processor Reliability File  
SAS FILE NAME: DETAIL.SRLPRL01  
SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Impacting (SEVERITY='I')  
MANAGEMENT AREA: Availability (MGMTAREA='AVAILABILITY')

PURPOSE: Identify Interruptions or System Degradation  
Caused by Recoverable Machine Checks

RATIONALE: Machine checks which are recovered by the system can cause costly interruptions and delays in services provided to online users and the execution of batch systems. By examining all data related to recoverable failures, you may be able to identify, isolate, and resolve problems which are impacting the services provided by your installation. This exception indicates that a recoverable machine failure has taken place and provides a starting point for your problem analysis.

DEFINITION: This exception is detected when the system terminated indicator is zero, indicating that a machine check has occurred which was recovered by the system.

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:

```
*****;
*
** 07201
** SOFT MACHINE CHECK HAS OCCURRED
*;
IF PRLSYST = 0
  THEN DO;
    EXCCODE='07201'; SEVERITY='I'; MGMTAREA='AVAILABILITY';
    EXCDesc1='SOFT MACHINE CHECK HAS OCCURRED';
    LINK HIT;
  END;
```

THRESHOLD MODIFICATION: No modifications are required.

#### **07203: Failure Has Occurred in Clock Comparator**

FILE: Processor Reliability File  
 SAS FILE NAME: DETAIL.SRLPRL01  
 SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Impacting (SEVERITY='I')  
 MANAGEMENT AREA: Reliability (MGMTAREA='Reliability')

PURPOSE: Identify System Errors and Interruptions Due To Failures in the Clock Comparator

RATIONALE: The IBM 370 processors include four facilities for measuring time: the time of day clock, the clock comparator, the CPU timer, and the interval timer. The clock comparator is used to indicate that the time of day clock value has exceeded a value stored in the clock comparator. This allows an interrupt to be generated when a certain time has been reached by the time of day clock. Any failure or error which causes loss of the ability to measure time units may impact your ability to provide services in your installation.

DEFINITION: This exception is detected when a value greater than zero is found in the clock comparator error indicator and the system has not been terminated.

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:

```
*****;  
*  
** 07203  
** FAILURE HAS OCCURRED IN CLOCK COMPARATOR  
*;  
IF PRLSYST = 0 AND PRLICKC  
  THEN DO;  
    EXCCODE='07203'; SEVERITY='I'; MGMTAREA='RELIABILITY';  
    EXCDESC1='FAILURE HAS OCCURRED IN CLOCK COMPARATOR';  
    LINK HIT;  
  END;
```

THRESHOLD MODIFICATION: No modifications are required.

**07204: Failure Has Occurred in CPU Timer**

FILE: Processor Reliability File  
SAS FILE NAME: DETAIL.SRLPRL01  
SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Impacting (SEVERITY='I')  
MANAGEMENT AREA: Reliability (MGMTAREA='RELIABILITY')

PURPOSE: Identify System Errors and Interruptions Due To Failures in the CPU Timer

RATIONALE: The IBM 370 processors include four facilities for measuring time: the time of day clock, the clock comparator, the CPU timer, and the interval timer. The CPU timer is used to measure elapsed CPU time and for indicating that a specified amount of time has elapsed. Any failure or error which causes loss of the ability to measure time units may impact your ability to provide services in your installation.

DEFINITION: This exception is detected when a value greater than zero is found in the CPU timer error indicator and the system has not been terminated.

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:

```
*****;
*
** 07204
** FAILURE HAS OCCURRED IN CPU TIMER
*;
IF PRLSYST = 0 AND PRLICTM
  THEN DO;
  EXCCODE='07204'; SEVERITY='I'; MGMTAREA='RELIABILITY';
  EXCDESC1='FAILURE HAS OCCURRED IN CPU TIMER ';
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: No modifications are required.

#### **07205: Failure Has Occurred in Time-of-Day Clock**

FILE: Processor Reliability File  
 SAS FILE NAME: DETAIL.SRLPRL01  
 SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Impacting (SEVERITY='I')  
 MANAGEMENT AREA: Reliability (MGMTAREA='RELIABILITY')

PURPOSE: Identify System Errors and Interruptions Due To Failures in the Time-of-Day Clock

RATIONALE: The IBM 370 processors include four facilities for measuring time: the time of day clock, the clock comparator, the CPU timer, and the interval timer. The time of day clock provides a high resolution measure of real time and is normally used for very accurate measurements of elapsed time. Any failure or error which causes loss of the ability to measure time units may impact your ability to provide services in your installation.

DEFINITION: This exception is detected when a value greater than zero is found in the time-of-day clock error indicator and the system has not been terminated.

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:

```
*****;  
*  
** 07205  
** FAILURE HAS OCCURRED IN TIME-OF-DAY CLOCK  
*;  
IF PRLSYST = 0 AND PRLITOD  
THEN DO;  
  EXCCODE='07205'; SEVERITY='I'; MGMTAREA='RELIABILITY';  
  EXCDESC1='FAILURE HAS OCCURRED IN TIME-OF-DAY CLOCK';  
  LINK HIT;  
END;
```

THRESHOLD MODIFICATION: No modifications are required.

**07206: System Degraded by High Speed Buffer Failure**

FILE: Processor Reliability File  
SAS FILE NAME: DETAIL.SRLPRL01  
SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Impacting (SEVERITY='I')  
MANAGEMENT AREA: Availability (MGMTAREA='AVAILABILITY')

PURPOSE: Identify Degradation to the System Caused By Failures in the High Speed Buffer

RATIONALE: All IBM System/370 processors equipped with a high speed buffer will automatically delete portions of the buffer should a recoverable failure occur. Loss of portions of the high speed buffer causes degradation in the performance of the system, depending on how much of the buffer is disabled.

DEFINITION: This exception is detected when a value greater than zero is found in the 'buffer is in error' indicator and the system has not been terminated.

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:

```
*****;
*
** 07206
** SYSTEM DEGRADED BY HIGH SPEED BUFFER FAILURE
*;
IF PRLSYST = 0 AND PRLSBUF
THEN DO;
  EXCCODE='07206'; SEVERITY='I'; MGMTAREA='AVAILABILITY';
  EXCDDESC1='SYSTEM DEGRADED BY HIGH SPEED BUFFER FAILURE';
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: The user may wish to restrict this exception to prime time. In which case, the following can be added before the THEN of the IF statement:

Prime Time - The hour range and days of the week to be included in the exception are specified. The hour of the day must be within the hh1 through hh2 range. Prime time specified as 8am through 6:59 pm (18:59) would appear as:

```
AND ( 8 <=HOUR AND HOUR<= 18 )
```

The days of the week are represented by the first three characters of their names. They must be enclosed in quotes, separated with OR's. Prime time specified as MONDAY through FRIDAY would appear as:

```
AND (DAYNAME='MON' OR DAYNAME='TUE' OR DAYNAME='WED'
      OR DAYNAME='THU' OR DAYNAME='FRI' )
```

**07207: System Degraded by External Damage**

FILE: Processor Reliability File  
SAS FILE NAME: DETAIL.SRLPRL01  
SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Impacting (SEVERITY='I')  
MANAGEMENT AREA: Availability (MGMTAREA='AVAILABILITY')

PURPOSE: Identify Degradation to the System Caused By Failures in Components Other than the Processor

RATIONALE: Failures which result in system degradation can lead to missed objectives for batch and online services. By tracking failures which cause degradation to the system, you may be able to identify, isolate, and resolve problems which are impacting the services provided by your installation. External damage is caused by an error in some component of the system other than the processor itself (for example, the channels). Note that the failures may result in more than one error being logged to the SYS1.LOGREC dataset.

DEFINITION: This exception is detected when a value greater than zero is found in the 'external damage indicator' and the system has not been terminated.

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:

```
*****;  
*  
** 07207  
** SYSTEM DEGRADED BY EXTERNAL DAMAGE  
*;  
IF PRLSYST = 0 AND PRLSEXD  
THEN DO;  
  EXCCODE='07207'; SEVERITY='I'; MGMTAREA='AVAILABILITY';  
  EXCDESC1='SYSTEM DEGRADED BY EXTERNAL DAMAGE';  
  LINK HIT;  
END;
```

THRESHOLD MODIFICATION: The user may wish to restrict this exception to prime time. In which case, the following can be added before the THEN of the IF statement:

Prime Time - The hour range and days of the week to be included in the exception are specified. The hour of the day must be within the hh1 through hh2 range. Prime time specified as 8am through 6:59 pm (18:59) would appear as:

```
AND ( 8 <=HOUR AND HOUR<= 18 )
```

The days of the week are represented by the first three characters of their names. They must be enclosed in quotes, separated with OR's. Prime time specified as MONDAY through FRIDAY would appear as:

```
AND ( DAYNAME='MON' OR DAYNAME='TUE' OR DAYNAME='WED'
      OR DAYNAME='THU' OR DAYNAME='FRI' )
```

#### **07208: System Degraded by Hardware Instruction Retry**

FILE: Processor Reliability File  
 SAS FILE NAME: DETAIL.SRLPRL01  
 SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Impacting (SEVERITY='I')  
 MANAGEMENT AREA: Availability (MGMTAREA='AVAILABILITY')

PURPOSE: Identify Degradation to the System Caused By Instruction Retry

RATIONALE: Failures which result in system degradation can lead to missed objectives for batch and online services. By tracking failures which cause degradation to the system, you may be able to identify, isolate, and resolve problems which are impacting the services provided by your installation. Instruction retry allows a processor to recover from intermittent failures in the hardware. An operation may be retried from the beginning or from some other point in the processing of the instruction that is known to be correct. When retry takes place many times, system degradation can occur.

DEFINITION: This exception is detected when a value greater than zero is found in the 'hardware instruction retry' indicator and the system has not been terminated.

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:

```
*****;  
*  
** 07208  
** SYSTEM DEGRADED BY HARDWARE INSTRUCTION RETRY  
*;  
IF PRLSYST = 0 AND PRLSHIR  
  THEN DO;  
  EXCCODE='07208'; SEVERITY='I'; MGMTAREA='AVAILABILITY';  
  EXCDDESC1='SYSTEM DEGRADED BY HARDWARE INSTRUCTION RETRY';  
  LINK HIT;  
END;
```

THRESHOLD MODIFICATION: The user may wish to restrict this exception to prime time. In which case, the following can be added before the THEN of the IF statement:

Prime Time - The hour range and days of the week to be included in the exception are specified. The hour of the day must be within the hh1 through hh2 range. Prime time specified as 8am through 6:59 pm (18:59) would appear as:

```
AND ( 8 <=HOUR AND HOUR<= 18 )
```

The days of the week are represented by the first three characters of their names. They must be enclosed in quotes, separated with OR's. Prime time specified as MONDAY through FRIDAY would appear as:

```
AND ( DAYNAME='MON' OR DAYNAME='TUE' OR DAYNAME='WED'  
      OR DAYNAME='THU' OR DAYNAME='FRI' )
```

**07209: System Wait State Due To CHECK STOP Switch**

FILE: Processor Reliability File  
 SAS FILE NAME: DETAIL.SRLPRL01  
 SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Impacting (SEVERITY='I')  
 MANAGEMENT AREA: Availability (MGMTAREA='AVAILABILITY')

PURPOSE: Identify System and Service Interruptions Due To Wait States Caused by the CHECK STOP Switch

RATIONALE: System failures and outages result in costly reruns and missed service objectives for batch and online services. The CHECK STOP switch or test is used to stop the processor when some hardware error or event takes place. This is usually done to isolate and resolve an intermittent hardware problem. CHECK STOP should not be used in normal operations and its use can indicate the presence of one or more hardware errors that require management involvement in their resolution.

DEFINITION: This exception is detected when a value greater than zero is found in the CHECK STOP indicator and the system has not been terminated.

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:

```
*****;
*
** 07209
** SYSTEM WAIT STATE DUE TO CHECK STOP SWITCH
*;
IF PRLSYST = 0 AND PRLTCKS
  THEN DO;
  EXCCODE='07209'; SEVERITY='I'; MGMTAREA='AVAILABILITY';
  EXCDESC1='SYSTEM WAIT STATE DUE TO CHECK STOP SWITCH';
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: No modifications are required.

**07210: System Wait State Due To Machine Check**

FILE: Processor Reliability File  
SAS FILE NAME: DETAIL.SRLPRL01  
SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Impacting (SEVERITY='I')  
MANAGEMENT AREA: Availability (MGMTAREA='AVAILABILITY')

PURPOSE: Identify System Interruptions Due to Wait States  
Caused by Machine Checks

RATIONALE: System failures and outages result in costly reruns and missed service objectives for batch and online services. System wait states can result in both delays and interruptions to services. If the wait state is restartable, services are delayed until some operator action takes place to restart the system. If the wait state is not restartable, the system must be re-IPLed and all services are interrupted for some period of time.

DEFINITION: This exception is detected when a value greater than zero is found in the wait state code and the system has not been terminated.

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:

```
*****;  
*  
** 07210  
** SYSTEM WAIT STATE DUE TO MACHINE CHECK  
*;  
IF PRLSYST = 0 AND PRLWSC NE ' '   
  THEN DO;  
  EXCCODE='07210'; SEVERITY='I'; MGMTAREA='AVAILABILITY';  
  EXCDDESC1='SYSTEM WAIT STATE DUE TO MACHINE CHECK';  
  LINK HIT;  
END;
```

THRESHOLD MODIFICATION: No modifications are required.

**07300: System Degraded by Storage Error(s)**

FILE: Storage Reliability File  
 SAS FILE NAME: DETAIL.SRLSTR01  
 SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Impacting (SEVERITY='I')  
 MANAGEMENT AREA: Availability (MGMTAREA='AVAILABILITY')

PURPOSE: Identify System Degradation Caused by Storage Errors

RATIONALE: Failures which result in system degradation can lead to missed objectives for batch and online services. By tracking failures which cause degradation to the system, you may be able to identify, isolate, and resolve problems which are impacting the services provided by your installation. Recoverable storage errors may result in higher channel activity for direct access devices due to the need to refresh portions of programs which are executing. If a failure occurs which can not be recovered by refreshing portions of a program, the program may be abnormally terminated. This may cause interruptions to online services or may require that batch programs be rerun.

DEFINITION: This exception is detected when a storage failure is encountered which did not result in the system being terminated by the machine check handler.

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:

```
*****;
*
** 07300
** SYSTEM DEGRADED BY STORAGE ERROR(S)
*;
IF STRFSC > 0 AND STRSYST
  THEN DO;
  EXCCODE='07300'; SEVERITY='I'; MGMTAREA='AVAILABILITY';
  EXCDESC1='SYSTEM DEGRADED BY STORAGE ERROR(S)';
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: The user may wish to restrict this exception to prime time. In which case, the following can be added before the THEN of the IF statement:

Prime Time - The hour range and days of the week to be included in the exception are specified. The hour of the day must be within the hh1 through hh2 range. Prime time specified as 8am through 6:59 pm (18:59) would appear as:

AND ( 8 <=HOUR AND HOUR<= 18 )

The days of the week are represented by the first three characters of their names. They must be enclosed in quotes, separated with OR's. Prime time specified as MONDAY through FRIDAY would appear as:

AND ( DAYNAME='MON' OR DAYNAME='TUE' OR DAYNAME='WED'  
OR DAYNAME='THU' OR DAYNAME='FRI' )

**07400: Recoverable Channel Check(s) Occurred**

FILE: Channel Reliability File  
SAS FILE NAME: DETAIL.SRLCRL01  
SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Critical (SEVERITY='C')  
MANAGEMENT AREA: Availability (MGMTAREA='AVAILABILITY')

PURPOSE: Identify Channel Failures which did not Result In System Termination

RATIONALE: Channel failures which are recovered by the channel check handler may result in degradation to the system. This degradation can cause delays or interruptions to online services or batch jobs in execution. By tracking recoverable channel failures, you may be able to identify, isolate, and resolve problems which are impacting the services provided by your installation.

DEFINITION: This exception is created when any channel check record is found in the channel reliability file.

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:

```
*****;
*
** 07400
** RECOVERABLE CHANNEL CHECK(S) OCCURRED
*;
IF CHANNEL NE ' '
THEN DO;
  EXCCODE='07400'; SEVERITY='C'; MGMTAREA='AVAILABILITY';
  EXCDISC1='RECOVERABLE CHANNEL FAILURE(S) OCCURRED';
  EXCDISC2='CHANNEL= ' || CHANNEL;
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: No modifications are required.

**07500: Permanent Error(s) Occurred - Critical DASD**  
Device

FILE: DASD Device Reliability File  
SAS FILE NAME: DETAIL.SRLDRL01  
SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Critical (SEVERITY='C')  
MANAGEMENT AREA: Availability (MGMTAREA='AVAILABILITY')

PURPOSE: Identify Permanent Errors Occurring on Critical Direct Access Devices

RATIONALE: Direct access devices are used to store libraries containing programs and data sets containing information used by online systems and batch applications. In some installations, one or more direct access devices may be dedicated to a critical application. Permanent errors that occur on these devices may cause failures in the online systems or batch programs using the libraries and data sets. By examining all permanent errors that occur on these critical devices, you may be able to identify, isolate, and resolve problems that are impacting the services provided by your installation.

DEFINITION: This exception is created when a permanent error is detected on any direct access device identified as being critical to the installation. Note that any error producing a 07500 exception will also create a 07501 exception, though the reverse is not true. Exception 07500 identifies permanent errors ONLY if they occur on a CRITICAL DASD Device. Exception 07501 identifies ALL permanent errors.

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:

```
*****;
*
** 07500
** PERMANENT ERROR(S) OCCURRED - CRITICAL DASD DEVICE
*;
IF DRLPRMCT AND
  (DEVNUM = 0000x)
  THEN DO;
  EXCCODE='07500'; SEVERITY='C'; MGMTAREA='AVAILABILITY';
  EXCDESC1='PERMANENT ERROR(S) OCCURRED - CRITICAL DASD
            DEVICE';
  EXCDESC2='ADDRESS= ' || PUT(DEVNUM,HEX4.) || ', VOLSER= '
            || VOLSER || ', ERROR COUNT= ' || DRLPRMCT ;
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: The user should modify the address of the critical direct access device according to the following convention:

cuuu - is the channel and unit address of the direct access device. For a device with access through more than one channel address, the address should be the lowest address that can be used. For example, a device with addresses 240 and 440 would appear as

DEVNUM = '0240x'

NOTE: For direct access devices having movable address plugs, you may wish to track permanent errors using the volume serial number. In this case, you should replace the DEVADDR = '0000x' expression with the expression VOLSER = 'volname'. This technique may also be used for permanently mounted volumes such as the IBM 3350 so that the exception tracking is not dependent on the actual hardware address being used. The following convention would be used:

volname - is the 6 character volume serial number of the direct access volume. The volume GRP400 would appear

VOLSER = 'GRP400'

#### **07501: Permanent Error(s) Occurred on DASD Device**

FILE: DASD Device Reliability File  
SAS FILE NAME: DETAIL.SRLDRL01  
SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Impacting (SEVERITY='I')  
MANAGEMENT AREA: Reliability (MGMTAREA='RELIABILITY')

PURPOSE: Identify Permanent Errors Occurring on Direct Access Devices

RATIONALE: Direct access devices are used to store libraries containing programs and data sets containing information used by online systems and batch applications. Permanent errors that occur on direct access devices may cause failures in the online systems or batch programs using the libraries and data sets. By examining permanent errors that occur on direct access devices, you may be able to identify, isolate, and resolve problems that are impacting the services provided by your installation.

DEFINITION: This exception is created when a permanent error is detected on any direct access device. Note that any error producing a 07500 exception will also create a 07501 exception, though the reverse is not true. Exception 07500 identifies permanent errors ONLY if they occur on a CRITICAL DASD Device. Exception 07501 identifies ALL permanent errors.

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:

```
*****;
*
** 07501
** PERMANENT ERROR(S) OCCURRED ON DASD DEVICE
*;
IF DRLPRMCT
  THEN DO;
  EXCCODE='07501'; SEVERITY='I'; MGMTAREA='RELIABILITY';
  EXCDESC1='PERMANENT ERROR(S) OCCURRED ON DASD DEVICE';
  EXCDESC2='ADDRESS= ' || DEVADDR || ', VOLSER= ' || VOLSER
           || ', ERROR COUNT= ' || DRLPRMCT;
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: No modifications are required.

**07502: Temporary Error(s) Exceed Maximum for DASD Device**

FILE: DASD Device Reliability File  
SAS FILE NAME: DETAIL.SRLDRL01  
SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Warning (SEVERITY='W')  
MANAGEMENT AREA: Reliability (MGMTAREA='RELIABILITY')

PURPOSE: Identify Temporary Errors on Direct Access  
Devices which Exceed A Maximum Threshold

RATIONALE: Temporary errors on direct access devices may be an indication of permanent errors at some future time. They may also cause performance problems due to the need to recover from the errors. This exception provides a warning when the number of temporary errors exceed an installation defined maximum.

DEFINITION: This exception is produced when the number of temporary errors on a direct access device exceeds a defined maximum number.

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:

```
*****;  
*  
** 07502  
** TEMPORARY ERROR(S) EXCEED MAXIMUM FOR DASD DEVICE  
*;  
IF DRLTMPCT > err-ct  
  THEN DO;  
    EXCCODE='07502'; SEVERITY='W'; MGMTAREA='RELIABILITY';  
    EXCDDESC1='TEMPORARY ERROR(S) EXCEED MAX FOR DASD DEVICE';  
    EXCDDESC2='ADDRESS= ' || DEVADDR || ', ERROR COUNT= ' ||  
              DRLTMPCT;  
    LINK HIT;  
  END;
```

THRESHOLD MODIFICATION: The user should modify the value of the number of temporary errors which are acceptable on a direct access device according to the following convention:

err-ct - is the maximum number of acceptable temporary errors on a direct access device. The value 256 would be specified as

```
DRLTMPCT > 256
```

**07600: Permanent Error(s) Occurred - Critical Tape  
Device**

FILE: Magnetic Tape Device Reliability File  
SAS FILE NAME: DETAIL.SRLMRL01  
SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Critical (SEVERITY='C')  
MANAGEMENT AREA: Availability (MGMTAREA='AVAILABILITY')

PURPOSE: Identify Permanent Errors Occurring on Critical  
Magnetic Tape Devices

RATIONALE: Magnetic tape devices are used to store large amounts of data generally used by batch application programs. They are also used as logging devices for online systems such as IMS or CICS. Permanent errors that occur on these devices may cause failures in the online systems or batch programs using the devices. By examining all permanent errors that occur on these critical devices, you may be able to identify, isolate, and resolve problems impacting the services provided by your installation.

DEFINITION: This exception is created when a permanent error is detected on any magnetic tape device identified as being critical to the installation. Note that any error producing a 07600 exception will also create a 07601 exception, though the reverse is not true. Exception 07600 identifies permanent errors ONLY if they occur on a CRITICAL magnetic tape device. Exception 07601 identifies ALL permanent errors.

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:

```
*****;
*
** 07600
** PERMANENT ERROR(S) OCCURRED - CRITICAL TAPE DEVICE
*;
IF MRLPRMCT AND
  (DEVNUM = '0000x')
  THEN DO;
  EXCCODE='07600'; SEVERITY='C'; MGMTAREA='AVAILABILITY';
  EXCDDESC1='PERMANENT ERROR(S) OCCURRED - CRITICAL TAPE DEV';
  EXCDDESC2='ADDRESS= ' || PUT(DEVNUM,HEX4.) ||
    ', ERROR COUNT= ' || MRLPRMCT;
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: The user should modify the address of the critical magnetic tape device according to the following convention:

cuu - is the channel and unit address of the magnetic tape device. A device with address 572 would appear as

```
DEVNUM = '0572'
```

#### **07601: Permanent Error(s) Occurred on Tape Device**

FILE: Magnetic Tape Device Reliability File  
SAS FILE NAME: DETAIL.SRLMRL01  
SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Impacting (SEVERITY='I')  
MANAGEMENT AREA: Reliability (MGMTAREA='RELIABILITY')

PURPOSE: Identify Permanent Errors Occurring on Magnetic Tape Devices

RATIONALE: Magnetic tape devices are used to store large amounts of data generally used by batch application programs. They may also be used as logging devices for online systems such as IMS or CICS. Permanent errors that occur on magnetic tape devices may cause failures in the online systems or batch programs using the devices. By examining permanent errors that occur on magnetic tape devices, you may be able to identify, isolate, and resolve problems impacting the services provided by your installation.

DEFINITION: This exception is created when a permanent error is detected on any magnetic tape device. Note that any error producing a 07600 exception will also create a 07601 exception, though the reverse is not true. Exception 07600 identifies permanent errors ONLY if they occur on a CRITICAL magnetic tape device. Exception 07601 identifies ALL permanent errors.

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:

```
*****;
*
** 07601
** PERMANENT ERROR(S) OCCURRED ON TAPE DEVICE
*;
IF MRLPRMCT
  THEN DO;
    EXCCODE='07601'; SEVERITY='I'; MGMTAREA='RELIABILITY';
    EXCDISC1='PERMANENT ERROR(S) OCCURRED ON TAPE DEVICE';
    EXCDISC2='ADDRESS= ' || DEVADDR || ', VOLSER= ' || VOLSER
              || ', ERROR COUNT= ' || MRLPRMCT;
    LINK HIT;
  END;
```

THRESHOLD MODIFICATION: No modifications are required.

#### **07602: Temporary Read Error(s) Exceed Maximum for Tape**

FILE: Magnetic Tape Device Reliability File  
 SAS FILE NAME: DETAIL.SRLMRL01  
 SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Warning (SEVERITY='W')  
 MANAGEMENT AREA: Reliability (MGMTAREA='Reliability')

PURPOSE: Identify Temporary Read Errors on Magnetic Tape Devices which Exceed A Maximum Threshold

RATIONALE: Temporary read errors on magnetic tape devices may be an indication of permanent errors at some future time. This exception provides a warning when the number of temporary read errors exceed an installation defined maximum.

DEFINITION: This exception is produced when the number of temporary read errors on a magnetic tape device exceeds a defined maximum number.

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:

```
*****;  
*  
** 07602  
** TEMPORARY READ ERROR(S) EXCEED MAXIMUM FOR TAPE  
*;  
IF MRLTEMPR > value  
  THEN DO;  
    EXCCODE='07602'; SEVERITY='W'; MGMTAREA='RELIABILITY';  
    EXCDESC1='TEMPORARY READ ERROR(S) EXCEED MAXIMUM FOR TAPE';  
    EXCDESC2='ADDRESS= ' || DEVADDR || ', ERROR COUNT= ' ||  
             MRLTEMPR;  
    LINK HIT;  
  END;
```

THRESHOLD MODIFICATION: The user should specify the value for the number of acceptable temporary read errors on a magnetic tape device according to the following convention:

value - is the maximum number of acceptable temporary read errors for a magnetic tape device. The value 16 would be specified as

```
MRLTEMPR > 16
```

**07603: Temporary Write Error(s) Exceed Maximum for Tape**

FILE: Magnetic Tape Device Reliability File  
 SAS FILE NAME: DETAIL.SRLMRL01  
 SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Warning (SEVERITY='W')  
 MANAGEMENT AREA: Reliability (MGMTAREA='RELIABILITY')

PURPOSE: Identify Temporary Write Errors on Magnetic Tape Devices which Exceed A Maximum Threshold

RATIONALE: Temporary write errors on magnetic tape devices may be an indication of permanent errors at some future time. This exception provides a warning when the number of temporary write errors exceed an installation defined maximum.

DEFINITION: This exception is produced when the number of temporary write errors on a magnetic tape device exceeds a defined maximum number.

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:

```
*****;
*
** 07603
** TEMPORARY WRITE ERROR(S) EXCEED MAXIMUM FOR TAPE
*;
IF MRLTEMPW > value
THEN DO;
  EXCCODE='07603'; SEVERITY='W'; MGMTAREA='RELIABILITY';
  EXCDESC1='TEMPORARY WRITE ERROR(S) EXCEED MAX FOR TAPE';
  EXCDESC2='ADDRESS= ' || DEVADDR || ', ERROR COUNT= ' ||
           MRLTEMPW;
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: The user should specify the value for the number of acceptable temporary write errors on a magnetic tape device according to the following convention:

value - is the maximum number of acceptable temporary write errors for a magnetic tape device. The value 2 would be specified as

MRLTEMPW > 2

**07700: Permanent Error(s) Occurred - Critical U/R Device**

FILE: Unit Record Device Reliability File  
SAS FILE NAME: DETAIL.SRLXRL01  
SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Critical (SEVERITY='C')  
MANAGEMENT AREA: Availability (MGMTAREA='AVAILABILITY')

PURPOSE: Identify Permanent Errors Occurring on Critical Unit Record Devices

RATIONALE: Unit record devices include card readers, card punches, and printers and a number of other devices such as optical scanners and magnetic ink character readers. Permanent errors that occur on these devices may impact the functions or services being provided by the devices, such as the printing of reports or capture of magnetically encoded documents. By examining all permanent errors that occur on these critical devices, you may be able to identify, isolate, and resolve problems impacting the services provided by your installation.

DEFINITION: This exception is created when a permanent error is detected on any unit record device identified as being critical to the installation. Note that any error producing a 07700 exception will also create a 07701 exception, though the reverse is not true. Exception 07700 identifies permanent errors ONLY if they occur on a CRITICAL unit record device. Exception 07701 identifies ALL permanent errors.

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:

```
*****;  
*  
** 07700  
** PERMANENT ERROR(S) OCCURRED - CRITICAL U/R DEVICE  
*;  
IF XRLPRMCT AND  
  (DEVNUM = 0000x )  
  THEN DO;  
    EXCCODE='07700'; SEVERITY='C'; MGMTAREA='AVAILABILITY';  
    EXCDDESC1='PERMANENT ERROR(S) OCCURRED - CRITICAL U/R DEV';  
    EXCDDESC2='ADDRESS= ' || PUT(DEVNUM,HEX4.) ||  
              ', ERROR COUNT= ' || XRLPRMCT;  
    LINK HIT;  
  END;
```

THRESHOLD MODIFICATION: The user should modify the address of the critical unit record device according to the following convention:

cuuu - is the channel and unit address of the unit record device. A device with address 042E would appear as

```
DEVNUM = '042E'
```

**07701: Permanent Error(s) Occurred on U/R Device**

FILE: Unit Record Device Reliability File  
SAS FILE NAME: DETAIL.SRLXRL01  
SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Impacting (SEVERITY='I')  
MANAGEMENT AREA: Reliability (MGMTAREA='RELIABILITY')

PURPOSE: Identify Permanent Errors Occurring on Unit Record Devices

RATIONALE: Unit record devices include card readers, card punches, and printers and a number of other devices such as optical scanners and magnetic ink character readers. Permanent errors that occur on these devices may impact the functions or services being provided by the devices, such as the printing of reports or capture of magnetically encoded documents. By examining permanent errors that occur on these devices, you may be able to identify, isolate, and resolve problems impacting the services provided by your installation.

DEFINITION: This exception is created when a permanent error is detected on any unit record device. Note that any error producing a 07700 exception will also create a 07701 exception, though the reverse is not true. Exception 07700 identifies permanent errors ONLY if they occur on a CRITICAL unit record device. Exception 07701 identifies ALL permanent errors.

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:

```
*****;
*
** 07701
** PERMANENT ERROR(S) OCCURRED ON U/R DEVICE
*;
IF XRLPRMCT
THEN DO;
  EXCCODE='07701'; SEVERITY='I'; MGMTAREA='RELIABILITY';
  EXCDDESC1='PERMANENT ERROR(S) OCCURRED ON U/R DEVICE';
  EXCDDESC2='ADDRESS= ' || DEVADDR || ', ERROR COUNT= ' ||
    XRLPRMCT;
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: No modifications are required.

#### **07800: Permanent Error(s) Occurred - Critical TP Device**

FILE: TP Device Reliability File  
 SAS FILE NAME: DETAIL.SRLTRL01  
 SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Critical (SEVERITY='C')  
 MANAGEMENT AREA: Availability (MGMTAREA='AVAILABILITY')

PURPOSE: Identify Permanent Errors Occurring on Critical Teleprocessing Devices

RATIONALE: Teleprocessing devices are the control units and terminals that are used to provide online services to various users. They include the TP control unit, terminal devices for the remote input and output of data, and many specialized devices such as automated teller machines in the banking industry. Permanent errors that occur on these devices may cause failures in the online systems or batch programs using the devices. By examining all permanent errors that occur on these critical devices, you may be able to identify, isolate, and resolve problems impacting the services provided by your installation.

DEFINITION: This exception is created when a permanent error is detected on any teleprocessing device identified as being critical to the installation. Note that any error producing a 07800 exception will also create a 07801 exception, though the reverse is not true. Exception 07800 identifies permanent errors ONLY if they occur on a CRITICAL teleprocessing device. Exception 07801 identifies ALL permanent errors.

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:

```
*****;
*
** 07800
** PERMANENT ERROR(S) OCCURRED - CRITICAL TP DEVICE
*;
IF TRLPRMCT AND
  (DEVNUM = 0000x )
  THEN DO;
  EXCCODE='07800'; SEVERITY='C'; MGMTAREA='AVAILABILITY';
  EXCDESC1='PERMANENT ERROR(S) OCCURRED - CRITICAL TP DEV';
  EXCDESC2='ADDRESS= ' || PUT(DEVNUM,HEX4.) ||
           ', ERROR COUNT= ' || TRLPRMCT;
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: The user should modify the address of the critical teleprocessing device according to the following convention:

cuuu - is the channel and unit address of the teleprocessing device. A device with address 0A10 would appear as

DEVNUM = '0A10'

**07801: Permanent Error(s) Occurred on TP Device**

FILE: TP Device Reliability File  
SAS FILE NAME: DETAIL.SRLTRL01  
SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Impacting (SEVERITY='I')  
MANAGEMENT AREA: Reliability (MGMTAREA='RELIABILITY')

PURPOSE: Identify Permanent Errors Occurring on  
Teleprocessing Devices

RATIONALE: Teleprocessing devices are the control units and terminals that are used to provide online services to various users. They include the TP control unit, terminal devices for the remote input and output of data, and many specialized devices such as automated teller machines in the banking industry. Permanent errors that occur on these devices may cause failures in the online systems or batch programs using the devices. By examining permanent errors that occur on these devices, you may be able to identify, isolate, and resolve problems impacting the services provided by your installation.

DEFINITION: This exception is created when a permanent error is detected on any teleprocessing device. Note that any error producing a 07800 exception will also create a 07801 exception, though the reverse is not true. Exception 07800 identifies permanent errors ONLY if they occur on a CRITICAL teleprocessing device. Exception 07801 identifies ALL permanent errors.

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:

```
*****;  
*  
** 07801  
** PERMANENT ERROR(S) OCCURRED ON TP DEVICE  
*;  
IF TRLPRMCT  
THEN DO;  
  EXCCODE='07801'; SEVERITY='I'; MGMTAREA='RELIABILITY';  
  EXCDESC1='PERMANENT ERROR(S) OCCURRED ON TP DEVICE';  
  EXCDESC2='ADDRESS= ' || DEVADDR || ', ERROR COUNT= ' ||  
           TRLPRMCT;  
  LINK HIT;  
END;
```

THRESHOLD MODIFICATION: No modifications are required.

**07950: Temporary Read Error(s) Exceed Maximum for Tape  
Volume**

FILE: Magnetic Tape Media Reliability File  
SAS FILE NAME: DETAIL.SRLMMR01  
SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Warning (SEVERITY='W')  
MANAGEMENT AREA: Reliability (MGMTAREA='RELIABILITY')

PURPOSE: Identify Temporary Read Errors on Magnetic Tape  
Volumes which Exceed A Maximum Threshold

RATIONALE: Temporary read errors on magnetic tape volumes  
may be an indication of permanent errors at some future time.  
This exception provides a warning when the number of  
temporary read errors exceed an installation defined maximum.

DEFINITION: This exception is produced when the number of  
temporary read errors on a magnetic tape device exceeds a  
defined maximum number.

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:

```
*****;
*
** 07950
** TEMPORARY READ ERROR(S) EXCEED MAXIMUM FOR TAPE VOLUME
*;
IF MMRTEMPR > err-value
  THEN DO;
  EXCCODE='07950'; SEVERITY='W'; MGMTAREA='RELIABILITY';
  EXCDDESC1='TEMP READ ERROR(S) EXCEED MAX FOR TAPE VOLUME';
  EXCDDESC2='VOLUME= ' || VOLUME || ', ERROR COUNT= ' ||
    PUT(MMRTEMPR,6.);
  LINK HIT;
END;
```

THRESHOLD MODIFICATION: The user should modify the value used for the number of temporary read errors according to the following convention:

err-value - the threshold value for number of temporary read error(s) for a single magnetic tape volume. A value of 8 would appear as:

```
MMRTEMPR > 8
```

**07951: Temporary Write Error(s) Exceed Maximum for Tape Vol.**

FILE: Magnetic Tape Media Reliability File  
 SAS FILE NAME: DETAIL.SRLMMR01  
 SOURCE LOCATION: prefix.MICS.USER.SOURCE(DYSRLEXC)

SEVERITY: Warning (SEVERITY='W')  
 MANAGEMENT AREA: Reliability (MGMTAREA='RELIABILITY')

PURPOSE: Identify temporary write errors on magnetic tape volumes which exceed a maximum threshold

RATIONALE: Temporary write errors on magnetic tape volumes may be an indication of permanent errors at some future time. This exception provides a warning when the number of temporary write errors exceed an installation defined maximum.

DEFINITION: This exception is produced when the number of temporary write errors on a magnetic tape volume exceeds a defined maximum number.

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:

```
*****;  
*  
** 07951  
** TEMPORARY WRITE ERROR(S) EXCEED MAXIMUM FOR TAPE VOLUME  
*;  
IF MMRTEMPW > err-value  
  THEN DO;  
    EXCCODE='07951'; SEVERITY='W'; MGMTAREA='RELIABILITY';  
    EXCDDESC1='TEMP WRITE ERROR(S) EXCEED MAX FOR TAPE VOLUME';  
    EXCDDESC2='VOLUME= ' || VOLUME || ', ERROR COUNT= ' ||  
              PUT(MMRTEMPW,6.);  
    LINK HIT;  
  END;
```

THRESHOLD MODIFICATION: The user should modify the value used for the number of temporary write errors according to the following convention:

err-value - the threshold value for number of temporary write error(s) for a single magnetic tape volume. A value of 15 would appear as:

```
MMRTEMPW > 15
```

# Chapter 5: FILES

---

This chapter identifies each file in the System Reliability Information Area and describes its level of summarization and data sequencing as the files appear in the applicable time-span.

The files maintained in the System Reliability Information Area are:

- o SRLCRL - SRL Channel Reliability File
- o SRLDMR - SRL DASD Media Reliability File
- o SRLDRL - SRL DASD Device Reliability File
- o SRLMMR - SRL Mag. Tape Media Reliability File
- o SRLMRL - SRL Mag. Tape Device Reliability File
- o SRLNTC - SRL Communications Controller Reliability File
- o SRLPRL - SRL Processor Reliability File
- o SRLRNC - SRL Reliability Incident File
- o SRLSSD - SRL System Software Diagnostic File
- o SRLSSM - SRL System Software Malfunction Summary File
- o SRLSTR - SRL Storage Reliability File
- o SRLTRL - SRL TP Device Reliability File
- o SRLXRL - SRL Unit Record Device Reliability File

The SRL files can be tailored to meet your site-specific needs. Files that are turned off by default at certain time spans may be turned on, and files that are turned on by default may be turned off. In addition using the FOPT statement in SRLGENIN you can change the setting of the type of elements that are kept in the data base. Using this statement you can override the CA MICS Complex level options that are specified on the ESSENTIAL and DERIVED statements in sharedprefix.MICS.PARMS(CPLXDEF). Refer to Section 4.2.4.2.2 in the CA MICS System Modification Guide. for more information on how to use the FOPT statement.

This section contains the following topics:

- [5.1 Data Element Naming Conventions](#) (see page 147)
- [5.2 SRL Channel Reliability \(SRLCRL\) File](#) (see page 148)
- [5.3 SRL DASD Media Reliability \(SRLDMMR\) File](#) (see page 155)
- [5.4 SRL DASD Device Reliability \(SRLDRL\) File](#) (see page 160)
- [5.5 SRL Magnetic Tape Media Reliability \(SRLMMR\) File](#) (see page 167)
- [5.6 SRL Magnetic Tape Device Reliability \(SRLMRL\) File](#) (see page 172)
- [5.7 SRL Processor Reliability \(SRLPRL\) File](#) (see page 181)
- [5.8 SRL Reliability Incident \(SRLRNC\) File](#) (see page 188)
- [5.9 SRL System Software Diagnostic \(SRLSSD\) File](#) (see page 192)
- [5.10 User Software Diagnostic \(SRL\\_UD\) File](#) (see page 204)
- [5.11 SRL System Software Malfunction Summary \(SRLSSM\) File](#) (see page 216)
- [5.12 User Software Malfunction \(SRL\\_UM\) File](#) (see page 222)
- [5.13 SRL Storage Reliability \(SRLSTR\) File](#) (see page 228)
- [5.14 SRL TP Device Reliability \(SRLTRL\) File](#) (see page 235)
- [5.15 SRL Unit Record Device Reliability \(SRLXRL\) File](#) (see page 240)
- [5.16 SRL Communications Controller Rel. \(SRLNTC\) File](#) (see page 247)

## 5.1 Data Element Naming Conventions

The data elements in the CA MICS Data Base files 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 three-character prefixes with which the SRL standard data element names begin and the files in which they are contained.

File	File Name	Prefix
SRLCRL	SRL Channel Reliability	CRL
SRLDMR	SRL DASD Media Reliability	DMR
SRLDRL	SRL DASD Device Reliability	DRL
SRLMMR	SRL Mag Tape Media Reliability	MMR
SRLMRL	SRL Mag Tape Device Reliability	MRL
SRLPRL	SRL Processor Reliability	PRL
SRLRNC	SRL Reliability Incident	RNC
SRLSSD	SRL System Software Diagnostic	SSD
SRL_UD	SRL User Software Diagnostic	SSD
SRLSSM	SRL System Software Malfunction	
	Summary	SSM
SRL_UM	SRL User Software Malfunction	
	Summary	SSM
SRLSTR	SRL Storage Reliability	STR
SRLTRL	SRL TP Device Reliability	TRL
SRLXRL	SRL Unit Record Device	
	Reliability	XRL

Common data elements do not use a data element prefix. They have a common definition across data base 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 List that accompanies each of the file descriptions in this chapter.

## 5.2 SRL Channel Reliability (SRLCRL) File

FILENAME=SRLCRLxx

The Channel Reliability File contains data identifying software and hardware detected channel failures which did not result in system termination.

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

- 1 - SRLCRL File Organization
- 2 - SRLCRL Data Elements List
- 3 - SRLCRL Usage Considerations
- 4 - SRLCRL Retrieval Example

### 5.2.1 SRLCRL 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	CPUSER	CHANNEL	YEAR	MONTH	
	DAY	HOUR	ENDTS			
DAYS	SYSID	CPUSER	CHANNEL	YEAR	MONTH	
	DAY	HOUR				
WEEKS	SYSID	CPUSER	CHANNEL	YEAR	WEEK	
	ZONE	HOUR				
MONTHS	SYSID	CPUSER	CHANNEL	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 5-1. SRLCRL Time-Span Granularity Chart

### 5.2.2 SRLCRL 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 "XDMY" as follows:

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

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

**DATA ELEMENT:** The data element name.

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

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

**GENERATION DATE:** Tue, May 12, 2009

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

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

## Sequence/Summary Data Elements

XDWM..E CHANNEL - Physical Channel Address  
 XDWM..E CPUSER - CPU/Processor Serial Number  
 XD...E DAY - Day of Month  
 XDW...E HOUR - Hour of Day  
 XDWM..E MONTH - Month of Year  
 XDWM..E SYSID - System Identifier  
 XDW...E WEEK - Week of Year  
 XDWM..E YEAR - Year of Century  
 XDWM..E ZONE - Time Zone

## Common Data Elements

XD.... CHPID - Channel Path Identification  
 XDWM.. CPUMODEL - CPU Model Identification  
 XD.... DAYNAME - Name of Day of Week  
 XDW... DEVADDR - Device Address  
 XDWM.. DEVCLASS - Device Class  
 XDW...E DEVNUM - Device Number  
 XDWM.. DEVTYPE - Device Type  
 XDWM..E ENDTS - End Time Stamp  
 XDW... LOGADDR - Logical Device Address  
 XDWM.. MICSVER - CA MICS Version Number  
 XDWM.. STARTTS - Start Time Stamp  
 XD.... VOLSER - Volume Serial Number

## Retained Data Elements

X..... CRLAI01 - Busy Device No 1 On Failing Ch  
 X..... CRLAI02 - Busy Device No 2 On Failing Ch  
 X..... CRLAI03 - Busy Device No 3 On Failing Ch  
 X..... CRLAI04 - Busy Device No 4 On Failing Ch  
 X..... CRLAI05 - Busy Device No 5 On Failing Ch  
 X..... CRLAI06 - Busy Device No 6 On Failing Ch  
 X..... CRLAI07 - Busy Device No 7 On Failing Ch  
 X..... CRLAI08 - Busy Device No 8 On Failing Ch  
 XDWM.. CRLASEQN - Associated CRW Sequence Number  
 XD.... CRLCFT - Channel Chk Handler Footprint  
 XD.... CRLCHCUA - Chan Unit Num Logged By Hdwe  
 XD.... CRLCHID - Channel ID Assoc With Failure  
 XDWM.. CRLCHPCT - Channel Path Recovery Count  
 XD.... CRLCLA - Channel Logout Area  
 X..... CRLCODE - CRW Origin Code  
 X..... CRLCP - CRW Retry Processor Address  
 X..... CRLCRW - Channel Report Word  
 X..... CRLDEVST - UCB Device Status Flags

X.... CRLDEVT - Device Type Assoc With Failure  
X.... CRLECSW - Extended CSW Stored At Failure  
X.... CRLEDATA - Extended Data Area  
X.... CRLERP - ERP Information Block  
X.... CRLESW - Extended Status Word  
X.... CRLFCCW - Last Real CCW Executed  
X.... CRLFCSW - CSW Stored At Failure  
X.... CRLFLAG2 - CRW Flag Byte 2  
X.... CRLICHPT - ICHPT Flags  
X.... CRLISDT - IOS Interrupt Definition Table  
X.... CRLJOB - Jobname of Job Assoc. With Fail  
XD... CRLLOGL - Length of Chan Logout Area  
X.... CRLLPUM - Last Path Used Mask  
XD... CRLMCS1 - Channel Status for Processor 1  
XD... CRLMCS10 - Channel Status for Processor 10  
XD... CRLMCS11 - Channel Status for Processor 11  
XD... CRLMCS12 - Channel Status for Processor 12  
XD... CRLMCS13 - Channel Status for Processor 13  
XD... CRLMCS14 - Channel Status for Processor 14  
XD... CRLMCS15 - Channel Status for Processor 15  
XD... CRLMCS16 - Channel Status for Processor 16  
XD... CRLMCS2 - Channel Status for Processor 2  
XD... CRLMCS3 - Channel Status for Processor 3  
XD... CRLMCS4 - Channel Status for Processor 4  
XD... CRLMCS5 - Channel Status for Processor 5  
XD... CRLMCS6 - Channel Status for Processor 6  
XD... CRLMCS7 - Channel Status for Processor 7  
XD... CRLMCS8 - Channel Status for Processor 8  
XD... CRLMCS9 - Channel Status for Processor 9  
X.... CRLMODUL - CSECT Name of Recording Module  
XD... CRLOPA1 - Address of Online Processor 1  
XD... CRLOPA10 - Address of Online Processor 10  
XD... CRLOPA11 - Address of Online Processor 11  
XD... CRLOPA12 - Address of Online Processor 12  
XD... CRLOPA13 - Address of Online Processor 13  
XD... CRLOPA14 - Address of Online Processor 14  
XD... CRLOPA15 - Address of Online Processor 15  
XD... CRLOPA16 - Address of Online Processor 16  
XD... CRLOPA2 - Address of Online Processor 2  
XD... CRLOPA3 - Address of Online Processor 3  
XD... CRLOPA4 - Address of Online Processor 4  
XD... CRLOPA5 - Address of Online Processor 5  
XD... CRLOPA6 - Address of Online Processor 6  
XD... CRLOPA7 - Address of Online Processor 7  
XD... CRLOPA8 - Address of Online Processor 8

XD.... CRLOPA9 - Address of Online Processor 9  
XD.... CRLOPNO - No of Active Online Processors  
X..... CRLPMCW - Path Management Control Word  
X..... CRLRSMAD - Absolute Storage Address  
X..... CRLRSMER - Real Storage Manager Error ID  
X..... CRLRSMRC - Real Storage Manager Code  
X..... CRLRSMST - Real Storage Manager Status  
X..... CRLSCHRC - UCB Subchannel Recovery Anchor  
X..... CRLSCSW - Subchannel Status Word  
XDWM.. CRLSEQNO - CRW Sequence Number  
X..... CRLSID - Subchannel ID Number  
X..... CRLTIOAD - Control Unit Address of TIO  
X..... CRLTRMSQ - Termination/Sequence Code  
X..... CRLUCBAD - UCB or RDEV address  
X..... CRLUCBLV - UCB Level and Mask

## Accumulated Data Elements

XDWM.. CRLALTRT - Alternate Return To IOS  
XDWM.. CRLATTN - CSW ATTN Bit Is ON  
XDWM.. CRLCANAL - Channel Avail. Module Unavail  
XDWM.. CRLCATV - Channel Avail. Table Valid  
XDWM.. CRLCFRR - FRR Executed In FRR Stack  
XDWM.. CRLCPRV - Cmd Register Parity Valid  
XDWM.. CRLCRHA - Channel Reconf Hardware Active  
XDWM.. CRLCSWCT - CSW Count Valid  
XDWM.. CRLDATA - Portion of Data Overlaid  
XDWM.. CRLERPIB - ERPIB Already Created  
XDWM.. CRLERPP - Error Rec. Already Active  
XDWM.. CRLHARD - Hardware Stored CRW  
XDWM.. CRLHSCH - Status of Halt Subchannel  
XDWM.. CRLICUA - Control Unit Addr Invalid  
XDWM.. CRLINT - Status of I/O Interrupt  
XDWM.. CRLINVAL - Invalid CRW  
XDWM.. CRLIORR - IO Restart Required  
XDWM.. CRLIUCB - UCB Invalid  
XDWM.. CRLMESG - Operator Message Required  
XDWM.. CRLNOLOG - Channel Failed To Log

XDWM..	CRLNOR	- No CCH Recording
XDWM..	CRLNOSP	- Channel Failed To Log
XDWM..	CRLRETRY	- Status of Retry Operation
XDWM..	CRLRLOG	- Record LOGREC Record Only
XDWM..	CRLSENSE	- Status of Sense Data
XDWM..	CRLSOFT	- Software Stored CRW
XDWM..	CRLSSCH	- Status of Start Subchannel
XDWM..	CRLTSCH	- Status of Test Subchannel
XDWM..	CRLVCCW	- CCW address Valid
XDWM..	CRLVDVNO	- Device Number Valid
XDWM..	CRLVDVNU	- Device Number Valid
XDWM..	CRLVDVST	- Device Status Valid
XDWM..	CRLVLPUM	- Last Path Used Mask Valid
XDWM..	CRLVSEQC	- Sequence Code Valid
XDWM..	CRLVTERM	- Termination Code Valid

### 5.2.3 SRLCRL Usage Considerations

This section identifies any special considerations or techniques related to using the SRLCRL file. Additionally, a sample retrieval example is provided to facilitate the 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 &diit, 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.

## 5.2.4 SRLCRL Retrieval Example

This section presents a typical SRLCRL retrieval example.

Print a list of all jobs associated with the channel that encountered a failure yesterday. This will be useful to know what jobs were affected by a certain channel failure (in this example the address is 3FA).

```
DATA;  
SET &PSRLX..SRLCRL01;  
IF DEVNUM = '03FA'X;  
PROC PRINT; VAR SYSID STARTTS ENDTS CRLJOB;
```

## 5.3 SRL DASD Media Reliability (SRLDMR) File

FILENAME=SRLDMRxx

The DASD Media Reliability File contains data quantifying statistics and temporary and permanent errors which resulted in a record being logged to the SYS1.LOGREC data set for a specific direct access volume.

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

- 1 - SRLDMR File Organization
- 2 - SRLDMR Data Elements List
- 3 - SRLDMR Usage Considerations
- 4 - SRLDMR Retrieval Example

### 5.3.1 SRLDMR 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	CPUSER	VOLSER	DEVNUM	YEAR	
	MONTH	DAY	HOUR	ENDTS		
DAYS	SYSID	CPUSER	VOLSER	DEVNUM	YEAR	
	MONTH	DAY	HOUR			
WEEKS	SYSID	CPUSER	VOLSER	YEAR	WEEK	
	ZONE	HOUR				
MONTHS	SYSID	CPUSER	VOLSER	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 5-2. SRLDMR Time-Span Granularity Chart

## 5.3.2 SRLDMR Data Elements List

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

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

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

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

**DATA ELEMENT:** The data element name.

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

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

**GENERATION DATE:** Tue, May 12, 2009

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

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

-----

### Sequence/Summary Data Elements

XDWM..E	CPUSER	- CPU/Processor Serial Number
XD...E	DAY	- Day of Month
XD...E	DEVNUM	- Device Number
XDW...E	HOUR	- Hour of Day
XDWM..E	MONTH	- Month of Year
XDWM..E	SYSID	- System Identifier

XDWM..E VOLSER - Volume Serial Number  
XDW...E WEEK - Week of Year  
XDWM..E YEAR - Year of Century  
XDWM..E ZONE - Time Zone

Common Data Elements

XDWM..E CPUMODEL - CPU Model Identification  
XD...E DAYNAME - Name of Day of Week  
XD...E DEVADDR - Device Address  
XDWM..E DEVTYPE - Device Type  
XDWM..E ENDTS - End Time Stamp  
XD...E LOGADDR - Logical Device Address  
XDWM..E MICSVER - CA MICS Version Number  
XDWM..E STARTTS - Start Time Stamp

Accumulated Data Elements

XDWM.. DMRBLKCT - No Of Blocks Read/Searched  
XDWM..E DMRBYTCT - No Of Bytes Read  
XDWM.. DMRCKDCT - No Of Times Check Data Recovered  
XDWM.. DMRCMDOA - No Of Command Overruns on Channel A  
XDWM.. DMRCMDOB - No Of Command Overruns on Channel B  
XDWM.. DMRCMDOC - No Of Command Overruns on Channel C  
XDWM.. DMRCMDOD - No Of Command Overruns on Channel D  
XDWM.. DMRCMDOE - No Of Command Overruns on Channel E  
XDWM.. DMRCMDOF - No Of Command Overruns on Channel F  
XDWM.. DMRCMDOG - No Of Command Overruns on Channel G  
XDWM.. DMRCMDOH - No Of Command Overruns on Channel H  
XDWM..E DMRCODCK - No Of Correctable Data Checks  
XDWM.. DMRDATOA - No Of Data Overruns on Channel A  
XDWM.. DMRDATOB - No Of Data Overruns on Channel B  
XDWM.. DMRDATOC - No Of Data Overruns on Channel C  
XDWM.. DMRDATOD - No Of Data Overruns on Channel D  
XDWM.. DMRDATOE - No Of Data Overruns on Channel E  
XDWM.. DMRDATOF - No Of Data Overruns on Channel F  
XDWM.. DMRDATOG - No Of Data Overruns on Channel G  
XDWM.. DMRDATOH - No Of Data Overruns on Channel H  
XDWM.. DMRDEGR - No Of Degradation Events  
XDWM.. DMRLOGCT - LOGREC Record Count  
XDWM.. DMRPRMCT - No Of Permanent Errors  
XDWM..E DMRSEKCT - No Of Seeks/Accesses  
XDWM..E DMRSERCT - No Of Seek Errors  
XDWM.. DMRTMPCT - No Of Temporary Errors  
XDWM.. DMRUCACC - No Of Uncorr. DCKs/Access Offset  
XDWM..E DMRUCDCK - No Of Uncorrectable Data Checks  
XDWM.. DMRWRVER - No Of Writes with Verify ON

### 5.3.3 SRLDMR Usage Considerations

This section identifies any special considerations or techniques related to using the SRLDMR file. Additionally, a sample retrieval example is provided to facilitate the 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 &diit, 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.

### 5.3.4 SRLDMR Retrieval Example

This section presents a typical SRLDRL retrieval example.

Print a list showing count of Permanent and Temporary errors that occurred yesterday for all devices. Also show the total bytes read/searched. This can be used to determine if the devices are meeting manufacturers' published design tolerances for device errors in terms of bytes read/searched per temporary/permanent (soft/hard) error.

```
PROC PRINT DATA=&PSRLD..SRLDMR01;  
VAR SYSID DEVTYPE DEVNUM DMRPRMCT DMRTMPCT DMRBYTCT;
```

## 5.4 SRL DASD Device Reliability (SRLDRL) File

FILENAME=SRLDRLxx

The DASD Device Reliability File contains data quantifying direct access device statistics and temporary and permanent errors which have resulted in a record being logged to the SYS1.LOGREC data set.

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

- 1 - SRLDRL File Organization
- 2 - SRLDRL Data Elements List
- 3 - SRLDRL Usage Considerations
- 4 - SRLDRL Retrieval Example

### 5.4.1 SRLDRL 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	CPUSER	DEVTYPE	DEVNUM	YEAR	
	MONTH	DAY	HOUR	ENDTS		
DAYS	SYSID	CPUSER	DEVTYPE	DEVNUM	YEAR	
	MONTH	DAY	HOUR			
WEEKS	SYSID	CPUSER	DEVTYPE	DEVNUM	YEAR	
	WEEK	ZONE	HOUR			
MONTHS	SYSID	CPUSER	DEVTYPE	DEVNUM	YEAR	
	MONTH	ZONE				
YEARS	N/A					
TABLES	N/A					

Generation Date: Tue, May 12, 2009

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

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

Figure 5-3. SRLDRL Time-Span Granularity Chart

## 5.4.2 SRLDRL Data Elements List

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

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

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

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

**DATA ELEMENT:** The data element name.

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

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

**GENERATION DATE:** Tue, May 12, 2009

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

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

### Sequence/Summary Data Elements

XDWM..E	CPUSER	- CPU/Processor Serial Number
XD...E	DAY	- Day of Month
XDWM..E	DEVNUM	- Device Number
XDWM..E	DEVTYPE	- Device Type
XDW...E	HOUR	- Hour of Day
XDWM..E	MONTH	- Month of Year
XDWM..E	SYSID	- System Identifier

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

Common Data Elements

XDWM..E CDEVIND - Critical Device Indicator  
XDWM..E CPUMODEL - CPU Model Identification  
XD...E DAYNAME - Name of Day of Week  
XDWM..E DEVADDR - Device Address  
XD...E DEVNUM2 - Secondary Device Number  
XDWM..E ENDTS - End Time Stamp  
XDWM..E LOGADDR - Logical Device Address  
XDWM..E MICSVER - CA MICS Version Number  
XDWM..E STARTTS - Start Time Stamp  
XDWM..E VENDOR - Name of Device Vendor  
XDW...E VOLSER - Volume Serial Number

Retained Data Elements

XD... DRLCCW - Last CCW Executed  
XD... DRLCSW - CSW For Last CCW Executed  
XD... DRLDEVT - Device Type Assoc With Failure  
XD... DRLESW - Extended status word  
XD... DRLJOB - Jobname of Job Assoc With Err  
XD... DRLLOGTY - LOGREC Record Source/Subsource  
XD... DRLSCSW - Subchannel status word  
XD... DRLSKADR - Last Seek Address  
XD... DRLSNBCT - Count of Sense Bytes  
X.... DRLSNB0 - Device Sense Bytes  
X.... DRLSNB1 - Device Sense Bytes  
X.... DRLSNB10 - Device Sense Bytes  
X.... DRLSNB11 - Device Sense Bytes  
X.... DRLSNB12 - Device Sense Bytes  
X.... DRLSNB13 - Device Sense Bytes  
X.... DRLSNB14 - Device Sense Bytes  
X.... DRLSNB15 - Device Sense Bytes  
X.... DRLSNB16 - Device Sense Bytes  
X.... DRLSNB17 - Device Sense Bytes  
X.... DRLSNB18 - Device Sense Bytes  
X.... DRLSNB19 - Device Sense Bytes  
X.... DRLSNB2 - Device Sense Bytes  
X.... DRLSNB20 - Device Sense Bytes  
X.... DRLSNB21 - Device Sense Bytes  
X.... DRLSNB22 - Device Sense Bytes  
X.... DRLSNB23 - Device Sense Bytes

X..... DRLSNB24 - Device Sense Bytes  
 X..... DRLSNB25 - Device Sense Bytes  
 X..... DRLSNB26 - Device Sense Bytes  
 X..... DRLSNB27 - Device Sense Bytes  
 X..... DRLSNB28 - Device Sense Bytes  
 X..... DRLSNB29 - Device Sense Bytes  
 X..... DRLSNB30 - Device Sense Bytes  
 X..... DRLSNB31 - Device Sense Bytes  
 X..... DRLSNB32 - Device Sense Bytes  
 X..... DRLSNB33 - Device Sense Bytes  
 X..... DRLSNB34 - Device Sense Bytes  
 X..... DRLSNB35 - Device Sense Bytes  
 X..... DRLSNB36 - Device Sense Bytes  
 X..... DRLSNB37 - Device Sense Bytes  
 X..... DRLSNB38 - Device Sense Bytes  
 X..... DRLSNB39 - Device Sense Bytes  
 X..... DRLSNB40 - Device Sense Bytes  
 X..... DRLSNB41 - Device Sense Bytes  
 X..... DRLSNB42 - Device Sense Bytes  
 X..... DRLSNB43 - Device Sense Bytes  
 X..... DRLSNB44 - Device Sense Bytes  
 X..... DRLSNB45 - Device Sense Bytes  
 X..... DRLSNB46 - Device Sense Bytes  
 X..... DRLSNB47 - Device Sense Bytes  
 X..... DRLSNB48 - Device Sense Bytes  
 X..... DRLSNB49 - Device Sense Bytes  
 X..... DRLSNB50 - Device Sense Bytes  
 X..... DRLSNB51 - Device Sense Bytes  
 X..... DRLSNB52 - Device Sense Bytes  
 X..... DRLSNB53 - Device Sense Bytes  
 X..... DRLSNB54 - Device Sense Bytes  
 X..... DRLSNB55 - Device Sense Bytes  
 X..... DRLSNB56 - Device Sense Bytes  
 X..... DRLSNB57 - Device Sense Bytes  
 X..... DRLSNB58 - Device Sense Bytes  
 X..... DRLSNB59 - Device Sense Bytes  
 X..... DRLSNB60 - Device Sense Bytes  
 X..... DRLSNB61 - Device Sense Bytes  
 X..... DRLSNB62 - Device Sense Bytes  
 X..... DRLSNB63 - Device Sense Bytes  
 X..... DRLSNB64 - Device Sense Bytes  
 X..... DRLSNB65 - Device Sense Bytes  
 X..... DRLSNB66 - Device Sense Bytes  
 X..... DRLSNB67 - Device Sense Bytes  
 X..... DRLSNB68 - Device Sense Bytes  
 X..... DRLSNB69 - Device Sense Bytes  
 X..... DRLSNB70 - Device Sense Bytes  
 X..... DRLSNB71 - Device Sense Bytes  
 X..... DRLSNB72 - Device Sense Bytes  
 X..... DRLSNB73 - Device Sense Bytes  
 X..... DRLSNB74 - Device Sense Bytes  
 X..... DRLSNB75 - Device Sense Bytes  
 X..... DRLSNB76 - Device Sense Bytes  
 X..... DRLSNB77 - Device Sense Bytes  
 X..... DRLSNB78 - Device Sense Bytes  
 X..... DRLSNB79 - Device Sense Bytes  
 X..... DRLSNB80 - Device Sense Bytes  
 X..... DRLSNB81 - Device Sense Bytes  
 X..... DRLSNB82 - Device Sense Bytes  
 X..... DRLSNB83 - Device Sense Bytes  
 X..... DRLSNB84 - Device Sense Bytes  
 X..... DRLSNB85 - Device Sense Bytes  
 X..... DRLSNB86 - Device Sense Bytes  
 X..... DRLSNB87 - Device Sense Bytes  
 X..... DRLSNB88 - Device Sense Bytes  
 X..... DRLSNB89 - Device Sense Bytes  
 X..... DRLSNB90 - Device Sense Bytes  
 X..... DRLSNB91 - Device Sense Bytes  
 X..... DRLSNB92 - Device Sense Bytes  
 X..... DRLSNB93 - Device Sense Bytes  
 X..... DRLSNB94 - Device Sense Bytes  
 X..... DRLSNB95 - Device Sense Bytes  
 X..... DRLSNB96 - Device Sense Bytes  
 X..... DRLSNB97 - Device Sense Bytes  
 X..... DRLSNB98 - Device Sense Bytes  
 X..... DRLSNB99 - Device Sense Bytes  
 X..... DRLSNB100 - Device Sense Bytes

#### Accumulated Data Elements

XDWM.. DRLBUSOP - Bus Out Parity Checks  
 XDWM.. DRLCMDOA - COMMAND OVERRUNS - CHANNEL A  
 XDWM.. DRLCMDOB - COMMAND OVERRUNS - CHANNEL B  
 XDWM.. DRLCMDOC - COMMAND OVERRUNS - CHANNEL C  
 XDWM.. DRLCMDOD - COMMAND OVERRUNS - CHANNEL D  
 XDWM.. DRLCMDOE - COMMAND OVERRUNS - CHANNEL E  
 XDWM.. DRLCMDOF - COMMAND OVERRUNS - CHANNEL F  
 XDWM.. DRLCMDOG - COMMAND OVERRUNS - CHANNEL G  
 XDWM.. DRLCMDOH - COMMAND OVERRUNS - CHANNEL H  
 XDWM.. DRLCORE - Correctable Read Errors  
 XDWM.. DRLDATAA - DATA OVERRUNS - CHANNEL A  
 XDWM.. DRLDATOB - DATA OVERRUNS - CHANNEL B  
 XDWM.. DRLDATOC - DATA OVERRUNS - CHANNEL C  
 XDWM.. DRLDATOD - DATA OVERRUNS - CHANNEL D  
 XDWM.. DRLDATE - DATA OVERRUNS - CHANNEL E  
 XDWM.. DRLDATOF - DATA OVERRUNS - CHANNEL F  
 XDWM.. DRLDATOG - DATA OVERRUNS - CHANNEL G  
 XDWM.. DRLDATOH - DATA OVERRUNS - CHANNEL H  
 XDWM.. DRLDCKP - Permanent Data Checks  
 XDWM.. DRLDCKT - Temporary Data Checks  
 XDWM..E DRLEQCCP - Perm Ctl Unit Equip Cks  
 XDWM..E DRLEQCCT - Temp Ctl Unit Equip Cks  
 XDWM.. DRLEQCDP - Perm Drive Equip Cks  
 XDWM.. DRLEQCDT - Temp Drive Equip Cks  
 XDWM.. DRLINTK - Invalid Track Format  
 XDWM..E DRLLOGCT - LOGREC Record Count

XDW..	DRLMBRD	- MEGABYTES READ
XDW..	DRLMDCC	- Logging Mode-Corr DCKs
XDW..	DRLMDCR	- Logging Mode-Retry DCKs
XDW..	DRLMDSC	- Logging Mode-Seek Cks
XDW..	DRLOVERR	- Overruns
XDW..E	DRLPRMCT	- Count of Permanent Errors
XDW..	DRLRTRD	- RETRY READ ERRORS
XDW..E	DRLSEKCT	- SEEK COUNT
XDW..	DRLSERCT	- SEEK ERRORS
XDW..E	DRLSIOCT	- Number of START I/Os
XDW..E	DRLTMPCT	- Count of Temporary Errors
XDW..	DRLUSECT	- Number of Device Uses (Reserved)

### 5.4.3 SRLDRL Usage Considerations

This section identifies any special considerations or techniques related to using the SRLDRL file. Additionally, a sample retrieval example is provided to facilitate the 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 &diit, 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.

### 5.4.4 SRLDRL Retrieval Example

This section presents a typical SRLDRL retrieval example.

Print a list showing count of Permanent and Temporary errors that occurred yesterday for all devices. Also show the total megabytes read/searched. This can be used to determine if the devices are meeting manufacturers' published design tolerances for device errors in terms of megabytes read per temporary/permanent (soft/hard) error.

```
PROC PRINT DATA=&PSRLD..SRLDRL01;  
VAR SYSID DEVTYPE DEVNUM DRLPRMCT DRLTMPCT DRLMBRD;
```

## 5.5 SRL Magnetic Tape Media Reliability (SRLMMR) File

FILENAME=SRLMMRxx

The Magnetic Tape Media Reliability File contains data quantifying statistics and temporary and permanent errors which resulted in a record being logged to the SYS1.LOGREC data set for a specific magnetic tape volume.

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

- 1 - SRLMMR File Organization
- 2 - SRLMMR Data Elements List
- 3 - SRLMMR Usage Considerations
- 4 - SRLMMR Retrieval Example

### 5.5.1 SRLMMR 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	CPUSER	VOLSER	DEVNUM	YEAR	
	MONTH	DAY	HOUR	ENDTS		
DAYS	SYSID	CPUSER	VOLSER	DEVNUM	YEAR	
	MONTH	DAY	HOUR			
WEEKS	SYSID	CPUSER	VOLSER	YEAR	WEEK	
	ZONE	HOUR				
MONTHS	SYSID	CPUSER	VOLSER	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. SRLMMR Time-Span Granularity Chart

## 5.5.2 SRLMMR Data Elements List

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

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

```

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

```

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

**DATA ELEMENT:** The data element name.

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

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

**GENERATION DATE:** Tue, May 12, 2009

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

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

### Sequence/Summary Data Elements

XDWM..E	CPUSER	- CPU/Processor Serial Number
XD...E	DAY	- Day of Month
XD...E	DEVNUM	- Device Number
XDW...E	HOUR	- Hour of Day
XDWM..E	MONTH	- Month of Year
XDWM..E	SYSID	- System Identifier
XDWM..E	VOLSER	- Volume Serial Number

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

Common Data Elements

XDW..E CPUMODEL - CPU Model Identification  
XD...E DAYNAME - Name of Day of Week  
XD...E DEVADDR - Device Address  
XD...E DEVTYPE - Device Type  
XDW..E ENDTS - End Time Stamp  
XD...E LOGADDR - Logical Device Address  
XDW..E MICSVER - CA MICS Version Number  
XDW..E STARTTS - Start Time Stamp  
XD...E UNITSER - Equipment Unit Serial Number

Retained Data Elements

XD... MMRDENS - Volume Density  
XD... MMRJOB - Jobname of Job Using Volume  
XD... MMRTUmdl - Tape Unit Model Number

Accumulated Data Elements

XDW.. MMRBLKLN - Block Length  
XDW.. MMRCLNCT - Number of Cleaner Actions  
XDW.. MMRERAGP - Number of Erase Gaps  
XDW..E MMRMTS - Number of Volume Mounts  
XDW..E MMRPERMR - No Of Permanent Read Errors  
XDW..E MMRPERMW - No Of Permanent Write Errors  
XDW..E MMRsIOCT - START IO Count  
XDW..E MMRTEMPR - No Of Temporary Read Errors  
XDW..E MMRTEMPW - No Of Temporary Write Errors

### 5.5.3 SRLMMR Usage Considerations

This section identifies any special considerations or techniques related to using the SRLMMR file. Additionally, a sample retrieval example is provided to facilitate the 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 &ddiit, 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.

### 5.5.4 SRLMMR Retrieval Example

This section presents a typical SRLMMR retrieval example.

Print a list showing the number of temporary read errors on tape volumes and corresponding SIO count. This can be used to determine if the tape media is meeting manufacturers' expected level of reliability. Any tape volumes not meeting certain expected levels of reliability may need to be discarded. In a few cases high temporary errors may be due to a tape unit malfunction. If that is suspected a different tape drive should be used to verify that this is the case.

```
PROC PRINT DATA=&PSRLD..SRLMMR01;  
VAR SYSID DEVTYPE DEVNUM MMRTMPR MMRSIOCT;
```

This example may be expanded to compute a ratio between temporary read errors and SIO counts and compare the value against a threshold ratio. Any observation whose ratio of temporary read errors and SIO counts exceeds the thresholds may be printed.

## 5.6 SRL Magnetic Tape Device Reliability (SRLMRL) File

FILENAME=SRLMRLxx

The Magnetic Tape Device Reliability File contains data quantifying magnetic tape device statistics and temporary and permanent errors which resulted in a record being logged to the SYS1.LOGREC data set.

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

- 1 - SRLMRL File Organization
- 2 - SRLMRL Data Elements List
- 3 - SRLMRL Usage Considerations
- 4 - SRLMRL Retrieval Example

## 5.6.1 SRLMRL 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	CPUSER	DEVTYPE	DEVNUM	YEAR	
	MONTH	DAY	HOUR	ENDTS		
DAYS	SYSID	CPUSER	DEVTYPE	DEVNUM	YEAR	
	MONTH	DAY	HOUR			
WEEKS	SYSID	CPUSER	DEVTYPE	DEVNUM	YEAR	
	WEEK	ZONE	HOUR			
MONTHS	SYSID	CPUSER	DEVTYPE	DEVNUM	YEAR	
	MONTH	ZONE				
YEARS	N/A					
TABLES	N/A					

Generation Date: Tue, May 12, 2009

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

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

Figure 5-5. SRLMRL Time-Span Granularity Chart

## 5.6.2 SRLMRL Data Elements List

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

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

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

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

**DATA ELEMENT:** The data element name.

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

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

**GENERATION DATE:** Tue, May 12, 2009

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

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

-----

### Sequence/Summary Data Elements

- XDWM..E CPUSER - CPU/Processor Serial Number
- XD...E DAY - Day of Month
- XDWM..E DEVNUM - Device Number
- XDWM..E DEVTYPE - Device Type
- XDW...E HOUR - Hour of Day
- XDWM..E MONTH - Month of Year
- XDWM..E SYSID - System Identifier

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

Common Data Elements

XD...E CDEVIND - Critical Device Indicator  
XDWM..E CPUMODEL - CPU Model Identification  
XD...E DAYNAME - Name of Day of Week  
XDWM..E DEVADDR - Device Address  
XD...E DEVNUM2 - Secondary Device Number  
XDWM..E ENDTS - End Time Stamp  
XDWM..E LOGADDR - Logical Device Address  
XDWM..E MICSVER - CA MICS Version Number  
XDWM..E STARTTS - Start Time Stamp  
XD...E UNITSER - Equipment Unit Serial Number  
XDWM..E VENDOR - Name of Device Vendor  
XD...E VOLSER - Volume Serial Number

Retained Data Elements

XD.... MRLBLKLN - Block Length  
XD.... MRLCCW - Last CCW Executed  
XD.... MRLCSW - CSW For Last CCW Executed  
XD.... MRLDENS - Tape Density  
XD.... MRLDEVT - Device Type Assoc With Failure  
XD.... MRLESW - Extended status word  
XD.... MRLIORCT - Number of IO Retries  
XD.... MRLJOB - Jobname of Job Assoc With Err  
XD.... MRLLOGID - Log ID  
XD....E MRLLOGTY - LOGREC Record Source/Subsource  
XD.... MRLMEDID - Medium Identifier  
XD.... MRLMEDPA - Medium Partition  
XD.... MRLPRDID - Product Identifier  
XD.... MRLPRDSE - Product Serial  
XD.... MRLSCSW - Subchannel status word  
XD.... MRLSNBCT - Number of Sense Bytes  
X.... MRLSNB0 - Tape Unit Sense Bytes  
X.... MRLSNB1 - Tape Unit Sense Bytes  
X.... MRLSNB10 - Tape Unit Sense Bytes  
X.... MRLSNB11 - Tape Unit Sense Bytes  
X.... MRLSNB12 - Tape Unit Sense Bytes  
X.... MRLSNB13 - Tape Unit Sense Bytes  
X.... MRLSNB14 - Tape Unit Sense Bytes  
X.... MRLSNB15 - Tape Unit Sense Bytes  
X.... MRLSNB16 - Tape Unit Sense Bytes  
X.... MRLSNB17 - Tape Unit Sense Bytes  
X.... MRLSNB18 - Tape Unit Sense Bytes  
X.... MRLSNB19 - Tape Unit Sense Bytes  
X.... MRLSNB2 - Tape Unit Sense Bytes

X.... MRLSNB20 - Tape Unit Sense Bytes  
 X.... MRLSNB21 - Tape Unit Sense Bytes  
 X.... MRLSNB22 - Tape Unit Sense Bytes  
 X.... MRLSNB23 - Tape Unit Sense Bytes  
 X.... MRLSNB24 - Tape Unit Sense Bytes  
 X.... MRLSNB25 - Tape Unit Sense Bytes  
 X.... MRLSNB26 - Tape Unit Sense Bytes  
 X.... MRLSNB27 - Tape Unit Sense Bytes  
 X.... MRLSNB28 - Tape Unit Sense Bytes  
 X.... MRLSNB29 - Tape Unit Sense Bytes  
 X.... MRLSNB3 - Tape Unit Sense Bytes  
 X.... MRLSNB30 - Tape Unit Sense Bytes  
 X.... MRLSNB31 - Tape Unit Sense Bytes  
 X.... MRLSNB32 - Tape Unit Sense Bytes  
 X.... MRLSNB33 - Tape Unit Sense Bytes  
 X.... MRLSNB34 - Tape Unit Sense Bytes  
 X.... MRLSNB35 - Tape Unit Sense Bytes  
 X.... MRLSNB36 - Tape Unit Sense Bytes  
 X.... MRLSNB37 - Tape Unit Sense Bytes  
 X.... MRLSNB38 - Tape Unit Sense Bytes  
 X.... MRLSNB4 - Tape Unit Sense Bytes  
 X.... MRLSNB5 - Tape Unit Sense Bytes  
 X.... MRLSNB6 - Tape Unit Sense Bytes  
 X.... MRLSNB7 - Tape Unit Sense Bytes  
 X.... MRLSNB8 - Tape Unit Sense Bytes  
 X.... MRLSNB9 - Tape Unit Sense Bytes  
 XD.... MRLVOLID - VOLID

#### Accumulated Data Elements

XDWM.. MRLALUHR - Number of ALUHR  
 XDWM.. MRLBCKWD - Number of BCKWD  
 XDWM.. MRLBLKCR - Channel Read Blocks Processed  
 XDWM.. MRLBLKCW - Channel Write Blocks Processed  
 XDWM.. MRLBLKRD - Number of Blocks Read  
 XDWM.. MRLBLKWR - Number of Blocks Written  
 XDWM.. MRLBRDER - Block 0 Read Error  
 XDWM.. MRLBUSOP - Bus Out Parity Checks  
 XDWM.. MRLCAPSC - Capacity Scaled  
 XDWM.. MRLCAPSO - Capacity Scale Operation  
 XDWM.. MRLCHINT - Channel Initiated Recovery  
 XDWM.. MRLCHOVR - Channel Overruns  
 XD.... MRLCHPTH - Channel Path Identifier  
 XDWM.. MRLCHWBC - Channel Write Blocks Compressed  
 XDWM.. MRLCHWBE - Channel Write Bytes Effective  
 XDWM.. MRLCLEAN - Cleaner Action  
 XDWM.. MRLCLNCT - Number of Cleaner Actions  
 XDWM.. MRLCLNRE - Cleaner Action Recommended

XDWM.. MRLCOMP - Number of COMP  
XDWM.. MRLCRBYT - Channel Read Bytes Processed  
XD... MRLCTYPE - Control Unit Library Type Model  
XDWM.. MRLCUIINT - Control Unit Initiated Recovery  
XDWM.. MRLCWBYT - Channel Write Bytes Processed  
XDWM.. MRLDATCK - Count of Data Checks  
XDWM.. MRLDEERR - Device Equipment Check  
XDWM.. MRLDIERR - Device Interface Errors  
XD... MRLDTYPE - Device Type Model  
XDWM.. MRLEBGRD - Early Beginning of Read  
XDWM.. MRLEDCC - Number of EDCC  
XDWM.. MRLENRD - Number of ENDRD  
XDWM.. MRLENVCK - Number of ENVCK  
XDWM.. MRLEODEN - EOD Encountered  
XDWM.. MRLEQPCK - Count of Equipment Checks  
XDWM.. MRLERAGP - Number of Erase Gaps  
XDWM.. MRLERPCU - CU Errors Corrected by ERP  
XDWM.. MRLERSOP - Erase Operation  
XDWM.. MRLERTYP - Permanent Error Type  
XDWM.. MRLEXCPA - Number of EXCPA  
XDWM.. MRLEXP - Number of EXP  
XDWM.. MRLEXP2 - Number of EXP2  
XDWM.. MRLEXP3 - Number of EXP3  
XDWM.. MRLEXP3A - Number of EXP3A  
XDWM.. MRLFEEDT - Number of FEEDT  
XDWM.. MRLFMTCH - Format Changed  
XD... MRLFMTID - Format Identifier  
XDWM.. MRLBFFL - Locate Block Function Failures  
XD... MRLLC - Logging Code  
XD... MRLNGTH - # of bytes in Log format  
XDWM.. MRLLOGCT - LOGREC Record Count  
XDWM.. MRLMEDFO - Medium Format Operation  
XDWM.. MRLMEDRC - Medium Recycled  
XDWM.. MRLMLERR - Medium Length Error  
XDWM.. MRLMLEXC - Medium Length Exception  
XDWM.. MRLMTEL - Number of MTEL  
XDWM..E MRLMTS - Number of Volume Mounts  
XDWM.. MRLNOICT - Noise Count  
XDWM.. MRLNRZI - NRZI Noise  
XDWM.. MRLOBSWP - Outboard Swap  
XD... MRLOGFMT - Log Format  
XDWM.. MRLORDOP - Number of ORDOP  
XDWM.. MRLOUTSQ - Out of Sequence Checks  
XDWM.. MRLOVERR - Number of Overruns  
XDWM.. MRLPARCK - Number of PARCK  
XDWM.. MRLPART - Partitioned  
XDWM.. MRLPEICK - Number of PEICK  
XDWM.. MRLPERMR - Permanent Read Errors

XDWM.. MRLPERMM - Permanent Write Errors  
XDWM.. MRLPMERR - Partition Map Error  
XDWM..E MRLPRMCT - Count of Permanent Errors  
XDWM.. MRLPRMRD - Permanent Read Data Error  
XDWM.. MRLPRMWR - Permanent Write Data Error  
XDWM.. MRLPRTRD - Number of Partial Reads  
XDWM.. MRLRBDAC - Read Backward Data Acquisition  
XDWM.. MRLRBDCK - Read Backward Data Check  
XDWM.. MRLRBECC - Read Backward ECC Corrected  
XDWM.. MRLRBORC - Read Backward Opposite Recovery  
XDWM.. MRLRBRET - Read Backward Retries  
XDWM.. MRLRBSCK - Read Backward Servo Check  
XDWM.. MRLRBTRS - Read Backward Transient  
XDWM.. MRLRDBYT - Number of Bytes Read  
XDWM.. MRLRDERR - Read Errors Per 100K SIOs  
XDWM.. MRLRDRCA - 3480 Read Recovery Actions  
XDWM.. MRLRESDA - Residual Data Accessed  
XDWM.. MRLRFDAC - Read Forward Data Acquisition  
XDWM.. MRLRFDCK - Read Forward Data Check  
XDWM.. MRLRFECC - Read Forward ECC Corrected  
XDWM.. MRLRFORC - Read Forward Opposite Recovery  
XDWM.. MRLRFRET - Read Forward Retries  
XDWM.. MRLRFSCK - Read Forward Servo Check  
XDWM.. MRLRFTRS - Read Forward Transient  
XDWM.. MRLRSERR - Read Sequence Errors  
XDWM.. MRLRWRC - Read-Write VRC Errors  
XDWM.. MRLSBGRD - Slow Beginning of Read  
XDWM.. MRLSERRD - Servo Demarks Read  
XDWM.. MRLSERWR - Servo Demarks Written  
XDWM..E MRLSIOCT - START IO Count  
XDWM.. MRLSKEW - Tape Skew Errors  
XDWM.. MRLSNDRD - Number of SNDRD  
XDWM.. MRLSPAR - Number of SPAR  
XDWM.. MRLSTRCK - Number of STR Checks  
XDWM..E MRLTEMPR - Temporary Read Errors  
XDWM..E MRLTEMPW - Temporary Write Errors  
XDWM.. MRLTIERR - Number of TIERR  
XDWM..E MRLTMPCT - Count of Temporary Errors  
XDWM.. MRLTRVRC - Number of TRVRC  
XDWM.. MRLUSECT - Number of Device Uses (Reserved)  
XDWM.. MRLVCRER - Volume Control Region Errors  
XDWM.. MRLVELCG - Number of VELCG  
XDWM.. MRLVELRT - Number of VELRT  
XDWM.. MRLWRBYT - Number of Bytes Written

```
XDWM.. MRLWRCKI - Write Check Ignored
XDWM.. MRLWRDAC - Write Data Acquisition
XDWM.. MRLWRDCK - Write Data Check
XDWM.. MRLWRECC - Write ECC Corrected
XDWM.. MRLWREREG - 3480 Write Erase Gaps
XDWM.. MRLWRERR - Write Errors Per 100K SIOs
XDWM.. MRLWRRET - Write Retries
XDWM.. MRLWRSCK - Write Servo Check
XDWM.. MRLWRTRS - Write Transient
XDWM.. MRLWTMCK - Number of WTM Checks
```

### 5.6.3 SRLMRL Usage Considerations

This section identifies any special considerations or techniques related to using the SRLMRL file. Additionally, a sample retrieval example is provided to facilitate the 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 &diit, 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.

### 5.6.4 SRLMRL Retrieval Example

This section presents a typical SRLMRL retrieval example.

Print a list showing the number of tape mounts that have taken place for all tape devices. This can be useful to detect any unusual activity among tape devices. If there is a high mount activity on certain devices, then those devices may require more frequent maintenance.

```
PROC PRINT DATA=&PSRLD..SRLMRL01;
VAR SYSID DEVTYPE DEVADDR MRLMTS;
```

## 5.7 SRL Processor Reliability (SRLPRL) File

FILENAME=SRLPRLxx

The Processor Reliability File contains data identifying software and hardware detected processor failures for each time-span in which the file is defined.

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

- 1 - SRLPRL File Organization
- 2 - SRLPRL Data Elements List
- 3 - SRLPRL Usage Considerations
- 4 - SRLPRL Retrieval Example

### 5.7.1 SRLPRL 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	CPUSER	YEAR	MONTH	DAY	
	HOUR	ENDTS				
DAYS	SYSID	CPUSER	YEAR	MONTH	DAY	
	HOUR					
WEEKS	SYSID	CPUSER	YEAR	WEEK	ZONE	
	HOUR					
MONTHS	SYSID	CPUSER	YEAR	MONTH	ZONE	
YEARS	N/A					
TABLES	N/A					

Generation Date: Tue, May 12, 2009

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

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

Figure 5-6. SRLPRL Time-Span Granularity Chart

## 5.7.2 SRLPRL Data Elements List

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

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

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

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

**DATA ELEMENT:** The data element name.

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

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

**GENERATION DATE:** Tue, May 12, 2009

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

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

-----

### Sequence/Summary Data Elements

XDWM..E	CPUSER	- CPU/Processor Serial Number
XD...E	DAY	- Day of Month
XDW...E	HOURL	- Hour of Day
XDWM..E	MONTH	- Month of Year
XDWM..E	SYSID	- System Identifier
XDW...E	WEEK	- Week of Year
XDWM..E	YEAR	- Year of Century

XDWM..E ZONE - Time Zone

Common Data Elements

XDWM.. CPUMODEL - CPU Model Identification  
XD... DAYNAME - Name of Day of Week  
XDWM..E ENDTS - End Time Stamp  
XDWM.. MICSVER - CA MICS Version Number  
XDWM.. STARTTS - Start Time Stamp

Retained Data Elements

X.... PRLERRID - ERRORID From RTM  
X.... PRLFSA - Failing Storage Address  
XDWM.. PRLJOB - Jobname of Job Assoc With Fail  
X.... PRLMCELA - MCK Extended Logout Area  
X.... PRLMCELL - MCEL Data Area Length  
XDWM.. PRLMOSW - MCK Old Program Status Word  
XDWM.. PRLPGM - Pgmname Assoc With Failure  
XDWM.. PRLWSC - Wait State Code From System  
X.... PRLXMPWL - (MVS) Length of Checking Blk

## Accumulated Data Elements

XDWM.. PRLCHNG - Change Indicator Already ON  
 XDWM.. PRLDAE - Delayed Access Exception  
 XDWM.. PRLDBSE - Double Bit Error Flag  
 XDWM.. PRLEDXF - Extended Storage Control Failure  
 XDWM.. PRLEDXN - Extended Storage Not Operational  
 XDWM.. PRLFCD - Clock Damage  
 XDWM.. PRLFCCK - Channel Subsystem Damage  
 XDWM.. PRLFCP - Channel Report Word Pending  
 XDWM.. PRLFDG - Degradation  
 XDWM.. PRLFDS - Double Bit Error  
 XDWM.. PRLFED - External Damage  
 XDWM.. PRLFKE - Key Error  
 XDWM.. PRLFPD - Processor Damage  
 XDWM.. PRLFSC - Storage Error Corrected  
 XDWM.. PRLFSD - System Damage  
 XDWM.. PRLFSE - Storage Error  
 XDWM.. PRLFSPD - Service Processor Damage  
 XDWM.. PRLFSQA - Frame In SQA  
 XDWM.. PRLFSR - System Recovery  
 XDWM.. PRLFTD - Timer Damage  
 XDWM.. PRLFVF - Vector Failure  
 XDWM.. PRLFVS - Vector Source  
 XDWM.. PRLFWN - Power Warning  
 XDWM.. PRLHHRD - Hard Error Assumed  
 XDWM.. PRLHINV - Registers, PSW Are Invalid  
 XDWM.. PRLHIO - Hard Error from I/O Supervisor  
 XDWM.. PRLHIPD - Instruction Processor Damage  
 XDWM.. PRLHSD - System Damage Has Occurred  
 XDWM.. PRLHSPF - Storage Protect Key Error  
 XDWM.. PRLHSTO - Hard Storage Error Occurred  
 XDWM.. PRLHVS - Hard Error - Vector Source  
 XDWM.. PRLIBU - Backed Up Indicator  
 XDWM.. PRLICKC - Clock Comparator Error  
 XDWM.. PRLICTM - CPU Timer Error  
 XDWM.. PRLIDY - Delayed Indicator  
 XDWM.. PRLIL80 - Interval Timer Is In Error  
 XDWM.. PRLINTC - Intercepted Frame Error  
 XDWM.. PRLINV - Invalid Logout Indicator  
 XDWM.. PRLINVP - Storage Reconf - Page Invalid  
 XDWM.. PRLITOD - Time of Day Clock Is In Error  
 XDWM.. PRLLSQA - Frame In LSQA  
 XDWM.. PRLNUCL - Frame In Nucleus  
 XDWM.. PRLNVF - LRB May Not Be Valid  
 XDWM.. PRLOFLN - Frame Was OFFLINE  
 XDWM.. PRLPGFX - Frame Is Fixed  
 XDWM.. PRLRSRC - Storage Reconf - Status Avail  
 XDWM.. PRLRSRF - Storage Reconf Not Attempted

XDWM..	PRLSBUF	- Buffer Is In Error
XDWM..	PRLSDG	- Degradation Machine Check
XDWM..	PRLSEC	- Secondary Error Indicator
XDWM..	PRLSECC	- ECC Corrected Storage Error
XDWM..	PRLSER	- Storage Error Was Already Set
XDWM..	PRLSEXD	- External Damage Has Occurred
XDWM..	PRLSHIR	- HIR Corrected Processor Error
XDWM..	PRLSPER	- Permanent Error Occurred
XDWM..	PRLSSFT	- Soft Machine Error Is Assumed
XDWM..	PRLSSPD	- Service Processor Damage
XDWM..	PRLSVF	- Soft Vector Failure
XDWM..	PRLSYST	- System Terminated By MCH
XDWM..	PRLTCKS	- Check Stop Indicator
XDWM..	PRLTDMG	- System Damage Indicator
XDWM..	PRLTHR	- Error Threshold Reached
XDWM..	PRLTIOS	- Termination from I/O Supervisor
XDWM..	PRLVCC	- Clock Comparator Valid
XDWM..	PRLVCR	- Control Regs Valid
XDWM..	PRLVED	- External Damage Code Valid
XDWM..	PRLVEQR	- Frame Is V EQ R
XDWM..	PRLVFA	- Failing Storage Address Valid
XDWM..	PRLVFP	- Floating Point Regs Valid
XDWM..	PRLVGR	- Gen Purpose Regs Valid
XDWM..	PRLVIA	- Instruction Address Valid
XDWM..	PRLVLG	- Logout (MCEL) Valid
XDWM..	PRLVMS	- PSW Masks and Key Are Valid
XDWM..	PRLVPM	- Pgm Masks and Cond Code Valid
XDWM..	PRLVPT	- Processor Timer Valid
XDWM..	PRLVRC	- Region Code Valid
XDWM..	PRLVST	- Storage Logical Valid
XDWM..	PRLVTE	- Vector Threshold Exceeded
XDWM..	PRLVWP	- PSW EMWP Is Valid
XDWM..	PRLWRN	- Power Warning Indicator

### 5.7.3 SRLPRL Usage Considerations

This section identifies any special considerations or techniques related to using the SRLPRL file. Additionally, a sample retrieval example is provided to facilitate the 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 &diit, 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.

### 5.7.4 SRLPRL Retrieval Example

This section presents a typical SRLPRL retrieval example.

Print a list showing the jobs associated with a processor failure. This may be used to determine what jobs were affected by a machine check. Some types of errors may result in the termination of the active job, but may allow system operation to continue. However it is possible for a job to cause a machine check. In this case the offending job may be identified by this report.

```
PROC PRINT DATA=&PSRLX..SRLPRL01;  
VAR SYSID CPUSER PRLJOB;
```

## 5.8 SRL Reliability Incident (SRLRNC) File

FILENAME=SRLRNCxx

The Reliability Incident File contains data identifying errors which resulted in the logging of a record to the SYS1.LOGREC Data Set.

This file is only maintained in the DETAIL Time-Span.

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

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

## 5.8.1 SRLRNC 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 CPUSER 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 5-7. SRLRNC Time-Span Granularity Chart

## 5.8.2 SRLRNC 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 CPUSER - CPU/Processor Serial Number
- X....E DAY - Day of Month
- X....E ENDTS - End Time Stamp
- X....E HOUR - Hour of Day
- X....E MONTH - Month of Year
- X....E SYSID - System Identifier
- X....E YEAR - Year of Century

#### Common Data Elements

X....E CDEVIND - Critical Device Indicator  
X....E CHANNEL - Physical Channel Address  
X....E CPUMODEL - CPU Model Identification  
X....E DAYNAME - Name of Day of Week  
X....E DEVADDR - Device Address  
X....E DEVCLASS - Device Class  
X....E DEVNUM - Device Number  
X....E DEVTYPE - Device Type  
X....E LOGADDR - Logical Device Address  
X....E MICSVER - CA MICS Version Number  
X....E STARTTS - Start Time Stamp  
X....E VOLSER - Volume Serial Number  
X....E WEEK - Week of Year  
X....E ZONE - Time Zone

#### Retained Data Elements

X.... RNCCJOB - Critical Job Indicator  
X.... RNCJOB - Jobname of Job Encountering Failure  
X.... RNCTEXT - Incident Descriptive Text  
X....E RNCTYPE - Type of Incident Encountered

#### Accumulated Data Elements

X.... RNCCOUNT - Number of Incident Occurrences

### 5.8.3 SRLRNC Usage Considerations

This section identifies any special considerations or techniques related to using the SRLRNC file. Additionally, sample retrieval examples are provided to facilitate the 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 &diit, 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.

## 5.8.4 SRLRNC Retrieval Examples

This section presents typical SRLRNC retrieval examples.

1. Print a list showing the jobs that abended yesterday and the description of the abend. Also show the criticality of the device associated with the failure as well as the criticality of the job that failed. Refer to the data dictionary descriptions of the elements RNCCDEV and RNCCJOB for a better understanding of how criticality is designated.

```
PROC PRINT DATA=&PSRLX..SRLRNC01;  
VAR SYSID CPUSER DEVNUM LOGADDR RNCCDEV  
RNCJOB RNCCJOB RNCTEXT;
```

2. Print a distribution of the different types of incidents and the number of times they occurred yesterday.

```
PROC FREQ DATA=&PSRLX..SRLRNC01;  
TABLES RNCTYPE;
```

## 5.9 SRL System Software Diagnostic (SRLSSD) File

FILENAME=SRLSSDxx

The System Software Diagnostic File contains data identifying software and software detected hardware problems which resulted in the logging of a record to the SYS1.LOGREC data set. The information in this file represents software diagnostic information for operating system modules and routines. Data is maintained within the DETAIL Time-Span as sequenced but not summarized records.

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

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

### 5.9.1 SRLSSD 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	CPUSER	MODULE	YEAR	MONTH	
	DAY	HOURL	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 5-8. SRLSSD Time-Span Granularity Chart

### 5.9.2 SRLSSD 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 CPUSER - CPU/Processor Serial Number
- X....E DAY - Day of Month
- X....E ENDTS - End Time Stamp
- X....E HOUR - Hour of Day
- X....E MODULE - Name of Failing Module/Routine
- X....E MONTH - Month of Year
- X....E SYSID - System Identifier

X.....E YEAR - Year of Century

#### Common Data Elements

X..... CPUMODEL - CPU Model Identification  
X..... DAYNAME - Name of Day of Week  
X..... MICSVER - CA MICS Version Number  
X..... STARTTS - Start Time Stamp  
X..... WEEK - Week of Year  
X..... ZONE - Time Zone

#### Retained Data Elements

X..... SSDABPGM - Name of ABENDING Program  
X..... SSDAPLW - ASM Class Lockword  
X..... SSDASCB - Address of ASCB with Problem  
X..... SSDASID - ASID For LOGREC Debugging  
X..... SSDASI1 - ASID of Problem  
X..... SSDASST - Address of Segment Table with Problem  
X..... SSDCIDB - Component ID Base (Prefix) Number  
X..... SSDCJOB - Critical Job Indicator  
X..... SSDCMOD - Critical Module Indicator  
X..... SSDCMPID - Component Identification (ID)  
X..... SSDCOMP - Data Mgmt Reserved Value  
X..... SSDCPID - CPU Id For Failing CPU  
X..... SSDCPUI - ERRORID Logical CPU ID  
X..... SSDCRCD - Component Reason/Return Code  
X..... SSDCSCT - CSECT Name Involved In Rec.  
X..... SSDDAET - Dump Analysis Status Flags  
X..... SSDDPID - ID Of Dump Requested  
X..... SSDDPLA - SDWA Dump Parameter List Flags  
X..... SSDEADR - FRR or ESTAE Recovery Routine Address  
X..... SSDEASID - ERRORID - Address Space ID  
X..... SSDECPID - ERRORID - CPU ID  
X..... SSDEPA - Entry Point Address  
X..... SSDERTM - ERRORID Time Stamp  
X..... SSDESEQ - ERRORID - Sequence Number  
X..... SSDETIME - ERRORID - Time Stamp  
X..... SSDFAIN - Storage Location Associated with Problem  
X..... SSDFIOB - Address of Purge IO Request List  
X..... SSDFMID - ASID of Memory With Error  
X..... SSDFRM1 - Dump Storage Range 1 - Begin  
X..... SSDFRM2 - Dump Storage Range 2 - Begin  
X..... SSDFRM3 - Dump Storage Range 3 - Begin  
X..... SSDFRM4 - Dump Storage Range 4 - Begin  
X..... SSDFRREA - Copy of the FRR Paramter Area

X..... SSDGR0 - Contents of GP Reg 0 at ABEND  
X..... SSDGR1 - Contents of GP Reg 1 at ABEND  
X..... SSDGR10 - Contents of GP Reg 10 at ABEND  
X..... SSDGR11 - Contents of GP Reg 11 at ABEND  
X..... SSDGR12 - Contents of GP Reg 12 at ABEND  
X..... SSDGR13 - Contents of GP Reg 13 at ABEND  
X..... SSDGR14 - Contents of GP Reg 14 at ABEND  
X..... SSDGR15 - Contents of GP Reg 15 at ABEND  
X..... SSDGR2 - Contents of GP Reg 2 at ABEND  
X..... SSDGR3 - Contents of GP Reg 3 at ABEND  
X..... SSDGR4 - Contents of GP Reg 4 at ABEND  
X..... SSDGR5 - Contents of GP Reg 5 at ABEND  
X..... SSDGR6 - Contents of GP Reg 6 at ABEND  
X..... SSDGR7 - Contents of GP Reg 7 at ABEND  
X..... SSDGR8 - Contents of GP Reg 8 at ABEND  
X..... SSDGR9 - Contents of GP Reg 9 at ABEND  
X..... SSDHLHI - Highest Lock Held Indicator  
X..... SSDICLW - IOSCAT Lockword  
X..... SSDILLW - IOSLCH Lockword  
X..... SSDINTA - Interrupt Code  
X..... SSDINTP - Interrupt Code  
X..... SSDIOA - Chan Int Masks - IO Interrupts  
X..... SSDIOBR - Pointer To FIOB Field  
X..... SSDIOP - Chan Int Masks - IO Interrupts  
X..... SSDIPLW - IOSYNCH Lockword  
X..... SSDIULW - IOSUCB Lockword  
X..... SSDJOB - Jobname of Job Executing at Failure  
X..... SSDKEYA - Program Status Word - Key  
X..... SSDKEYP - Program Status Word - Key  
X..... SSDKEY1 - Program Status Word - Key  
X..... SSDKEY2 - Program Status Word - Key  
X..... SSDLASG - Lockword Address for ASMGL Lock  
X..... SSDLRSA - Lockword Address for RSMAD Lock  
X..... SSDLRSC - Lockword Address for RSMCM Lock  
X..... SSDLRSG - Lockword Address for RSMGL Lock  
X..... SSDLRSS - Lockword Address for RSMST Lock  
X..... SSDLRSX - Lockword Address for RSMXM Lock

X.... SSDMDAT - Module Assembly Date  
X.... SSDMVR - Module Version, PTF Number  
X.... SSDNXTA - Address of Next Instruction  
X.... SSDNXT - Address of Next Instruction  
X.... SSDNXT1 - Addr of Next Instruction  
X.... SSDNXT2 - Addr of Next Instruction  
X.... SSDOCMP - Original value of REQ, STEP, or STCC  
X.... SSDOCRC - Reason Code on original entry  
X.... SSDPARM - Parameter List Addr for ESTAE Macro  
X.... SSDPSWA - BC Mode PSW at Time of Error  
X.... SSDPSWP - BC Mode PSW from Last PRB  
X.... SSDPSW1 - EC Mode PSW at Time of Error  
X.... SSDPSW2 - EC Mode PSW from the RB Level  
X.... SSDRBAD - RB Address of ABENDING Pgm  
X.... SSDRECA - Address of SDWA Variable Area  
X.... SSDREXN - Rec. Rtn. Error Handler Name  
X.... SSDRFSA - Failing Real Storage Address  
X.... SSDRRL - Recovery Routine Creating SDWA  
X.... SSDRTYA - Address of Retry Routine  
X.... SSDSCKB - Storage Check - Starting Addr  
X.... SSDSCKE - Storage Check - Ending Addr  
X.... SSDSCMPC - System Completion Code  
X.... SSDSCNAM - Name of Subcomponent/Subfunction  
X.... SSDSCPID - System Control Program identification  
X.... SSDSDRC - SVCDUMP Status Indicator  
X.... SSDSDRN - SDUMP Partial Dump Reason Flags  
X.... SSDSEQNO - ERRORID Sequence Number  
X.... SSDSPID - Subpool ID Containing SDWA  
X.... SSDSPN - Processor is Spinning Indicator  
X.... SSDSR0 - Contents of GP Reg 0 from RB  
X.... SSDSR1 - Contents of GP Reg 1 from RB  
X.... SSDSR10 - Contents of GP Reg 10 from RB  
X.... SSDSR11 - Contents of GP Reg 11 from RB  
X.... SSDSR12 - Contents of GP Reg 12 from RB  
X.... SSDSR13 - Contents of GP Reg 13 from RB  
X.... SSDSR14 - Contents of GP Reg 14 from RB  
X.... SSDSR15 - Contents of GP Reg 15 from RB  
X.... SSDSR2 - Contents of GP Reg 2 from RB  
X.... SSDSR3 - Contents of GP Reg 3 from RB  
X.... SSDSR4 - Contents of GP Reg 4 from RB  
X.... SSDSR5 - Contents of GP Reg 5 from RB  
X.... SSDSR6 - Contents of GP Reg 6 from RB

X.... SSDSR7 - Contents of GP Reg 7 from RB  
X.... SSDSR8 - Contents of GP Reg 8 from RB  
X.... SSDSR9 - Contents of GP Reg 9 from RB  
X.... SSDSUPR - Supervisor Control Word  
X.... SSDTALW - \*\* Lockword (reserved)  
X.... SSDTCB - TCB of Problem  
X.... SSDTDLW - \*\* Lockword (reserved)  
X.... SSDTIME - Timestamp of Related MC Record  
X.... SSDTNLW - \*\* Lockword (reserved)  
X.... SSDT01 - Dump Storage Range 1 - End  
X.... SSDT02 - Dump Storage Range 2 - End  
X.... SSDT03 - Dump Storage Range 3 - End  
X.... SSDT04 - Dump Storage Range 4 - End  
X.... SSDTRAN - Virt Addr Causing Trans Exc  
X.... SSDTRN2 - Virt Addr Causing Trans Exc  
X.... SSDUARE1 - Variable Recording Area (User Area)  
X.... SSDUARE2 - Variable Recording Area (User Area)  
X.... SSDUCMPC - User Completion Code  
X.... SSDXCMLA - Cross Memory ASCB Address of CML  
X.... SSDXCOMU - Cross Memory FRR/ESTAE Buffer  
X.... SSDXCR3 - Cross Memory Control Register 3  
X.... SSDXCR4 - Cross Memory Control Register 4  
X.... SSDXPAD - Cross Memory Extension Pointer Addr  
X.... SSDXPRIM - Cross Memory Primary ASID  
X.... SSDXSCND - Cross Memory Secondary ASID

Accumulated Data Elements

X.... SSDABTM - Error Type - Syst Issued SVC13  
X.... SSDACR - MCH Info - ACR Request  
X.... SSDADM - Format and Display DMGMT Blks  
X.... SSDALLN - Display Entire Virtual Nucleus  
X.... SSDASMP - Free ASM Class Lock  
X.... SSDCBS - Format and Display Ctl Blocks  
X.... SSDCCA - Condition Code  
X.... SSDCCF - Recovery Exit Altered Comp Code  
X.... SSDCCP - Condition Code  
X.... SSDCC1 - Condition Code  
X.... SSDCC2 - Condition Code  
X.... SSDCHNG - Storage Frame Err - Change Ind  
X.... SSDCLUP - Other Error- Cleanup and Exit  
X.... SSDCML - Free XM Local Lock  
X.... SSDCMS - Free CMS Lock  
X.... SSDCTS - Other Error- Task Not In Ctl  
X.... SSDCWT - Continue With Termination Ind

---

X.....	SSDDEC1	- Decimal Overflow
X.....	SSDDEC2	- Decimal Overflow
X.....	SSDDISP	- Free Dispatcher Lock
X.....	SSDDLST	- MVS Version SNAP Dump Parmlist
X.....	SSDD0A	- Decimal Overflow
X.....	SSDD0P	- Decimal Overflow
X.....	SSDDPSW	- Display Program Status Word
X.....	SSDDPT	- SNAP Dump Requested
X.....	SSDDREG	- Display Registers
X.....	SSDDSAH	- Display Save Area Handler
X.....	SSDDSAS	- Display Save Areas
X.....	SSDDVS3	- Storage Ranges Not Available
X.....	SSDEASM	- Other Error- Lower Level Exit
X.....	SSDEBC	- Var. Recording Option, EBC
X.....	SSDECT1	- Program Status Word - EC Mode
X.....	SSDECT2	- Program Status Word - EC Mode
X.....	SSDENRB	- Other Error- Enabled RB In Ctl
X.....	SSDENSN	- Enhanced Dump Option
X.....	SSDERFL	- Other Error- ERRORID Avail
X.....	SSDERR	- Format and Display Error Blks
X.....	SSDERRID	- Record Contains An ERRORID Field
X.....	SSDEUA	- Exponent Underflow
X.....	SSDEUP	- Exponent Underflow
X.....	SSDEXP1	- Exponent Underflow
X.....	SSDEXP2	- Exponent Underflow
X.....	SSDEXTA	- Chan Int Masks - External Int
X.....	SSDEXTP	- Chan Int Masks - External Int
X.....	SSDEXT1	- Interrupt Masks - External
X.....	SSDEXT2	- Interrupt Masks - External
X.....	SSDFASG	- Free the ASM GLOBAL CLASS Lock
X.....	SSDFCPU	- Free the CPU Lock
X.....	SSDFLLK	- Free LOCAL Lock
X.....	SSDFLSQ	- Other Stor Errs - Fr In LSQA

X..... SSDFPA - Fixed Point Overflow  
X..... SSDFP01 - Fixed Point Overflow  
X..... SSDFP02 - Fixed Point Overflow  
X..... SSDFPP - Fixed Point Overflow  
X..... SSDFPRX - MCH Info - FP Regs Unpred.  
X..... SSDFREE - Free SDWA,RTCA Before Retry  
X..... SSDFRSA - Free RSM Address Space Class Lock  
X..... SSDFRSC - Free the RSM COMMON CLASS Lock  
X..... SSDFRSG - Free the RSM GLOBAL CLASS Lock  
X..... SSDFRSM - Free the RSM Lock  
X..... SSDFRSS - Free the RSM Steal Class Lock  
X..... SSDFRSX - Free RSM XM Class Lock  
X..... SSDFSQA - Other Stor Errs - Fr In SQA  
X..... SSDFTRC - Free the TRACE Lock  
X..... SSDFVSF - Free the VSM Fix Lock  
X..... SSDFVSP - Free VSM Page Lock  
X..... SSDGLBL - Other ERror- Global Resource Manager  
X..... SSDGTF - Display GTF Incore Table  
X..... SSDHEX - Var. Recording Option, HEX  
X..... SSDICAT - Free IOSCAT Lock  
X..... SSDILA - Instruction Length Code  
X..... SSDILCH - Free IOSLCH Lock  
X..... SSDILP - Instruction Length Code  
X..... SSDIL1 - Instruction Length For PSW1  
X..... SSDIL2 - Instruction Length For PSW1  
X..... SSDIMC1 - Pgm Chk Int Code - MCK  
X..... SSDIMC2 - Pgm Chk Int Code - MCK  
X..... SSDINC1 - Interrupt Code for PSW1  
X..... SSDINC2 - Interrupt Code for PSW1  
X..... SSDINSF - MCH Info - Instruction Failure  
X..... SSDINTC - Other Stor Errs - Intercept  
X..... SSDINVP - MCH Flag - Page Invalidated  
X..... SSDIOHT - IO Halted and Not Restorable  
X..... SSDIOQR - IO Quiesced and Restorable  
X..... SSDIOS - Format and Display IOS Blocks  
X..... SSDIO1 - Interrupt Masks - IO Interrupt  
X..... SSDIO2 - Interrupt Masks - IO Interrupt  
X..... SSDIPC1 - Pgm Chk Int Code - Unsol PC  
X..... SSDIPC2 - Pgm Chk Int Code - Unsol PC  
X..... SSDIPRG - Free IOSYNCH Lock  
X..... SSDIPR1 - Pgm Chk Int Code - PER  
X..... SSDIPR2 - Pgm Chk Int Code - PER  
X..... SSDIRB - Other Error- IRB Preceded RB  
X..... SSDIUCB - Free IOSUCB Lock  
X..... SSDLCL - Other Error- Local Resource Manager

---

```

X..... SSDLCPU - Log. Addr of CPU Holding Resrc
X..... SSDLDIS - Other Error- Disabled Routine
X..... SSDLNTH - Length of This SDWA
X..... SSDLSQA - Display LSQA
X..... SSDLVL2 - MVS/XA Version SNAP Dump Parmlist
X..... SSDMABD - Other Error- Ancestor ABENDED
X..... SSDMCK - Error Type - Machine Check
X..... SSDMCIV - Other Error- MCK Data Unavail
X..... SSDMCKA - Program Status Word - MCK Ind
X..... SSDMCKP - Program Status Word - MCK Ind
X..... SSDMCK1 - Program Status Word - Mach Chk
X..... SSDMCK2 - Program Status Word - Mach Chk
X..... SSDMSER - Storage Frame Err - Error Set
X..... SSDNIOP - User Requested No IO Process.
X..... SSDNOIO - No IO Outstanding
X..... SSDNRBE - Other Error- Assoc RB Not in Ctl
X..... SSDNSWA - Storage Frame Err- Non-Swap Addr Space
X..... SSDNSWP - Storage Frame Err- LT Non-Swap Addr Sp
X..... SSDNUC - Display Nucleus
X..... SSDNUCL - Other Stor Errs - Fr Cont Nuc
X..... SSDOCUR - Number of Occurrences of Problem
X..... SSDOFLN - Other Stor Errs - Frame Offln
X..... SSDOPTM - Free SRM Lock
X..... SSDORCF - SSDOCRC contains valid reason code
X..... SSDOREQ - SSDOCMP contains original SSDREQ value
X..... SSDOSTC - SSDOCMP contains original SSDSTCC value
X..... SSDOSTP - SSDOCMP contains original SSDSTEP value
X..... SSDPERC - Other Error- Rtn Percolated
X..... SSDPER1 - Interrupt Masks - PER Allowed
X..... SSDPER2 - Interrupt Masks - PER Allowed
X..... SSDPGCK - Error Type - Program Check
X..... SSDPGFX - Other Stor Errs - Fr Is Fixed
X..... SSDPGIO - Error Type - Paging IO Error
X..... SSDPGM1 - Program Status Word - Sup,Pblm
X..... SSDPGM2 - Program Status Word - Sup,Pblm
X..... SSDPREF - Storage Frame Err- Preferred Frame
X..... SSDPSTI - Prevent Further Processing Ind
X..... SSDPSWU - MCH Info - PSW, Ctl Regs Unpre
X..... SSDQQS - Format and Display QCBs,QELs
X..... SSDRCDF - MCH Flag - MCK Rec Not Logged
X..... SSDRCF - Reason Code Supplied to RTM
X..... SSDRCRD - Recording Requested
X..... SSDREAF - Recovery Exit Alter Reason Code
X..... SSDREGU - MCH Info - GP Regs Unpredict.
X..... SSDREQ - Dump To Be Taken Indicator
X..... SSDRERR - Retry using XM Address Environment

```

X..... SSDRETY - Retry Using RTYA Address Ind  
X..... SSDRKEY - Error Type - Console RESTART  
X..... SSDRPVIV - Other Error- Regs,PSW Unavail  
X..... SSDRSRC - MCH Flag - Reconfig Status Avl  
X..... SSDRSRF - MCH Flag - Reconfig Not Attemp  
X..... SSDSALL - Free SALLOC Lock  
X..... SSDSCK - MCH Info - Storage Data Check  
X..... SSDSERP - Serialize FRR Percolation  
X..... SSDSGA - Significance Exception  
X..... SSDSGN1 - Significance Exception  
X..... SSDSGN2 - Significance Exception  
X..... SSDSGP - Significance Exception  
X..... SSDSKIP - Other Error- FRRs Skipped  
X..... SSDSKYF - MCH Info - Storage Key Failure  
X..... SSDSLST - Storage Lists Supplied  
X..... SSDSPER - Other Stor Errs - Perm Error  
X..... SSDSPIN - Interrupt VIA the RESTART Key  
X..... SSDSPVA - Program Status Word - Sup,Pblm  
X..... SSDSPVP - Program Status Word - Sup,Pblm  
X..... SSDSQA - Display SQA  
X..... SSDSRBM - Other Error- System SRB Mode  
X..... SSDSRVL - MCH Flag - Storage Addr Valid  
X..... SSDSTAE - Other Error- Previous Error  
X..... SSDSTAF - Other Error- Prev STAE Failure  
X..... SSDSTAI - Other Error- STAI Exit Rec Ctl  
X..... SSDSTEP - Jobstep To Be Terminated Indicator  
X..... SSDSUBL - Dump Subpool List Supplied  
X..... SSDSUM - Provide Summary Dump  
X..... SSDSVCD - Error Type - Task Issued SVC13  
X..... SSDSVCE - Error Type - SVC By Locked Rtn  
X..... SSDSWA - Display SWA  
X..... SSDS1 - Address Space Selection Bit 1  
X..... SSDS2 - Address Space Selection Bit 2  
X..... SSDTADB - Free \*\* Lock (reserved)  
X..... SSDTDNB - Free \*\* Lock (reserved)  
X..... SSDTERR - MCH Info - Timer Error  
X..... SSDTEXC - Error Type - Unrecov Trans Err  
X..... SSDTJPA - Display Task JPA Modules  
X..... SSDTLPA - Display Task LPA Modules  
X..... SSDTNCB - Free \*\* Lock (reserved)  
X..... SSDTRM1 - Interrupt Masks - DAT Active  
X..... SSDTRM2 - Interrupt Masks - DAT Active  
X..... SSDTSVL - MCH Flag - Timestamp Valid  
X..... SSDTYP1 - Other Error- Type 1 SVC In Ctl

```

X..... SSDUAL   - User Supplied Data Length
X..... SSDUPRG  - Use SRnn Regs for Retry
X..... SSDUSPL  - Display User Subpools
X..... SSDVEQR  - Other Stor Errs - Fr Is V EQ R
X..... SSDVRAL  - Var. Recording Area Length
X..... SSDVRAM  - VRA Data in VRAMAP (IHAVRA) Format
X..... SSDVRCN  - Storage Frame Err- V eq R Candidate
X..... SSDVRIV  - MCH Info - Vector Regs Unpredict.
X..... SSDWATA  - Program Status Word - Wait St
X..... SSDWATP  - Program Status Word - Wait St
X..... SSDWAT1  - Program Status Word - Wait St.
X..... SSDWAT2  - Program Status Word - Wait St.

```

### 5.9.3 SRLSSD Usage Considerations

This section identifies any special considerations or techniques related to using the SRLSSD file. Additionally, sample retrieval examples are provided to facilitate the 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 &diit, 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

The software diagnostic information is obtained from the SYS1.LOGREC software records, type 4x (hexadecimal), where x is 0, 2, 4, or 8. Each software record read during the update cycle will create one entry in the system or user diagnostic file depending on whether the software failure represents a system or user problem, respectively.

An additional software record, type 4F (hexadecimal) indicates that one or more software records have been lost. The 4F records are not used to create entries in the software diagnostic files.

## 5.9.4 SRLSSD Retrieval Examples

This section presents typical SRLSSD retrieval examples.

1. Print a list showing the jobs that abended yesterday and the number of times they abended and percentage versus the other jobs that abended. This can help identify those jobs that are failing more often than others, and steps may be taken to correct the situation.

```
PROC FREQ DATA=&PSRLX..SRLSSD01;  
TABLES SSDJOB;
```

2. Print a list of all jobs beginning with PROD that abended yesterday and their system completion codes.

```
DATA;  
SET &PSRLX..SRLSSD01;  
IF SSDJOB EQ: 'PROD';  
PROC PRINT; VAR SYSID SSDJOB SSDSCMPC;
```

## 5.10 User Software Diagnostic (SRL\_UD) File

```
FILENAME=SRL_UDxx
```

The User Software Diagnostic File contains data identifying software and software detected hardware problems which resulted in the logging of a record to ERDS. The information in this file represents diagnostic information for problem program modules and routines. Data is maintained within the DETAIL Time-Span as sequenced but not summarized records.

This file is a parallel file to the SRLSSD file. Therefore all elements in this file will begin with the prefix of SSD.

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

- 1 - SRL\_UD File Organization
- 2 - SRL\_UD Data Elements List
- 3 - SRL\_UD Usage Considerations
- 4 - SRL\_UD Retrieval Examples

### 5.10.1 SRL\_UD 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	CPUSER	MODULE	YEAR	MONTH	
	DAY	HOURL	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 5-9. SRL\_UD Time-Span Granularity Chart

## 5.10.2 SRL\_UD 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 CPUSER - CPU/Processor Serial Number
- X....E DAY - Day of Month
- X....E ENDTS - End Time Stamp
- X....E HOUR - Hour of Day
- X....E MODULE - Name of Failing Module/Routine
- X....E MONTH - Month of Year
- X....E SYSID - System Identifier

X.....E YEAR - Year of Century

#### Common Data Elements

X..... CPUMODEL - CPU Model Identification  
X..... DAYNAME - Name of Day of Week  
X..... MICSVER - CA MICS Version Number  
X..... STARTTS - Start Time Stamp  
X..... WEEK - Week of Year  
X..... ZONE - Time Zone

#### Retained Data Elements

X..... SSDABPGM - Name of ABENDING Program  
X..... SSDAPLW - ASM Class Lockword  
X..... SSDASCB - Address of ASCB with Problem  
X..... SSDASID - ASID For LOGREC Debugging  
X..... SSDASI1 - ASID of Problem  
X..... SSDASST - Address of Segment Table with Problem  
X..... SSDCCP - Condition Code  
X..... SSDCIDB - Component ID Base (Prefix) Number  
X..... SSDCJOB - Critical Job Indicator  
X..... SSDCMOD - Critical Module Indicator  
X..... SSDCMPID - Component Identification (ID)  
X..... SSDCOMP - Data Mgmt Reserved Value  
X..... SSDCPID - CPU Id For Failing CPU  
X..... SSDCPUI - ERRORID Logical CPU ID  
X..... SSDCRCD - Component Reason/Return Code  
X..... SSDCSCT - CSECT Name Involved In Rec.  
X..... SSDDAET - Dump Analysis Status Flags  
X..... SSDDOP - Decimal Overflow  
X..... SSDDPID - ID Of Dump Requested  
X..... SSDDPLA - SDWA Dump Parameter List Flags  
X..... SSDEADR - FRR or ESTAE Recovery Routine Address  
X..... SSDEASID - ERRORID - Address Space ID  
X..... SSDECPID - ERRORID - CPU ID  
X..... SSDEPA - Entry Point Address  
X..... SSDERTM - ERRORID Time Stamp  
X..... SSDESEQ - ERRORID - Sequence Number  
X..... SSDETIME - ERRORID - Time Stamp  
X..... SSDEUP - Exponent Underflow  
X..... SSDFAIN - Storage Location Associated with Problem

X.... SSDFIOB - Address of Purge IO Request List  
X.... SSDFMID - ASID of Memory With Error  
X.... SSDFPP - Fixed Point Overflow  
X.... SSDFRM1 - Dump Storage Range 1 - Begin  
X.... SSDFRM2 - Dump Storage Range 2 - Begin  
X.... SSDFRM3 - Dump Storage Range 3 - Begin  
X.... SSDFRM4 - Dump Storage Range 4 - Begin  
X.... SSDFRREA - Copy of the FRR Paramter Area  
X.... SSDGR0 - Contents of GP Reg 0 at ABEND  
X.... SSDGR1 - Contents of GP Reg 1 at ABEND  
X.... SSDGR10 - Contents of GP Reg 10 at ABEND  
X.... SSDGR11 - Contents of GP Reg 11 at ABEND  
X.... SSDGR12 - Contents of GP Reg 12 at ABEND  
X.... SSDGR13 - Contents of GP Reg 13 at ABEND  
X.... SSDGR14 - Contents of GP Reg 14 at ABEND  
X.... SSDGR15 - Contents of GP Reg 15 at ABEND  
X.... SSDGR2 - Contents of GP Reg 2 at ABEND  
X.... SSDGR3 - Contents of GP Reg 3 at ABEND  
X.... SSDGR4 - Contents of GP Reg 4 at ABEND  
X.... SSDGR5 - Contents of GP Reg 5 at ABEND  
X.... SSDGR6 - Contents of GP Reg 6 at ABEND  
X.... SSDGR7 - Contents of GP Reg 7 at ABEND  
X.... SSDGR8 - Contents of GP Reg 8 at ABEND  
X.... SSDGR9 - Contents of GP Reg 9 at ABEND  
X.... SSDHLHI - Highest Location Held Indicator  
X.... SSDICLW - IOSCAT Lockword  
X.... SSDILLW - IOSLCH Lockword  
X.... SSDILP - Instruction Length Code  
X.... SSDINTA - Interrupt Code  
X.... SSDINTP - Interrupt Code  
X.... SSDIOA - Chan Int Masks - IO Interrupts  
X.... SSDIOBR - Pointer To FIOB Field  
X.... SSDIOP - Chan Int Masks - IO Interrupts  
X.... SSDIPLW - IOSYNCH Lockword  
X.... SSDIULW - IOSUCB Lockword  
X.... SSDJOB - Jobname of Job Executing at Failure  
X.... SSDKEYA - Program Status Word - Key  
X.... SSDKEYP - Program Status Word - Key  
X.... SSDKEY1 - Program Status Word - Key  
X.... SSDKEY2 - Program Status Word - Key  
X.... SSDLASG - Lockword Address for ASMGL Lock  
X.... SSDLRSA - Lockword Address for RSMAD Lock  
X.... SSDLRSC - Lockword Address for RSMCM Lock  
X.... SSDLRSG - Lockword Address for RSMGL Lock  
X.... SSDLRSS - Lockword Address for RSMST Lock  
X.... SSDLRSX - Lockword Address for RSMXM Lock

X..... SSDMDAT - Module Assembly Date  
X..... SSDMVR - Module Version, PTF Number  
X..... SSDNXTA - Address of Next Instruction  
X..... SSDNXTP - Address of Next Instruction  
X..... SSDNXT1 - Addr of Next Instruction  
X..... SSDNXT2 - Addr of Next Instruction  
X..... SSDOCMP - Original value of REQ, STEP, or STCC  
X..... SSDOCRC - Reason Code on original entry  
X..... SSDPARM - Parameter List Addr for ESTAE Macro  
X..... SSDPSWA - BC Mode PSW at Time of Error  
X..... SSDPSWP - BC Mode PSW from Last PRB  
X..... SSDPSW1 - EC Mode PSW at Time of Error  
X..... SSDPSW2 - EC Mode PSW from the RB Level  
X..... SSDRBAD - RB Address of ABENDING Pgm  
X..... SSDRECA - Address of SDWA Variable Area  
X..... SSDREXN - Rec. Rtn. Error Handler Name  
X..... SSDRFSA - Failing Real Storage Address  
X..... SSDRRL - Recovery Routine Creating SDWA  
X..... SSDRTYA - Address of Retry Routine  
X..... SSDSCKB - Storage Check - Starting Addr  
X..... SSDSCKE - Storage Check - Ending Addr  
X..... SSDSCMPC - System Completion Code  
X..... SSDSCNAM - Name of Subcomponent/Subfunction  
X..... SSDSCPID - System Control Program identification  
X..... SSDSDRC - SVCDUMP Status Indicator  
X..... SSDSDRN - SDUMP Partial Dump Reason Flags  
X..... SSDSEQNO - ERRORID Sequence Number  
X..... SSDSGP - Significance Exception  
X..... SSDSPID - Subpool ID Containing SDWA  
X..... SSDSPN - Processor is Spinning Indicator  
X..... SSDSR0 - Contents of GP Reg 0 from RB  
X..... SSDSR1 - Contents of GP Reg 1 from RB  
X..... SSDSR10 - Contents of GP Reg 10 from RB  
X..... SSDSR11 - Contents of GP Reg 11 from RB  
X..... SSDSR12 - Contents of GP Reg 12 from RB  
X..... SSDSR13 - Contents of GP Reg 13 from RB  
X..... SSDSR14 - Contents of GP Reg 14 from RB  
X..... SSDSR15 - Contents of GP Reg 15 from RB  
X..... SSDSR2 - Contents of GP Reg 2 from RB  
X..... SSDSR3 - Contents of GP Reg 3 from RB  
X..... SSDSR4 - Contents of GP Reg 4 from RB

X..... SSDSR5 - Contents of GP Reg 5 from RB  
 X..... SSDSR6 - Contents of GP Reg 6 from RB  
 X..... SSDSR7 - Contents of GP Reg 7 from RB  
 X..... SSDSR8 - Contents of GP Reg 8 from RB  
 X..... SSDSR9 - Contents of GP Reg 9 from RB  
 X..... SSDSUPR - Supervisor Control Word  
 X..... SSDTALW - \*\* Lockword (reserved)  
 X..... SSDTCB - TCB of Problem  
 X..... SSDTDLW - \*\* Lockword (reserved)  
 X..... SSDTIME - Timestamp of Related MC Record  
 X..... SSDTNLW - \*\* Lockword (reserved)  
 X..... SSDT01 - Dump Storage Range 1 - End  
 X..... SSDT02 - Dump Storage Range 2 - End  
 X..... SSDT03 - Dump Storage Range 3 - End  
 X..... SSDT04 - Dump Storage Range 4 - End  
 X..... SSDTRAN - Virt Addr Causing Trans Exc  
 X..... SSDTRN2 - Virt Addr Causing Trans Exc  
 X..... SSDUARE1 - Variable Recording Area (User Area)  
 X..... SSDUARE2 - Variable Recording Area (User Area)  
 X..... SSDUCMPC - User Completion Code  
 X..... SSDXCMLA - Cross Memory ASCB Address of CML  
 X..... SSDXCOMU - Cross Memory FRR/ESTAE Buffer  
 X..... SSDXCR3 - Cross Memory Control Register 3  
 X..... SSDXCR4 - Cross Memory Control Register 4  
 X..... SSDXPAD - Cross Memory Extension Pointer Addr  
 X..... SSDXPRIM - Cross Memory Primary ASID  
 X..... SSDXSCND - Cross Memory Secondary ASID

Accumulated Data Elements

X..... SSDABTM - Error Type - Syst Issued SVC13  
 X..... SSDACR - MCH Info - ACR Request  
 X..... SSDADM - Format and Display DMGMT Blks  
 X..... SSDALLN - Display Entire Virtual Nucleus  
 X..... SSDASMP - Free ASM Class Lock  
 X..... SSDCBS - Format and Display Ctl Blocks  
 X..... SSDCCA - Condition Code  
 X..... SSDCCF - Recovery Exit Altered Comp Code  
 X..... SSDCC1 - Condition Code  
 X..... SSDCC2 - Condition Code  
 X..... SSDCHNG - Storage Frame Err - Change Ind  
 X..... SSDCLUP - Other Error- Cleanup and Exit  
 X..... SSDCML - Free XM Local Lock  
 X..... SSDCMS - Free CMS Lock

---

X....	SSDCTS	- Other Error- Task Not In Ctl
X....	SSDCWT	- Continue With Termination Ind
X....	SSDDEC1	- Decimal Overflow
X....	SSDDEC2	- Decimal Overflow
X....	SSDDISP	- Free Dispatcher Lock
X....	SSDDLST	- MVS Version SNAP Dump Parmlist
X....	SSDD0A	- Decimal Overflow
X....	SSDDPSW	- Display Program Status Word
X....	SSDDPT	- SNAP Dump Requested
X....	SSDDREG	- Display Registers
X....	SSDDSAH	- Display Save Area Handler
X....	SSDDSAS	- Display Save Areas
X....	SSDDVS3	- Storage Ranges Not Available
X....	SSDEASM	- Other Error- Lower Level Exit
X....	SSDEBC	- Var. Recording Option, EBC
X....	SSDECT1	- Program Status Word - EC Mode
X....	SSDECT2	- Program Status Word - EC Mode
X....	SSDENRB	- Other Error- Enabled RB In Ctl
X....	SSDENSN	- Enhanced Dump Option
X....	SSDERFL	- Other Error- ERRORID Avail
X....	SSDERR	- Format and Display Error Blks
X....	SSDERRID	- Record Contains An ERRORID Field
X....	SSDEUA	- Exponent Underflow
X....	SSDEXP1	- Exponent Underflow
X....	SSDEXP2	- Exponent Underflow
X....	SSDEXTA	- Chan Int Masks - External Int
X....	SSDEXTB	- Chan Int Masks - External Int
X....	SSDEXT1	- Interrupt Masks - External
X....	SSDEXT2	- Interrupt Masks - External
X....	SSDFASG	- Free the ASM GLOBAL CLASS Lock
X....	SSDFCPU	- Free the CPU Lock
X....	SSDFLLK	- Free LOCAL Lock
X....	SSDFLSQ	- Other Stor Errs - Fr In LSQA
X....	SSDFPA	- Fixed Point Overflow
X....	SSDFP01	- Fixed Point Overflow
X....	SSDFP02	- Fixed Point Overflow
X....	SSDFPRX	- MCH Info - FP Regs Unpred.
X....	SSDFREE	- Free SDWA,RTCA Before Retry
X....	SSDFRSA	- Free RSM Address Space Class Lock
X....	SSDFRSC	- Free the RSM COMMON CLASS Lock
X....	SSDFRSG	- Free the RSM GLOBAL CLASS Lock

X.... SSDFRSM - Free the RSM Lock  
X.... SSDFRSS - Free the RSM Steal Class Lock  
X.... SSDFRSX - Free RSM XM Class Lock  
X.... SSDFSQA - Other Stor Errs - Fr In SQA  
X.... SSDFTRC - Free the TRACE Lock  
X.... SSDFVSF - Free the VSM Fix Lock  
X.... SSDFVSP - Free VSM Page Lock  
X.... SSDGLBL - Other Error- Global Resource Manager  
X.... SSDGTF - Display GTF Incore Table  
X.... SSDHEX - Var. Recording Option, HEX  
X.... SSDICAT - Free IOSCAT Lock  
X.... SSDILA - Instruction Length Code  
X.... SSDILCH - Free IOSLCH Lock  
X.... SSDIL1 - Instruction Length For PSW1  
X.... SSDIL2 - Instruction Length For PSW1  
X.... SSDIMC1 - Pgm Chk Int Code - MCK  
X.... SSDIMC2 - Pgm Chk Int Code - MCK  
X.... SSDINC1 - Interrupt Code for PSW1  
X.... SSDINC2 - Interrupt Code for PSW1  
X.... SSDINSF - MCH Info - Instruction Failure  
X.... SSDINTC - Other Stor Errs - Intercept  
X.... SSDINVP - MCH Flag - Page Invalidated  
X.... SSDIOHT - IO Halted and Not Restorable  
X.... SSDIOQR - IO Quiesced and Restorable  
X.... SSDIOS - Format and Display IOS Blocks  
X.... SSDIO1 - Interrupt Masks - IO Interrupt  
X.... SSDIO2 - Interrupt Masks - IO Interrupt  
X.... SSDIPC1 - Pgm Chk Int Code - Unsol PC  
X.... SSDIPC2 - Pgm Chk Int Code - Unsol PC  
X.... SSDIPRG - Free IOSYNCH Lock  
X.... SSDIPR1 - Pgm Chk Int Code - PER  
X.... SSDIPR2 - Pgm Chk Int Code - PER  
X.... SSDIRB - Other Error- IRB Preceded RB  
X.... SSDIUCB - Free IOSUCB Lock  
X.... SSDLCL - Other Error- Local Resource Manager  
X.... SSDLCPU - Log. Addr of CPU Holding Resrc  
X.... SSDLDIS - Other Error- Disabled Routine  
X.... SSDLNTH - Length of This SDWA  
X.... SSDLSQA - Display LSQA  
X.... SSDLVL2 - MVS/XA Version SNAP Dump Parmlist

---

X..... SSDMABD - Other Error- Ancestor ABENDED  
X..... SSDMCK - Error Type - Machine Check  
X..... SSDMCIV - Other Error- MCK Data Unavail  
X..... SSDMCKA - Program Status Word - MCK Ind  
X..... SSDMCKP - Program Status Word - MCK Ind  
X..... SSDMCK1 - Program Status Word - Mach Chk  
X..... SSDMCK2 - Program Status Word - Mach Chk  
X..... SSDMSER - Storage Frame Err - Error Set  
X..... SSDNIOP - User Requested No IO Process.  
X..... SSDNOIO - No IO Outstanding  
X..... SSDNRBE - Other Error- Assoc RB Not in Ctl  
X..... SSDNSWA - Storage Frame Err- Non-Swap Addr Space  
X..... SSDNSWP - Storage Frame Err- LT Non-Swap Addr Sp  
X..... SSDNUC - Display Nucleus  
X..... SSDNUCL - Other Stor Errs - Fr Cont Nuc  
X..... SSDOCUR - Number of Occurrences of Problem  
X..... SSDOFLN - Other Stor Errs - Frame Offln  
X..... SSDOPTM - Free SRM Lock  
X..... SSDORCF - SSDOCRC contains valid reason code  
X..... SSDOREQ - SSDOCMP contains original SSDREQ value  
X..... SSDOSTC - SSDOCMP contains original SSDSTCC value  
X..... SSDOSTP - SSDOCMP contains original SSDSTEP value  
X..... SSDPERC - Other Error- Rtn Percolated  
X..... SSDPER1 - Interrupt Masks - PER Allowed  
X..... SSDPER2 - Interrupt Masks - PER Allowed  
X..... SSDPGCK - Error Type - Program Check  
X..... SSDPGFX - Other Stor Errs - Fr Is Fixed  
X..... SSDPGIO - Error Type - Paging IO Error  
X..... SSDPGM1 - Program Status Word - Sup,Pblm  
X..... SSDPGM2 - Program Status Word - Sup,Pblm  
X..... SSDPREF - Storage Frame Err- Preferred Frame  
X..... SSDPSTI - Prevent Further Processing Ind  
X..... SSDPSWU - MCH Info - PSW, Ctl Regs Unpre  
X..... SSDQQS - Format and Display QCBs,QELs  
X..... SSDRCDF - MCH Flag - MCK Rec Not Logged  
X..... SSDRCF - Reason Code Supplied to RTM  
X..... SSDRCRD - Recording Requested  
X..... SSDREAF - Recovery Exit Alter Reason Code  
X..... SSDREGU - MCH Info - GP Regs Unpredict.  
X..... SSDREQ - Dump To Be Taken Indicator  
X..... SSDRERR - Retry using XM Address Environment

```

X..... SSDRETY - Retry Using RTYA Address Ind
X..... SDDRKEY - Error Type - Console RESTART
X..... SSDRPVIV - Other Error- Regs,PSW Unavail
X..... SSDRSRC - MCH Flag - Reconfig Status Avl
X..... SSDRSRF - MCH Flag - Reconfig Not Attemp
X..... SSDSALL - Free SALLOC Lock
X..... SSDSCK - MCH Info - Storage Data Check
X..... SSDSERP - Serialize FRR Percolation
X..... SSDSGA - Significance Exception
X..... SSDSGN1 - Significance Exception
X..... SSDSGN2 - Significance Exception
X..... SSDSKIP - Other Error- FRRs Skipped
X..... SSDSKYF - MCH Info - Storage Key Failure
X..... SSDSLST - Storage Lists Supplied
X..... SSDSPER - Other Stor Errs - Perm Error
X..... SSDSPIN - Interrupt VIA the RESTART Key
X..... SSDSPVA - Program Status Word - Sup,Pblm
X..... SSDSPVP - Program Status Word - Sup,Pblm
X..... SSDSQA - Display SQA
X..... SSDSRBM - Other Error- System SRB Mode
X..... SSDSRVL - MCH Flag - Storage Addr Valid
X..... SSDSTAE - Other Error- Previous Error
X..... SSDSTAF - Other Error- Prev STAE Failure
X..... SSDSTAI - Other Error- STAI Exit Rec Ctl
X..... SSDSTEP - Jobstep To Be Terminated Indicator
X..... SSDSUBL - Dump Subpool List Supplied
X..... SSDSUM - Provide Summary Dump
X..... SSDSVCD - Error Type - Task Issued SVC13
X..... SSDSVCE - Error Type - SVC By Locked Rtn
X..... SSDSWA - Display SWA
X..... SSDS1 - Address Space Selection Bit 1
X..... SSDS2 - Address Space Selection Bit 2
X..... SSDTADB - Free ** Lock (reserved)
X..... SSDTDNB - Free ** Lock (reserved)
X..... SSDTERR - MCH Info - Timer Error
X..... SSDTEXC - Error Type - Unrecov Trans Err
X..... SSDTJPA - Display Task JPA Modules
X..... SSDTLPA - Display Task LPA Modules
X..... SSDTNCB - Free ** Lock (reserved)
X..... SSDTRM1 - Interrupt Masks - DAT Active
X..... SSDTRM2 - Interrupt Masks - DAT Active
X..... SSDTSVL - MCH Flag - Timestamp Valid
X..... SSDTYP1 - Other Error- Type 1 SVC In Ctl
X..... SSDUAL - User Supplied Data Length
X..... SSDUPRG - Use SRnn Regs for Retry
X..... SSDUSPL - Display User Subpools
X..... SSDVEQR - Other Stor Errs - Fr Is V EQ R

```

X..... SSDVRAL - Var. Recording Area Length  
X..... SSDVRAM - VRA Data in VRAMAP (IHAVRA) Format  
X..... SSDVRCN - Storage Frame Err- V eq R Candidate  
X..... SSDVRIV - MCH Info - Vector Regs Unpredict.  
X..... SSDWATA - Program Status Word - Wait St  
X..... SSDWATP - Program Status Word - Wait St  
X..... SSDWAT1 - Program Status Word - Wait St.  
X..... SSDWAT2 - Program Status Word - Wait St.

### 5.10.3 SRL\_UD Usage Considerations

This section identifies any special considerations or techniques related to using the SRL\_UD file. Additionally, sample retrieval examples are provided to facilitate the 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 &diit, 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.

### 5.10.4 SRL\_UD Retrieval Examples

This section presents typical SRL\_UD retrieval examples.

1. Print a list showing the jobs that abended yesterday and the number of times they abended and percentage versus the other jobs that abended. This can help identify those jobs that are failing more often than others, and steps may be taken to correct the situation.

```
PROC FREQ DATA=&PSRLX..SRL_UD01;  
TABLES SSDJOB;
```

2. Print a list of all jobs beginning with PROD that abended yesterday and their system completion codes.

```
DATA;  
SET &PSRLX..SRL_UD01;  
IF SSDJOB EQ: 'PROD';  
PROC PRINT; VAR SYSID SSDJOB SSDSCMPC;
```

## 5.11 SRL System Software Malfunction Summary (SRLSSM) File

FILENAME=SRLSSMxx

The System Software Malfunction Summary File contains data identifying operating system modules or routines which encountered software or software detected hardware errors for defined intervals of time.

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

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

### 5.11.1 SRLSSM 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	CPUSER	SSMSCMPC	SSMUCMPC	MODULE	
	SSMFRRTN	SSMJOB	SSMABPGM	SSMCSECT	YEAR	
	MONTH	DAY	HOUR	ENDTS		
DAYS	SYSID	CPUSER	SSMSCMPC	SSMUCMPC	MODULE	
	SSMFRRTN	SSMJOB	SSMABPGM	SSMCSECT	YEAR	
	MONTH	DAY	HOUR			
WEEKS	SYSID	CPUSER	SSMSCMPC	SSMUCMPC	MODULE	
	SSMFRRTN	SSMJOB	SSMABPGM	SSMCSECT	YEAR	
	WEEK	ZONE	HOUR			
MONTHS	SYSID	CPUSER	SSMSCMPC	SSMUCMPC	MODULE	
	SSMFRRTN	SSMJOB	SSMABPGM	SSMCSECT	YEAR	
	MONTH	ZONE				
YEARS	N/A					
TABLES	N/A					

Generation Date: Tue, May 12, 2009

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

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

Figure 5-10. SRLSSM Time-Span Granularity Chart

## 5.11.2 SRLSSM Data Element 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, May 12, 2009

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

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

-----

### Sequence/Summary Data Elements

```

XDWM..E CPUSER - CPU/Processor Serial Number
XD...E DAY - Day of Month
XDW...E HOUR - Hour of Day
XDWM..E MODULE - Name of Failing Module/Routine
XDWM..E MONTH - Month of Year
XDWM..E SSMABPGM - Name of Program Encountering ABEND
XDWM..E SSMCSECT - Name of CSECT Containing Failing Module

```

XDWM..E SSMFRRTN - Name of Functional Recovery Routine  
XDWM..E SSMJOB - Jobname of Job Encountering Failure  
XDWM..E SSMSCMPC - System Completion Code  
XDWM..E SSMUCMPC - User Completion Code  
XDWM..E SYSID - System Identifier  
XDW...E WEEK - Week of Year  
XDWM..E YEAR - Year of Century  
XDWM..E ZONE - Time Zone

Common Data Elements

XDWM..E CPUMODEL - CPU Model Identification  
XD...E DAYNAME - Name of Day of Week  
XDWM..E ENDTS - End Time Stamp  
XDWM..E MICSVER - CA MICS Version Number  
XDWM..E STARTTS - Start Time Stamp

Retained Data Elements

X.... SSMCIDB - Component ID Base (Prefix) Number  
XDWM..E SSMCJOB - Critical Job Indicator  
XDWM..E SSMCMOD - Critical Module Indicator  
X.... SSMCPID - Component Identification (ID)  
X.... SSMCRCD - Component Reason/Return Code  
XDWM.. SSMEASID - ERRORID - Address Space ID  
XDWM.. SSMECPID - ERRORID - CPU ID  
XDWM.. SSMEPA - Failing Program Entry Point Address  
XDWM.. SSMSEQ - ERRORID - Sequence Number  
XDWM.. SSMETIME - ERRORID - Time Stamp  
X.... SSMMDAT - Module Assembly Date  
X.... SSMVRS - Module Version, PTF Number  
XDWM.. SSMPSWBC - BC Mode Program Status Word  
XDWM.. SSMPSWEC - EC Mode Program Status Word  
XDWM.. SSMPSWMC - Machine Check Program Status Word  
XDWM.. SSMRC - Return Code  
XDWM.. SSMREASN - Descriptive Reason for Failure  
X.... SSMRRL - Recovery Routine Creating SDWA  
X.... SSMSCNAM - Name of Subcomponent/Subfunction  
XDWM.. SSMTYPE - Type of Record Describing Failure

Accumulated Data Elements

XDWM..E SSMFCT - Count of Failures

### 5.11.3 SRLSSM Usage Considerations

This section identifies any special considerations or techniques related to using the SRLSSM file. Additionally, sample retrieval examples are provided to facilitate the 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 &diit, 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.

### 5.11.4 SRLSSM Retrieval Examples

This section presents typical SRLSSM retrieval examples.

1. Print a list showing the operating system modules or routines which encountered failures and the frequency of failures over the last month.

```
PROC FREQ DATA=&PSRLM..SRLSSM01;  
TABLES MODULE;
```

2. Print a list of failures that occurred yesterday for a specific module that you are tracking and the associated job name, program name, CSECT and System Completion code.

```
DATA;  
SET &PSRLX..SRLSSM01;  
IF MODULE EQ: 'IKJEFT01';  
PROC PRINT;  
VAR CPUSER SYSID SSMJOB SSMABPGM SSMCSECT  
SSMSCMPC;
```

## 5.12 User Software Malfunction (SRL\_UM) File

FILENAME=SRL\_UMxx

The User Software Malfunction Summary File contains data identifying problem program modules or routines which encountered software or software detected hardware errors for defined intervals of time.

This file is a parallel file to the SRLSSM file. Therefore all elements in this file will begin with the prefix of SSM.

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

- 1 - SRL\_UM File Organization
- 2 - SRL\_UM Data Elements List
- 3 - SRL\_UM Usage Considerations
- 4 - SRL\_UM Retrieval Examples

### 5.12.1 SRL\_UM 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	CPUSER	SSMSCMPC	SSMUCMPC	MODULE	
	SSMFRRTN	SSMJOB	SSMABPGM	SSMCSECT	YEAR	
	MONTH	DAY	HOUR	ENDTS		
DAYS	SYSID	CPUSER	SSMSCMPC	SSMUCMPC	MODULE	
	SSMFRRTN	SSMJOB	SSMABPGM	SSMCSECT	YEAR	
	MONTH	DAY	HOUR			
WEEKS	SYSID	CPUSER	SSMSCMPC	SSMUCMPC	MODULE	
	SSMFRRTN	SSMJOB	SSMABPGM	SSMCSECT	YEAR	
	WEEK	ZONE	HOUR			
MONTHS	SYSID	CPUSER	SSMSCMPC	SSMUCMPC	MODULE	
	SSMFRRTN	SSMJOB	SSMABPGM	SSMCSECT	YEAR	
	MONTH	ZONE				
YEARS	N/A					
TABLES	N/A					

Generation Date: Tue, May 12, 2009

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

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

Figure 5-11. SRL\_UM Time-Span Granularity Chart

## 5.12.2 SRL\_UM Data Elements List

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

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

```

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

```

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

**DATA ELEMENT:** The data element name.

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

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

**GENERATION DATE:** Tue, May 12, 2009

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

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

### Sequence/Summary Data Elements

XDWM..E	CPUSER	- CPU/Processor Serial Number
XD...E	DAY	- Day of Month
XDW...E	HOURL	- Hour of Day
XDWM..E	MODULE	- Name of Failing Module/Routine
XDWM..E	MONTH	- Month of Year
XDWM..E	SSMABPGM	- Name of Program Encountering ABEND
XDWM..E	SSMCSECT	- Name of CSECT Containing Failing Module

XDWM..E SSMFRRTN - Name of Functional Recovery Routine  
XDWM..E SSMJOB - Jobname of Job Encountering Failure  
XDWM..E SSMSCMPC - System Completion Code  
XDWM..E SSMUCMPC - User Completion Code  
XDWM..E SYSID - System Identifier  
XDW...E WEEK - Week of Year  
XDWM..E YEAR - Year of Century  
XDWM..E ZONE - Time Zone

Common Data Elements

XDWM..E CPUMODEL - CPU Model Identification  
XD...E DAYNAME - Name of Day of Week  
XDWM..E ENDTS - End Time Stamp  
XDWM..E MICSVER - CA MICS Version Number  
XDWM..E STARTTS - Start Time Stamp

Retained Data Elements

X.... SSMCIDB - Component ID Base (Prefix) Number  
XDWM..E SSMCJOB - Critical Job Indicator  
XDWM..E SSMCMOD - Critical Module Indicator  
X.... SSMCMPID - Component Identification (ID)  
X.... SSMCRCD - Component Reason/Return Code  
XDWM.. SSMEASID - ERRORID - Address Space ID  
XDWM.. SSMCEPID - ERRORID - CPU ID  
XDWM.. SSMPEPA - Failing Program Entry Point Address  
XDWM.. SSMSEQ - ERRORID - Sequence Number  
XDWM.. SSMETIME - ERRORID - Time Stamp  
X.... SSMMDAT - Module Assembly Date  
X.... SSMVRS - Module Version, PTF Number  
XDWM.. SSMPSWBC - BC Mode Program Status Word  
XDWM.. SSMPSWEC - EC Mode Program Status Word  
XDWM.. SSMPSWMC - Machine Check Program Status Word  
XDWM.. SSMRC - Return Code  
XDWM.. SSMREASN - Descriptive Reason for Failure  
X.... SSMRRL - Recovery Routine Creating SDWA  
X.... SSMSCNAM - Name of Subcomponent/Subfunction  
XDWM.. SSMTYPE - Type of Record Describing Failure

Accumulated Data Elements

XDWM..E SSMFCT - Count of Failures

### 5.12.3 SRL\_UM Usage Considerations

This section identifies any special considerations or techniques related to using the SRL\_UM file. Additionally, sample retrieval examples are provided to facilitate the 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 &diit, 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.

### 5.12.4 SRL\_UM Retrieval Examples

This section presents typical SRL\_UM retrieval examples.

1. Print a list showing the problem program modules or routines which encountered failures and the frequency of failures over the last month.

```
PROC FREQ DATA=&PSRLM..SRL_UM01;  
TABLES MODULE;
```

2. Print a list of failures that occurred yesterday for a specific module that you are tracking and the associated job name, program name, CSECT and System Completion code.

```
DATA;  
SET &PSRLX..SRL_UM01;  
IF MODULE EQ: 'MYPROGRM';  
PROC PRINT;  
VAR CPUSER SYSID SSMJOB SSMABPGM SSMCSECT  
SSMSCMPC;
```

## 5.13 SRL Storage Reliability (SRLSTR) File

FILENAME=SRLSTRxx

The Storage Reliability File contains data identifying software and hardware detected storage failures for each Time-Span in which the file is defined.

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

- 1 - SRLSTR File Organization
- 2 - SRLSTR Data Elements List
- 3 - SRLSTR Usage Considerations
- 4 - SRLSTR Retrieval Example

### 5.13.1 SRLSTR 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	CPUSER	YEAR	MONTH	DAY	
	HOUR	ENDTS				
DAYS	SYSID	CPUSER	YEAR	MONTH	DAY	
	HOUR					
WEEKS	SYSID	CPUSER	YEAR	WEEK	ZONE	
	HOUR					
MONTHS	SYSID	CPUSER	YEAR	MONTH	ZONE	
YEARS	N/A					
TABLES	N/A					

Generation Date: Tue, May 12, 2009

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

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

Figure 5-12. SRLSTR Time-Span Granularity Chart

### 5.13.2 SRLSTR Data Elements List

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

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

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

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

**DATA ELEMENT:** The data element name.

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

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

**GENERATION DATE:** Tue, May 12, 2009

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

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

-----

Sequence/Summary Data Elements

- XDWM..E CPUSER - CPU/Processor Serial Number
- XD...E DAY - Day of Month
- XDW...E HOUR - Hour of Day
- XDWM..E MONTH - Month of Year
- XDWM..E SYSID - System Identifier
- XDW...E WEEK - Week of Year
- XDWM..E YEAR - Year of Century

XDWM..E ZONE - Time Zone

#### Common Data Elements

XDWM.. CPUMODEL - CPU Model Identification  
XD.... DAYNAME - Name of Day of Week  
XDWM..E ENDTS - End Time Stamp  
XDWM.. MICSVER - CA MICS Version Number  
XDWM.. STARTTS - Start Time Stamp

#### Retained Data Elements

X..... STRERRID - ERRORID From RTM  
X..... STRFSA - Failing Storage Address  
X..... STRJOB - Jobname of Job Assoc With Fail  
X..... STRMCELA - MCK Extended Logout Area  
X..... STRMCELL - MCEL Data Area Length  
X..... STRMOSW - MCK Old Program Status Word  
X..... STRPGM - Pgmname Assoc With Failure  
X..... STRWSC - Wait State Code From System  
X..... STRXMPWL - (MVS) Length of Checking Blk

#### Accumulated Data Elements

XDWM.. STRCHNG - Change Indicator Already ON  
XDWM.. STRDAE - Delayed Access Exception  
XDWM.. STRDBSE - Double Bit Error Flag  
XDWM.. STREDXF - Extended Storage Control Failure  
XDWM.. STREDXN - Extended Storage Not Operational  
XDWM.. STRFCD - Clock Damage  
XDWM.. STRFCK - Channel Subsystem Damage  
XDWM.. STRFCP - Channel Report Word Pending  
XDWM.. STRFDG - Degradation  
XDWM.. STRFDS - Double Bit Error  
XDWM.. STRFED - External Damage  
XDWM.. STRFKE - Key Error  
XDWM.. STRFPD - Processor Damage  
XDWM.. STRFSC - Storage Error Corrected  
XDWM.. STRFSD - System Damage  
XDWM.. STRFSE - Storage Error  
XDWM.. STRFSPD - Service Processor Damage

XDWM.. STRFSQA - Frame In SQA  
XDWM.. STRFSR - System Recovery  
XDWM.. STRFTD - Timer Damage  
XDWM.. STRFVF - Vector Failure  
XDWM.. STRFVS - Vector Source  
XDWM.. STRFWN - Power Warning  
XDWM.. STRHHRD - Hard Error Assumed  
XDWM.. STRHINV - Registers, PSW Are Invalid  
XDWM.. STRHIO - Hard Error from I/O Supervisor  
XDWM.. STRHIPD - Instruction Processor Damage  
XDWM.. STRHSD - System Damage Has Occurred  
XDWM.. STRHSPF - Storage Protect Key Error  
XDWM.. STRHSTO - Hard Storage Error Occurred  
XDWM.. STRHVS - Hard Error - Vector Source  
XDWM.. STRIBU - Backed Up Indicator  
XDWM.. STRICKC - Clock Comparator Error  
XDWM.. STRICTM - CPU Timer Error  
XDWM.. STRIDY - Delayed Indicator  
XDWM.. STRIL80 - Interval Timer Is In Error  
XDWM.. STRINTC - Intercepted Frame Error  
XDWM.. STRINV - Invalid Logout Indicator  
XDWM.. STRINVP - Storage Reconf - Page Invalid  
XDWM.. STRITOD - Time of Day Clock Is In Error  
XDWM.. STRLSQA - Frame In LSQA  
XDWM.. STRNUCL - Frame In Nucleus  
XDWM.. STRNVF - LRB May Not Be Valid  
XDWM.. STROFLN - Frame Was OFFLINE  
XDWM.. STRPGFX - Frame Is Fixed  
XDWM.. STRRSRC - Storage Reconf - Status Avail  
XDWM.. STRRSRF - Storage Reconf Not Attempted  
XDWM.. STRSBUF - Buffer Is In Error  
XDWM.. STRSDG - Degradation Machine Check  
XDWM.. STRSEC - Secondary Error Indicator  
XDWM.. STRSECC - ECC Corrected Storage Error

---

XDWM..	STRSER	- Storage Error Was Already Set
XDWM..	STRSEXD	- External Damage Has Occurred
XDWM..	STRSHIR	- HIR Corrected Processor Error
XDWM..	STRSPER	- Permanent Error Occurred
XDWM..	STRSSFT	- Soft Machine Error Is Assumed
XDWM..	STRSSPD	- Service Processor Damage
XDWM..	STRSVF	- Soft Vector Failure
X.....	STRSYST	- System Terminated By MCH
XDWM..	STRTCKS	- Check Stop Indicator
XDWM..	STRTDMG	- System Damage Indicator
XDWM..	STRTHR	- Error Threshold Reached
XDWM..	STRTIOS	- Termination from I/O Supervisor
XDWM..	STRVCC	- Clock Comparator Valid
XDWM..	STRVCR	- Control Regs Valid
XDWM..	STRVED	- External Damage Code Valid
XDWM..	STRVEQR	- Frame Is V EQ R
XDWM..	STRVFA	- Failing Storage Address Valid
XDWM..	STRVFP	- Floating Point Regs Valid
XDWM..	STRVGR	- Gen Purpose Regs Valid
XDWM..	STRVIA	- Instruction Address Valid
XDWM..	STRVLG	- Logout (MCEL) Valid
XDWM..	STRVMS	- PSW Masks and Key Are Valid
XDWM..	STRVPM	- Pgm Masks and Cond Code Valid
XDWM..	STRVPT	- Processor Timer Valid
XDWM..	STRVRC	- Region Code Valid
XDWM..	STRVST	- Storage Logical Valid
XDWM..	STRVTE	- Vector Threshold Exceeded
XDWM..	STRVWP	- PSW EMWP Is Valid
XDWM..	STRWRN	- Power Warning Indicator

### 5.13.3 SRLSTR Usage Considerations

This section identifies any special considerations or techniques related to using the SRLSTR file. Additionally, a sample retrieval example is provided to facilitate the 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 &ddiit, 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.

### 5.13.4 SRLSTR Retrieval Example

This section presents a typical SRLSTR retrieval example.

Print a list showing the job names and program names associated with storage failures for yesterday.

```
PROC PRINT DATA=&PSRLX..SRLSTR01; VAR SYSID CPUSER  
STRJOB STRPGM;
```

## 5.14 SRL TP Device Reliability (SRLTRL) File

FILENAME=SRLTRLxx

The TP Device Reliability File contains data quantifying teleprocessing device statistics and temporary and permanent errors which resulted in a record being logged to the SYS1.LOGREC data set.

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

- 1 - SRLTRL File Organization
- 2 - SRLTRL Data Elements List
- 3 - SRLTRL Usage Considerations
- 4 - SRLTRL Retrieval Example

### 5.14.1 SRLTRL 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	CPUSER	DEVTYPE	DEVNUM	YEAR	
	MONTH	DAY	HOUR	ENDTS		
DAYS	SYSID	CPUSER	DEVTYPE	DEVNUM	YEAR	
	MONTH	DAY	HOUR			
WEEKS	SYSID	CPUSER	DEVTYPE	DEVNUM	YEAR	
	WEEK	ZONE	HOUR			
MONTHS	SYSID	CPUSER	DEVTYPE	DEVNUM	YEAR	
	MONTH	ZONE				
YEARS	N/A					
TABLES	N/A					

Generation Date: Tue, May 12, 2009

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

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

Figure 5-13. SRLTRL Time-Span Granularity Chart

## 5.14.2 SRLTRL Data Elements List

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

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

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

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

**DATA ELEMENT:** The data element name.

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

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

**GENERATION DATE:** Tue, May 12, 2009

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

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

-----

### Sequence/Summary Data Elements

XDWM..E	CPUSER	- CPU/Processor Serial Number
XD...E	DAY	- Day of Month
XDWM..E	DEVNUM	- Device Number
XDWM..E	DEVTYPE	- Device Type
XDW...E	HOUR	- Hour of Day
XDWM..E	MONTH	- Month of Year

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

Common Data Elements

XD...E CDEVIND - Critical Device Indicator  
XDWM..E CPUMODEL - CPU Model Identification  
XD...E DAYNAME - Name of Day of Week  
XDWM..E DEVADDR - Device Address  
XD...E DEVNUM2 - Secondary Device Number  
XDWM..E ENDTS - End Time Stamp  
XDWM..E LOGADDR - Logical Device Address  
XDWM..E MICSVER - CA MICS Version Number  
XDWM..E STARTTS - Start Time Stamp  
XDWM..E VENDOR - Name of Device Vendor

Retained Data Elements

XD... TRLCW - Last CCW Executed  
XD... TRLCW - CSW For Last CCW Executed  
XD... TRLDEVT - Device Type Assoc With Failure  
XD... TRLESW - Extended status word  
XD... TRLJOB - Jobname of Job Assoc With Err  
XD... TRLLOGTY - LOGREC Record Source/Subsource  
XD... TRLSCSW - Subchannel status word  
XDWM.. TRLTERMN - Terminal Name

Accumulated Data Elements

XDWM.. TRLATN - Unit Status - Attention  
XDWM.. TRLSY - Unit Status - Busy  
XDWM.. TRLBUSOT - Statis Data - Bus Out Chks  
XDWM.. TRLB0BCC - Byte 0 - Bus C Chk  
XDWM.. TRLB0CR - Byte 0 - Command Reject  
XDWM.. TRLB0CT - Byte 0 Event Count  
XDWM.. TRLB0DC - Byte 0 - Data Chk  
XDWM.. TRLB0EQC - Byte 0 - Equip Chk  
XDWM.. TRLB0IR - Byte 0 - Interv. Req  
XDWM.. TRLB0OR - Byte 0 - Overrun  
XDWM.. TRLB0RCV - Byte 0 - Receiving  
XDWM.. TRLB0TO - Byte 0 - Time Out  
XDWM.. TRLCCC - Chan Status - Chan Ctl Chk  
XDWM.. TRLCDC - Chan Status - Chan Data Chk  
XDWM.. TRLCE - Unit Status - Channel End  
XDWM.. TRLCHC - Chan Status - Chaining Chk  
XDWM.. TRLC SCT - Chan Status Event Count  
XDWM.. TRLCUE - Unit Status - Control Unit End

```

XDWM..  TRLDE   - Unit Status - Device End
XDWM..  TRLEQC  - Statis Data - Equip Chk
XDWM..  TRLICC  - Chan Status - Interface Ctl Chk
XDWM..  TRLIL   - Chan Status - Incorrect Len
XDWM..  TRLINTR - Statis Data - Interv. Required
XDWM..E  TRLLOGCT - LOGREC Record Count
XDWM..  TRLLOST - Statis Data - Lost Data
XDWM..  TRLOVERR - Statis Data - Overrun
XDWM..  TRLPRC  - Chan Status - Protection Chk
XDWM..E  TRLPRMCT - Count of Permanent Errors
XDWM..E  TRLSIOCT - Number of START I/Os
XDWM..  TRLSM   - Unit Status - Status Modifier
XDWM..  TRLSTCT - Statis Data Event Count
XDWM..E  TRLTMPCT - Count of Temporary Errors
XDWM..  TRLTMRD - Statis Data - Temp Read Errs
XDWM..  TRLTMWR - Statis Data - Temp Write Errs
XDWM..  TRLTOUT - Statis Data - Time Outs
XDWM..  TRLUC   - Unit Status - Unit Check
XDWM..  TRLUE   - Unit Status - Unit End
XDWM..  TRLUSCT - Unit Status Event Count
XDWM..  TRLUSECT - Number of Device Uses (Reserved)
XDWM..  TRLXPC  - Chan Status - Program Chk
XDWM..  TRLXPCI - Chan Status - PCI Interrupt

```

### 5.14.3 SRLTRL Usage Considerations

This section identifies any special considerations or techniques related to using the SRLTRL file. Additionally, a sample retrieval example is provided to facilitate the 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 &diit, 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.

### 5.14.4 SRLTRL Retrieval Example

This section presents a typical SRLTRL retrieval example.

Print a list showing the number of temporary and permanent errors that occurred on all teleprocessing devices. Print the terminal name, device type and vendor name.

```
PROC PRINT DATA=&PSRLD..SRLTRL01;  
VAR SYSID DEVTYPE TRMTRM TRLTMPCT TRLPRMCT TRLVENDR;
```

This example may be changed to track a specific teleprocessing device by using a subsetting IF statement. This example can be used to identify those devices that have a higher number of temporary or permanent errors than others.

## 5.15 SRL Unit Record Device Reliability (SRLXRL) File

FILENAME=SRLXRLxx

The Unit Record Device Reliability File contains data quantifying unit record device statistics and temporary and permanent errors which resulted in a record being logged to the SYS1.LOGREC data set.

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

- 1 - SRLXRL File Organization
- 2 - SRLXRL Data Elements List
- 3 - SRLXRL Usage Considerations
- 4 - SRLXRL Retrieval Example

### 5.15.1 SRLXRL 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	CPUSER	DEVTYPE	DEVNUM	YEAR	
	MONTH	DAY	HOUR	ENDTS		
DAYS	SYSID	CPUSER	DEVTYPE	DEVNUM	YEAR	
	MONTH	DAY	HOUR			
WEEKS	SYSID	CPUSER	DEVTYPE	DEVNUM	YEAR	
	WEEK	ZONE	HOUR			
MONTHS	SYSID	CPUSER	DEVTYPE	DEVNUM	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 5-14. SRLXRL Time-Span Granularity Chart

### 5.15.2 SRLXRL Data Elements List

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

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

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

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

**DATA ELEMENT:** The data element name.

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

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

**GENERATION DATE:** Tue, May 12, 2009

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

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

-----

#### Sequence/Summary Data Elements

- XDWM..E CPUSER - CPU/Processor Serial Number
- XD...E DAY - Day of Month
- XDWM..E DEVNUM - Device Number
- XDWM..E DEVTYPE - Device Type
- XDW...E HOUR - Hour of Day
- XDWM..E MONTH - Month of Year
- XDWM..E SYSID - System Identifier

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

## Common Data Elements

XD...E CDEVIND - Critical Device Indicator  
XDWM..E CPUMODEL - CPU Model Identification  
XD...E DAYNAME - Name of Day of Week  
XDWM..E DEVADDR - Device Address  
XD...E DEVNUM2 - Secondary Device Number  
XDWM..E ENDTS - End Time Stamp  
XDWM..E LOGADDR - Logical Device Address  
XDWM..E MICSVER - CA MICS Version Number  
XDWM..E STARTTS - Start Time Stamp  
XDWM..E VENDOR - Name of Device Vendor

## Retained Data Elements

XD... XRLCCW - Last CCW Executed  
XD... XRLCSW - CSW For Last CCW Executed  
X.... XRLDDALN - Device Dependent Data Count  
X.... XRLDDA0 - Device Dependent Data  
X.... XRLDDA1 - Device Dependent Data  
X.... XRLDDA10 - Device Dependent Data  
X.... XRLDDA11 - Device Dependent Data  
X.... XRLDDA12 - Device Dependent Data  
X.... XRLDDA13 - Device Dependent Data  
X.... XRLDDA14 - Device Dependent Data  
X.... XRLDDA15 - Device Dependent Data  
X.... XRLDDA16 - Device Dependent Data  
X.... XRLDDA17 - Device Dependent Data  
X.... XRLDDA18 - Device Dependent Data  
X.... XRLDDA19 - Device Dependent Data  
X.... XRLDDA2 - Device Dependent Data  
X.... XRLDDA20 - Device Dependent Data  
X.... XRLDDA21 - Device Dependent Data  
X.... XRLDDA22 - Device Dependent Data  
X.... XRLDDA23 - Device Dependent Data  
X.... XRLDDA3 - Device Dependent Data  
X.... XRLDDA4 - Device Dependent Data  
X.... XRLDDA5 - Device Dependent Data  
X.... XRLDDA6 - Device Dependent Data  
X.... XRLDDA7 - Device Dependent Data  
X.... XRLDDA8 - Device Dependent Data  
X.... XRLDDA9 - Device Dependent Data

XD.... XRLDEVT - Device Type Assoc With Failure  
XD.... XRLESW - Extended status word  
XD.... XRLJOB - Jobname of Job Assoc With Err  
XD.... XRLLOGTY - LOGREC Record Source/Subsource  
XD.... XRLSCSW - Subchannel status word  
X.... XRLSDRLN - Statistical Data Count  
X.... XRLSDR0 - Statistical Data Byte  
X.... XRLSDR1 - Statistical Data Byte  
X.... XRLSDR10 - Statistical Data Byte  
X.... XRLSDR11 - Statistical Data Byte  
X.... XRLSDR12 - Statistical Data Byte  
X.... XRLSDR13 - Statistical Data Byte  
X.... XRLSDR14 - Statistical Data Byte  
X.... XRLSDR15 - Statistical Data Byte  
X.... XRLSDR16 - Statistical Data Byte  
X.... XRLSDR17 - Statistical Data Byte  
X.... XRLSDR18 - Statistical Data Byte  
X.... XRLSDR19 - Statistical Data Byte  
X.... XRLSDR2 - Statistical Data Byte  
X.... XRLSDR20 - Statistical Data Byte  
X.... XRLSDR21 - Statistical Data Byte  
X.... XRLSDR22 - Statistical Data Byte  
X.... XRLSDR23 - Statistical Data Byte  
X.... XRLSDR24 - Statistical Data Byte  
X.... XRLSDR25 - Statistical Data Byte  
X.... XRLSDR26 - Statistical Data Byte  
X.... XRLSDR27 - Statistical Data Byte  
X.... XRLSDR28 - Statistical Data Byte  
X.... XRLSDR29 - Statistical Data Byte  
X.... XRLSDR3 - Statistical Data Byte  
X.... XRLSDR4 - Statistical Data Byte  
X.... XRLSDR5 - Statistical Data Byte  
X.... XRLSDR6 - Statistical Data Byte  
X.... XRLSDR7 - Statistical Data Byte  
X.... XRLSDR8 - Statistical Data Byte  
X.... XRLSDR9 - Statistical Data Byte  
X.... XRLSNBLN - Device Sense Byte Count  
X.... XRLSNB0 - Device Sense Bytes

X..... XRLSNB1 - Device Sense Bytes  
X..... XRLSNB10 - Device Sense Bytes  
X..... XRLSNB11 - Device Sense Bytes  
X..... XRLSNB12 - Device Sense Bytes  
X..... XRLSNB13 - Device Sense Bytes  
X..... XRLSNB14 - Device Sense Bytes  
X..... XRLSNB15 - Device Sense Bytes  
X..... XRLSNB16 - Device Sense Bytes  
X..... XRLSNB17 - Device Sense Bytes  
X..... XRLSNB18 - Device Sense Bytes  
X..... XRLSNB19 - Device Sense Bytes  
X..... XRLSNB2 - Device Sense Bytes  
X..... XRLSNB20 - Device Sense Bytes  
X..... XRLSNB21 - Device Sense Bytes  
X..... XRLSNB22 - Device Sense Bytes  
X..... XRLSNB23 - Device Sense Bytes  
X..... XRLSNB3 - Device Sense Bytes  
X..... XRLSNB4 - Device Sense Bytes  
X..... XRLSNB5 - Device Sense Bytes  
X..... XRLSNB6 - Device Sense Bytes  
X..... XRLSNB7 - Device Sense Bytes  
X..... XRLSNB8 - Device Sense Bytes  
X..... XRLSNB9 - Device Sense Bytes

#### Accumulated Data Elements

XDWM.. XRLBSY - Unit Status - Busy  
XDWM.. XRLBUSOP - Unit Status - Attention  
XDWM.. XRLBUSOT - Statis Data - Bus Out Chks  
XDWM.. XRLB0BCC - Byte 0 - Bus C Chk  
XDWM.. XRLB0B5 - Byte 0 - Bit 5  
XDWM.. XRLB0B6 - Byte 0 - Bit 6  
XDWM.. XRLB0B7 - Byte 0 - Bit 7  
XDWM.. XRLB0CR - Byte 0 - Command Reject  
XDWM.. XRLB0CT - Byte 0 Event Count  
XDWM.. XRLB0DC - Byte 0 - Data Chk  
XDWM.. XRLB0EQC - Byte 0 - Equip Chk  
XDWM.. XRLB0IR - Byte 0 - Interv. Req  
XDWM.. XRLCCC - Chan Status - Chan Ctl Chk

XDWM..	XRLCDC	- Chan Status - Chan Data Chk
XDWM..	XRLCE	- Unit Status - Channel End
XDWM..	XRLCHC	- Chan Status - Chaining Chk
XDWM..	XRLCSCT	- Chan Status Event Count
XDWM..	XRLCUE	- Unit Status - Control Unit End
XDWM..	XRLDE	- Unit Status - Device End
XDWM..	XRLEQC	- Statis Data - Equip Chk
XDWM..	XRLICC	- Chan Status - Interface Ctl Chk
XDWM..	XRLIL	- Chan Status - Incorrect Len
XDWM..	XRLINTR	- Statis Data - Interv. Required
XDWM..E	XRLLOGCT	- LOGREC Record Count
XDWM..	XRLLOST	- Statis Data - Lost Data
XDWM..	XRLOVERR	- Statis Data - Overrun
XDWM..	XRLPRC	- Chan Status - Protection Chk
XDWM..E	XRLPRMCT	- Count of Permanent Errors
XDWM..	XRLSIOCT	- Number of START I/Os
XDWM..	XRLSM	- Unit Status - Status Modifier
XDWM..	XRLSTCT	- Statis Data Event Count
XDWM..E	XRLTMPCT	- Count of Temporary Errors
XDWM..	XRLTMRD	- Statis Data - Temp Read Errs
XDWM..	XRLTMWR	- Statis Data - Temp Write Errs
XDWM..	XRLTOUT	- Statis Data - Time Outs
XDWM..	XRLUC	- Unit Status - Unit Check
XDWM..	XRLUE	- Unit Status - Unit End
XDWM..	XRLUSCT	- Unit Status Event Count
XDWM..	XRLUSECT	- Number of Device Uses (Reserved)
XDWM..	XRLXPC	- Chan Status - Program Chk
XDWM..	XRLXPCI	- Chan Status - PCI Interrupt

### 5.15.3 SRLXRL Usage Considerations

This section identifies any special considerations or techniques related to using the SRLXRL file. Additionally, a sample retrieval example is provided to facilitate the 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 &diit, where d is the database identifier, ii 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.

### 5.15.4 SRLXRL Retrieval Example

This section presents a typical SRLXRL retrieval example.

Print a list showing the number of temporary and permanent errors that occurred on all unit record devices. Print the device type and vendor name.

```
PROC PRINT DATA=&PSRLD..SRLXRL01;  
VAR SYSID DEVTYPE XRLTMPCT XRLPRMCT XRLVENDR;
```

This example may be changed to track a specific unit record device by using a subsetting IF statement. This example can be used to identify those devices that have a higher number of temporary or permanent errors than others.

## 5.16 SRL Communications Controller Rel. (SRLNTC) File

FILENAME=SRLNTCxx

The Communications Controller Reliability file contains data quantifying statistics and temporary and permanent errors on devices attached to a Network Communications Controller (3725,3745) which resulted in an Miscellaneous Data Recorder (MDR) record being logged to the ERDS data set.

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

- 1 - SRLNTC File Organization
- 2 - SRLNTC Data Elements List
- 3 - SRLNTC Usage Considerations
- 4 - SRLNTC Retrieval Example

### 5.16.1 SRLNTC 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 5-15. SRLNTC Time-Span Granularity Chart

## 5.16.2 SRLNTC 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 "XDMY" 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

.....E	CPUSER	- CPU/Processor Serial Number
.....E	DAY	- Day of Month
.....E	MONTH	- Month of Year
.....E	NCPNAME	- Network Ctl Program Name
.....E	RECMODE	- Recording Mode
.....E	SYSID	- System Identifier
.....E	WEEK	- Week of Year

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

Common Data Elements

.....E CPUMODEL - CPU Model Identification  
.....E DAYNAME - Name of Day of Week  
.....E DEVADDR - Device Address  
.....E DEVNUM - Device Number  
.....E DEVTYPE - Device Type  
.....E ENDTS - End Time Stamp  
.....E HOUR - Hour of Day  
.....E LIA - Line Address  
.....E LINK - Link Name  
.....E MICsver - CA MICS Version Number  
.....E NETADDR - Network Address  
.....E RESOURCE - Resource ID of Failing Device (name)  
.....E STARTTS - Start Time Stamp

Retained Data Elements

..... NTCBCMD - BTU Command  
..... NTCBFLG2 - Mode Control Flags  
..... NTCBMOD - BTU Modifier  
..... NTCBTUFG - BTU Flags  
..... NTCCANDT - Channelization and Trailing Flag  
..... NTCCBYT1 - LPDA Control (1st byte)  
.....E NTCCFLD - Transmit BLU Command Field  
.....E NTCCMAND - I/O Command Field  
..... NTCCMODS - Command Modifiers  
..... NTCCORN - Channelization & Trailing Corr. Number  
..... NTCCREJ - Command Reject Reason  
..... NTCCSCF - Configurable Station Control Flags  
..... NTCCDFG - Dial Control Flags  
.....E NTCDFEAT - Device Features  
.....E NTCDVTYP - Device Type from DVB Control Block  
..... NTCCERSTA - Initial Error Status (First Byte)  
..... NTCCERSTB - Initial Error Status (Second Byte)  
..... NTCCERSTE - Initial Error Extended Status  
..... NTCCEXTST - Extended Error Status  
.....E NTCCIMCTL - Immediate Control Flags  
.....E NTCLNK - Link Subsystem Type  
..... NTCLPDFG - LPDA Flags  
..... NTCLRSTR - LPDA Local & Remote Self-test Results  
..... NTCLSTAT - LPDA Local Status

```

.....E NTCLTYPE - Line Type
..... NTCOCF - Service Seeking Output Control Flags
.....E NTCRBLUC - Received BLU Command Field
..... NTCRBYT1 - LPDA Remote Status (1st byte)
..... NTCRBYT2 - LPDA Remote Status (2nd byte)
..... NTCRRCV - Remote Receive DB Information
..... NTCRSPON - Control Flag Definitions
..... NTCSHWCS - Show Cause Indicator
..... NTCSLAD - Remote SDLC LPDA Address
..... NTCSSCF - Service Seeking Command Flags
..... NTCSTAT - I/O Status/Current Error Status
.....E NTCSTYPE - Station Type
..... NTCX21CP - X.21 Call Progress Signal

```

#### Accumulated Data Elements

```

.....E NTCBRCNT - I-format received counter (error free)
..... NTCOC - Current Outstanding Count
.....E NTCPCNT - SCB Pass Count
.....E NTCRECENT - Receive I-format Error Counter
.....E NTCRPCNT - S-format received counter (error free)
.....E NTCTCNT - Total I-format Transmission Counter
.....E NTCTIACT - Total ACK'd I-format Counter
.....E NTCTINCT - Total I-format Retransmissions Counter
.....E NTCTPCNT - Total Transmission Counter
.....E NTCTRTCT - Temporary Error Counter/Total Retry

```

### 5.16.3 SRLNTC Usage Considerations

This section identifies any special considerations or techniques related to using the SRLNTC file. Additionally, a sample retrieval example is provided to facilitate the use of this file.

The SRLNTC file is made up of information from seven types of records. The field RECMODE will indicate the source of each observation.

RECMODE can take on the following values depending on the type of record encountered:

'80'X - Record Maintenance Statistics (RECMS) RU Format for Permanent BSC/SS or Line Errors.

'81'X - Record Maintenance Statistics (RECMS) RU Format for BSC/SS Station Statistics.

'82'X - Record Maintenance Statistics (RECMS) RU Format for SNA Link Permanent Errors.

'83'X - Record Maintenance Statistics (RECMS) RU Format for SNA Station Permanent Errors.

'84'X - Record Maintenance Statistics (RECMS) RU Format for BSC 3270 Status/Sense.

'86'X - Record Maintenance Statistics (RECMS) RU Format for SNA Statistics.

'A3'X - Record Maintenance Statistics (RECMS) RU Format for Intensive-Mode Record for SNA Recoverable Errors.

Whenever you find missing values for the observations, it means that field is not valid for that type. For example, the field NTTCNT is valid for an observation when RECMODE = X'80', but will be missing when RECMODE is X'82' as that field is not present in the data. When writing reports using the SRLNTC file, this information may be important.

A number of fields consist of bit patterns represented as hexadecimal values. The following method is normally used to test bit patterns in SAS.

Example:

Let us assume that the variable NTCDFEAT that contains the Device Features has a value of X'4080' and we want to report on whether a Critical situation notification has occurred.

From the Data Dictionary description for NTCDFEAT we know that this field is valid only when RECMODE is X'80' or X'81'. We also know the bit pattern for Critical situation notification is that byte 2 should have the following pattern '1.....'. So our code would look as follows:

```
DATA CRITICAL;  
SET DETAIL.SRLNTC01;  
IF RECMODE EQ 80 OR RECMODE EQ 81;  
IF NTCDFEAT EQ '.....1.....';  
RUN;
```

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 &diit, 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.

## 5.16.4 SRLNTC Retrieval Example

This section presents a typical SRLTRL retrieval example.

Print a list showing the number of temporary errors for the resources connected to the front end processor whose NCP name is NCP01X for a given day:

```
DATA TEMPERR;  
SET &PSRLD..SRLNTC01;  
IF NCPNAME EQ 'NCP01X';  
PROC PRINT DATA=&PSRLD..SRLNTC01;  
VAR RESOURCE NTCTRTCT;
```

Quantify the various error records that are being logged to the SRLNTC file at the Detail time-span:

```
PROC FREQ DATA=&PSRLX..SRLNTC01;  
TABLES RECMODE;
```

Please see the Data Dictionary element RECMODE for information on how to use this information.

# Chapter 6: DATA SOURCES

---

The CA MICS System Reliability Analyzer processes the error and environmental records generated by system hardware and software and creates files in the CA MICS Database.

These records are produced by the operating systems whenever an error or important event occurs. Examples of these errors are IPL of the operating system, an I/O error accessing a DASD volume or a machine check on a processor.

These error records are written to the system error recording data set (ERDS). These data sets are called by different names under various operating systems. In MVS the ERDS is called SYS1.LOGREC; in VM, it is not a data set but the error recording area; in the VSE systems, its symbolic name is LOGREC.

The CA MICS System Reliability Analyzer supports the ERDS data from the MVS/SP, MVS/XA, MVS/ESA, OS/390, VM/SP, VM/XA, VM/ESA and VSE operating systems.

Details of the 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 256)

[6.2 Record Descriptions](#) (see page 256)

## 6.1 Data Collector Considerations

Before installing the CA MICS System Reliability Analyzer, the CA MICS System Administrator must address the data collection considerations that SRL requires. These issues include DASD space considerations and availability of the ERDS data.

The CA MICS System Reliability Analyzer can accept data from three different sources:

- o From SYS1.LOGREC data produced by the MVS operating system.
- o From the error recording area created by VM for recording ERDS data.
- o From IJSYSRC that resides on SYSRES disk for VSE systems. The data set is initialized by the IPL command SET RF=CREATE.

The data is offloaded either to tape or disk by IBM's EREP (Environmental Recording Editing and Printing Program).

The ERDS from the VM systems (called the error recording area) and the ERDS from the VSE systems running under VM (called LOGREC) can be transported to the MVS system using the CA MICS VM Data Transfer Program product, if your site is licensed for this product. See the CA MICS VM Data Transfer Program Guide for more information.

## 6.2 Record Descriptions

The records contained in ERDS can be of two types: statistical data and environmental data. Records have a maximum length of about 1900 bytes. There is a 24 byte standard header. The records do not contain the SYSID of the system. The CPU serial number is however available. This provides a way to correlate a SYSID based on CPU serial number. This method is discussed in Chapter 7 under Unit Level Parameters.

The following figures list the various record types that the CA MICS System Reliability Analyzer reads. The record types are arranged by operating system.

From MVS operating systems (SYS1.LOGREC)

Description	Type	Class/Source
Asynchronous Notification Record	'A3'X	Asynchronous notification
Channel Check Record (CCH)	'20'X	Channel check
	'21'X	Channel check
Channel Report Word Record (CRW)	'25'X	Channel report word
Dynamic Device Config. Record (DDR)	'60'X	Dynamic device configuration
Recovery/Termination Record (EOD)	'80'X	EOD
	'81'X	MCH forced termination
	'84'X	IOS-forced termination
System Initialization Record (IPL)	'50'X	System initialization
Machine Check Record (MCH)	'10'X	MCH record
	'13'X	MCH record
Miscellaneous Data Record (MDR)	'90'X	MDR record formatted by SVC91
	'91'X	MDR record
Missing Interrupt Handler Record	'70'X	MIH 370 record
	'71'X	MIH 370/XA record
Outboard (OBR) Record	'30'X	OBR (unit check) record
	'34'X	TCAM OBR record
	'36'X	VTAM OBR record
Software Error Record (SFT)	'40'X	Software-detected software error
	'42'X	Hardware-detected software error
	'44'X	Operator-detected error
	'48'X	Hardware-detected hardware error
	'4F'X	Lost-record summary record
Subchannel Logout Handler Rcd (SLH)	'23'X	SLH record

Figure 6-1. ERDS Record Types for MVS Operating Systems

From VM Operating Systems (Error recording area)

Description	Type	Class/Source
Asynchronous Notification Record	'A3'X	Asynchronous notification
Channel Check Record (CCH)	'20'X	Channel check
	'21'X	Channel check
Dynamic Device Config. Record (DDR)	'60'X	Dynamic device configuration
Machine Check Record (MCH)	'10'X	MCH record
Miscellaneous Data Record (MDR)	'91'X	MDR record
Missing Interrupt Handler Record	'70'X	MIH 370 record
Outboard (OBR) Record	'30'X	OBR (unit check) record

Figure 6-2. ERDS Record Types for VM Operating Systems

From VSE Operating Systems (LOGREC)

Description	Type	Class/Source
Asynchronous Notification Record	'A3'X	Asynchronous notification
Channel Check Record (CCH)	'20'X	Channel check
Recovery/Termination Record (EOD)	'80'X	EOD record
System Initialization Record (IPL)	'50'X	IPL record
Machine Check Record (MCH)	'10'X	MCH record
Miscellaneous Data Record (MDR)	'90'X	MDR record formatted by SVC 91
	'91'X	MDR record
Missing Interrupt Handler Record	'70'X	MIH 370 record
Outboard (OBR) Record	'30'X	OBR (unit check) record
	'34'X	BTAM OBR record

Figure 6-3. ERDS Record Types for VSE Operating Systems

This section contains information on the following topics:

- 1 - Channel Check Handler Record (CCH)
- 2 - Machine Check Record (MCH)
- 3 - Outboard Recorder Record (OBR)
- 4 - Software Error Record (SFT)
- 5 - System Initialization Record (IPL)
- 6 - Miscellaneous Data Record (MDR)
- 7 - Missing Interrupt Handler Record (MIH)
- 8 - Recovery/Termination Record (EOD)
- 9 - Dynamic Device Reconfiguration Record (DDR)
- 10 - Recording Channel Report Word Record (CRW)
- 11 - Recording Subchannel Logout Handler Record (SLH)

### 6.2.1 Channel Check Handler Record (CCH)

The operating system writes a Channel Check Handler Record when a channel failure occurs but the system control program is not terminated. The errors include channel control checks, channel data checks, and interface control checks.

The record types are 20 and 21.

### 6.2.2 Machine Check Record (MCH)

This record contains information regarding failures such as processor failure, storage failure, storage key failure or timing facility failure.

Whenever a machine check interrupt occurs a record gets written. A machine check interrupt may occur if the problem was recovered by the hardware or the software, the hardware could not correct the problem and software recovery routines were given control, or the problem resulted in the loss of a processor.

The record types are 10 and 13.

### 6.2.3 Outboard Recorder Record (OBR)

This record contains I/O error information and statistical data. There are two forms of outboard recorder records: short form and long form.

The short form records statistical data for the devices with the exception of tape drives. The long form of the OBR record includes, in addition to the information contained in the short form, information regarding permanent unit checks which are I/O errors that could not be corrected by the system's error recovery program. A long OBR record also gets written when the dynamic pathing availability facility encounters an error while changing the state of a path group.

The record types are 30, 34, 36, 3A, and 3C.

### 6.2.4 Software Error Record (SFT)

The system recovery process writes the software error record. Information that is software-specific such as ERRORID and the system diagnostic work area (SDWA) control block and its extensions for the failing task or request block is contained in this record.

A software record also gets written at the request of the machine check handler to provide program-damage assessment in case of a machine check. A short form of the software record is produced to indicate the number of records lost because the error-recording buffer was full.

The record types are 40, 42, 44, 48 and 4F.

## 6.2.5 System Initialization Record (IPL)

The IPL records are written to document operating system initialization. These records are always written by OS/VS1, OS/VS2 and MVS/XA, while other MVS systems do so only if the reliability data extractor (RDE) option is in effect.

This record is also generated to provide information about power-line disturbances that cause system termination.

When the RDE option is in effect, the operator is prompted by a message to supply a reason code for the IPL and an ID code for the responsible subsystem. These are then included in the record when it is written to the ERDS. The reason codes and ID codes can be found in the following manuals: SYS1.LOGREC Error Recording for MVS VSE/Advanced Functions System Management Guide for VSE.

The record type is 50.

## 6.2.6 Miscellaneous Data Record (MDR)

The miscellaneous data record contains error and usage data from buffered control units or communications controllers, or device failures on teleprocessing (TP) devices connected to a communications controller.

The following events cause an MDR record to be written:

- o Overflow of the statistical counters in a buffered control unit
- o Overflow of the NCP counter in a communications controller
- o TP device failure
- o DASD volume demounts
- o Operator-initiated EOD (End of Day) or ROD (Record on Demand), or VARY OFFLINE commands
- o Some invocations of EREP, which force the writing of statistical data to the ERDS

The record types are 90 and 91.

### 6.2.7 Missing Interrupt Handler Record (MIH)

Interrupts such as missing channel-end (primary status) and/or device-end (secondary status) interrupts on non-TP devices cause an MIH record to be written to the ERDS.

The record type is 70 and 71.

### 6.2.8 Recovery/Termination Record (EOD)

The recovery/termination record contains information relating to the cause of termination and system environmental information.

The record types are 80, 81, and 84.

### 6.2.9 Dynamic Device Reconfiguration Record (DDR)

The DDR records are written to the ERDS for each operator-initiated or system-initiated swap between direct access and magnetic tape devices and for each operator-initiated swap on a unit record device.

The record type is 60.

### 6.2.10 Recording Channel Report Word Record (CRW)

The CRW records are written to the ERDS for all software- and hardware-generated channel report words. Software-generated CRW's are created by IOS modules to invoke channel path recovery. Hardware-generated CRW's are created by the channel to provide information describing a machine malfunction affecting a specific or a collection of channel subsystem facilities.

The record type is 25.

### 6.2.11 Recording Subchannel Logout Handler Record (SLH)

The SLH records are written to the ERDS by the subchannel logout handler (SLH). The channel-detected errors that are recorded to ERDS by SLH are:

- o Channel control check
- o Interface control check
- o Channel data check
- o Address limit check
- o Measurement check

The record type is 23.



# Chapter 7: DEFINING PARAMETERS

---

This chapter describes how to define the parameters that are required for installing the CA MICS System Reliability Analyzer Option. The 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 do the following:

- 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 CA MICS System Reliability Analyzer Option. 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, contact Technical Support at <http://ca.com/support>.

This section contains the following topics:

[7.1 Environmental Considerations](#) (see page 266)

[7.2 Complex Level Parameters](#) (see page 266)

[7.3 Unit Level Parameters](#) (see page 267)

## 7.1 Environmental Considerations

Before coding product parameters, you need to know about the ERDS data that you will be processing using the CA MICS System Reliability Analyzer (SRL). Availability of the data is an important consideration. If you are planning to process ERDS data from VM or VSE, arrangements must be made for the transport of this data to the MVS system so that SRL can process this data. The CA MICS VM Data Transfer Program allows the transfer of data from VM and VSE systems running under VM to the MVS system. If you are licensed for the CA MICS VM Data Transfer Program, please read the product guide on how to accomplish this transfer.

The ERDS data is present in a dataset called SYS1.LOGREC on MVS systems. On VM systems the ERDS data is referred to as the error recording area and on VSE systems it is referred to as LOGREC. Depending on your site's conventions, the data may be dumped to tape or disk on a daily basis. This data that is offloaded from the ERDS should be input to the CA MICS System Reliability Analyzer.

Before you specify parameters for the CA MICS System Reliability Analyzer:

- o Review the default options for the parameters to determine their applicability to your site.
- o Review reporting requirements to determine whether or not you need to code MICF inquiries to satisfy your site's reporting needs.
- o Review data base unit specifications to determine which unit or units should include the CA MICS System Reliability Analyzer.

## 7.2 Complex Level Parameters

This section shows you how to specify the complex level parameters that define the processing of the CA MICS SRL Analyzer. The following topics are covered:

- 1 - Analyzer Definition Statements (SRLGENIN)

### 7.2.1 Analyzer Definition Statements (SRLGENIN)

The member SRLGENIN present in sharedprefix.MICS.GENLIB can be tailored if required to meet site requirements. This tailoring includes turning on or off certain files and turning on or off certain elements. For a complete discussion regarding the tailoring of the SRLGENIN member, please refer to the CA MICS System Modification Guide, Chapter 6.

## 7.3 Unit Level Parameters

This section contains information on the unit level parameters for the System Reliability Analyzer.

This section contains the following subsections:

- 1 - SRL System Code Generation (SRLPGEN)
- 2 - SRL Processing Options (SRLOPS)
- 3 - SRL Device Definitions (SRLDEVS)
- 4 - SRL Input DD Statements (INPUTSRL)
- 5 - Data Base Space Modeling (DBMODEL)

### 7.3.1 SRL System Code Generation (SRLPGEN)

Figure 7-1 identifies each of the system code generation processes for the CA MICS System Reliability Analyzer, their PARMs member inputs, and the output members, MACROs (a member may contain the definition of more than one SAS MACRO), and FORMATS that they generate. The output libraries are at the data base unit level (prefix) unless noted otherwise.

The following CA MICS system code generation routines are SAS programs executed as part of the job SRLPGEN. The applicable input PARMs members that must be completed prior to SRLPGEN execution are identified in the parentheses below for each process.

- o SRL Processing Options (SRLOPS)
- o SRL Device Definitions (SRLDEVS)

System Code Generator	MICS.PARMS Input Member	USER.SOURCE Output Members and SAS MACRO Names	USER.LOAD Output SAS FORMATS
SRLPGEN	SRLOPS	#SRLMSTR _SRLLOOP #SRLFMTS	\$SRLCMOD \$SRLCJOB \$SRLCSID
	SRLDEVS	#SRLDEVS	\$SRLDEVS

Figure 7-1. SRLPGEN Code Generator Cross-Reference List

## 7.3.2 SRL Processing Options (SRLOPS)

This section shows you how to specify the operational statements that control CA MICS System Reliability Analyzer 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. *
*****
```

There are three types of information about the LOGREC data at your installation that you must specify to the System Reliability Analyzer (SRL).

- o The LOGREC data from each System Control Program (SCP) must be mapped to an SMF system identifier (original SYSID). This is necessary because the LOGREC data does not contain this identification and because CA MICS associates and summarizes the data in the database

according to the computer system producing the data. The original SYSID can be expressed to CA MICS in more than one way and is determined by how the LOGREC data is input to the CA MICS system. The methods for identifying the original SYSIDs to CA MICS are discussed later in this section.

- o The second type of information to be supplied to CA MICS is the types of LOGREC data you want recorded in the CA MICS Database. For instance, do you want to have CA MICS record data on DASD devices, tape devices, systems software, user software, etc. The ten categories of LOGREC data are explained later in this section.
- o CA MICS enables special tracking of jobs and system modules that are critical to your installation. The third type of information that you must specify to SRL is a list of these critical jobs and system modules.

The information for SRLOPS is specified in four types of statements: OPTIONS, CPUSYSID, CMOD, and CJOB. Each statement type is described below in detail. Figure 7-2 is a worksheet to aid in collecting data with which to complete prefix.MICS.PARMS(SRLOPS). As with most CA MICS PARMs members, the format of the statements is free-form, but positional. If a statement is to be coded, then all of the parameters in that statement must be coded. Comments are coded by beginning the statement with an '\*'. Blank statements are allowed.

Modify the sample SRLOPS member supplied with the prefix.MICS.PARMS library distributed with the CA MICS system rather than code it from scratch. Starting with an existing, correct specification may spare you annoying syntax errors. An example SRLOPS member is shown below:

```

*
*   SYSTEM RELIABILITY (SRL) PROCESSING OPTIONS
*
OPTIONS SYSA SRLSYSA 5 WARN SS US PR CH DA MT XR TP DM MM NT
OPTIONS SYSB SRLSYSB 5 ACCEPT SS US PR CH DA MT XR TP DM MM
OPTIONS PSYS SRLPROD 5 ABEND SS US PR CH DA MT XR TP DM MM NT
CPUSYSID PSUB 3090 012345
CPUSYSID PSUB 3090 112345
CPUSYSID PSUB 3090 212345
CPUSYSID PSUB 3090 312345
CPUSYSID CORP 3090 054321
CPUSYSID CORP 3090 154321
CPUSYSID CORP 3090 254321
CPUSYSID CORP 3090 354321
OPTIONS TSYS SRLTEST 5 WARN SS US PR CH DA MT XR TP DM MM NT
CPUSYSID DEVL 3084 034512
CPUSYSID DEVL 3084 134512
CPUSYSID MAIN 3084 234512
CPUSYSID MAIN 3084 334512
CMOD IEFW21SD C  INITIATOR/TERMINATOR
CMOD IEFACTRT C  SMF ACCOUNTING EXIT
CMOD IEFUJV  I  SMF JOB VALIDATION EXIT
CMOD IFASMFDP C  SMF DUMP UTILITY PROGRAM
CMOD ISTINM01 C  VTAM CONTROL PROGRAM
CMOD READPSWD W  SYSTEM PASSWORD READING ROUTINE
CJOB JES2     C  JOB ENTRY SUBSYSTEM 2
CJOB JES3     C  JOB ENTRY SUBSYSTEM 3
CJOB NET      C  VTAM CONTROL PROGRAM
CJOB HSM      C  HIERARCHICAL STORAGE MANAGER

```

#### SYSTEM DEFINITIONS

##### OPTIONS Statement

The OPTIONS statement is used to define the ddnames used to input data so that SRL can logically associate the defined processing options in SRLOPS with the appropriate input data. This statement also provides for identifying the types of LOGREC data to be included in the CA MICS Database. In conjunction with the CPUSYSID statement, an important function of the OPTIONS statement is to conditionally provide an original SYSID (ORGSYSID) to be assigned to the input data.

At least one OPTIONS statement is required, but you can have as many as are needed to define each of the ddnames that are to be used as input to SRL.

The format of the OPTIONS statement is:

```
OPTIONS sysid ddname gmt action ds1 ds2 ds3 ds4 ... ds11
```

where the parameters are:

sysid = Original SYSID. This parameter can be used in one of two ways depending upon whether the OPTIONS statement is used with associated CPUSYSID statements. The two uses of this parameter are as follows.

- o If the OPTIONS statement is coded without any associated CPUSYSID statements, this parameter is the original SYSID (ORGSYSID) to be assigned to the input data identified by the ddname. In this case, it will be assigned to all of the data processed by the ddname.
- o When the associated CPUSYSID statements are coded along with an OPTIONS statement, then this parameter becomes the default original SYSID (ORGSYSID) which will be assigned to any data not fully identified by the associated CPUSYSID parameter information.

This parameter is a 1- to 4-character SMF SYSID. The SYSID must be one of those defined in the prefix.MICS.PARMS member SYSID, but not every SYSID defined in the SYSID member must appear here.

ddname = This is the ddname that will be used to input the LOGREC data for the SYSID specified on the OPTIONS statement or associated CPUSYSID statements. One OPTIONS statement is required for each DDNAME that will be used. All ddnames specified in this parameter must also appear in the INPUTSRL specifications in prefix.MICS.PARMS(INPUTSRL). INPUTSRL is used to supply the actual job control language to be used to read the LOGREC data into CA MICS (See Section 7.3.4).

gmt = The Greenwich Mean Time (GMT) offset is required because LOGREC may use the computer time-of-day clock in doubleword format to time stamp records written to the LOGREC data set. The GMT offset must be specified in whole hours. The Eastern Standard Time offset is 5 hours. The GMT offset may vary from +12 to -12 hours.

Note that the GMT offset is changed by daylight savings time. In order for this value to remain accurate, you must update the value and run the SRLPGEN job if you change to or from daylight savings time.

action = ABEND/ACCEPT/WARN. This parameter is provided as a precaution against accidental inclusion of data for an SCP which has not been defined to SRL. It allows the administrator to determine in advance how SRL should handle this situation by specifying what action is to be taken. This parameter takes affect only when CPUSYSID statements are associated with the OPTIONS statement. There are three possible actions which you can have SRL take in this situation:

ABEND - The DAY070 step of the DAILY job will abend with a USER abend code of 0998. An appropriate error message is written to MICSLLOG to explain the abend.

ACCEPT - This specification tells SRL to accept the data and use the original SYSID specified in the OPTIONS statement as the default original SYSID.

WARN - This specification of action tells SRL to ignore the data but write a message to MICSLLOG indicating that data had been input to SRL which was not processed.

Since the parameters on the OPTIONS statement are positional, this parameter must be coded even if there are no CPUSYSID statements associated with it.

ds\_ = Data Selection (ds1 ds2 ds3 ds4 ... ds11). Data selection options determine the type of LOGREC data that will be recorded in the CA MICS Database. The two letter codes cause the data to be selected while the three letter codes cause the data to NOT be selected. There are no defaults, so an entry must be coded for each data selection option.

Each data selection option corresponds to one or more CA MICS SRL files but does not determine whether the file(s) will exist in the database. The code specification simply determines whether or not data from this ddname is to be written to the database file(s). For example, if Nxx is selected for the same data selection option on all of the OPTIONS statements, then the file will be present in the database, but will not contain any data. The data selection codes are:

SS/NSS - Controls the selection of system software information. The data affected by this option is the data in the System Software Diagnostic and System Software Malfunction Summary Files.

US/NUS - Controls the selection of user software information. The data affected by this option is the data in the System Software Diagnostic and User Software Malfunction Summary Files.

PR/NPR - Controls the selection of processor and processor storage information. The data affected by this option is the data in the Processor Reliability and Storage Reliability Files.

CH/NCH - Controls the selection of channel information. The data affected by this option is the data contained in the Channel Reliability File.

DA/NDA - Controls the selection of DASD device information. The data affected by this option is the data in the DASD Device Reliability File.

- MT/NMT - Controls the selection of magnetic tape device information. The data affected by this option is the data in the Magnetic Tape Device Reliability File.
- XR/NXR - Controls the selection of unit record device information. The data affected by this option is the data in the Unit Record Device Reliability File.
- TP/NTP - Controls the selection of teleprocessing device information. The data affected by this option is the data in the TP Device Reliability File.
- DM/NDM - Controls the selection of DASD media information. The data affected by this option is the data in the DASD Media Reliability File.
- MM/NMM - Controls the selection of magnetic tape media information. The data affected by this option is the data in the Magnetic Tape Media Reliability File.
- NT/NNT - Controls the selection of Communications Controller Reliability Information. The data affected by this option is the data in the Communications Controller Reliability File.

#### CPUSYSID Statement

The CPUSYSID statement is an optional SRLOPS statement that provides you with more flexibility in assigning an original SYSID (ORGSYSID) to LOGREC data. If you code a CPUSYSID statement, you can make CA MICS SRL process LOGREC data from more than one SCP and/or CPU using a single ddname by concatenation. Concatenating more than one SCP allows you to logically group input data by CPU, processing site, or other installation grouping requirements. The only restriction to this grouping capability is that multiple guests of the same SCP under VM without dedicated processors cannot be separately identified requiring that OPTIONS statements be coded to process them via separate ddnames.

The CPUSYSID statement allows you to identify data for the assignment of the original SYSID by CPU serial number and model number. CPUSYSID statements must follow an OPTIONS statement and are associated with the OPTIONS statement that they follow. The associated OPTIONS statement contains the ddname that identifies the data to which the CPUSYSID statements pertain. The sample SRLOPS member listed above illustrates how these statements are coded.

The format of the CPUSYSID statement is:

```
CPUSYSID sysid cpu.model cpu.serial
```

where the parameters are:

sysid = Original SYSID. This parameter is a 1- to 4-character SMF SYSID. The SYSID must be one of those defined in the prefix.MICS.PARMS member SYSID, but not every SYSID defined in the SYSID member must appear here. Data in the data set(s) defined by the ddname of the preceding OPTIONS statement will be assigned this original SYSID if the CPU serial and model numbers of the data match those found in this CPUSYSID statement.

cpu.model = CPU model number. This parameter identifies the CPU model number associated with the original SYSID. It is 1 to 4 digits in length.

cpu.serial = CPU serial number. This parameter identifies the CPU serial number that is to be associated with the original SYSID. The serial number identifies a specific CPU or processor by its 6 hexadecimal character serial number. The serial number is the number stamped on the frame of the processor and is the number returned from executing the instruction 'Store CPU ID'. The serial number may contain any combination of the digits 0-9 and the hexadecimal characters A-F.

#### CRITICAL FUNCTIONS DEFINITION

The LOGREC Exception Reports will track failures of important system software modules and processing jobs that you identify in the CMOD and CJOB statements. A default list of system modules is contained in the prefix.MICS.PARMS(SRLOPS) member shipped with the CA MICS system. In addition, you may wish to specify other system modules that are to be added to this list. You may also specify the job name of one or more jobs at your installation which you would like to track in the same way. The statements for doing this are:

##### CMOD Statement

Use the CMOD statement to specify system modules. One module is specified per statement, using the following three parameters:

MODULE - The program name of the module.

SEVERITY - 'C' for Critical, 'I' for Impacting, or 'W' for Warning.

DESCRIPTION - A 1- to 38-character description of the module.

##### CJOB Statement

Use the CJOB statement to specify processing jobs. One jobname is specified per statement, using the following three parameters:

JOB - The job name.

SEVERITY - 'C' for Critical, 'I' for Impacting, or 'W' for Warning.

DESCRIPTION - A 1- to 38-character description of the job.

The SEVERITY level will be carried in the CA MICS Database for all software records created from the LOGREC data. Both CMOD and CJOB will be present in each record and, in addition to the values of 'C', 'I', and 'W', mentioned above, can have a default value of blank. The blank CMOD and CJOB values indicate that the module and jobname were not specified in the SRLOPS member and therefore will not be tracked.

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

data\_set\_allocation\_parameters is one or more data set allocation parameters (for example, STORCLAS or SPACE) separated by spaces.

You can also specify the WORK parameter as the following:

```
WORK n XXX pppp ssss
```

where:

n is the number of WORK data sets

XXX is TRK or CYL  
 pppp is the primary allocation  
 ssss is the secondary allocation

Note: When allocating any number of SAS WORK data sets, be aware that one additional SAS WORK data set is automatically allocated to facilitate sorting. For example, if you allocate six SAS WORK data sets, you will actually get seven.

If you omit the `data_set_allocation_parameters` or the `WORK` parameter, the work data sets are allocated according to the values you specified for the `WORKUNIT` and `WORKSPACE` parameters in `prefix.MICS.PARMS(JCLDEF)`. Use the `data_set_allocation_parameters` to override this default, either to alter the space allocation or to use System Managed Storage (SMS) parameters to control data set placement and characteristics.

Note: If you allocate insufficient space for the WORK data sets, `DAYnnn` and/or `INCRnnn` processing will fail and can only be restarted from the beginning.

Note: If internal step restart is active, you can override the WORK data set allocation parameters at execution-time using the `//PARMOVRD` facility. For more information about execution-time override of dynamic data set allocation parameters, see the `PIOM`, section 2.3.6.

Specify data set allocation parameters, separated by blanks, according to SAS `LIBNAME` statement syntax. If you need multiple lines, repeat the `WORK` keyword on the continuation line.

`WORK` accepts the engine/host options documented in the SAS Companion for the z/OS environment, including `STORCLAS`, `UNIT`, `SPACE`, `BLKSIZE`, `DATACLAS`, `MGMTCLAS`, and `VOLSER`.

Important! Do not specify the `DISP` parameter.

Example 1:

```
WORK n STORCLAS=MICSTEMP SPACE=(XXX,(pppp,ssss),RLSE)
```

where:

- n - is the number of WORK data sets.
- STORCLAS - specifies a storage class for a new data set.  
The name can have up to 8 characters.
- SPACE - specifies how much disk space to provide for

- a new data set being allocated.
- XXX - is TRK or CYL.
- pppp - is the primary allocation.
- ssss - is the secondary allocation.
- RLSE - specifies that free-space should be released when the data set is closed.

Example 2:

```
WORK n XXX pppp ssss
```

where:

- n - is the number of WORK data sets.
- XXX - is TRK or CYL.
- pppp - is the primary allocation.
- ssss - is the secondary allocation.

Example 3 (multiple lines):

```
WORK n STORCLAS=MICSTEMP UNIT=SYSDA  
WORK SPACE=(xxxx,(pppp,ssss),,,ROUND))
```

where:

- n - is the number of WORK data sets.
- STORCLAS - specifies a storage class for a new data set. The name can have up to eight characters.
- UNIT - specifies the generic unit for a new data set. The name can have up to eight characters.
- SPACE - specifies how much disk space to provide for a new data set being allocated.
- XXX - is TRK or CYL.
- pppp - is the primary allocation.
- ssss - is the secondary allocation.

Note: Since there is some performance impact when using multiple WORK files, you should specify the minimum number of WORK data sets to meet your work space requirements. As a start, try incrementing the number gradually beginning from the default.

WORK Considerations  
-----

How Much Space Should You Allocate?

- o First Time Implementation of Multiple Work Files

If this is the first time you are implementing multiple work files for this product in this unit, review prefix.MICS.PARMS(JCLDEF) and find the WORKSPACE parameter. It will resemble this sample statement:

```
WORKSPACE      TRK 500 250
```

The value shows the current SAS WORK space allocation for the unit as a single data set. It also serves as the default value used in the unit's DAYnnn daily update (and/or INCRnnn incremental update) step unless you provide a WORK parameter.

To achieve the equivalent work space allocation of WORKSPACE TRK 500 250 using multiple WORK data sets that will collectively share the work space requirements of the daily and/or incremental update step, you could code either one of these:

```
WORK 2 SPACE=(TRK,(250,125))
```

```
WORK 5 SPACE=(TRK,(100,50))
```

To determine the total work space, multiply the number of WORK files (n) by the primary (pppp) and secondary (ssss) values specified.

Note: To simplify the example, only the SPACE parameter is shown above. You can follow either with data set allocation parameters like UNIT or STORCLAS as required for your site.

#### o Adjusting Allocation for Existing Multiple WORK Files

If you have previously implemented multiple WORK file support for this product in this unit, and you want to change either the number of WORK files or the space allocations, examine prefix.MICS.PARMS(cccOPS) and find the existing WORK statement.

- If the existing WORK statement only specifies the number of WORK files but does not contain space allocation information as shown below:

```
WORK 5
```

Then each of the multiple WORK files is allocated using the values from the WORKSPACE parameter of

prefix.MICS.PARMS(JCLDEF), as described earlier under First Time Implementation of Multiple Work Files.

To increase workspace, you can increase the number of WORK files (for example, change WORK 5 to WORK 6,7,8, or 9), increase the space allocation in the WORKSPACE parameter, or do both.

To decrease workspace, you can decrease the number of WORK files (for example, change WORK 5 to WORK 4,3,2, or 1), decrease the space allocation in the WORKSPACE parameter, or do both.

You can also elect to explicitly specify the multiple WORK file space allocation by adding the space allocation values directly to the WORK statement. This will remove the link to the prefix.MICS.PARMS(JCLDEF) WORKSPACE parameter for multiple WORK file space allocation. This is recommended as it serves to clearly document, in one place, how multiple WORK files are allocated.

- If the existing WORK statement does include space allocation as shown in the examples below:

```
WORK 5 TRK 200 100
```

or

```
WORK 5 SPACE=(TRK,(200,100)) STORCLAS=MICSTEMP
```

Simply change the values to meet your needs.

If you need more work space, you can increase the number of WORK files (for example, change WORK 5 to WORK 6,7,8, or 9), increase the space allocation (for example, change TRK 200 100 to TRK 250 120), or do both.

To decrease work space, you can decrease the number of WORK files (for example, change WORK 5 to WORK 4,3,2, or 1), decrease the space allocation (for example, change TRK 200 100 to TRK 150 80), or do both.

Note: If internal step restart is NOT active (RESTART NO) and you change the WORK parameter, you must:

- o Run cccPGEN
- o Run JCLGENU for DAILY (to regenerate DAILY) and, if

incremental update is enabled, INCRccc

When internal step restart is active, (RESTART YES), then, when you change WORK and run cccPGEN, changes take effect immediately. There is no need to run JCLGENU.

SASWORK

-----

This statement is optional.

The WORK DD statement in the CA MICS procedures allocates a temporary data set where SAS keeps its temporary data files and other items that SAS uses during processing of the current job.

By default, the space allocated is defined in the member prefix.MICS.PARMS(JCLDEF) with the WORKSPACE and WORKUNIT parameters, then generated into all the JCL procedures for a given unit.

With the SASWORK statement you have the option to override this unit-wide definition to specify the space allocation individually for the current step.

The format of the SASWORK statement is:

SASWORK data\_set\_allocation\_parameters

where data\_set\_allocation\_parameters is one or more data set allocation parameters (for example, STORCLAS or SPACE) separated by spaces.

You can also specify the SASWORK parameter as the following:

SASWORK XXX pppp ssss

where:

XXX is TRK or CYL  
pppp is the primary allocation  
ssss is the secondary allocation

If you omit the data\_set\_allocation\_parameters or the SASWORK statement, the WORK data set is allocated according to the values you specified for the WORKUNIT and WORKSPACE parameters in prefix.MICS.PARMS(JCLDEF). Use the data\_set\_allocation\_parameters to override this default,

either to alter the space allocation or to use System Managed Storage (SMS) parameters to control data set placement and characteristics.

Specify data set allocation parameters, separated by blanks, according to SAS LIBNAME statement syntax. If you need multiple lines, repeat the SASWORK keyword on the continuation line.

Example:

```
SASWORK STORCLAS=MICSTEMP SPACE=(XXX,(pppp,ssss))
```

where:

- STORCLAS - specifies a storage class for a new data set.  
The name can have up to 8 characters.
- SPACE - specifies how much disk space to provide for a new data set being allocated.
- XXX - is TRK or CYL.
- pppp - is the primary allocation.
- ssss - is the secondary allocation.

Note: If you change the SASWORK parameter, you must:

- o Run cccPGEN
- o Run JCLGENU for DAILY (to regenerate DAILY) and, if incremental update is enabled, INCRccc

```
MULTWORK|NOMULT fff fff ... fff  
-----
```

Since multiple work files usage impacts performance, this product provides these optional parameters so you can restrict multiple work files usage to only those files having excessive space requirements.

Note: You can only use one of these optional parameters with the WORK statement, NOT both.

The MULTWORK parameter restricts the use of multiple WORK files to ONLY those listed after the MULTWORK keyword.

```
MULTWORK fff fff ... fff
```

where fff is the unique three character identifier

If you need multiple lines, repeat the MULTWORK on the continuation line.

The NOMULT parameter forces the use of multiple WORK files for all files EXCEPT those specified after the NOMULT keyword.

```
NOMULT fff fff ... fff
```

where fff is the unique three character identifier

If you need multiple lines, repeat the NOMULT on the continuation line.

NOTE: The default is zero (0).  
The maximum is nine (9).

The default is

```
MULTWORK _UD _UM CRL DMR DRL MMR MRL PRL RNC STR SSD SSM  
MULTWORK TRL XRL NTC
```

if neither MULTWORK or NOMULT parameters are specified.

The following files are eligible for multiple WORK support.

SRL System Reliability Information Area Files

- \_UD User Software Diagnostic File
- \_UM User Software Malfunction Summary
- CRL Channel Reliability File
- DMR DASD Media Reliability
- DRL DASD Device Reliability File
- MMR Mag. Tape Media Reliability
- MRL Mag. Tape Device Reliability
- PRL Processor Reliability File
- RNC Reliability Incident File
- STR Storage Reliability File
- SSD System Software Diagnostic File
- SSM System Software Malfunction Summary
- TRL TP Device Reliability
- XRL Unit Record Device Reliability
- NTC Communications Controller Rel. File

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(JCLGEN) or by specifying
*       DAILY in prefix.MICS.PARMS(JCLGEN) and
*       executing prefix.MICS.CNTL(JCLGEN).
*
*       If incremental update is active for this product,
*       you must also regenerate the INCRccc job.
*
*****
```

Internal step restart can significantly reduce time and resource usage to recover from daily and/or incremental update processing failures. CA MICS uses a checkpoint/restart technique.

- o When internal step restart is activated, the database update job step "checkpoints" (or saves) intermediate results (work file contents) and the operational environment at the end of each processing phase.
- o Then, if required, the database update step can resume execution at the beginning of the processing phase in which the failure occurred.
- o Restart is accomplished by restoring the operational environment from the last checkpoint, bypassing completed processing phases, and resuming execution using intermediate results (work files) from the last checkpoint.

Note: When you activate internal step restart (RESTART YES), the following optional restart parameters are enabled. These parameters have no effect if restart is disabled (RESTART NO). For more details, see the individual parameter descriptions later in this section.

- o RESTARTCKPT data\_set\_allocation\_parameters
- o RESTARTWORK data\_set\_allocation\_parameters
- o DYNAMWAIT minutes

Processing Phases:

-----

This product employs two database update processing phases followed by the two common roll-up phases.

Phase	Description
FORMAT	Read raw input data, convert to SAS format, and output to intermediate work files.
DBUPDATE	Sort intermediate work file contents, eliminate duplicate input data, prepare for DETAIL cycle creation, merge data across optional multiple work files, enhance data content, and create the new DETAIL cycle.
DYSUM	Summarize DETAIL data to create new DAYS cycles and to update current week-to-date and month-to-date cycles.
DYAGE	Cutover new database cycles to production and "age" existing cycles.

RESTART Considerations

o Overhead

Enabling internal step restart adds some overhead to the database update job step -- the cost of taking checkpoints and managing saved materials. Since this overhead is relatively constant and independent of input data volume, you may find that costs outweigh potential savings when input data volume is low, for example in a test unit. For high volume, production units, internal step restart support overhead should be a minor portion of total resource usage.

o Cataloged Work Files

When internal step restart is enabled, the SAS work data set, internal step restart control data set, and multiple work file data sets are allocated and cataloged with permanent dataset names so they will be retained for use in restart if the step abends. These data sets are deleted when the step completes successfully.

Prior to enabling internal step restart support, these data sets were probably allocated on system "scratch" space with a temporary, system assigned data set names. If your installation standards do not allow "permanent" data sets on DASD volumes used for temporary work space, you may need to use the WORK, RESTARTCKPT, and RESTARTWORK parameters to direct the internal step restart data sets to a generic unit or storage class that allows cataloged data sets.

#### o Dynamic Allocation

When internal step restart is active, dynamic allocation is employed for the work data sets. If your installation restricts dynamic allocation of large, cataloged data sets, you may need to use the WORK, RESTARTCKPT, and RESTARTWORK parameters to direct work data set allocation to a generic unit or storage class where dynamic allocation is allowed.

#### o Data Set Names

The SAS work data set, internal step restart control data set, and multiple work file data sets are allocated and cataloged according to the standard CA MICS unit database data set name conventions. The default DDNAME and data set names are:

- o SAS work data set,  
//cccXWORK DD DSN=prefix.MICS.cccXWORK,.....
- o Internal step restart control data set,  
//cccXCKPT DD DSN=prefix.MICS.cccXCKPT,.....
- o Multiple work file data sets,  
//WORKnn DD DSN=prefix.MICS.cccWRKnn,.....

Since these data sets conform to the same data set name conventions as your existing CA MICS data sets, there should be few, if any, data set name related allocation issues. However, it is possible to override the data set names if required. Please contact CA MICS Product Support for assistance if you must alter data set names.

RESTARTCKPT  
-----

This statement is optional. Specify the following to override default data set allocation parameters for the internal step restart checkpoint data set:

```
RESTARTCKPT  data_set_allocation_parameters
```

Note: RESTARTCKPT is ignored when you specify RESTART NO.

The internal step restart checkpoint data set (or cccXCKPT data set) contains processing status, control, and SAS environmental information for internal step restart processing checkpoints. This includes a copy of the SAS WORK format and macro catalogs, current macro variable values, and a description of work files that may be needed to restart DAYnnn processing.

By default, the cccXCKPT data set is allocated according to the values you specified for the WORKUNIT and WORKSPACE parameters in prefix.MICS.PARMS(JCLDEF). Specify RESTARTCKPT to override this default, either to alter the space allocation or to use System Managed Storage (SMS) parameters to control data set placement and characteristics.

Note: If you allocate insufficient space for the cccXCKPT data set, DAYnnn processing will fail and can only be restarted from the beginning.

Note: You can override the RESTARTCKPT data set allocation parameters at execution-time using the //PARMOVRD facility. For more information about execution-time override of dynamic data set allocation parameters, see the PIOM, section 2.3.6.

Specify data set allocation parameters, separated by blanks, according to SAS LIBNAME statement syntax. If you need multiple lines, repeat the RESTARTCKPT keyword on the continuation line.

RESTARTCKPT accepts the engine/host options documented in the SAS Companion for the z/OS Environment, including STORCLAS, UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and VOLSER.

Important! DO NOT SPECIFY THE DISP PARAMETER.

Example 1:

```
RESTARTCKPT  STORCLAS=MICSTEMP SPACE=(xxxx,(pp,ss),,,ROUND)
```

where:

STORCLAS - specifies a storage class for a new data set.  
The name can have up to eight characters.

SPACE - specifies how much disk space to provide for  
a new data set being allocated, where:

xxxx is TRK, CYL, or blklen  
pp is the primary allocation  
ss is the secondary allocation

and ROUND specifies that the allocated space be  
"rounded" to a cylinder boundary when the unit  
specified was a block length. ROUND is ignored  
with the TRK or CYL options.

Example 2 (multiple lines):

```
RESTARTCKPT STORCLAS=MICSTEMP UNIT=SYSDA
RESTARTCKPT SPACE=(xxxx,(pp,ss),,,ROUND)
```

where:

STORCLAS - specifies a storage class for a new data set.  
The name can have up to eight characters.

UNIT - specifies the generic unit for a new data set.  
The name can have up to eight characters.

SPACE - specifies how much disk space to provide for  
a new data set being allocated.

RESTARTWORK

-----

This statement is optional. Specify the following to  
override default data set allocation parameters for the  
internal step restart WORK data set:

```
RESTARTWORK data_set_allocation_parameters
```

Note: RESTARTWORK is ignored when you specify RESTART NO.

The internal step restart WORK data set (or cccXWORK data  
set) contains the intermediate work files that are not  
enabled to multiple work file support, including those files  
you may have specified on the optional NOMULT statement.

By default, the cccXWORK data set is allocated according to

the values you specified for the WORKUNIT and WORKSPACE parameters in prefix.MICS.PARMS(JCLDEF). Specify RESTARTWORK to override this default, either to alter the space allocation or to use System Managed Storage (SMS) parameters to control data set placement and characteristics.

Note: If you allocate insufficient space for the cccXWORK data set, DAYnnn processing will fail and can only be restarted from the beginning.

Note: You can override the RESTARTWORK data set allocation parameters at execution-time using the //PARMOVRD facility. For more information about execution-time override of dynamic data set allocation parameters, see the PIOM, section 2.3.6.

Specify data set allocation parameters, separated by blanks, according to SAS LIBNAME statement syntax. If you need multiple lines, repeat the RESTARTWORK keyword on the continuation line.

RESTARTWORK accepts the engine/host options documented in "SAS Companion for the z/OS Environment", including STORCLAS, UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and VOLSER.

Important! DO NOT SPECIFY THE DISP PARAMETER.

Example 1:

```
RESTARTWORK STORCLAS=MICSTEMP SPACE=(xxxx,(pp,ss),,,ROUND)
```

where:

STORCLAS - specifies a storage class for a new data set.  
The name can have up to eight characters.

SPACE - specifies how much disk space to provide for a new data set being allocated, where:

xxxx is TRK, CYL, or blklen  
pp is the primary allocation  
ss is the secondary allocation

and ROUND specifies that the allocated space be "rounded" to a cylinder boundary when the unit specified was a block length. ROUND is ignored with the TRK or CYL options.

Example 2 (multiple lines):

```

RESTARTWORK STORCLAS=MICSTEMP UNIT=SYSDA
RESTARTWORK SPACE=(xxxx,(pp,ss),,,ROUND)

```

where:

STORCLAS - specifies a storage class for a new data set.  
The name can have up to eight characters.

UNIT - specifies the generic unit for a new data set.  
The name can have up to 8 characters.

SPACE - specifies how much disk space to provide for  
a new data set being allocated.

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.

<p>INSTALLATION PREPARATION WORKSHEET: System Reliability Options</p> <p>PARMS Library Member is SRLOPS</p> <p>Reference Sections: 7.3.2</p>																																									
<p>SYSTEM DEFINITIONS--&gt;</p> <p>One OPTIONS statement is required for each ddname included in INPUTSRL. One or more optional CPUSYSID statements follow the OPTIONS statement if data for more than one CPU or SCP is included in the data sets(s) which make up the ddname on the OPTIONS statement.</p>	<table border="0"> <tr> <td></td> <td>Orig</td> <td></td> <td>ABEND</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>SYSID</td> <td>DDNAME</td> <td>GMT OFF</td> <td>ACCEPT WARN</td> <td>SS NUS</td> <td>US NUS</td> <td>PR NPR</td> <td>CH NCH</td> <td>DA NDA</td> <td>MT NMT</td> <td>XR NXR</td> <td>TP NTP</td> <td>DM NDM</td> <td>MM NMM</td> <td></td> </tr> </table> <p>OPTIONS -----</p> <table border="0"> <tr> <td></td> <td>Orig</td> <td>CPU</td> <td>CPU</td> </tr> <tr> <td></td> <td>SYSID</td> <td>Model</td> <td>Serial</td> </tr> </table> <p>CPUSYSID -----</p> <p>CPUSYSID -----</p> <p>CPUSYSID -----</p> <p>CPUSYSID -----</p>		Orig		ABEND														SYSID	DDNAME	GMT OFF	ACCEPT WARN	SS NUS	US NUS	PR NPR	CH NCH	DA NDA	MT NMT	XR NXR	TP NTP	DM NDM	MM NMM			Orig	CPU	CPU		SYSID	Model	Serial
	Orig		ABEND																																						
	SYSID	DDNAME	GMT OFF	ACCEPT WARN	SS NUS	US NUS	PR NPR	CH NCH	DA NDA	MT NMT	XR NXR	TP NTP	DM NDM	MM NMM																											
	Orig	CPU	CPU																																						
	SYSID	Model	Serial																																						
<p>CRITICAL FUNCTIONS---&gt;</p> <p>One statement per module that the user has selected for special tracking.</p>	<p>SYSTEM MODULES</p> <table border="0"> <tr> <td></td> <td>MODULE</td> <td>SEVERITY</td> <td>DESCRIPTION</td> </tr> <tr> <td></td> <td>CMOD</td> <td>-</td> <td>-----</td> </tr> <tr> <td></td> <td>CMOD</td> <td>-</td> <td>-----</td> </tr> <tr> <td></td> <td>CMOD</td> <td>-</td> <td>-----</td> </tr> <tr> <td></td> <td>CMOD</td> <td>-</td> <td>-----</td> </tr> <tr> <td></td> <td>CMOD</td> <td>-</td> <td>-----</td> </tr> </table>		MODULE	SEVERITY	DESCRIPTION		CMOD	-	-----		CMOD	-	-----		CMOD	-	-----		CMOD	-	-----		CMOD	-	-----																
	MODULE	SEVERITY	DESCRIPTION																																						
	CMOD	-	-----																																						
	CMOD	-	-----																																						
	CMOD	-	-----																																						
	CMOD	-	-----																																						
	CMOD	-	-----																																						

One statement per job that the user has selected for special tracking.	PROCESSING JOB		
	JOB	SEVERITY	DESCRIPTION
	CJOB	-----	-----
	CJOB	-----	-----
	CJOB	-----	-----
	CJOB	-----	-----
	CJOB	-----	-----
	WORK n data_set_allocation_parameters		
	MULTWORK NOMULT fff ... fff		
	RESTART YES/NO		
	INCRUPDATE YES/NO		
	INCRDB PERM/TAPE/DYNAM		
	INCRDETAIL data_set_allocation_parameters		
	-----		
	...5...10...15...20...25...30...35...40...45...50...55...60...65...70..		
-----			

### 7.3.3 SRL Device Definitions (SRLDEVS)

The prefix.MICS.PARM member SRLDEVS is used to associate a failure impact level, a vendor name, and a device description with one or more of the devices attached to a specific CPU or processor. It also allows data for devices with multiple paths from one or more processors to be related to a single device address. Entries in this member are optional.

The SRLDEVS member contains two types of statements, the CPUSERIAL and the DEVICE statement. Each is described below in detail. Figure 7-3 is a worksheet to aid in collecting the data with which to complete prefix.MICS.PARMS(SRLDEVS). As with most CA MICS PARMS members, the format of the statements is free-form, but positional. There are no default values; so if a statement is to be coded, all parameters must be coded and not left blank. Comments are coded by beginning the statement with an '\*'. Blank statements are allowed.

Modify the sample SRLDEVS member supplied with the prefix.MICS.PARMS library distributed with the CA MICS system rather than code it from scratch. Starting with an existing, correct specification may spare you annoying syntax errors. An example SRLDEVS member is shown below.

Example 1:

```
*
*   SYSTEM RELIABILITY (SRL) DEVICE TABLE
*
CPUSERIAL 069604
DEVICE 760      160 N IBM TSO STORAGE VOLUME
DEVICE 170      170 I IBM INSURANCE CLAIMS FILES
DEVICE 840      240 C IBM PRIMARY PAGING VOLUME
DEVICE 950-957  350 N IBM PROGRAMMER WORK VOLUMES
DEVICE 570      570 C IBM IMS LOG TAPE
CPUSERIAL 054130
DEVICE 760      160 N IBM TSO STORAGE VOLUME
DEVICE 170      170 I IBM INSURANCE CLAIMS FILES
DEVICE 840      240 C IBM PRIMARY PAGING VOLUME
DEVICE 950-957  350 N IBM PROGRAMMER WORK VOLUMES
DEVICE 570      570 C IBM IMS LOG TAPE
```

CPUSERIAL Statement

A CPUSERIAL statement identifies a specific CPU or processor by its 6 hexadecimal character serial number.

The format of the CPUSERIAL statement is:

CPUSERIAL cpuser

or

CPUSERIAL SHARED

or

CPUSERIAL cpuser1 cpuser2 cpuser3 ... cpuser8

where the parameter is:

cpuser = CPU serial number. The serial number is the number stamped on the frame of the processor and is the number returned from executing the instruction 'Store CPU ID'. The serial number may contain any combination of the digits 0-9 and the hexadecimal characters A-F. It can be 6 digits long.

If your site has devices shared across multiple CPUs, then you can take advantage of the SHARED keyword and avoid specifying the CPUSERIAL number and DEVICE specifications for each of the shared CPUs by coding just one set of CPUSERIAL and DEVICE control statements. Note however that is a possibility for the devices belonging to a nonshared CPU being classified under SHARED if the device addresses match those of the devices specified for the CPUSERIAL SHARED statement and if the devices belonging to this CPU are not defined in SRLDEVS.

Another way of specifying the CPUSERIAL statement for devices that are shared across several CPUs is to specify the CPUSERIAL statement, followed by a list of the CPU serial numbers (up to a maximum of eight) and listing the devices that are shared across those CPUs using DEVICE statements below it.

Example 1 above shows the simplest form of coding the CPUSERIAL and DEVICE statements. Example 2 shows how to use the SHARED keyword of the CPUSERIAL statement and Example 3 shows you how the coding of Example 1 can be simplified by specifying multiple CPU Serial numbers on the CPUSERIAL statement for devices shared by the CPUs.

Example 2:

```
CPUSERIAL 069604
DEVICE 760      160 N IBM TSO STORAGE VOLUME
DEVICE 170      170 I IBM INSURANCE CLAIMS FILES
DEVICE 840      240 C IBM PRIMARY PAGING VOLUME
DEVICE 950-957  350 N IBM PROGRAMMER WORK VOLUMES
DEVICE 570      570 C IBM IMS LOG TAPE
CPUSERIAL SHARED
DEVICE 760      160 N IBM TSO STORAGE VOLUME
DEVICE 170      170 I IBM INSURANCE CLAIMS FILES
DEVICE 840      240 C IBM PRIMARY PAGING VOLUME
DEVICE 950-957  350 N IBM PROGRAMMER WORK VOLUMES
DEVICE 570      570 C IBM IMS LOG TAPE
```

Example 3:

```
CPUSERIAL 069604 054130
DEVICE 760      160 N IBM TSO STORAGE VOLUME
DEVICE 170      170 I IBM INSURANCE CLAIMS FILES
DEVICE 840      240 C IBM PRIMARY PAGING VOLUME
DEVICE 950-957 350 N IBM PROGRAMMER WORK VOLUMES
DEVICE 570      570 C IBM IMS LOG TAPE
```

### DEVICE Statement

The DEVICE statements following a CPUSERIAL statement are assumed to represent devices normally associated with that processor. Each DEVICE statement contains a physical device address or range of addresses, a logical device address, a failure impact level, a vendor name, and an installation device description. There can be more than one DEVICE statement per CPUSERIAL statement.

The format of the DEVICE statement is:

```
DEVICE ppp-ppp lll f vendor description
```

where the parameters are:

ppp-ppp = Physical address. The single device address or range of addresses used to identify one or more devices attached to the processor. The device address(es) must contain 4 valid hexadecimal characters. If a range is specified, the pair of addresses must be separated by a '-', must have no imbedded blanks, and the first three characters of the addresses must have the same channel and control unit values. For a range, the device addresses must also be specified in ascending order. For example, the range 0230-0237 would be valid. The address pair 0237-0230 would not be valid because the device addresses are not in ascending order.

- l11 = Logical address. The 4 hexadecimal character address to which the physical address is mapped if a single device address is specified in PHYSICAL ADDRESS. If a range of addresses is specified in PHYSICAL ADDRESS, this value is the starting address for the mapped range of addresses and the third digit of this address must match the third digit of the address specified in the first address of the range. For example, the range 830-837 would be mapped to the address 230 in the following manner: 830->230, 831->231, 832->232, ..., 837->237. The range of addresses 458-45F could not be mapped to the starting address 250 because the device addresses '0' and '8' do not match.
- f = Failure impact. The single character code for the impact to the installation caused by a failure on the device(s) at the address(es) specified in PHYSICAL ADDRESS. The value must be N for no impact or not specified, C for critical, I for impacting, or W for warning. This value is carried in the data base and is available for use by reporting programs.
- vendor = The 1- to 8-character name of the vendor supplying the device described by this statement. The name may not contain any embedded blanks.
- description = Device description. This is the 1- to 22-character description of the device(s) described by this statement. The description may contain embedded blanks but should not exceed 22 characters in length. Note that the actual description should be from the installation's point of view, the device's use, importance, etc. The description of the device from a hardware point of view (e.g., 3390 Model 3) is already known and maintained by the CA MICS system. The description provided here is carried in the data base, but is not used by the CA MICS system.

NOTE ON USAGE:

The statements in this parameter are all optional and need not be specified. All CA MICS elements for devices having no SRLDEVS statements are set to blank or a value meaning 'not specified'. You may wish to 'comment out' or provide dummy values for this parameter until a later date. If you wish to change one or more of these parameters at some later time, then you must execute prefix.MICS.PARMS(SRLPGEN) to rebuild the formatting procedures.

```

+-----+
| INSTALLATION PREPARATION WORKSHEET: System Reliability Device Table |
| PARS Library Member is SRLDEVS |
| Reference Sections: 7.3.3 |
+-----+
| CPUSERIAL _____ |
|      Physical Logical Failure |
|      Address* Address Impact Vendor Device Description |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| CPUSERIAL _____ |
|      Physical Logical Failure |
|      Address* Address Impact Vendor Device Description |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| DEVICE --- --- - ----- |
| * NOTE: Physical Address can be a single address or a range |
| of addresses. |
+-----+
| ...5...10...15...20...25...30...35...40...45...50...55...60...65...70.. |
+-----+

```

Figure 7-3. System Reliability Component Device Definition Worksheet

### 7.3.4 SRL Input DD Statements (INPUTSRL)

The input DD statement(s) to define the System Reliability Analyzer's input file(s) must be supplied in the INPUTSRL member of the prefix.MICS.PARMS library. A worksheet for coding this member is shown in Figure 7-4.

For example, if your LOGREC data was to be read from a data set named SRL.DAILY.DATA using the ddname SRLSYS1 (ddnames are defined in CA MICS.PARMS(SRLOPS)), you would change the INPUTSRL member to contain the following:

```
//SRLSYS1 DD DISP=SHR,DSN=SRL.DAILY.DATA
```

The ddname used to read the LOGREC data into CA MICS is also used to relate the SRL processing options with the data. Every ddname specified here should also be specified on an OPTIONS statement in SRLOPS. The order in which the ddnames are specified is not important.

NOTE: Each system control program (SCP) writes data to its own LOGREC data set or data recording area. SRL cannot read this data but instead uses the history file produced by processing the data through IBM's Environmental Record Editing and Printing Program (EREP). Even though SRL will allow the concatenation of input LOGREC data, we strongly recommend that you not combine the history files into a single data set as described in the EREP documentation because there is no SMF system identification available in the LOGREC data. Combining the data could, in some cases, make it impossible for CA MICS to assign a unique original SYSID to the data for each SCP. If the data is already in a single file, it is impossible to split it apart for processing by CA MICS.

```
+-----+
| INSTALLATION PREPARATION WORKSHEET: INPUTSRL JCL Definitions
| PARS Library Member is INPUTSRL
| Reference Section: 7.3.4
+-----+
|
| This definition is required to specify the DD statement for SRL data
| which will be read by the DAILY CA MICS job.
|
| //@
| //@ WARNING: ALWAYS MAKE CHANGES IN PARS(INPUTSRL) AND NOT
| //@ &CNTL(DAILY).
| //@ CHANGES MADE TO &CNTL(DAILY)
| //@ WILL BE GONE WHEN DAILY REGENERATED BY JCLGEN.
| //@
| //insrl1 DD DISP=SHR,DCB=BUFNO=3,DSN=_____
| //insrl2 DD DISP=SHR,DCB=BUFNO=3,DSN=_____
+-----+
```

Figure 7-4. INPUTSRL JCL Definition Worksheet

### 7.3.5 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

### 7.3.5.1 Data Retention Specifications (FILE Statement)

The System Reliability Analyzer contains one Information Area, which has fourteen files.

The suggested retention period is specified within each of the online and archive timespans. If the specification is a value of '00', the file is not supported for the indicated timespan and the '00' value may not be changed unless the user performs database tailoring in order to add support for that particular file in that particular timespan.

#### EXAMPLE

The prefix.MICS.PARMS(DBMODEL) FILE statement below illustrates how to enter the information for a file whose SRLGENIN FILE statement specifies that the file is inactive in the YEARS timespan and TABLES data area.

```
FILE SRL SRLSSM 01 33 09 06 00 00 053 024
```

NOTE: 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.

```

+-----+
| INSTALLATION PREPARATION WORKSHEET: Database Data Retention Definitions |
+-----+
| PARM Library Member is DBMODEL |
+-----+
| Reference Section: 7.3.5.2 |
+-----+
| File |DETAIL| Online Data Base Retention | Archive Cut-Off |
| Name |__(NA)| DAYS WEEKS MONTHS YEARS TABLES | WEEKS MONTHS |
|      |__(NA)| __ (NA) __ (NA) __ (NA) __ (NA) __ (NA) | __ (NA) __ (NA) |
+-----+
|SRLSSD|__(10)| __ (00) __ (00) __ (00) __ (0) 00 (00) | __ (000) __ (000) |
|SRL_UD|__(02)| __ (00) __ (00) __ (00) __ (0) 00 (00) | __ (000) __ (000) |
|SRLSSM|__(01)| __ (33) __ (27) __ (06) __ (0) 00 (00) | __ (000) __ (000) |
|SRL_UM|__(01)| __ (08) __ (12) __ (03) __ (0) 00 (00) | __ (000) __ (000) |
|SRLRNC|__(10)| __ (00) __ (00) __ (00) __ (0) 00 (00) | __ (000) __ (000) |
|SRLPRL|__(10)| __ (33) __ (27) __ (12) __ (0) 00 (00) | __ (000) __ (000) |
|SRLSTR|__(10)| __ (33) __ (27) __ (12) __ (0) 00 (00) | __ (000) __ (000) |
|SRLCRL|__(10)| __ (33) __ (12) __ (06) __ (0) 00 (00) | __ (000) __ (000) |
|SRLDRL|__(10)| __ (33) __ (12) __ (06) __ (0) 00 (00) | __ (000) __ (000) |
|SRLMRL|__(10)| __ (33) __ (12) __ (06) __ (0) 00 (00) | __ (000) __ (000) |
|SRLXRL|__(10)| __ (33) __ (12) __ (06) __ (0) 00 (00) | __ (000) __ (000) |
|SRLTRL|__(10)| __ (33) __ (12) __ (06) __ (0) 00 (00) | __ (000) __ (000) |
|SRLDMR|__(10)| __ (33) __ (12) __ (06) __ (0) 00 (00) | __ (000) __ (000) |
|SRLMMR|__(10)| __ (33) __ (12) __ (06) __ (0) 00 (00) | __ (000) __ (000) |
+-----+
| ...5...10...15...20...25...30...35...40...45...50...55...60...65...70.. |
+-----+

```

Figure 7-6. Database Data Retention Worksheet

### 7.3.5.2 DBMODEL Input Statements

The DBMODEL member of prefix.MICS.PARMS provides the input to the Database Space Modeling Facility.

Using the information collected on the worksheets in Figures 7-5 and 7-6, code and update the DBMODEL member. To actually perform the space modeling, submit the jobs as described in Section 2.3.4.2 of the PIOM.

# Chapter 8: INSTALLATION

---

After specifying the parameters documented in Chapter 7 of this guide, you can install the System Reliability Analyzer Option by using the checklists in Section 3.8 of the PIOM.



# Chapter 9: PROCESSING

---

The processing information in this chapter provides an overview of how data from the CA MICS System Reliability Analyzer becomes part of the CA MICS Data Base.

This section contains the following topics:

[9.1 Processing Overview](#) (see page 307)

[9.2 Daily Update Processing Flow](#) (see page 309)

## 9.1 Processing Overview

The CA MICS System Reliability Analyzer makes use of the standard data base update and summarization facilities of CA MICS to maintain its data in the online and offline data bases. The ERDS data (from SYS1.LOGREC for MVS systems, error recording area for VM systems, and LOGREC for VSE systems) is supplied to CA MICS in the DAY070 step of the DAILY data base 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 time-spans
- o Updates the week-to-date and month-to-date cycles

A more detailed description of DAY070 processing is presented in the next section.

Weekly processing is performed by the WEEK070 and WEEK300 steps. The WEEK070 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 data base files.

Monthly processing is performed by the MONTH070 and MONTH300 steps. The MONTH070 step splits the month-to-date file into a new month-to-date and a new monthly '01' cycle. It also appends the data to the year-to-date file. The MONTH300 step creates the monthly offline data base files.

The optional yearly processing is performed by the YEAR070 step which splits the year-to-date files into a new year-to-date and a new yearly '01' cycle.

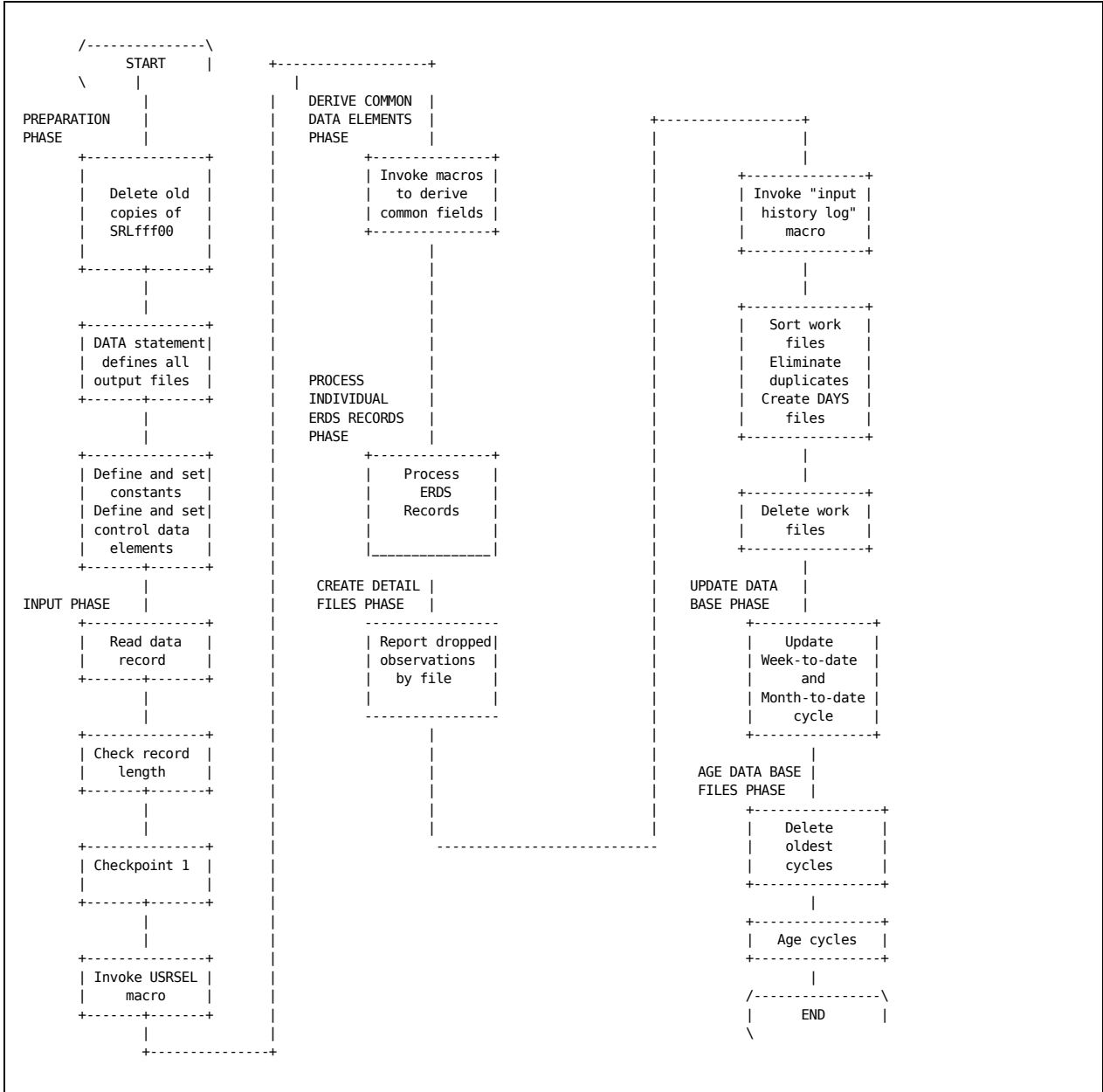


Figure 9-1. Processing Flow Diagram

## 9.2 Daily Update Processing Flow

The DAY070 step of the DAILY job processes data from the Error Recording Data Set (ERDS). The ERDS contains records created by the operating system from data captured by hardware or software whenever an error or other noteworthy event occurs.

Step DAY070 consists of the following phases:

- 1 - Preparation Phase
- 2 - Input Phase
- 3 - Decoding Phase
- 4 - Data Input Phase
- 5 - Data Summarization Phase
- 6 - Termination Phase

### 9.2.1 Preparation Phase

During the Preparation Phase the CA MICS System Reliability Analyzer defines its output files with a DATA statement. Constants are defined and set to their initial values along with data elements and formats.

### 9.2.2 Input Phase

During the Input Phase the CA MICS System Reliability Analyzer reads the ERDS data from either MVS, VM or VSE or a combination thereof. At End-of-File, a count of statistics is printed. This count will indicate total records kept, total short records deleted, total records options deleted and total records data ranges deleted.

### 9.2.3 Decoding Phase

During the Decoding Phase, the CA MICS System Reliability Analyzer checks the record type and subtype and transfers control to the appropriate processing code.

### 9.2.4 Data Input Phase

During the Data Input Phase, the CA MICS System Reliability Analyzer reads the data elements from the various record types contained in ERDS and performs computations to scale and accumulate data.

### 9.2.5 Data Summarization Phase

The DAY070 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 Termination Phase

At the end of DAY070 processing a report is written to the SASLOG that provides statistics of the record types that were read by the CA MICS System Reliability Analyzer.

The SRL ERDS Record Summary Report shows the various record types that were processed by the SRL Analyzer for every DD that contained data that was input to the DAY070 step.

```
FOR DDNAME= SYSB , SYSID= S008 , CPUMODEL= 3090-300E
```

```
RECORDS WERE PROCESSED FOR:
CPU SERIAL= 172567 , MODEL= 3090 , SCP= MXA

NUMBER OF INPUT RECORDS -----: 4714
MACHINE CHECK RECORDS (MCH) --: 20
CHANNEL ERROR RECORDS:
  CHANNEL CHECK (CCH) -----: 4
  SUBCHANNEL LOGOUT (SLH) ---: 3
  CHANNEL REPORT WORD (CRW) -: 20
OUTBOARD RECORDER (OBR):
  UNIT CHECK RECORDS -----: 366
  TCAM RECORDS -----: 0
  VTAM RECORDS -----: 25
  DYNAMIC PATHING -----: 2
SOFTWARE ERROR (SFW) RECORDS:
  SFW DETECTED SFW ERRORS ---: 60
  HDW DETECTED SFW ERRORS ---: 11
  OPERATOR DETECTED ERRORS --: 3
  HDW DETECTED HDW ERRORS ---: 2
  LOST RECORD SUMMARY -----: 1
  SYMPTOM RECORD SUMMARY ----: 59
SYSTEM INITIALIZATION (IPL):
  INITIAL PROGRAM LOAD -----: 0
RECONFIGURATION (DDR):
  DYNAMIC DEVICE RECONFIG ---: 2
MISSING INTERRUPT HANDLER:
  MISSING INTERRUPT (70) ----: 1
  MISSING INTERRUPT (71) ----: 326
SYSTEM TERMINATION (EOD):
  EOD FROM Z EOD COMMAND ----: 1
  MCH FORCED TERMINATION ----: 1
  IOS HOT I/O (WAIT STATE) --: 2
NON-STANDARD (MDR) RECORDS:
  SVC 91 INITIATED -----: 653
  MISC. DATA RECORD -----: 794
A(X) RECORDS:
  MACHINE CHECK FRAMES (MCF)-: 1
  EXTERNAL TIME REFERENCE ---: 1
  ASYNCH NOTIFICATION (A3) --: 1
C(X) RECORDS:
  CHANNEL CHECK FRAMES (CCF)-: 2
OTHER/UNKNOWN RECORD TYPES ---: 1
```

Figure 9-2. SRL ERDS Record Summary Report



# Chapter 10: MODIFICATION

---

The CA MICS System Reliability Analyzer is tailored primarily through the use of options and parameters, file and data element tailoring, and exits. This chapter provides checklists for changing the product's parameters and describes the exits that are available during the DAILY update processing.

This section contains the following topics:

- [10.1 Parameter Modification](#) (see page 313)
- [10.2 Standard User Exits](#) (see page 317)
- [10.3 File and Data Element Customization](#) (see page 330)
- [10.4 Testing Modifications to the Analyzer Product](#) (see page 331)
- [10.5 Change the Number of Work Files for DAY070](#) (see page 332)
- [10.6 Enable Internal Step Restart](#) (see page 335)
- [10.7 Implement Incremental Update](#) (see page 337)

## 10.1 Parameter Modification

Numerous parameters control the operation of the CA MICS System Reliability Analyzer. Often, you can customize the product by altering the same parameters that you used to install the product. This section provides information and checklists for modifying the CA MICS System Reliability Analyzer through parameter modification. The following topics are addressed:

- 1 - Add or Change Elements in a File
- 2 - Alter Derived Element Support
- 3 - Change Active Time-spans for an Element
- 4 - Alter the Active Time-spans for a File
- 5 - Parameter Modification Checklists

## 10.1.2 Alter Derived Element Support

Derived or computed elements (such as averages and percents) can either be kept in the database or computed when the elements are required. Computing these elements only when they are required can reduce the amount of DASD needed for the database. The statements in SRLGENIN that affect this option are COMPOPT and FOPT. These override the defaults set in CPLXDEF. After modifying these options in SRLGENIN, you must run SRLCGEN. Follow the steps in Checklist 1 in Section 10.1.7 to complete this task.

See Sections 4.2.4.1.3 and 4.2.4.2.2 of the System Modification Guide for information on COMPOPT and FOPT, and Section 2.3.1.8 of the PIOM for more information on CPLXDEF.

## 10.1.3 Change Active Time-spans for an Element

The active time-spans for an element can be altered by updating the element NAME or NAMX statement in the SRLGENIN member of sharedprefix.MICS.PARMS. An element can be turned off completely and thereby removed from the CA MICS System Reliability Analyzer. This can be a useful way to reduce the size of your data base. Be very careful when altering the active time-spans for an element, because it is possible to eliminate data from higher time-spans (the element will become a missing value) if only the DETAIL or DAYS time-span is inactivated. After the change is made to the NAME or NAMX statement, you must run SRLCGEN.

Follow the steps in Checklist 1 in Section 10.1.7 to complete this task.

See Section 4.2.4.3 of the System Modification Guide for more information about these statements.

### 10.1.4 Alter the Active Time-spans for a File

The active time-spans and the status of the audit and history collection for a file can be altered by modifying the FILE statement for that file. You may also need to update the DBMODEL member of prefix.MICS.PARMS. After the change has been made, you must run SRLCGEN and CYCLEGEN in each unit that has the CA MICS System Reliability Analyzer installed. If the status of the audit and history collection for a file has been changed, then the WEEKLY and MONTHLY JCL will have to be regenerated. Follow the steps in Checklist 1 in Section 10.1.7 to complete this task.

See Section 4.2.4.2 of the System Modification Guide for more information about the FILE statement, and see Section 7.3.5 of this guide for information on DBMODEL.

### 10.1.5 Parameter Modification Checklists

```
***** * * *
CHECKLIST 1 - UPDATING SRLGENIN      * * *
*****
```

Modification of sharedprefix.MICS.GENLIB(SRLGENIN) is required when a file or element is turned on or off in a time-span, the status of archive or history files must be changed, the OPTIONS statement is changed, or any other complex modification is made to the System Reliability Analyzer files.

- \_\_\_ 1. Save a copy of sharedprefix.MICS.GENLIB(SRLGENIN) in sharedprefix.MICS.LOCALMOD.CNTL for recovery purposes.
- \_\_\_ 2. Update sharedprefix.MICS.GENLIB(SRLGENIN) using IEBUPDTE to apply the change.
- \_\_\_ 3. Submit sharedprefix.MICS.CNTL(SRLCGEN) to implement the change.
- \_\_\_ 4. If a file is enabled or disabled for a time-span, run CYCLEGEN in each unit that has SRL installed.
- \_\_\_ 5. If the archive or history file status for a file is changed, run GDGSGEN in each unit that has SRL installed.

- \_\_\_ 6. If the archive or history file status for a file is changed, the WEEKLY and MONTHLY job streams must be regenerated to add or remove the archive or history DD statements based upon the file status. Update prefix.MICS.PARMS(JCLGENU) so that it contains the single line:

WEEKLY MONTHLY

Submit prefix.MICS.CNTL(JCLGENU) in each unit to implement the changes and create a new WEEKLY and MONTHLY job stream.

```
*****  
*                                     *  
*      CHECKLIST 2 - MODIFYING SRLOPS      *  
*                                     *  
*****
```

Modification of member SRLOPS of prefix.MICS.PARMS is required when certain configuration changes are made to the unit specifications for the CA MICS System Reliability Analyzer. Refer to Section 7.3.1 of this guide for detailed information on these parameters.

- \_\_\_ 1. Update prefix.MICS.PARMS(SRLOPS).
- \_\_\_ 2. Submit prefix.MICS.CNTL(SRLPGEN) to implement the changes.
- \_\_\_ 3. Check that SRLPGEN completes successfully with a completion code of 0 and that the MICSLOG contains no serious error messages.

```

*****
*                                     *
*   CHECKLIST 3 - MODIFYING INPUTSRL   *
*                                     *
*****

```

The member INPUTSRL contained in prefix.MICS.PARMS contains the names of data sets that are to be processed by the System Reliability Analyzer. INPUTSRL may need to be updated to add the data set name that contains the ERDS data from the new system.

- \_\_\_ 1. Update prefix.MICS.PARMS(INPUTSRL)
- \_\_\_ 2. Update prefix.MICS.PARMS(JCLGENU) so that it contains the single line:
 

DAILY
- \_\_\_ 3. Submit prefix.MICS.CNTL(JCLGENU) to implement the changes and create a new DAILY job stream.

## 10.2 Standard User Exits

A number of user exit points are defined within CA MICS. Each of these points corresponds to a position in the CA MICS logic where user modification:

- o Is likely to occur, based on our experience.
- o Is unlikely to compromise CA MICS Data Base and operational integrity.
- o Is relatively easy to document and understand.

Using the CA MICS exit facilities to modify CA MICS logic is the safest method of system modification. If you follow the material in this section, you can perform a substantial amount of system customization without causing any undue ramifications when you apply standard vendor maintenance to the product.

Before implementing an exit, the System Administrator should determine whether the required modification can be accomplished by means of parameter modification or file tailoring. Full details of CA MICS exit processing are described in the CA MICS System Modification Guide, Section 4.3, User Exit Facilities.

The System Reliability Analyzer uses the "direct" form of exit invocation. For more information on this method of exit invocation, please refer to the CA MICS System Modification Guide, Section 4.3.1.1.

The following sections identify the user exits available for CA MICS System Reliability Analyzer processing, provide a general overview of the product's processing logic, and describe in detail each of the user exits.

- 1 - Available User Exits
- 2 - General Exits
- 3 - Output Processing Exits

### 10.2.1 Available User Exits

There are two types of user exits that you can use to modify CA MICS logic: general exits and product exits.

#### GENERAL EXITS

The general exits are used by all installed products. They allow the insertion of user exit routines that extend CA MICS logic.

## PRODUCT EXITS

Product exits apply only to the product for which they are provided. They are classified as to their purpose and are comprised of input, output, parameter-related, and special exits.

The output exits are used when data is being written to the CA MICS Data Base.

The parameter-related exits are also user exits, but are defined as part of the standard CA MICS installation process and are normally associated with other parameters or options. For example, the Account Code Routine is a user exit routine for entering the values for account codes that were defined in a separate but related installation.

Special exits are those that are classified as neither input, output, nor parameter-related. The calculation of a user-defined variable is an example of a type of special exit.

The user exits for the CA MICS System Reliability Analyzer are identified below:

### General Exits

USRSEL - File Processing Selection  
USRIDL - Checkpoint File Inspection

### Product Output Exits

USRSSM - Exit prior to output of DETAIL.SRLSSM file  
USRS\_UM - Exit prior to output of DETAIL.SRL\_UM file  
USRSSD - Exit prior to output of DETAIL.SRLSSD file  
USRS\_UD - Exit prior to output of DETAIL.SRL\_UD file  
USRSPRL - Exit prior to output of DETAIL.SRLPRL file  
USRSTR - Exit prior to output of DETAIL.SRLSTR file  
USRSCRL - Exit prior to output of DETAIL.SRLCRL file  
USRSDRL - Exit prior to output of DETAIL.SRLDRL file  
USRSRNC - Exit prior to output of DETAIL.SRLRNC file

- USRSMRL - Exit prior to output of DETAIL.SRLMRL file
- USR SXRL - Exit prior to output of DETAIL.SRLXRL file
- USRSTRL - Exit prior to output of DETAIL.SRLTRL file
- USRSDMR - Exit prior to output of DETAIL.SRLDMR file
- USRSMMR - Exit prior to output of DETAIL.SRLMMR file
- USRNTC - Exit prior to output of DETAIL.SRLNTC file

Please refer to Section 4.3.1 of the CA MICS System Modification Guide for guidelines on coding exits.

### 10.2.2 General Exits

General exits are invoked for all products. They are presented here to identify the special uses available for the CA MICS System Reliability Analyzer.

Each exit description includes the name and title, a description of its purpose and when it is invoked. It also shows which data elements are available, and any special considerations.

```
+-----+
| U S R S E L | - File Processing Selection Exit
+-----+
```

DESCRIPTION: USRSEL allows access to each record processed by any product. It can be used to alter input data formats or to select or exclude specific records.

INVOCATION: This exit gains control after a detail input record has been read and before the record formats have been defined.

ACCOUNTING INTERFACE: No interface is provided.

USES: This exit may be used to delete records before processing or to alter the data, such as SMF SYSID.

ELEMENTS AVAILABLE:

CODING RESTRICTIONS: None

SPECIAL NOTES: Because this exit is used by all products, the source code is located in member #BASEXIT of the appropriate source libraries. For example the USRSEL exit may look like the following:

```
MACRO _USRSEL
IF ROUTINE='DYSRLFMT' THEN DO;
  (exit code here)
END;
ELSE IF ROUTINE='DYSMFFMT' THEN DO;
  (exit code here)
END;
%
```

```
+-----+
| U S R I H L | - Examine Input History Log
+-----+
```

DESCRIPTION: USRIHL permits inspection of the detail time-span checkpoint file immediately following processing of all input records in the format routine.

INVOCATION: This exit is referenced in code that passes the detail time-span checkpoint file. This code reads the checkpoint file as an integrity check on that file, and in the process allows the user to inspect the file's contents.

ROUTINE - the name of the routine that invoked this exit. To use this exit in the CA MICS System Reliability Analyzer, test for:

```
ROUTINE = 'DYSRLFMT'
ORGSYSID - original SYSID as defined in SRLOPS
ENDTS    - time when the record was written to ERDS
```

ACCOUNTING INTERFACE: No interface is provided.

USES: This exit is normally not of use to the CA MICS System Reliability Analyzer.

ELEMENTS AVAILABLE: All elements in the ADMIHL file.

CODING RESTRICTIONS: None

SPECIAL NOTES: Because this exit is used by all products, the source code is located in member #BASEXIT of the appropriate source libraries. For example the USRSEL macro may look like the following:

```
MACRO _USRSEL
IF ROUTINE='DYSRLFMT' THEN DO;
  (exit code here)
END;
ELSE IF ROUTINE='DYSMFFMT' THEN DO;
  (exit code here)
END;
%
```

### 10.2.3 Output Processing Exits

This section describes the standard user exits invoked during the CA MICS System Reliability Analyzer's output phase of the daily update processing flow.

Each exit description includes the user exit name and title, a description of its purpose, and when it is invoked. It also lists the data elements available and notes special considerations, if any.

```
+-----+
| U S R S S M | - Exit prior to output of the DETAIL.SRLSSM
+-----+ file
```

DESCRIPTION: USRSSM allows access to the data elements used to build the records in the DETAIL.SRLSSM file. This file contains information from the type 4x ERDS records.

INVOCATION: This exit gains control immediately prior to the output of a record to the DETAIL.SRLSSM file.

USES: This exit can be used to add or change data elements being written to the DETAIL.SRLSSM file. Observations being written out can also be deleted based on selection criteria.

ELEMENTS AVAILABLE: All the elements that are turned on in SRLGENIN for the SSM file at the DETAIL time span.

CODING RESTRICTIONS: None

```
+-----+
| U S R S _ U D | - Exit prior to output of the DETAIL.SRL_UD
+-----+ suspend file
```

DESCRIPTION: USRS\_UD allows access to the data elements used to build the records in the DETAIL.SRL\_UD file. This file contains information regarding user programs that have terminated abnormally. This is a suspend file.

INVOCATION: This exit gains control immediately prior to the output of a record to the DETAIL.SRL\_UD file.

USES: This exit can be used to add or change data elements being written to the DETAIL.SRL\_UD file. Observations being written out can also be deleted based on selection criteria.

ELEMENTS AVAILABLE: All the elements that are turned on in SRLGENIN for the \_UD file at the DETAIL time span.

CODING RESTRICTIONS: None

```
+-----+
| U S R S _ U M | - Exit prior to output of the DETAIL.SRL_UM
+-----+ file
```

DESCRIPTION: USRS\_UM allows access to the data elements used to build the records in the DETAIL.SRL\_UM file. This file contains information regarding user programs that have terminated abnormally.

INVOCATION: This exit gains control immediately prior to the output of a record to the DETAIL.SRL\_UM file.

USES: This exit can be used to add or change data elements being written to the DETAIL.SRL\_UM file. Observations being written out can also be deleted based on selection criteria.

ELEMENTS AVAILABLE: All the elements that are turned on in SRLGENIN for the \_UM file at the DETAIL time span.

CODING RESTRICTIONS: None

+-----+  
| U S R S S D | - Exit prior to output of the DETAIL.SRLSSD  
+-----+ file

DESCRIPTION: USRSSD allows access to the data elements used to build the records in the DETAIL.SRLSSD file. This file contains information regarding system program that have terminated abnormally.

INVOCATION: This exit gains control immediately prior to the output of a record to the DETAIL.SRLSSD file.

USES: This exit can be used to add or change data elements being written to the DETAIL.SRLSSD file. Observations being written out can also be deleted based on selection criteria.

ELEMENTS AVAILABLE: All the elements that are turned on in SRLGENIN for the SSD file at the DETAIL time span.

CODING RESTRICTIONS: None

+-----+  
| U S R S P R L | - Exit prior to output of the DETAIL.SRLPRL  
+-----+ file

DESCRIPTION: USRSPRL allows access to the data elements used to build the records in the DETAIL.SRLPRL file. This file contains information regarding machine failure for errors involving the CPU or processor or external damage.

INVOCATION: This exit gains control immediately prior to the output of a record to the DETAIL.SRLPRL file.

USES: This exit can be used to add or change data elements being written to the DETAIL.SRLPRL file. Observations being written out can also be deleted based on selection criteria.

ELEMENTS AVAILABLE: All the elements that are turned on in SRLGENIN for the PRL file at the DETAIL time span.

CODING RESTRICTIONS: None

---

```
+-----+
| U S R S S T R | - Exit prior to output of the DETAIL.SRLSTR
+-----+ file
```

DESCRIPTION: USRSSTR allows access to the data elements used to build the records in the DETAIL.SRLSTR file. This file contains information regarding machine failure for errors involving system storage or the processor storage protect key facilities.

INVOCATION: This exit gains control immediately prior to the output of a record to the DETAIL.SRLSTR file.

USES: This exit can be used to add or change data elements being written to the DETAIL.SRLSTR file. Observations being written out can also be deleted based on selection criteria.

ELEMENTS AVAILABLE: All the elements that are turned on in SRLGENIN for the STR file at the DETAIL time span.

CODING RESTRICTIONS: None

```
+-----+
| U S R S C R L | - Exit prior to output of the DETAIL.SRLCRL
+-----+ file
```

DESCRIPTION: USRSCRL allows access to the data elements used to build the records in the DETAIL.SRLCRL file. This file contains information regarding channel failures.

INVOCATION: This exit gains control immediately prior to the output of a record to the DETAIL.SRLCRL file.

USES: This exit can be used to add or change data elements being written to the DETAIL.SRLCRL file. Observations being written out can also be deleted based on selection criteria.

ELEMENTS AVAILABLE: All the elements that are turned on in SRLGENIN for the CRL file at the DETAIL time span.

CODING RESTRICTIONS: None

```
+-----+
| U S R S D R L | - Exit prior to output of the DETAIL.SRLDRL
+-----+ file
```

DESCRIPTION: USRSDRL allows access to the data elements used to build the records in the DETAIL.SRLDRL file. This file contains information regarding DASD failures.

INVOCATION: This exit gains control immediately prior to the output of a record to the DETAIL.SRLDRL file.

USES: This exit can be used to add or change data elements being written to the DETAIL.SRLDRL file. Observations being written out can also be deleted based on selection criteria.

ELEMENTS AVAILABLE: All the elements that are turned on in SRLGENIN for the DRL file at the DETAIL time span.

CODING RESTRICTIONS: None

```
+-----+
| U S R S R N C | - Exit prior to output of the DETAIL.SRLRNC
+-----+ file
```

DESCRIPTION: USRSRNC allows access to the data elements used to build the records in the DETAIL.SRLRNC file. This file contains information regarding significant error conditions or events that have occurred on the system.

INVOCATION: This exit gains control immediately prior to the output of a record to the DETAIL.SRLRNC file.

USES: This exit can be used to add or change data elements being written to the DETAIL.SRLRNC file. Observations being written out can also be deleted based on selection criteria.

ELEMENTS AVAILABLE: All the elements that are turned on in SRLGENIN for the RNC file at the DETAIL time span.

CODING RESTRICTIONS: None

---

```
+-----+
| U S R S M R L | - Exit prior to output of the DETAIL.SRLMRL
+-----+ file
```

DESCRIPTION: USRSMRL allows access to the data elements used to build the records in the DETAIL.SRLMRL file. This file contains information regarding failures and usage information on magnetic tape devices.

INVOCATION: This exit gains control immediately prior to the output of a record to the DETAIL.SRLMRL file.

USES: This exit can be used to add or change data elements being written to the DETAIL.SRLMRL file. Observations being written out can also be deleted based on selection criteria.

ELEMENTS AVAILABLE: All the elements that are turned on in SRLGENIN for the MRL file at the DETAIL time span.

CODING RESTRICTIONS: None

```
+-----+
| U S R S X R L | - Exit prior to output of the DETAIL.SRLXRL
+-----+ file
```

DESCRIPTION: USRSXRL allows access to the data elements used to build the records in the DETAIL.SRLXRL file. This file contains information regarding failures for unit record devices.

INVOCATION: This exit gains control immediately prior to the output of a record to the DETAIL.SRLXRL file.

USES: This exit can be used to add or change data elements being written to the DETAIL.SRLXRL file. Observations being written out can also be deleted based on selection criteria.

ELEMENTS AVAILABLE: All the elements that are turned on in SRLGENIN for the XRL file at the DETAIL time span.

CODING RESTRICTIONS: None

+-----+  
| U S R S T R L | - Exit prior to output of the DETAIL.SRLTRL  
+-----+ file

DESCRIPTION: USRSTRL allows access to the data elements used to build the records in the DETAIL.SRLTRL file. This file contains information regarding failures for teleprocessing devices.

INVOCATION: This exit gains control immediately prior to the output of a record to the DETAIL.SRLTRL file.

USES: This exit can be used to add or change data elements being written to the DETAIL.SRLTRL file. Observations being written out can also be deleted based on selection criteria.

ELEMENTS AVAILABLE: All the elements that are turned on in SRLGENIN for the TRL file at the DETAIL time span.

CODING RESTRICTIONS: None

+-----+  
| U S R S D M R | - Exit prior to output of the DETAIL.SRLDMR  
+-----+ file

DESCRIPTION: USRSDMR allows access to the data elements used to build the records in the DETAIL.SRLDMR file. This file contains information regarding failures and usage for direct access storage volumes.

INVOCATION: This exit gains control immediately prior to the output of a record to the DETAIL.SRLDMR file.

USES: This exit can be used to add or change data elements being written to the DETAIL.SRLDMR file. Observations being written out can also be deleted based on selection criteria.

ELEMENTS AVAILABLE: All the elements that are turned on in SRLGENIN for the DMR file at the DETAIL time span.

CODING RESTRICTIONS: None

---

```
+-----+
| U S R S M M R | - Exit prior to output of the DETAIL.SRLMMR
+-----+ file
```

DESCRIPTION: USRSMMR allows access to the data elements used to build the records in the DETAIL.SRLMMR file. This file contains information regarding failures and usage for magnetic tape volumes.

INVOCATION: This exit gains control immediately prior to the output of a record to the DETAIL.SRLMMR file.

USES: This exit can be used to add or change data elements being written to the DETAIL.SRLMMR file. Observations being written out can also be deleted based on selection criteria.

ELEMENTS AVAILABLE: All the elements that are turned on in SRLGENIN for the MMR file at the DETAIL time span.

CODING RESTRICTIONS: None

```
+-----+
| U S R S N T C | - Exit prior to output of the DETAIL.SRLNTC
+-----+ file
```

DESCRIPTION: USRSNTC allows access to the data elements used to build the records in the DETAIL.SRLNTC file. This file contains information regarding failures on devices connected to communication controllers.

INVOCATION: This exit gains control immediately prior to the output of a record to the DETAIL.SRLNTC file.

USES: This exit can be used to add or change data elements being written to the DETAIL.SRLNTC file. Observations being written out can also be deleted based on selection criteria.

ELEMENTS AVAILABLE: All the elements that are turned on in SRLGENIN for the NTC file at the DETAIL time-span.

CODING RESTRICTIONS: None

## 10.3 File and Data Element Customization

A great amount of product tailoring can be performed by updating the product's parameters as described in Chapter 7 of this guide. That method addresses most of the data selection criteria. For example you can control what kind of ERDS information you wish to keep by setting appropriate options in SRLOPS.

Tailoring the data base, as explained in Chapter 6 of the CA MICS System Modification Guide, is at the next level of detail. For example, deleting certain data elements of a file, adding others, creating a file in time-spans that are not normally supported, and modifying the CA MICS archive process are not changes that can conveniently be made by the novice user.

Such changes to CA MICS are not to be taken lightly. The integrity and usability of the entire CA MICS Data Base can be compromised by such changes. Therefore, thorough testing and verification is an absolute must.

Following the guidelines in Chapter 6 of the CA MICS System Modification Guide will help you tailor your CA MICS Data Base. If, after you read that chapter, you still have a question on the feasibility or practicality of some intended change, please call the CA MICS Product Support Group for assistance.

## 10.4 Testing Modifications to the Analyzer Product

When you test modifications to the CA MICS System Reliability Analyzer, you must do so in either a test unit or a test complex. If the modification requires a component generation (SRLCGEN) to implement, use a test complex. Use a test unit if there is no test complex or if the change does not require an SRLCGEN. If you do not have a test complex and would like to create one, please refer to Administrative Newsletter AN-00089 "Creating a CA MICS Test Environment" for a checklist on how to create a test complex.

To test modifications, follow the steps below:

1. Make as few changes as possible. The simpler the change, the easier the comparison of "before" and "after" results.
2. Run the proper generation job(s) as required and as described in other sections.
3. Run update job(s) as required and as described in other sections.
4. Validate the data by comparing numbers of observations, relevant elements, and selected observations in the "before" and "after" runs.

## 10.5 Change the Number of Work Files for DAY070

To change the number of work files used in the CA MICS System Reliability Analyzer processing in Step DAY070, follow the checklist provided below for each unit.

See Section 7.3.2 of this guide for a detailed description of the statement syntax.

```
*****  
*                                                                 *  
*           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.

## 10.6 Enable Internal Step Restart

To enable the internal step restart in the CA MICS System Reliability Analyzer, follow the checklist provided below:

See Section 7.3.2 of this guide for a detailed description of the statement syntax.

```
*****
*                                     *
*           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.

## 10.7 Implement Incremental Update

To implement incremental update in the CA MICS System Reliability Analyzer, follow the checklist provided below:

See Section 7.3.2 of this guide for a detailed description of the statement syntax.

```
*****
*                                     *
*           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.



# Appendix A: MESSAGES

---

## Messages

This appendix lists all messages generated by the CA MICS System Reliability Analyzer. Some messages are generated during the processing of the control statements, while others are caused by various conditions in the data found during the processing. The messages are listed in ascending numerical sequence and include the full text of the message, the type, the reason for the message, appropriate user action, and applicable references to documentation.

The following type codes are used to categorize the messages:

- Informational indicates a note that documents a CA MICS option or potentially important feature in the data.
- Warning indicates a condition in either the data or the control statements that does not affect the CA MICS System Reliability Analyzer's operation, but that may lead to unexpected results.
- Error indicates that a problem has been encountered with a control statement that will prevent a successful run of the product. Execution is stopped after all control statements are processed.

The message text often includes references to information that is contained in a control statement or values of permanent or temporary variables created during CA MICS processing. In the description below, the message text contains a word beginning with a percent sign (%), which indicates that a value will be substituted into the text at execution time. For example, message SRL00018 reads as follows:

```
>ERR>SYSID NOT 1 TO 4 CHARACTERS IN LENGTH.  SYSID
= %SYSID
```

A possible version of the printed message in the MICSL0G might be:

```
>ERR>SYSID NOT 1 TO 4 CHARACTERS IN LENGTH.  SYSID
      = SYS008
```

The messages are divided into three groups:

SRLPGEN Messages: These messages are issued when an abnormal condition is encountered during the SRLPGEN process. These messages have the prefix of SRL000.

DYSRLFMT Messages: These messages are issued when an abnormal condition is encountered during the DAILY processing of ERDS data. These messages have the prefix of SRL001.

Reports Messages: These messages are issued when an abnormal condition is encountered during the Standard Analysis Reports generation. These messages have the prefix of SRL002.

```
+-----+
| S R L 0 0 0 0 1 |
+-----+
```

TEXT: SRL0PS MEMBER INPUT DSN=%X VOL=SER=%PVOL.

TYPE: Informational

REASON: Start of SRLPGEN processing.

ACTION: None

REFERENCES: None

```
+-----+  
| S R L 0 0 0 0 2 |  
+-----+
```

TEXT: >ERR>INPUTSRL DDNAME SPECIFIED MORE THAN ONCE FOR  
DDNAME %INPNM.

TYPE: Error

REASON: The INPUTSRL member contains the DDNAME mentioned  
in the error message more than once.

ACTION: Ensure that the DDNAME in INPUTSRL member is not  
specified twice and run SRLPGEN again.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 0 3 |  
+-----+
```

TEXT: >ERR>NO VALID INPUTSRL DD STATEMENTS PRESENT.

TYPE: Error

REASON: There are no DDNAMEs defined in member INPUTSRL.

ACTION: Review the INPUTSRL member and specify DDNAMEs as  
defined in SRLOPS and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 0 4 |  
+-----+
```

TEXT: >ERR>KEYWORD NOT RECOGNIZED. KEYWORD = %KEYWD1.

TYPE: Error

REASON: The Keyword being specified in SRLOPS is not  
supported.

ACTION: Check the keyword for spelling and correct.  
Rerun SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 0 5 |  
+-----+
```

TEXT: >ERR>NO CMOD PARAMETERS SPECIFIED.

TYPE: Error

REASON: A CMOD statement has been specified in SRLOPS but no parameters were given.

ACTION: Specify all the parameters required for the CMOD statement and run SRLPGEN or remove CMOD statement.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 0 6 |  
+-----+
```

TEXT: >ERR>NO CMOD SEVERITY SPECIFIED.

TYPE: Error

REASON: A CMOD statement has been specified but the severity has not been specified.

ACTION: Specify all the parameters required for the CMOD statement and run SRLPGEN or remove the CMOD statement.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 0 7 |  
+-----+
```

TEXT: >ERR>LENGTH OF NAME GREATER THAN 8 CHARACTERS. ID = %KEYWD2.

TYPE: Error

REASON: Name length greater than 8 characters is not valid.

ACTION: Specify a length of 8 characters or less for this keyword and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 0 8 |  
+-----+
```

TEXT: >ERR>LENGTH OF SEVERITY GREATER THAN 1 CHARACTER.  
ID = %MODSEV.

TYPE: Error

REASON: The severity length cannot be greater than 1 character.

ACTION: Change this value to be 1 character in length.  
Run SRLPGEN. Valid values are C,I and W.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 0 9 |  
+-----+
```

TEXT: >ERR>UNIDENTIFIED SEVERITY CODE = %MODSEV.

TYPE: Error

REASON: The severity code is not recognized.

ACTION: Check the severity code specified for validity and correct. Severity code must be C,I or W.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 1 0 |  
+-----+
```

TEXT: >ERR>MODULE HAS ALREADY BEEN SPECIFIED WITH NEW ID  
= %KEYWD2.

TYPE: Error

REASON: The module has already been specified on another  
CMOD statement.

ACTION: Correct the module name and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 1 1 |  
+-----+
```

TEXT: >ERR>THE CRITICAL MODULE LIMIT OF %XC HAS BEEN  
EXCEEDED.  
>ERR>PLEASE NOTIFY THE CA MICS PRODUCT SUPPORT  
GROUP.  
>ERR>ARRAYS SIZES FOR MN AND MD MUST BE  
INCREASED.

TYPE: Error

REASON: The array defined for Critical Module has been  
exceeded. CA MICS Product Support will help you  
make a change to increase the size of the array to  
meet your site's requirements. The default size  
of the array is 150.

ACTION: Contact CA MICS Product Support

REFERENCES: None

```
+-----+  
| S R L 0 0 0 1 2 |  
+-----+
```

TEXT: >ERR>NO CJOB PARAMETERS SPECIFIED.

TYPE: Error

REASON: A CJOB statement has been specified but no  
parameters have been specified.

ACTION: Specify all the parameters required for the CJOB statement and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 1 3 |  
+-----+
```

TEXT: >ERR>NO CJOB SEVERITY SPECIFIED.

TYPE: Error

REASON: A CJOB statement has been specified but the severity has not been specified.

ACTION: Specify all the parameters required for the CJOB statement and run SRLPGEN or remove the CJOB statement.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 1 4 |  
+-----+
```

TEXT: >ERR>LENGTH OF SEVERITY GREATER THAN 1 CHARACTER.  
ID = %JOBSEV.

TYPE: Error

REASON: The severity length cannot be greater than 1 character.

ACTION: Change this value to be 1 character in length.  
Rerun SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 1 5 |  
+-----+
```

TEXT: >ERR>UNIDENTIFIED SEVERITY CODE = %JOBSEV.

TYPE: Error

REASON: The severity code is not recognized.

ACTION: Check the severity code specified for validity and correct. Run SRLPGEN. Severity code must be C, W or I.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 1 6 |  
+-----+
```

TEXT: >ERR>JOB %KEYWD2 HAS ALREADY BEEN DEFINED.

TYPE: Error

REASON: The job has already been specified on another CJOB statement.

ACTION: Correct the job name and rerun SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 1 7 |  
+-----+
```

TEXT: >ERR>THE CRITICAL JOB LIMIT OF %XC HAS BEEN EXCEEDED.  
>ERR>PLEASE NOTIFY THE CA MICS PRODUCT SUPPORT GROUP.  
>ERR>ARRAYS SIZES FOR JN AND JD MUST BE INCREASED.

TYPE: Error

REASON: The array defined for Critical Job has been exceeded. CA MICS Product Support will help you make a change to increase the size of the array to

meet your site's requirements. The default size of the array is 150.

ACTION: Contact CA MICS Product Support.

REFERENCES: None

```
+-----+  
| S R L 0 0 0 1 8 |  
+-----+
```

TEXT: >ERR>SYSID NOT 1 TO 4 CHARACTERS IN LENGTH. SYSID  
= %KEYWD2

TYPE: Error

REASON: SYSID specified cannot be greater than 4 characters.

ACTION: Correct the SYSID value.

REFERENCES: CA MICS SRL Guide, Chapter 7.

```
+-----+  
| S R L 0 0 0 1 9 |  
+-----+
```

TEXT: >ERR>SYSID %KEYWD2 HAS ALREADY BEEN DEFINED IN AN  
OPTIONS STATEMENT.

TYPE: Error

REASON: The SYSID cannot be specified more than once.

ACTION: Remove the duplicate specification of SYSID.

REFERENCES: CA MICS SRL Guide, Chapter 7.

```
+-----+  
| S R L 0 0 0 2 0 |  
+-----+
```

TEXT: >ERR>THE MAXIMUM SYSID LIMIT OF %XC HAS BEEN  
REACHED. PLEASE CONTACT THE CA MICS PRODUCT

SUPPORT GROUP.

TYPE: Error

REASON: The array defined for SYSID has been exceeded.  
CA MICS Product Support will help you make a  
change to increase the size of the array to meet  
your site's requirements.

ACTION: Contact CA MICS Product Support.

REFERENCES: None

```
+-----+  
| S R L 0 0 0 2 1 |  
+-----+
```

TEXT: >ERR>DDNAME %KEYWD3 IS NOT 1 TO 8 CHARACTERS IN  
LENGTH.

TYPE: Error

REASON: The DDNAME specified in SRLOPS must be between  
1 and 8 characters.

ACTION: Correct the DDNAME and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 2 2 |  
+-----+
```

TEXT: >ERR>THE DDNAME %DDNAME SPECIFIED IN THE OPTIONS  
STATEMENT IS NOT DEFINED IN INPUTSRL.

TYPE: Error

REASON: The DDNAME that was defined in SRLOPS is not  
present in INPUTSRL member.

ACTION: Specify the DDNAME indicated in the message in the  
INPUTSRL member and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 2 3 |  
+-----+
```

TEXT: >ERR>THE GMT SPECIFICATION %GMTVAL IS NOT NUMERIC.

TYPE: Error

REASON: GMT offset specification must be numeric.

ACTION: Specify a numeric value and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 2 4 |  
+-----+
```

TEXT: >ERR>THE GMT SPECIFICATION OF %KEYWD4 IS NOT IN  
THE RANGE OF -12 TO +12 HOURS.

TYPE: Error

REASON: The value of GMT specification is not between -12  
and +12

ACTION: Correct the value and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 2 5 |  
+-----+
```

TEXT: >ERR>THE SPECIFICATION OF %LEVEL , MUST BE ONE  
OF THE FOLLOWING: ABEND, ACCEPT, OR WARN.

TYPE: Error

REASON: The specification of the action parameter on the  
OPTIONS statement is incorrect. This parameter  
can have one of the following: ABEND, ACCEPT, or  
WARN.

ACTION: Correct the value for this parameter and run  
SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 2 6 |  
+-----+
```

TEXT: >ERR>THE SS/NSS PARAMETER IS INCORRECTLY SPECIFIED  
AS %KEYWD1 .

TYPE: Error

REASON: An error was encountered parsing the Data  
selection options specified on the OPTIONS  
statement. The Data Selection options are  
positional.

ACTION: Check to see if the 1st positional parameter for  
the data selection parameter on the OPTIONS  
statement is specified correctly. Correct and  
run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 2 7 |  
+-----+
```

TEXT: >ERR>THE US/NUS PARAMETER IS INCORRECTLY SPECIFIED  
AS %KEYWD2.

TYPE: Error

REASON: An error was encountered parsing the data  
selection options specified on the OPTIONS  
statement. The data selection options are  
positional.

ACTION: Check to see if the 2nd positional parameter for  
the data selection parameter on the OPTIONS  
statement is specified correctly. Correct and  
run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 2 8 |  
+-----+
```

TEXT: >ERR>THE PR/NPR PARAMETER IS INCORRECTLY SPECIFIED  
AS %KEYWD3.

TYPE: Error

REASON: An error was encountered parsing the data  
selection options specified on the OPTIONS  
statement. The data selection options are  
positional.

ACTION: Check to see if the 3rd positional parameter for  
the data selection parameter on the OPTIONS  
statement is specified correctly. Correct and  
run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 2 9 |  
+-----+
```

TEXT: >ERR>THE CH/NCH PARAMETER IS INCORRECTLY SPECIFIED  
AS %KEYWD4.

TYPE: Error

REASON: An error was encountered parsing the data  
selection options specified on the OPTIONS  
statement. The data selection options are  
positional.

ACTION: Check to see if the 4th positional parameter for  
the data selection parameter on the OPTIONS  
statement is specified correctly. Correct and  
run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 3 0 |  
+-----+
```

+-----+

TEXT: >ERR>THE DA/NDA PARAMETER IS INCORRECTLY SPECIFIED  
AS %KEYWD5.

TYPE: Error

REASON: An error was encountered parsing the data  
selection options specified on the OPTIONS  
statement. The data selection options are  
positional.

ACTION: Check to see if the 5th positional parameter for  
the data selection parameter on the OPTIONS  
statement is specified correctly. Correct and  
run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

+-----+

| S R L 0 0 0 3 1 |

+-----+

TEXT: >ERR>THE MT/NMT PARAMETER IS INCORRECTLY SPECIFIED  
AS %KEYWD6.

TYPE: Error

REASON: An error was encountered parsing the data  
selection options specified on the OPTIONS  
statement. The data selection options are  
positional.

ACTION: Check to see if the 6th positional parameter for  
the data selection parameter on the OPTIONS  
statement is specified correctly. Correct and  
run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

+-----+

| S R L 0 0 0 3 2 |

+-----+

TEXT: >ERR>THE XR/NXR PARAMETER IS INCORRECTLY SPECIFIED  
AS %KEYWD7.

TYPE: Error

REASON: An error was encountered parsing the data selection options specified on the OPTIONS statement. The data selection options are positional.

ACTION: Check to see if the 7th positional parameter for the data selection parameter on the OPTIONS statement is specified correctly. Correct and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 3 3 |  
+-----+
```

TEXT: >ERR>THE TP/NTP PARAMETER IS INCORRECTLY SPECIFIED  
AS %KEYWD8.

TYPE: Error

REASON: An error was encountered parsing the Data selection options specified on the OPTIONS statement. The data selection options are positional.

ACTION: Check to see if the 8th positional parameter for the data selection parameter on the OPTIONS statement is specified correctly. Correct and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 3 4 |  
+-----+
```

TEXT: >ERR>THE DM/NDM PARAMETER IS INCORRECTLY SPECIFIED  
AS %KEYWD9.

TYPE: Error

REASON: An error was encountered parsing the Data selection options specified on the OPTIONS

statement. The data selection options are positional.

ACTION: Check to see if the 9th positional parameter for the data selection parameter on the OPTIONS statement is specified correctly. Correct and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 3 5 |  
+-----+
```

TEXT: >ERR>THE MM/MMM PARAMETER IS INCORRECTLY SPECIFIED AS %KEYWD10.

TYPE: Error

REASON: An error was encountered parsing the Data selection options specified on the OPTIONS statement. The Data Selection options are positional.

ACTION: Check to see if the 10th positional parameter for the data selection parameter on the OPTIONS statement is specified correctly. Correct and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 3 6 |  
+-----+
```

TEXT: >ERR>THE CPU MODEL NUMBER %CPUNUM MUST BE 4 NUMERIC CHARACTERS IN LENGTH.

TYPE: Error

REASON: The CPU model number specified on the CPUSYSID statement in SRLOPS is not 4 characters in length.

ACTION: Correct the CPU model number and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 3 7 |  
+-----+
```

TEXT: >ERR>THE CPU SERIAL NUMBER %KEYSER IS NOT 6 IN LENGTH.

TYPE: Error

REASON: The CPU serial number specified on the CPUSYSID statement in SRLOPS is not 6 characters in length.

ACTION: Correct the CPU serial number and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 3 8 |  
+-----+
```

TEXT: >ERR>THIS COMBINATION OF CPU MODEL NUMBER AND CPU SERIAL NUMBER %STR HAS ALREADY BEEN USED.

TYPE: Error

REASON: A unique combination of CPU model number and CPU serial number must be specified for every CPUSYSID statement.

ACTION: Specify a unique combination of CPU model number and CPU serial number for the CPUSYSID statement. Rerun SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 3 9 |  
+-----+
```

TEXT: >ERR>THE MAXIMUM NUMBER OF %XC CPUSYSID STATEMENTS HAS BEEN EXCEEDED. CALL THE CA MICS PRODUCT SUPPORT GROUP.

TYPE: Error

REASON: The array defined for CPUSYSID has been exceeded  
CA MICS Product Support will help you make a  
change to increase the size of the array to meet  
your site's requirements. The default array size  
is 255.

ACTION: Contact CA MICS Product Support.

REFERENCES: None

```
+-----+  
| S R L 0 0 0 4 0 |  
+-----+
```

TEXT: >ERR>REQUIRED STATEMENT NOT FOUND. STATEMENT  
TYPE=OPTIONS.

TYPE: Error

REASON: The OPTIONS statement has not been specified in  
SRLOPS.

ACTION: Specify the OPTIONS statement and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 4 1 |  
+-----+
```

TEXT: >ERR>NO OPTIONS STATEMENT FOR PARMS(INPUTSRL)  
DDNAME %DDNAME.

TYPE: Warning

REASON: A DDNAME was specified in INPUTSRL but an  
associated OPTIONS statement was not found in  
SRLOPS

ACTION: SRLPGEN will ignore this DDNAME and continue  
processing. Specify the associated OPTIONS  
statement in SRLOPS and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 4 2 |  
+-----+
```

TEXT: >ERR>DDNAME %DDNAME DEFINED MORE THAN ONCE IN  
SRL0PS.

TYPE: Error

REASON: DDNAME specified has been specified twice in  
INPUTSRL

ACTION: Correct this error and rerun SRLPGEN

REFERENCES: CA MICS SRL Guide, Section 7.3.4.

```
+-----+  
| S R L 0 0 0 4 3 |  
+-----+
```

TEXT: >ERR>ORIGINAL SYSID %SYSID FOUND IN UNRELATED  
OPTIONS AND CPUSYSID STATEMENT.

TYPE: Error

REASON: The CPUSYSID statement specified a SYSID that was  
found on an OPTIONS statement that is not  
associated with this CPUSYSID statement.

ACTION: Correct the CPUSYSID statement or the OPTIONS  
statement as appropriate and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 4 4 |  
+-----+
```

TEXT: >ERR>ERROR(S) ENCOUNTERED IN SRL0PS PARM  
DEFINITIONS.  
>ERR>MACRO GENERATION ABORTED.  
>ERR>CORRECT ERROR(S) AND EXECUTE AGAIN.

TYPE: Error

REASON: SRLPGEN found invalid specification while

processing SRLOPS.

ACTION: Correct the Errors indicated and run SRLPGEN again.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 4 5 |  
+-----+
```

TEXT: >ERR>NO CPU SERIAL NUMBER SPECIFIED.

TYPE: Error

REASON: A CPUSERIAL statement was specified in SRLDEVS but the value was not specified.

ACTION: Specify the CPU Serial number for the CPUSERIAL statement and SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.3.

```
+-----+  
| S R L 0 0 0 4 6 |  
+-----+
```

TEXT: >ERR>CPU SERIAL NUMBER %KEYWD2 HAS ALREADY BEEN SPECIFIED.

TYPE: Error

REASON: A CPUSERIAL statement in SRLDEVS specified a CPU Serial number already specified on another CPUSERIAL statement. A unique CPU Serial number can be specified for every CPUSERIAL statement.

ACTION: Correct and rerun SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.3.

```
+-----+  
| S R L 0 0 0 4 7 |  
+-----+
```

TEXT: >ERR>THE CPU SERIAL NUMBER LIMIT OF %XC HAS  
>ERR>BEEN EXCEEDED. PLEASE CONTACT THE CA MICS  
>ERR>PRODUCT SUPPORT GROUP. THE CS ARRAY SIZE  
>ERR>MUST BE INCREASED.

TYPE: Error

REASON: The array defined for CPU serial number has been  
exceeded. CA MICS Product Support will help you  
make a change to increase the size of the array to  
meet your site's requirements.

ACTION: Contact CA MICS Product Support.

REFERENCES: None

```
+-----+  
| S R L 0 0 0 4 8 |  
+-----+
```

TEXT: SRLDEVS MEMBER INPUT.  
DSN=%X VOL=SER=%PVOL

TYPE: Informational

REASON: To display the data set name and volume serial  
number from which SRLDEVS member is being  
read.

ACTION: None

REFERENCES: None

```
+-----+  
| S R L 0 0 0 4 9 |  
+-----+
```

TEXT: >ERR>ADDRESS %ADDR IS NOT 4 DIGITS IN LENGTH.

TYPE: Error

REASON: The device address specified should be 3 digits  
long.

ACTION: Correct the device address value in SRLDEVS

and rerun SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.3.

```
+-----+  
| S R L 0 0 0 5 0 |  
+-----+
```

TEXT: >ERR>ADDRESS %ADDR CONTAINS THE INVALID  
HEXADECIMAL CHARACTER %INVALID. VALID  
HEXADECIMAL CHARACTERS ARE 0123456789ABCDEF.

TYPE: Error

REASON: Invalid hexadecimal character specified.

ACTION: Specify a valid hexadecimal value for the device  
Address and rerun SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.3.

```
+-----+  
| S R L 0 0 0 5 1 |  
+-----+
```

TEXT: >ERR>THE ADDRESSES IN ADDRESS RANGE ADDR\_LOW -  
ADDR\_HI DO NOT HAVE THE SAME FIRST THREE  
CHARACTERS.

TYPE: Error

REASON: The addresses in the address range specified for  
the DEVICE statement in SRLDEVS does not have the  
same first three numbers.

ACTION: Refer to Section 7.3.3 on how to specify the  
DEVICE statement.

REFERENCES: CA MICS SRL Guide, Section 7.3.3.

```
+-----+  
| S R L 0 0 0 5 2 |  
+-----+
```

TEXT: >ERR>THE ADDRESSES IN ADDRESS RANGE ADDR\_LOW -

ADDR\_HI ARE NOT ASCENDING.

TYPE: Error

REASON: The addresses in the address range specified for the DEVICE statement in SRLDEVS are not in ascending order.

ACTION: Refer to Section 7.3.3 on how to specify the DEVICE statement. Correct and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.3.

```
+-----+  
| S R L 0 0 0 5 3 |  
+-----+
```

TEXT: >ERR>NO LOGICAL ADDRESS SPECIFIED.

TYPE: Error

REASON: A DEVICE statement has been specified in SRLDEVS but the logical address which is the second parameter on the DEVICE statement has not been specified.

ACTION: Specify a logical address for this DEVICE statement and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.3.

```
+-----+  
| S R L 0 0 0 5 4 |  
+-----+
```

TEXT: >ERR>LOGICAL ADDRESS %KEYWD3 IS NOT FOUR IN LENGTH.

TYPE: Error

REASON: The logical address specified must be a four digit number.

ACTION: Correct the logical address and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.3.

```
+-----+  
| S R L 0 0 0 5 5 |  
+-----+
```

TEXT: >ERR>LOGICAL DEVICE ADDRESS AND RANGE DEVICE ADDRESS MUST MATCH.

TYPE: Error

REASON: The last digit of the logical device address did not match the last digit of the physical device address. If a range is specified for the physical device address, then the last digit of the first address must be the same as the last digit of the logical device address.

ACTION: Consult the CA MICS SRL Guide, Section 7.3.4 for rules on specifying the Logical device address. Correct and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.3.

```
+-----+  
| S R L 0 0 0 5 6 |  
+-----+
```

TEXT: >ERR>NO DEVICE FAILURE IMPACT SPECIFIED.

TYPE: Error

REASON: The failure impact parameter on the DEVICE parameter in SRLDEVS has not been specified.

ACTION: Specify a failure impact value or N for no impact or unspecified and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.3.

```
+-----+  
| S R L 0 0 0 5 7 |  
+-----+
```

TEXT: >ERR>LENGTH OF IMPACT VALUE IS GREATER THAN ONE.

TYPE: Error

REASON: The failure impact value is not N, C, I, or W.

ACTION: Specify a failure impact value or N for no impact or unspecified and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.3.

```
+-----+  
| S R L 0 0 0 5 8 |  
+-----+
```

TEXT: >ERR>UNIDENTIFIED FAILURE IMPACT CODE.

TYPE: Error

REASON: The failure impact value is not N, C, I, or W.

ACTION: Specify a failure impact value or N for no impact or unspecified and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.3.

```
+-----+  
| S R L 0 0 0 5 9 |  
+-----+
```

TEXT: >ERR>NO VENDOR NAME SPECIFIED.

TYPE: Error

REASON: The vendor name parameter on the DEVICE parameter in SRLDEVS has not been specified.

ACTION: Specify the vendor name for this device.

REFERENCES: CA MICS SRL Guide, Section 7.3.3.

```
+-----+  
| S R L 0 0 0 6 0 |  
+-----+
```

TEXT: >ERR>LENGTH OF VENDOR NAME %KEYWD4 IS GREATER THAN

8.

TYPE: Error

REASON: The vendor name field specified on the DEVICE parameter is greater than 8 characters.

ACTION: Change the vendor name to be a maximum of 8 characters in length in SRLDEVS and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.3.

```
+-----+  
| S R L 0 0 0 6 1 |  
+-----+
```

TEXT: >ERR>NO DEVICE DESCRIPTION SPECIFIED.

TYPE: Error

REASON: The device description parameter on the DEVICE statement has not been specified.

ACTION: Specify a device description and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.3.

```
+-----+  
| S R L 0 0 0 6 2 |  
+-----+
```

TEXT: >ERR>ERROR(S) ENCOUNTERED IN SRLDEVS PARM DEFINITIONS.

>ERR>MACRO GENERATION ABORTED.

>ERR>CORRECT ERROR(S) AND EXECUTE AGAIN.

TYPE: Error

REASON: This message is issued when errors are encountered in validating the SRLDEVS member.

ACTION: Correct the errors indicated in the MICSLOG and rerun SRLPGEN.

REFERENCES: None

```
+-----+  
| S R L 0 0 0 6 3 |  
+-----+
```

TEXT: >ERR>NO CPUSERIAL STATEMENT PROVIDED.

TYPE: Error

REASON: The DEVICE statement that is defined in SRLDEVS does not have an associated CPUSERIAL statement.

ACTION: Specify a CPUSERIAL statement in SRLDEVS for the associated DEVICE statement(s) and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.3.

```
+-----+  
| S R L 0 0 0 6 4 |  
+-----+
```

TEXT: >ERR>GMT PARAMETER NOT NUMERIC.

TYPE: Error

REASON: GMT offset specification must be numeric.

ACTION: Specify a numeric value for GMT offset parameter on the OPTIONS statement in SRLOPS and run SRLPGEN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 6 5 |  
+-----+
```

TEXT: >ERR>SRLOPS DDNAME SPECIFIED MORE THAN ONCE.

TYPE: Error

REASON: A DDNAME has been specified more than once on the OPTIONS statement in SRLOPS.

ACTION: Every OPTIONS statement must have a unique DDNAME

specification.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 0 6 6 |  
+-----+
```

TEXT: >ERR>THE SRL0PS DDNAME TABLE LIMIT HAS BEEN  
>ERR>EXCEEDED. PLEASE CONTACT THE CA MICS  
>ERR>PRODUCT SUPPORT GROUP. THE VAL01 ARRAY  
>ERR>SIZE MUST BE INCREASED.

TYPE: Error

REASON: The array defined for DDNAME table has been  
exceeded. CA MICS Product Support will help you  
make a change to increase the size of the array to  
meet your site's requirements. The default array  
size is 255.

ACTION: Contact CA MICS Product Support.

REFERENCES: None

```
+-----+  
| S R L 0 0 0 9 8 |  
+-----+
```

TEXT: >>>> %PROCESS HAS COMPLETED.

TYPE: Informational

REASON: The indicated process has completed.

ACTION: None

REFERENCES: None

```
+-----+  
| S R L 0 0 0 9 9 |  
+-----+
```

TEXT: %LINE

TYPE: Informational

REASON: This message prints the information specified in members SRLOPS, INPUTSRL and SRLDEVS.

ACTION: None

REFERENCES: None

```
+-----+  
| S R L 0 0 1 0 0 |  
+-----+
```

TEXT: >ERR> NUMBER OF UNIQUE SERIAL NUMBERS FOR A  
>ERR> SINGLE DDNAME EXCEEDED. DAY070 ABORTED.  
>ERR> CONTACT THE CA MICS PRODUCT SUPPORT GROUP.

TYPE: Error

REASON: The number of unique serial numbers that were processed from one of the input DDNAMEs has exceeded the threshold set. The default is 255.

ACTION: Contact CA MICS Product Support Group.

REFERENCES: None

```
+-----+  
| S R L 0 0 1 1 0 |  
+-----+
```

TEXT: >ERR> DATA FOR MODEL %RECMODEL SERIAL NUMBER  
>ERR> %CPUSER IN DDNAME %CTLDDN IS NOT DEFINED  
>ERR> IN SRLOPS. THE SRLOPS SPECIFIED ACTION  
>ERR> FOR THIS CONDITION IS JOB TERMINATION.

TYPE: Error

REASON: SRL was processing data from the DDNAME indicated and encountered data from a CPU that has not been defined in SRLOPS. The action specified on the options statement was ABEND.

ACTION: If the data is to be processed into SRL, then define the CPU in SRLOPS, or change the action

to be ACCEPT. If the data is not to be processed by SRL, then change the action to be WARN.

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 1 2 0 |  
+-----+
```

TEXT: >WARNING>DATA FOR MODEL %RECMODEL , SERIAL  
>WARNING>NUMBER %CPUSER IN DDNAME %CTLDDN HAS  
>WARNING>NOT BEEN DEFINED IN SRLOPS. THE  
>WARNING>SRLOPS SPECIFIED ACTION FOR THIS  
>WARNING>CONDITION IS TO IGNORE THE DATA.

TYPE: Warning

REASON: SRL was processing data from the DDNAME indicated and encountered data from a CPU that has not been defined in SRLOPS. The action specified on the options statement was WARN.

ACTION: None

REFERENCES: CA MICS SRL Guide, Section 7.3.2.

```
+-----+  
| S R L 0 0 2 0 0 |  
+-----+
```

TEXT: >ERR> KEYWORD NOT RECOGNIZED.

TYPE: Error

REASON: An invalid keyword has been specified for this report.

ACTION: Refer to the list of valid keywords for SRL reports and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 0 1 |  
+-----+
```

---

+-----+

TEXT: >ERR> NO SYSID PARAMETERS SPECIFIED.

TYPE: Error

REASON: The SYSID keyword has been specified without any parameters.

ACTION: Specify the SYSID(S) for this keyword.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

+-----+

| S R L 0 0 2 0 2 |

+-----+

TEXT: >ERR> INVALID SYSID VALUE.

TYPE: Error

REASON: SYSID specified cannot be greater than 4 characters.

ACTION: Correct the SYSID value and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

+-----+

| S R L 0 0 2 0 3 |

+-----+

TEXT: >ERR> NO CPU PARAMETERS SPECIFIED.

TYPE: Error

REASON: No parameters have been specified for the CPU keyword.

ACTION: Specify the parameters for the CPU keyword or remove keyword and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

+-----+

```
| S R L 0 0 2 0 4 |  
+-----+
```

TEXT: >ERR> INVALID CPU VALUE.

TYPE: Error

REASON: CPU value should be 6 characters in length.

ACTION: Specify a valid CPU value and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 0 5 |  
+-----+
```

TEXT: >ERR> NO EXCLUDE PARAMETER SPECIFIED.

TYPE: Error

REASON: The EXCLUDE keyword was specified but no parameter given.

ACTION: Specify YES or NO and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 0 6 |  
+-----+
```

TEXT: >ERR> EXCLUDE PARAMETER MUST BE YES OR NO.

TYPE: Error

REASON: A parameter value other than YES or NO was specified.

ACTION: Specify YES or NO and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

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

---

```
| S R L 0 0 2 0 7 |  
+-----+
```

TEXT: >ERR> NO FAILURES PARAMETER SPECIFIED.

TYPE: Error

REASON: The FAILURES keyword was specified but no parameter given.

ACTION: Specify a value for the FAILURES keyword and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 0 8 |  
+-----+
```

TEXT: >ERR> FAILURES PARAMETER MUST BE 1-365.

TYPE: Error

REASON: Range of parameter must be between 1 and 365.

ACTION: Specify a value between 1 and 365 and rerun report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 0 9 |  
+-----+
```

TEXT: >ERR> NO ERRORS PARAMETER SPECIFIED.

TYPE: Error

REASON: The ERRORS keyword was specified but no parameter given.

ACTION: Specify a value for the ERRORS keyword and rerun report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 1 0 |  
+-----+
```

TEXT: >ERR> ERRORS PARAMETER MUST BE 1-1000.

TYPE: Error

REASON: Range is not between 1 and 1000.

ACTION: Specify a value between 1 and 1000 and rerun report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 1 1 |  
+-----+
```

TEXT: >ERR> NO JOBNAME PARAMETERS SPECIFIED.

TYPE: Error

REASON: The JOBNAME keyword was specified but no parameters given.

ACTION: Specify job name(s) for this keyword and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 1 2 |  
+-----+
```

TEXT: >ERR> INVALID JOB NAME.

TYPE: Error

REASON: Job name specified is greater than 8 characters.

ACTION: Specify a valid job name and rerun the report.

REFERENCES: CA MICS SRL Guide, Session 3.2.9.

```
+-----+  
| S R L 0 0 2 1 3 |  
+-----+
```

TEXT: >ERR> NO MODULE PARAMETERS SPECIFIED.

TYPE: Error

REASON: The MODULE keyword was specified but no parameters given.

ACTION: Specify module(s) for this keyword and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 1 4 |  
+-----+
```

TEXT: >ERR> INVALID MODULE NAME.

TYPE: Error

REASON: Specified module name is greater than 8 characters.

ACTION: Specify a valid module name and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 1 5 |  
+-----+
```

TEXT: >ERR> NO SCC PARAMETERS SPECIFIED.

TYPE: Error

REASON: The SCC parameter was specified but no parameter given.

ACTION: Specify the system completion codes for this parameter and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 1 6 |  
+-----+
```

TEXT: >ERR> INVALID SYSTEM COMPLETION CODE.

TYPE: Error

REASON: The system completion code specified on the SCC parameter is not 3 characters in length.

ACTION: Change the system completion code to be 3 characters long and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 1 7 |  
+-----+
```

TEXT: >ERR> NO UCC PARAMETERS SPECIFIED.

TYPE: Error

REASON: The UCC keyword was specified but no parameter given.

ACTION: Specify a value for the UCC keyword and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 1 8 |  
+-----+
```

TEXT: >ERR> INVALID USER COMPLETION CODE.

TYPE: Error

REASON: The user completion code specified on the UCC parameter is not 3 characters in length.

ACTION: Change the user completion code to be 3-  
characters long and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 1 9 |  
+-----+
```

TEXT: >ERR> NO VOLUME PARAMETERS SPECIFIED.

TYPE: Error

REASON: The VOLUME keyword was specified but no parameter  
given.

ACTION: Specify a value for the VOLUME keyword.

REFERENCES: CA MICS SRL Guide, Section 3

```
+-----+  
| S R L 0 0 2 2 0 |  
+-----+
```

TEXT: >ERR> INVALID VOLUME SERIAL.

TYPE: Error

REASON: The volume serial number specified on the VOLUME  
keyword is not 6 characters in length.

ACTION: Specify the proper volume serial number and rerun  
the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 2 1 |  
+-----+
```

TEXT: >ERR> NO DEVICE CLASS PARAMETERS SPECIFIED.

TYPE: Error

REASON: The CLASS keyword was specified but no parameter given.

ACTION: Specify a value for the CLASS keyword and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 2 2 |  
+-----+
```

TEXT: >ERR> INVALID DEVICE CLASS.

TYPE: Error

REASON: The device class specified was greater than 8 characters.

ACTION: Specify a valid device type and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 2 3 |  
+-----+
```

TEXT: >ERR> NO DEVICE TYPE PARAMETERS SPECIFIED.

TYPE: Error

REASON: The TYPE keyword was specified but no parameter given.

ACTION: Specify a value for the TYPE keyword and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 2 4 |  
+-----+
```

TEXT: >ERR> INVALID DEVICE TYPE.

TYPE: Error

REASON: The device type specified was greater than 8 characters.

ACTION: Specify a valid device type and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 2 5 |  
+-----+
```

TEXT: >ERR> NO ADDRESS PARAMETERS SPECIFIED.

TYPE: Error

REASON: The ADDRESS keyword was specified but no parameter given.

ACTION: Specify a value for the ADDRESS keyword and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 2 6 |  
+-----+
```

TEXT: >ERR> INVALID ADDRESS SPECIFICATION.

TYPE: Error

REASON: The device address specified is not 3 characters in length.

ACTION: Change the device address to be 3 characters in length and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 2 7 |  
+-----+
```

TEXT: >ERR> NO CURRENT PARAMETERS SPECIFIED.

TYPE: Error

REASON: The CURRENT keyword was specified but no parameter given.

ACTION: Specify a value for the CURRENT keyword and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 2 8 |  
+-----+
```

TEXT: >ERR> INVALID CURRENT DATE.

TYPE: Error

REASON: The date value specified on the CURRENT keyword is invalid.

ACTION: Specify a valid date(s) and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 2 9 |  
+-----+
```

TEXT: >ERR> NO PREVIOUS PARAMETERS SPECIFIED.

TYPE: Error

REASON: The PREVIOUS keyword was specified but no parameter given.

ACTION: Specify a value for the PREVIOUS keyword and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 3 0 |  
+-----+
```

TEXT: >ERR> INVALID PREVIOUS DATE.

TYPE: Error

REASON: The date value specified on the CURRENT keyword is invalid.

ACTION: Specify a valid date(s) and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 3 1 |  
+-----+
```

TEXT: >ERR> NO TIMESPAN PARAMETER SPECIFIED.

TYPE: Error

REASON: The TIMESPAN keyword was specified but no parameter was given.

ACTION: Specify a value for the TIMESPAN keyword and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 3 2 |  
+-----+
```

TEXT: >ERR> INVALID TIMESPAN VALUE.

TYPE: Error

REASON: The value specified for the TIMESPAN keyword is invalid. Time-span should be either DETAIL, DAYS, WEEKS, MONTHS or YEARS.

ACTION: Correct the parameter for the TIMESPAN keyword

and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 3 3 |  
+-----+
```

TEXT: >ERR> NO CYCLES PARAMETER SPECIFIED.

TYPE: Error

REASON: The CYCLES keyword was specified but no parameter was given.

ACTION: Specify a value for the CYCLES keyword and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 3 4 |  
+-----+
```

TEXT: >ERR> INVALID CYCLES VALUE.

TYPE: Error

REASON: Invalid number of cycles was specified.

ACTION: Specify a valid cycles value and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 3 5 |  
+-----+
```

TEXT: >ERR> NO DAYRANGE PARAMETER SPECIFIED.

TYPE: Error

REASON: The DAYRANGE keyword was specified but no

parameter given.

ACTION: Specify a value for the DAYRANGE keyword and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 3 6 |  
+-----+
```

TEXT: >ERR> DAYRANGE PARAMETER MUST BE 1-99.

TYPE: Error

REASON: Range must be between 1 and 99.

ACTION: Correct the DAYRANGE parameter and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 3 7 |  
+-----+
```

TEXT: >ERR> NO REPORT PARAMETERS SPECIFIED.

TYPE: Error

REASON: The REPORT keyword was specified but no parameter given.

ACTION: Specify a value for the REPORT keyword and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 3 8 |  
+-----+
```

TEXT: >ERR> INVALID REPORT REQUEST.

TYPE: Error

REASON: The report requested on the REPORT keyword is invalid.

ACTION: Specify a valid report name on the REPORT keyword and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 3 9 |  
+-----+
```

TEXT: >ERR> TIMESPAN MUST BE DETAIL.

TYPE: Error

REASON: The value specified on the TIMESPAN keyword must be DETAIL for this report.

ACTION: Specify DETAIL for the TIMESPAN keyword and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 4 0 |  
+-----+
```

TEXT: >ERR> DAYRANGE MUST BE <= 7.

TYPE: Error

REASON: The value specified on the DAYRANGE keyword for this report should be less than or equal to 7.

ACTION: Specify a value between 1 and 7 and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 4 1 |  
+-----+
```

TEXT: >ERR> TIMESPAN MUST BE DETAIL OR DAYS.

TYPE: Error

REASON: The value specified on the TIMESPAN keyword for this report should be either DETAIL or DAYS.

ACTION: Specify DETAIL or DAYS and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 4 2 |  
+-----+
```

TEXT: >ERR> DAYRANGE MUST BE <= 10.

TYPE: Error

REASON: The value specified on the DAYRANGE keyword for this report should be less than or equal to 10.

ACTION: Specify a value between 1 and 10 and rerun the report.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.

```
+-----+  
| S R L 0 0 2 4 3 |  
+-----+
```

TEXT: >ERR> ERRORS FOUND IN REPORT CONTROL STATEMENTS  
>ERR> REPORT JOB TERMINATING.

TYPE: Error

REASON: This message indicates the termination of the report due to one or more errors that were encountered during the keyword validation process.

ACTION: Examine the errors and correct as appropriate.

REFERENCES: CA MICS SRL Guide, Section 3.2.9.