Environmental Record Editing and Printing Program (EREP)

Reference

Version 3 Release 5

GC35-0152-06

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Note

Before using this information and the product it supports, read the information in "Notices" on page 349.

Seventh Edition (September 2013)

This book applies to ***EREP Version 3 Release 5*** until otherwise indicated in new editions.

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Preface

The *EREP Reference* applies to EREP Version 3, Release 5.

The following operating systems can run EREP:

- DOS/VS, DOS/VSE, VSE/ESA ™, and VSE/Advanced Functions—known collectively in this book as ***VSE systems***.
- VS2, MVS/370, MVS/XA ™, MVS/ESA ™, OS/390 ®, and z/OS ® —known collectively in this book as ***MVS ™ systems***.
- VM/370, VM/SP ™, VM/SP/HPO, VM/XA, VM/ESA ®, and z/VM ® —known collectively in this book as ***VM systems***.

If EREP 3.5 is not installed on your system, some of the information in this book may not apply. You can find out which level of EREP your system supports by checking the release number of the EREP tape last installed; the release number is in the System Control Programming Specifications, which accompany the EREP tape.

Note: New releases of EREP are always *downward compatible.* That is, the latest version of EREP always runs on your system. New releases also include new functions that you can only use if you have the latest version of your operating system; but generally, old functions are not eliminated. The same is true of this book, although some very old versions of EREP (for example, IFCEREP0) are no longer supported.

Who Should Read This Publication

This publication is for people who manage and maintain data processing equipment in a system installation.

USER	DESCRIPTION
System programmers	Who set up and run EREP
IBM service representatives	Who use the EREP reports to diagnose problems in the installation's hardware devices
IBM systems engineers (SE)	Who are called when there is a problem with the running of EREP
Note: It is also for anyone who wants to find out what EREP is and how it works.	

When reading this publication, you will find a working knowledge of the operating system EREP runs under very helpful; familiarity with the system job control and entry language is also helpful, but not necessary.

Organization and Contents

The information on EREP is divided into two manuals:

MANUAL	DESCRIPTION
EREP User's Guide	Introductory and explanatory information about EREP and detailed process information for the person who may not know how to set up a job to run EREP.

Organization and Contents

MANUAL	DESCRIPTION
EREP Reference	Reference information in quick-look-up format—for the person who is familiar with EREP and the process of setting it up, but who wants to check out syntax, message wording, or coding rules.

The information in this manual is divided into the following topics:

- Part 1, "General Reference Information," on page 1 provides detailed information on how to create, use, and correct problems with EREP reports. It contains:
  - Chapter 1, "Introduction to EREP Controls," on page 3, provides a preview of the information in the topics of part 1.
  - Chapter 2, "EREP Parameters," on page 5, presents the syntax and coding rules for all EREP keyword parameters.
  - Chapter 3, "EREP Control Statements," on page 41, presents the format and coding rules for EREP control statements.
  - Chapter 4, "Error Records for EREP," on page 61, presents general information about the records that EREP uses, showing format and contents.
  - Chapter 5, "Correcting EREP Job Set-Up Problems," on page 71, provides information about methods to identify and correct EREP job set up problems.
  - Chapter 6, "EREP Messages," on page 77, lists the IFC-prefixed messages as they appear in EREP output with explanations and recommended responses. Also included are such problem determination aids as the EREP return codes, standard problem determination tables, and the DEBUG parameter.
  - Chapter 7, "Codes for Control Units, OBRs, and MDRs," on page 95, lists the control unit codes, outboard record (OBR) codes, and miscellaneous data record (MDR) codes.
- Part 2, "Examples of Output from Reports," on page 103 provides descriptions and examples of each report to help you select the reports you need to adequately monitor your installation.
  - Chapter 8, "System Summary Report," on page 105, provides an overview of errors for each of your installation's principal parts or subsystems: processors (CPU), channels, subchannels, storage, operating system control programs (SCPs), and I/O subsystems.
  - Chapter 9, "Trends Report," on page 113, presents the pattern and frequency of errors on a daily basis. You can use this performance trend to see when the errors began, their pattern, and when they end.
  - Chapter 10, "Event History Report," on page 121, consists of one-line abstracts of selected information from each record. The event history report shows errors in a time sequence that allows you to see how often and in what order errors occur.
  - Chapter 11, "System Exception Report Series," on page 127, is a series of reports that list software and hardware error data in a variety of ways to help you identify problems within your subsystems.
  - Chapter 12, "Threshold Summary Report," on page 207, shows all the permanent read/write errors, temporary read/write errors, and media statistics for each volume mounted, using the OBR and MDR records, for 3410, 3420, and 8809 tape devices. The system exception series is a replacement for the threshold summary. Consider switching to the system exception series.
  - Chapter 13, "Detail Edit and Summary Reports," on page 213, provide environmental information, hexadecimal dumps and summaries of errors to determine their nature and causes.

- Part 3, "Product-Dependent Information," on page 295 contains information specific to particular IBM ® machines and device types supported by EREP. The product-dependent information is presented by product group, as follows:

Note: This publication also includes a *Glossary* of terms and a list of the IBM publications mentioned or associated with the use of EREP.

z/OS information

This information explains how z/OS references information in other documents and on the web.

When possible, this information uses cross-document links that go directly to the topic in reference using shortened versions of the document title. For complete titles and order numbers of the documents for all products that are part of z/OS®, see *z/OS Information Roadmap*.

To find the complete z/OS library, including the z/OS Information Center, see z/OS Internet Library (http://www.ibm.com/systems/z/os/zos/bkserv/).

Summary of changes

This document contains terminology, maintenance, and editorial changes. Technical changes or additions to the text and illustrations are indicated by a vertical line to the left of the change.

Seventh Edition

This book has the following changes:
- A new record type, 4E, see Table 9 on page 69
- A new DASD SIM example, see Figure 56 on page 218
- Support for processor model 2818.

Sixth Edition

This book includes new EREP reports for High Performance FICON for System z, also referred to as High Performance FICON or zHPF.
- MIH Report
- OBR Report
- SLH Reports

System Initialization (IPL) reports for 2084 have been added, see Figure 71 on page 232 and Figure 72 on page 232.

EREP now supports processor models 2086, 2094, 2096, 2097, and 2098.

CPU reports involving the obsolete processor models 3081, 3083, 3084, and 3090 have been replaced by CPU reports of supported processor models. Also, other references to these obsolete processor models have been removed or updated if necessary.

Fifth Edition

This book includes new and updated EREP reports for Alternative Subchannel Support.
- MIH (370XA) Detail Edit Report, see Figure 83 on page 248
- MIH (370XA) Detail Summary Report, see Figure 84 on page 248
- OBR (Long) Detail Edit Report, Device Type 3590, see Figure 100 on page 264
- OBR (Long) Detail Edit Report, Device Type 3380, DPA, see Figure 106 on page 270
- OBR (Long) Detail Edit Report, Device Type 3590, DPA, see Figure 107 on page 271
- OBR (Long) Dynamic Pathing Validation Analysis Detail Edit Report, Device Type 3390, see Figure 110 on page 273
- SLH Detail Edit Report, Device Type FCTC, see "Subchannel Logout Handler (SLH) Detail Edit Report, FCTC" on page 288

This book includes new EREP reports for Extended Address Volume (EAV), provided by APAR IO03548.

- DASD String Summary, Part 2 (2), see Figure 17 on page 147
- OBR (Long) Detail Edit Report for Extended Address Volume (EAV), see Figure 113 on page 275

This book includes new and updated EREP reports in support of the 3592-E06 tape drives.

- 3592 Tape Subsystem Exception Report, see Figure 49 on page 205
- 3592 Emulated Device Summary Report, see Figure 50 on page 205
- TAPE Media Informational Messages (MIMs), see Figure 52 on page 207

This book includes updates to the following messages:

- IFC253I
- IFC258I

Part 1. General Reference Information

This part of the EREP Reference provides detailed information on how to:
- Create EREP reports
- Use EREP reports
- Correct problems with EREP reports

Read the topics as you need them for information about the reports you are creating.

The *EREP Reference, Part 1* covers the following subjects:

Chapter 1. Introduction to EREP Controls

You communicate with EREP using keyword parameters and control statements.

Parameters tell EREP which report to run, which records to use for the report, and what to do with the records when the report is complete.

Control statements tell EREP what your hardware configuration is like, how many processors you have, whether or not your I/O devices are shared by more than one processor, and exactly where the devices are. Control statements also give EREP other information, such as limits on the number of errors included in any report.

All operating systems use the same parameters and controls to tell EREP what specific information to print in the reports.

If you run EREP using *no controls at all*, EREP produces detail summary reports (and data reduction reports, if your installation includes 3370 DASD) of all the records on the ERDS. The reports do not combine the records from shared I/O devices, nor do they identify the records as being from shared devices. EREP writes the records to a history file if one is available to receive them; if none is available, EREP issues an error message and the job or step abends.

Syntax Rules and Conventions

Common notations (rules) are used to define the syntax and format of EREP control statements and parameters. The following syntax rules define what is required for the specific report you are requesting.

Use the following alphanumeric characters and symbols when you write procedures that create EREP reports:

- Code *uppercase letters, numbers,* and this set of *symbols* exactly as they are shown.

SYMBOL	DESCRIPTION
’	apostrophe
*	asterisk
,	comma
=	equal sign
-	hyphen
( )	parentheses
.	.
period	
A– Z	alphabetic
0–9	numeric
$ # @	national

- Substitute specific information for *variables* appearing as *lowercase letters* and *other symbols*.

For example: If the variable *serial* appears in the parameter or control statement syntax, substitute a specific serial number value (such as 012345 or 503B) in the parameter or control statement.

- Code a *hyphen* or a *dash* between two entries to indicate a range.

  For example:

  hhmm-hhmm
  indicates a range of time.

  addr-addr
  indicates a range of continuous addresses.

Conventions for Syntax Rules

The following set of symbols describe the syntax of the parameter and control statements in this book. Never put these symbols in the parameter or control statements.

SYMBOL	DESCRIPTION	How to read these symbols
{ }	braces	Group related items, such as alternatives. **For example:** ALPHA=({A|B|C},D) indicates that you *must* choose one of the items enclosed within the braces. If you choose A, code ALPHA=(A,D).
[ ]	brackets	Group related items; however, everything within the brackets is optional and may be omitted. **For example:** ALPHA=([A|B|C],D) indicates that you *may* choose one of the items within the brackets or omit all of them. If you select only D, code ALPHA=(,D).
...	ellipses	Indicate that the preceding item or group of items can be repeated more than once in succession. **For example:** ALPHA [,BETA] ... indicates that ALPHA can appear alone or can be followed by ,BETA any number of times in succession.
—	underscore	Indicates a default option. You only need to specify the parameter if you do not want the underscored default option.
|	vertical bar	Represents logical OR, and means that you can code one or the other of two alternatives. **For example:** KEYWORD=[ALPHA|BETA] indicates that you can code either ALPHA or BETA as the value for KEYWORD.

Chapter 2. EREP Parameters

You can direct EREP processing and tailor EREP reports with the following keyword parameters: report, selection, and processing parameters.

Because none of the parameters are required, you can allow EREP to operate entirely by default. However, you must check the default options in Table 2 on page 10 to be sure they are the ones you want.

See Part 3, "Product-Dependent Information," on page 295 for more information on using the EREP parameters with specific devices.

Refer to the following topics in the *EREP User's Guide* for more information on using EREP parameters with each operating system.

Topic
Running EREP under MVS
Running EREP under VM
Running EREP under VSE

The following general coding rules apply to all the EREP parameters. The parameter string must be limited to 100 characters. EREP will reject any parameter strings over 100 characters.

Rules	**Examples**
Parameters consist of a keyword followed by an equal sign and one or more values. Some parameters require parentheses around the value field.	⋮ `DATE=(82136,82143)` ⋮

When the allowed value of a parameter is *Y* or *N*, you may omit =*Y* and code only the keyword. EREP always interprets this as specifying *YES* regardless of the default value.	⋮
	`HIST=Y,ACC=N`
	⋮
	
	`or`
	
	⋮
	`HIST,ACC=N`
	⋮

Use commas to separate the parameters if they are on the same line. There can be no spaces in a parameter expression or parameter field. However, when entering parameters as **CPEREPXA** operands, you can separate them by commas or by one or more blanks.	⋮
	`PRINT=PS,TYPE=MC,HIST,ACC=N`
	`ENDPARM`
	⋮

Rules	Examples

If parameters and control statements are in the same file, you must code **ENDPARM** to indicate the end of parameters before coding any control statements.	`:`
	`TRENDS,HIST,ACC=N,DATE=(89032,89056)`
	`ENDPARM`
	`:`
	`control statements`
	`:`

If you code the parameters as in-stream data, they can be entered as individual records.	`:`
	`TRENDS`
	`HIST`
	`ACC=N`
	`DATE=(89032,89056)`
	`ENDPARM`
	`control statements`
	`:`

Report Parameter Summary

Use the following report parameters to select which kind of report you want EREP to produce. You can request only one type of report each time you execute the EREP command for your system, but you may produce any number of different type reports by including additional EREP commands with the associated parameters and control statements.

REPORT PARAMETERS	WHAT THEY DO	REFER TO
EVENT	Produces a *three part event history report* that lists errors chronologically. This report is used to establish a pattern and diagnose problems.	"EVENT — Event History (Report Parameter)" on page 22
PRINT	Produces a *series of detail edit or summary reports*, or both, for the selected record types. The number of reports depends on the input and selection parameters. **Note: PRINT=SD** is the default report parameter. The other options are shown in the syntax for the print parameter: **PRINT={AL | DR | NO | PS | PT | SD | SU}** The only way to run EREP without producing any report output is to code **PRINT=NO**.	"PRINT — Print reports (report parameter)" on page 28
SYSEXN	Produces a *system exception report series* covering processors, channels, DASD, optical and tape subsystems.	"SYSEXN — System Exception Reports (Report Parameter)" on page 30
SYSUM	Produces a *condensed two part system summary report* of all errors for the principle system elements: CPU, channels, storage, SCP, I/O subsystem.	"SYSUM — System Summary (Report Parameter)" on page 31
THRESHOLD	Produces a *summary* of a 3410, 3420, or 8809 tape subsystem, including media statistics and permanent errors that exceed the limits set on the parameter.	"THRESHOLD — Threshold Summary (Report Parameter)" on page 33
TRENDS	Produces a *two part trends report* that presents error records logged for the various system elements during a maximum of 30 days. This report presents the errors in chronological order by Julian date.	"TRENDS — Trends Report (Report Parameter)" on page 35

Table 1 on page 9 shows parameters that *cannot* be used together.

Selection Parameter Summary

Use the following selection parameters to select records for EREP to use in the report.

SELECTION PARAMETERS	TELLS EREP TO:	REFER TO
CPU (Processor serial and machine type numbers)	Use only the records associated with this particular processor.	"CPU — Central Processing Unit (Selection Parameter)" on page 13
CPUCUA (Processor serial number and device address)	Use only the records associated with this device attached to this processor.	"CPUCUA — CPU/Channel/Unit Address (Selection Parameter)" on page 15
CUA (Device address or number)	Use only the records associated with this particular device address or device number.	"CUA — Channel/Unit Address (Selection Parameter)" on page 16
DATE	Use only the records created during this date range.	"DATE — Date Range (Selection Parameter)" on page 17
DEV (Device type)	Use only the records associated with this particular device type; or, conversely, do not use the records associated with this device type.	"DEV — Device Type (Selection Parameter)" on page 19
DEVSER (Device serial number)	Use only the OBR records associated with this tape device serial number. (Use only for the THRESHOLD report and only with the 3410, 3420, and 8809 tape OBR records.)	"DEVSER — Device Serial Number (Selection Parameter)" on page 20
ERRORID (Error identifier)	Use only the MCH and MVS software records containing this particular error identifier.	"ERRORID — Error Identifier (Selection Parameter)" on page 21
LIA/LIBADR (Line interface [base] address)	Use only the 3705, 3720, 3725, 3735 or 3745 communication controller records containing this line interface address.	"LIA/LIBADR — Line Interface Base Address (Selection Parameter)" on page 23
MOD (Processor model)	Use only the records containing this processor machine type (number).	"MOD — Processor Model (Selection Parameter)" on page 26
MODE (370 or 370XA)	Use only the records created in this operating mode.	"MODE — Operating Mode (Selection Parameter)" on page 27
SYMCDE (Fault symptom code)	Use only the 33XX DASD records containing this particular fault symptom code.	"SYMCDE — Fault Symptom Code (Selection Parameter)" on page 29
TERMN (Terminal name)	Use only the VTAM OBR records containing this terminal name.	"TERMN — Terminal Name (Selection Parameter)" on page 33
TIME	Use only the records created during this time range.	"TIME — Time Range (Selection Parameter)" on page 34
TYPE (Record type)	Use only the records of the specified types.	"TYPE — Record Type (Selection Parameter)" on page 36

SELECTION PARAMETERS	TELLS EREP TO:	REFER TO
VOLID (Volume serial number)	Use only the 33XX DASD or 34XX tape records containing this volume serial number.	"VOLID — Volume Identifier (Selection Parameter)" on page 38

Table 1 on page 9 shows the parameters that *cannot* be used together.

Processing Parameter Summary

Use the following processing parameters to control the way EREP processes the records you have selected:

PROCESSING PARAMETERS	WHAT THEY DO	REFER TO
ACC (Accumulate)	Tells EREP to copy the records used for the report into an output history file.	"ACC — Accumulate Records (Processing Parameter)" on page 13
HIST (History)	Tells EREP that its input consists of records on a history file.	"HIST — History Input (Processing Parameter)" on page 23
LINECT (Line count)	Tells EREP that each page of the report output must contain this number of lines.	"LINECT — Line Count (Processing Parameter)" on page 24
LINELEN (Line length)	Tells EREP that each line of the system summary report output may contain up to this number of characters.	"LINELEN — Line Length (Processing Parameter)" on page 25
MERGE (Merge)	Tells EREP that its input consists of records from both the ERDS and a history file.	"MERGE — Merge Input Data Sets (Processing Parameter)" on page 26
SHORT (Short OBR)	Tells EREP to print out short form OBR records in detail edit report output.	"SHORT — Print Short OBR Records (Processing Parameter)" on page 29
TABSIZE (Table size)	Tells EREP that the sort table it uses for internal processing must be this size.	"TABSIZE — Sort Table Size (Processing Parameter)" on page 32
ZERO (Zero ERDS)	Tells EREP that when this report is complete, to change the header pointer to allow the ERDS to be overwritten with newly collected errors.	"ZERO — Clear the ERDS (Processing Parameter)" on page 38

Table 1 shows the parameters that *cannot* be used together.

EREP Parameter Combinations

To help you to avoid using invalid parameter combinations, Table 1 shows the parameters that cannot be used together. An *X* in a column indicates which two parameters cannot be used together; for example the ACC and the threshold parameters cannot be used together. Numbers in the column are identified in the notes following the table.

Table 1. EREP Selection, Processing, and Report Parameter Combinations

	Processing Parameters								Selection Parameters														
	ACC	HIST	LINECT	LINELEN	MERGE	SHORT	TABSIZE	ZERO	CPU	CPUCUA	14 CUA	DATE	DEV	DEVSER	ERRORID	LIA/LIBADR	MOD	MODE	SYMCDE	TERMN	TIME	TYPE	15 VOLID
REPORT																							
EVENT						X								X									
PRINT			1			2								X									
SYSEXN						X								X									
SYSUM						X								X									
THRESHOLD	X					X		X	X	X			3		X	X	X		X	X		X	
TRENDS						X								X									
PROCESSING																							
ACC	X							4						X									
HIST		X			X			X															
LINECT			X																				
LINELEN				X																			
MERGE		X			X									X									
SHORT						X																	
TABSIZE							X							X									
ZERO	4	X						X	X	X	X	X	X		X	X	X	5	X	X	X	X	X
SELECTION																							
CPU								X	X	X							X						
CPUCUA								X	X	X	X			X			X					6	
CUA 14								X		X	X											6	
DATE								X				X											
DEV								X					X	7		8						9	10
DEVSER	X				X		X			X			7	X	X	X	X		X	X		11	12
ERRORID								X						X	X							12	
LIA/LIBADR								X					8	X		X			X	X			X
MOD								X	X	X				X			X						
MODE								5										X					
SYMCDE								X						X		X			X	X		11	X
TERMN								X						X		X			X	X		11	X
TIME								X													X		
TYPE								X		6	6		9	11	12				11	11		X	13
VOLID 15								X					10	12		X			X	X		13	X

Note:

1. Invalid when PRINT=NO.
2. Invalid when PRINT=DR, NO, SD, or SU.
3. Invalid except for DEV=(34XX, 3410, 3420, or 8809).
4. Invalid for ZERO=Y if ACC=N.
5. Invalid except when you code or default MODE=ALL, which indicates no record selection.
6. Only affects the selection of record types that contain a CUA: CCH(C), DDR(D), MDR(T), MIH(H), and OBR(O).
7. DEVSER is only used for the threshold report summary, so the following are the only devices allowed: 3410, 3420, 8809, and 34XX.
8. LIA/LIBADR applies only to TP communication controllers, so the following are the only valid devices: 3705, 3720, 3725, and 3745.
9. DEV is valid with only the following record types: DDR(D) MIH(H), OBR(O), MDR(T), and A3(A).
10. VOLID applies only to 33XX DASD and 34XX tape devices.
11. Only affects the selection of record types that contain a symptom code: OBR(O).
12. Only affects the selection of record types that contain an error ID: MCH(M) and SFT(S).
13. Only affects the selection of record types that contain a volume ID: OBR(O) and MDR(T).
14. The CUA parameter is not supported for A2 and A3 records.
15. The VOLID parameter is not supported for A3 records, even if they contain a volume ID.

Default Actions for EREP Parameters

Table 2 shows the default values that EREP uses when you do not include a parameter in the controls for an EREP run.

Table 2. When You Omit EREP Parameters

PARAMETER	IF YOU OMIT THIS PARAMETER
ACC	EREP assumes ACC=Y, except when you request a threshold report. Then, the default is ACC=N.
CPU	EREP processes records from all processors.
CPUCUA	EREP processes all available records.
CUA	EREP uses the records from all device addresses.
DATE	EREP uses all the records in the input data set, regardless of when they were created except for the trends report. For the trends report, if you do not code the DATE parameter, the default is to process 30 days of error data.
DEV	EREP processes records associated with all device types.
DEVSER	EREP uses records for the threshold summary regardless of the device serial numbers they contain.
ERRORID	EREP processes all MCH and SFT records, regardless of their error identifiers.
EVENT	Unless you specifically code EVENT or EVENT=Y, EREP does not produce an event history report.
HIST	EREP assumes HIST=N and uses the ERDS as input.
LIA/LIBADR	EREP uses 3705, 3720, 3725, 3735, and 3745 TP communication controller records regardless of the line interface base address they contain.
LINECT	For MVS, and VM, 50 lines per page; for VSE systems, the default is the number of lines per page set for SYSLST at SYSGEN.

Table 2. When You Omit EREP Parameters (continued)

PARAMETER	IF YOU OMIT THIS PARAMETER
LINELEN	132.
MERGE	EREP assumes MERGE=N and uses records from only one input file.
MOD	EREP processes records regardless of which kind of processor they were created on.
MODE	EREP uses all available records, regardless of whether they were recorded in 370 or 370XA mode.
PRINT	If you do not code any report parameter at all, EREP assumes PRINT=SD, which produces a detail summary and, if applicable, a data reduction report for each record and device type you select. If you code PRINT without any keyword value, it is a syntax error.
SHORT	EREP does not print out short OBR records for detail edit reports. It does print them out for detail summaries, however.
SYMCDE	EREP uses all OBR records, regardless of the fault symptom codes they contain.
SYSEXN	Unless you specifically code SYSEXN or SYSEXN=Y, EREP does not produce a system exception report series.
SYSUM	Unless you specifically code SYSUM or SYSUM=Y, EREP does not produce a system summary.
TABSIZE	For MVS, and VM, EREP's internal sort table is 24KB; for VSE systems, it is 4KB.
TERMN	EREP processes VTAM OBR records regardless of the terminal name they contain.
THRESHOLD	Unless you specifically code THRESHOLD and some threshold values, EREP produces no threshold summary.
TIME	EREP uses all available records, regardless of the time they were created.
TRENDS	Unless you specifically code TRENDS or TRENDS=Y, EREP produces no trends report.
TYPE	EREP uses all types of records.
VOLID	EREP uses certain DASD and tape records regardless of the associated volume serial numbers.
ZERO	EREP does not clear the ERDS after completing the report. The default is ZERO=N.

Parameter Descriptions

Use the following syntax summaries of the EREP parameters to find complete parameter descriptions.

SYNTAX	REFER TO
ACC[=Y] | =N	"ACC — Accumulate Records (Processing Parameter)" on page 13
CPU=({*nnnnnn* **|** *Xnnnnn* **|** *XXnnnn***}.***model***[, ...])**	"CPU — Central Processing Unit (Selection Parameter)" on page 13
CPUCUA=(*serial***.{***cua* **|** *cuX***}[,***serial***.{***cua* **|** *cuX***}]...)**	"CPUCUA — CPU/Channel/Unit Address (Selection Parameter)" on page 15
CUA=({[N]*addr* **| [N]***addr***-[N]***addr***}[, ...])**	"CUA — Channel/Unit Address (Selection Parameter)" on page 16
DATE=({*yyddd***[,***yyddd***] |** *yyddd***[-***yyddd***]})**	"DATE — Date Range (Selection Parameter)" on page 17
DEBUG=(nn[,nn] ...)	"DEBUG — Debug (Diagnostic Parameter)" on page 18

<table>
<tr><th>SYNTAX</th><th>REFER TO</th></tr>
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SYNTAX	REFER TO
VOLID=(*volser***[,***volser***]...)**	"VOLID — Volume Identifier (Selection Parameter)" on page 38
ZERO[=Y] | =N	"ZERO — Clear the ERDS (Processing Parameter)" on page 38

ACC — Accumulate Records (Processing Parameter)

Tells EREP to

Copy the records that passed filtering for the report onto an output data set.

Syntax

ACC[=Y] | =N

Defaults

EREP assumes ACC=Y, except when you request a threshold report. Then, the default is ACC=N.

Coding

Specifying ACC is the same as ACC=Y.

Important: If you request a system summary report using the ERDS as input and code ACC=Y or allow it by default, EREP clears the ERDS even if you code ZERO=N. If your EREP run defines the ACCDEV file as DUMMY, the records are lost.

If you code or imply ACC=Y for an EREP run, you must also code the system control statements needed to define the output data set to hold the records. Refer to the following topics in the *EREP User's Guide* for more details and examples: MVS System Controls, Defining Files for CPEREPXA, and VSE System Controls.

If you code ZERO=Y when requesting PRINT=SU or PRINT=NO, EREP assumes ACC=Y and expects you to define the output file.

Parameter Conflicts

DEVSER THRESHOLD ZERO=Y if ACC=N

Notes

EREP does not zero the ERDS unless *all the records have been accumulated* on an output file.

CPU — Central Processing Unit (Selection Parameter)

Tells EREP to

Use only the records containing the specified model and CPU ID numbers:
- The model number is the machine type.
- The CPU ID number may also be called the serial number in some reports.

The following are valid processor model numbers for the CPU parameter:

2003	2096	9373
2064	2097	9375
2066	2098	9377
2084	2817	9672
2086	2818	9673
2094	2827	9674

Syntax

CPU=({*nnnnnn* **|** *Xnnnnn* **|** *XXnnnn***}.***model***[,***nnnnnn* **|** *Xnnnnn* **|** *XXnnnn***}.***model***]...)**

nnnnnn
: The six-digit hexadecimal CPU ID number. It defines a single processor in an *n*-way central processor complex.

Xnnnnn
: The processor identifier. You may wish to use this form if you want to select *all* the records for an *n*-way central processor complex, single image or physically partitioned, without having to specify all the processor addresses individually. For example: 012345, 112345, 212345.

XXnnnn
: The processor identifier. You may wish to use this form if you want to select *all* the records for a logical partitioned (PR/SM ™ LPAR) central processor complex, whether single image or physically partitioned. See "PR/SM Feature" on page 337.

model
: The four-digit decimal processor model number.

Defaults

EREP processes records from all processors.

Coding

Maximum of six entries.

When using PR/SM to create logical partitions, use the logical partition identifier in conjunction with the last four digits of the serial number. See "PR/SM Feature" on page 337 for more information.

Parameter Conflicts

CPUCUA MOD THRESHOLD ZERO

Notes

If you use the CPU parameter, you cannot use ZERO=Y because you have excluded some records from processing.

Examples

```
CPU=(123456.0168,234567.2084)
CPU=(0A1572.2098,1B1572.2098,2C1572.2098)
CPU=(XX1572.2096,X37297.2097)
```

CPUCUA — CPU/Channel/Unit Address (Selection Parameter)

Tells EREP to

Use only the records containing the serial number and channel unit address specified.

Syntax

CPUCUA=(*serial***.{***cua* | *cuX***}[,***serial***.{***cua* | *cuX***}]...)**

serial
: The six-digit hexadecimal CPU serial number.

cua
: A unique three- or four-digit hexadecimal channel or unit address (the device number in a 370/XA environment).

cuX
: Two or three hexadecimal digits followed by an *X* to denote the range of device addresses with those digits ending in 0 through F.

Defaults

EREP processes all available records.

Coding

Maximum of four entries.

When using PR/SM to create logical partitions, use the logical partition identifier in conjunction with the last four digits of the serial number. See “PR/SM Feature” on page 337 for more information.

Parameter Conflicts

CPU
CUA
DEVSER
MOD
THRESHOLD
ZERO

Notes

- If you use the CPUCUA parameter, you cannot use ZERO=Y because you have excluded some records from processing.
- CPUCUA only affects the selection of record types (TYPE parameter) that contain a CUA:
  - CCH
  - DDR
  - MDR
  - MIH
  - OBR

CUA — Channel/Unit Address (Selection Parameter)

Tells EREP to

Use only the records containing (or not containing) the channel or unit address specified.

Syntax

CUA=({[N]*addr* | [N]*addr*-[N]*addr*}[,...])

addr
A three- or four-digit hexadecimal address or group of addresses. The format of the address may be *nnXX*, *nnn*X, or *nnnn* (for example: 01XX, 038X, or 049C). *nnXX* means that EREP processes all controller or unit addresses on channel *nn*; *nnnX* means that EREP processes all unit addresses on channel or control unit *nnn*.

Important: The channel identifier can be one or two digits.

addr-addr
A range of contiguous hexadecimal addresses, which may include more than one channel and control unit. The lower address must appear first in the expression. An *X* in the lower address represents a *0*; in the upper address it represents an *F*.

N
Indicates *not*; it excludes CUAs from the report. **N***nnXX* means that EREP processes all controller or unit addresses *not* on channel *nn*; **N***nnnX* means that EREP processes all unit addresses *not* on channel or control unit *nnn*.

Defaults

EREP processes records from all devices (CUAs).

Coding

Maximum of eight entries.

You cannot select and exclude CUAs on the same CUA parameter; CUA=(123-320,N12C) is invalid.

Parameter Conflicts

CPUCUA ZERO

Notes

- If you use the CUA parameter, you cannot use ZERO=Y because you have excluded some records from processing.
- CUA only affects the selection of record types (TYPE parameter) that contains a CUA:

  CCH
  DDR
  MDR
  MIH
  OBR

Exception: A2 and A3 records cannot be selected by CUA.

- If there are alternate paths to a device, and you want EREP to process all the records for the device, you must specify the CUAs for all the alternate paths.

Examples

To *select* records from a specific CUA or range of CUAs:

```
CUA=(012C)
CUA=(0123,032X,04XX)
CUA=(123-320,04XX)
CUA=(123-320,4B0-C00)
```

To *exclude* records from a specific CUA or range of CUAs:

```
CUA=(N012C)
CUA=(N0123,N032X,N04XX)
CUA=(N123-N320,N04XX)
CUA=(N123-N320,N4B0-NC00)
```

DATE — Date Range (Selection Parameter)

Tells EREP to

Select records created during the specified date range.

Syntax

DATE=({*yyddd***[,***yyddd***] | ***yyddd***[-***yyddd***]})**

yyddd

The year *yy* and the Julian day *ddd*.

The first *yyddd* is the year and day when the date range begins; the second *yyddd* is the ending year and day. The second date is optional; you can select records from a single date as well as from a range of dates. To select a single date, code only one *yyddd*.

When you code a date range, the second *yyddd* must be greater than or equal to the first. If it is not, EREP issues a syntax-error message.

Defaults

If you do not code the DATE parameter, all the records in the ERDS or history file will be selected for all the reports except for the trends report. For the trends report the default is to process 30 days of error data ending with the current date.

Coding

- DATE is valid with all the report parameters.
- To express a range of 30 days, add 29 to the beginning Julian day.
- DATE is required when you use the TIME selection parameter.

Parameter Conflicts

ZERO

Notes

- If you use the DATE parameter, you cannot use ZERO=Y because you have excluded some records from processing.
- The dates in the PERIOD FROM and TO in the report headings are the dates of the first and the last record found within the date range specified in the DATE parameter.

Examples

```
DATE=(82137)
DATE=(82136,82143)
DATE=(89152-89181)
```

DEBUG — Debug (Diagnostic Parameter)

Tells EREP to

Print the record input information indicated by the specified options as part of the EREP report.

Syntax

DEBUG=(*nn*[,*nn*] ...)

nn The one- or two-digit decimal number assigned to an EREP DEBUG option.

The following DEBUG options are available for customer use:

Number
Meaning

4 Print the name and compile date of all control modules. Print the start and stop times of each routine called by IFCEREP1. The information appears in the EREP messages file (TOURIST output).

17 Print a hexadecimal dump of every record that passed filtering on the event report. The records appear in the event history report, one following each normal data line.

If you select a print report with DEBUG=(17) a hexadecimal dump of every record that passed filtering appears in the EREP messages file (TOURIST output).

Defaults

None. Debugging information is not normally printed.

Coding

No special considerations

Parameter Conflicts

None.

Notes

- See your IBM service representative before attempting any debugging of the EREP program.

- Because this book is primarily for IBM customers, it includes only those DEBUG options available and recommended for customer use; your IBM service representative can advise you further, if necessary.

DEV — Device Type (Selection Parameter)

Tells EREP to

Select or exclude records associated with the specified generic device types.

The following are valid device types for DEV:

AFP1	1060	2303	2780	327T	3490	3886	9313
BA00	1130	2305	2790	3277	3504	3890 ™	9332
BCTA	115A	2311	2930	3278	3505	3895	9335
CTCA	1255	2314	2947	3284	3525	3945	9336
ESIO	1270	2321	2955	3286	3540	3968	9345
NMVT	1275	2400	2956	3289	3590	3995	9347
OSA	1285	2495	2970	3310	3670	4245	9348
OSAD	1287	2501	2972	3330	3700	4248	
SCTC	1288	2520	3036	3340	3704	5080	
SWCH	1403	2540	3066	3350	3705	5203	
0671	1419	2560	3138	3370	3720	5424	
1012	1442	2596	3148	3375	3725	5425	
1015	1443	2671	3158	3380	3735	6262	
1017	2020	2701	3168	3390	3745	7340	
1018	2150	2702	3203	3400	3791	7443	
1030	2250	2703	3210	3410	3800	7770	
105D	2260	2715	3211	3420	3820	7772	
105T	2265	2740	3213	3422	3838	83B3	
1050	2280	2741	3215	3424	3848	8809	
1052	2282	2760	3262	3430	3850	9246	
1053	2301	2770	327D	3480	3851	9247	

The following are valid general device classes for DEV:

`23XX 27XX 32XX 33XX 34XX 35XX 37XX 38XX ESIO`

Syntax

DEV=(*type* | **N***type***[,***type* | **N***type***]...)**

type
: A four character field: either a specific device type (3340, 3420) or the representation of a class of devices (33XX, 34XX).

N Indicates *not*; excludes a device type from the report.

Defaults

EREP processes records associated with all device types.

Coding

- **Maximum of eight entries.**
- The device type numbers must be enclosed in parentheses.
- You cannot select and exclude devices on the same DEV parameter; DEV=(3330,N2400) is invalid.

- DEV=(NMVT) selects NMVT records from all devices.
- DEV=(ESIO) selects the I/O units that are supported in EREP on the ESCON ® links. See "ESIO I/O Connected to an ESCON Link" on page 344 for more information.

Parameter Conflicts

ZERO

Notes

- If you use the DEV parameter, you cannot use ZERO=Y because you have excluded some records from processing.
- The only record types affected by the DEV parameter are the following:

A3 (A)	MDR (T)
CCH (C)	MIH (H)
DDR (D)	OBR (O)

- Special restrictions apply if you use the DEV parameter with any of the following parameters:

  DEVSER

  LIA/LIBADR

  TYPE

  THRESHOLD

  VOLID

  See the other parameter descriptions and Part 3, "Product-Dependent Information," on page 295 for the special restrictions.
- If a device is emulating another device, use the device type number of the emulated device on the DEV parameter.
- EREP interprets some DEV entries to mean more than just the device you have coded; see Part 3, "Product-Dependent Information," on page 295for additional device-specific considerations.

Examples

To select records from specific devices or a class of devices:

```
DEV=(3420)
DEV=(33XX,3705)
```

To exclude the records from specific devices or a class of devices:

```
DEV=(N3420)
DEV=(N33XX,N3705)
```

DEVSER — Device Serial Number (Selection Parameter)

Tells EREP to

Select for the threshold summary only those OBR records that contain the specified device serial numbers.

Syntax

DEVSER=(*serial***[,***serial***]...)**

serial
A six-digit decimal device serial number from the service data.

Defaults

EREP selects OBR records without regard for the device serial numbers they contain.

Coding

Maximum of eight entries.

DEVSER is used only for the threshold summary report.

Parameter Conflicts

ACC	EVENT	PRINT	SYSEXN	TRENDS
CPUCUA	LIA/LIBADR	SHORT	SYSUM	ZERO
ERRORID	MOD	SYMCDE	TERMN	

Notes

- EREP forces the DEV and TYPE parameters when you use the DEVSER parameter. See “Threshold Summary Report Information” on page 320 in Part 3, “Product-Dependent Information,” on page 295.
- The device serial number is a value in a 2-byte field of a tape OBR record that corresponds to the external serial number of the device. If the external serial number is greater than 65535, only the four low-order digits (decimal) are correct for the device serial. To use DEVSER to specify numbers larger than 65535, do the following:
  1. Convert the external serial number to binary
  2. Reconvert the low-order (rightmost) 16 bits to decimal
  3. Pad the resulting number with leading zeros to make a six-digit decimal number.

Examples

```
DEVSER=(013455,113455,213455)
```

ERRORID — Error Identifier (Selection Parameter)

Tells EREP to

Select for the requested report only the records containing the specified error identifier.

Syntax

ERRORID=(*seqno***[**,*cpuid*,*asid*,*hh*,*mm*,*ss*,*t***])**

seqno
A 5-digit decimal error identifier from an MCH record or an MVS software (SFT) record.

cpuid
A 2-digit hexadecimal processor (CPU) identifier.

asid
A 4-digit hexadecimal address space identifier.

hh A 2-digit decimal value representing the hour.

mm A 2-digit decimal value representing the minute.

ss A 2-digit decimal value representing the second.

t A single decimal digit indicating tenths of the second.

Defaults

EREP processes all MCH and SFT records, regardless of their error identifiers.

Coding

- Coding only the sequence number *seqno* causes EREP to process all records with the same error ID, regardless of when or where they were recorded.
- If you code the time-stamp values on the ERRORID parameter, you must also code the DATE parameter.
- If you use the ERRORID parameter, you cannot use ZERO=Y because you have excluded some records from processing.
- The only records that contain an error ID are machine check (MCH) records and software (SFT) records produced by MVS. Therefore, the only record TYPE values you can code with the ERRORID parameter are M and S.

Parameter Conflicts

DEVSER THRESHOLD ZERO

Examples

```
ERRORID=(01234)
ERRORID=(23456,01,0012,06,21,31,6)
```

EVENT — Event History (Report Parameter)

Tells EREP to

Produce an event history report (one-line abstracts of selected records in chronological order).

Syntax

EVENT[=Y] | =N

Defaults

EREP does not produce an event history report.

Coding

EREP produces an event history report only when you specifically code EVENT.

Specifying EVENT is the same as EVENT=Y.

Parameter Conflicts

DEVSER SHORT

Notes

If you do not code any selection parameters with EVENT, EREP processes all available records for the report. The default value of ZERO=N means that EREP does not clear the ERDS unless you specifically request it.

HIST — History Input (Processing Parameter)

Tells EREP to

Use the records in a history file for the requested report, instead of those in the ERDS.

Syntax

HIST[=Y] | =N

Defaults

EREP assumes HIST=N and uses the ERDS as input, if you omit this processing parameter.

Coding

- Specifying HIST is the same as HIST=Y.
- HIST is valid for all the report parameters.
- You must code the system control statements to define the input file and a temporary work file. Refer to the following topics in the *EREP User's Guide* for more details and examples: MVS System Controls, Defining Files for CPEREPXA, and VSE System Controls.
- To use more than one data set as the history input under MVS concatenate DD statements for the other data sets to the ACCIN DD statement. For VM and VSE, the history input must be in a single data set.

Parameter Conflicts

MERGE ZERO

Notes

When creating history dataset, HIST means write records to ACCDEV ddname (see 1st step in SYS1.SAMPLIB(IFBEREPS)).

LIA/LIBADR — Line Interface Base Address (Selection Parameter)

Tells EREP to

Select MDR records according to the specified line interface base address. See Chapter 25, “Teleprocessing (TP) Devices,” on page 341 in Part 3, “Product-Dependent Information,” on page 295.

Syntax

LIA | LIBADR=*address*

address
A four-digit hexadecimal line interface base address.

Defaults

EREP processes all available records.

Coding

You can use LIA or LIBADR; EREP accepts both forms.

Parameter Conflicts

DEVSER SYMCDE TERMN THRESHOLD VOLID ZERO

Notes

- If you use the LIA/LIBADR parameter, you cannot use ZERO=Y because you have excluded some records from processing.
- If you code the DEV parameter with any device other than a 3705, 3720, 3725, 3735, or 3745 communications controller, a parameter conflict occurs. See Chapter 25, “Teleprocessing (TP) Devices,” on page 341 in Part 3, “Product-Dependent Information,” on page 295.

LINECT — Line Count (Processing Parameter)

Tells EREP to

Print this many lines on each page of output.

Syntax

LINECT=*nnn*

nnn
One-to-three decimal digits.

Defaults

For VSE systems, the number of lines set for SYSLST at SYSGEN.

For MVS, and VM systems, 50 lines per page.

Coding

Minimum value is 25.

For large installations, with more than 42 processors, `LINECT=60` is recommended.

Parameter Conflicts

PRINT=NO

Notes

If the value you specify for LINECT is less than 25, EREP ignores it and uses the default value instead.

LINELEN — Line Length (Processing Parameter)

Tells EREP to

Print up to this many characters in each line of output.

Syntax

LINELEN=*nnn*

nnn
indicates the maximum number of characters to be printed on each line of output.

132 Standard print

165 High-density print, 3800 printer only, paper width≥12 inches.

204 High-density print, 3800 printer only, paper width≥14 7/8 inches.

Defaults

132

Coding

- Only LINELEN=132, LINELEN=165, or LINELEN=204 are valid.
- When you code LINELEN=204, the EREPPT DD statement must be coded to indicate high-density print is requested via the CHARS option:

```
//EREPPT  DD  SYSOUT=A,CHARS=(GSC,GFC,GUC)
```

OR

```
//EREPPT  DD  SYSOUT=A,CHARS=DUMP
```

Parameter Conflicts

None.

Notes

- This parameter is valid only for the system summary report. It is not useful for the following reports:

  EVENT
  PRINT={AL DR NO PS PT SD SU}
  SYSEXN
  THRESHOLD
  TRENDS
- This parameter applies only if your installation has a 3800 printer and you are running under an MVS operating system.

MERGE — Merge Input Data Sets (Processing Parameter)

Tells EREP to

Use the records from both the ERDS and a history file as input for the requested report.

Syntax

MERGE[=Y] | =N

Defaults

EREP assumes MERGE=N and uses records from only one input file if you omit this processing parameter.

Coding

- Specifying MERGE is the same as MERGE=Y.
- You must make sure the system control statements needed to define both of the input files are present. Refer to the following topics in the *EREP User's Guide* for more details and examples: MVS System Controls, Defining Files for CPEREPXA, and VSE System Controls

Parameter Conflicts

HIST

Notes

- If you do not use the MERGE (or HIST) parameter, you are telling EREP that the ERDS is its only input.
- Under MVS, the history input can be in more than one data set. See "HIST — History Input (Processing Parameter)" on page 23.
- Under VSE, the input and output files should be assigned to different EXTENTs.

MOD — Processor Model (Selection Parameter)

Tells EREP to

Select for the requested report only those records containing the specified CPU (processor) model numbers.

The following are valid processor model numbers for the MOD parameter:

0115	0155	2066	2098	4331	9083	9377
0125	0158	2084	3031	4341	9121	9672
0135	0165	2086	3032	4361	9190	9673
0138	0168	2094	3033	4381	9221	9674
0145	2003	2096	3062	9021	9373	
0148	2064	2097	4321	9081	9375	

Syntax

MOD=(*model***[,***model***]...)**

model
A three- or four-digit decimal processor model number.

Defaults

EREP processes records regardless of which kind of processor they were created on.

Coding

Maximum of four entries.

Parameter Conflicts

CPU CPUCUA DEVSER THRESHOLD ZERO

Notes

- MOD is the processor equivalent of the DEV parameter.
- If you use the MOD parameter, you cannot use ZERO=Y because you have excluded some records from processing.

Examples

```
MOD=(168,3031)
```

MODE — Operating Mode (Selection Parameter)

Tells EREP to

Select for the requested report only those records created while the system was operating in the specified mode.

Syntax

MODE={370 | 370XA | ALL}

370
means **370** mode only.

370/XA
means **370XA** and **370/ESA** modes only.

ALL
means **370**, **370XA** and **370/ESA** modes.

Defaults

If you omit this selection parameter, EREP assumes MODE=ALL and processes all available records, regardless of the mode they were recorded in.

Coding

- ZERO=Y is valid only with MODE=ALL.
- If you code:
  - MODE=370 and TYPE=C, EREP processes CCH records
  - MODE=370XA and TYPE=C, EREP processes SLH and CRW records
  - MODE=ALL and TYPE=C, EREP processes all available CCH, SLH, and CRW records

Parameter Conflicts

None.

Notes

- If EREP is running under any MVS system except MVS/XA, it treats software (SFT) records produced by MVS/XA as unknown records. Therefore, the combination of **MODE=370XA** or **MODE=ALL** and **TYPE=S** is meaningful only if the records were produced by MVS/XA.
- If a device is supported in **370XA** mode, any detail summary reports you request for the device reflect that mode, regardless of what you specify on the **MODE** parameter.

PRINT — Print reports (report parameter)

Tells EREP to

Produce the PRINT reports specified (or PRINT=NO to produce no report output).

Syntax

PRINT={AL | DR | NO | PS | PT | SD | SU}

AL requests all the detail (PRINT) reports: detail edits of the records, detail summaries, and, if applicable, data reduction reports.

DR requests only data reduction reports.

NO requests that no reports be generated at all.

PS requests both detail edit and detail summary reports.

PT requests only detail edit reports.

SD requests detail summaries and data reduction reports.

SU requests only detail summary reports.

Defaults

If you do not code any report parameter at all, EREP assumes PRINT=SD, which produces a detail summary and, if applicable, a data reduction report for each record and device type you select.

Coding

- If you code PRINT without a keyword value, it is a syntax error. You cannot code PRINT alone.
- If you code ZERO=Y and either PRINT=NO or PRINT=SU, EREP assumes ACC=Y; make sure the ACCDEV output file is present to receive the accumulated records.
- If you do not want any report output, code PRINT=NO.
- If you want EREP to clear the ERDS you must change the value of the ZERO parameter YES. The default value for the ZERO parameter is NO with PRINT.
- If you use selection parameters with PRINT, you cannot clear the ERDS because not all the records have been processed for the report.

Parameter Conflicts

DEVSER

SHORT — Print Short OBR Records (Processing Parameter)

Tells EREP to

Include short OBR records in a requested detail edit (PRINT) report.

Syntax

SHORT[=Y] | =N

Defaults

If you omit this processing parameter, EREP assumes SHORT=N and suppresses the detail printing of short OBR records.

Coding

Specifying SHORT is the same as SHORT=Y.

Parameter Conflicts

DEVSER EVENT PRINT=DR PRINT=NO PRINT=SD PRINT=SU SYSEXN SYSUM TRENDS THRESHOLD

Notes

The OBR detail summary always includes the information in short OBR records (unless they are VTAM OBR records.)

SYMCDE — Fault Symptom Code (Selection Parameter)

Tells EREP to

Select for the requested report only those 33XX DASD records having the specified fault symptom code. The symptom code consists of the bit settings in a two-byte field of the sense data in an OBR record for a 33XX DASD.

Syntax

SYMCDE={*nnnn* **|** *nnnX* **|** *nnXX* **|** *nXXX***}**

n is a hexadecimal digit.

Defaults

EREP processes 33XX records regardless of their symptom code bit settings.

Coding

No special considerations.

Parameter Conflicts

DEVSER	THRESHOLD
LIA/LIBADR	VOLID
TERMN	ZERO

Notes

- If you use the SYMCDE parameter, you cannot use ZERO=Y because you have excluded some records from processing.
- The SYMCDE parameter only affects TYPE=O records that contain a symptom code.
- The combination of digits and Xs on the parameter indicate how specific you are being: if you code 4032, you want EREP to select only the records containing that exact symptom code; if you code 40XX, you want EREP to select the records containing symptom codes that begin with 40.

Examples

Following are some ways to code SYMCDE, and the resulting bit setting EREP looks for in the OBR sense data.

Parameter Value
  Bit Setting

SYMCDE=4032
  0100 0000 0011 0010

SYMCDE=193X
  0001 1001 0011 xxxx

SYMCDE=92XX
  1001 0010 xxxx xxxx

SYMCDE=9XXX
  1001 xxxx xxxx xxxx

x indicates either a **0** or **1** is valid.

SYSEXN — System Exception Reports (Report Parameter)

Tells EREP to

Produce the system exception report series (several reports covering various aspects of your processing and I/O subsystems).

Syntax

SYSEXN[=Y] | =N

Defaults

EREP does not produce a system exception report series.

Coding

- EREP only produces a system exception report series when you specifically code SYSEXN.
- Specifying SYSEXN is the same as SYSEXN=Y.

- Take care when specifying TYPE with SYSEXN because the report results can be misleading.
- You may need the DASDID, SYSIMG, and LIMIT control statements to customize the system exception reports. See Chapter 3, "EREP Control Statements," on page 41

Parameter Conflicts

DEVSER SHORT

Notes

- See Part 3, "Product-Dependent Information," on page 295, for device-specific information about the system exception report series.
- Unless you use DATE or TIME or both with SYSEXN, EREP processes all the available records.
- EREP requires a large internal sort table to create the system exception reports (512KB is a reasonable TABSIZE value). The increase in TABSIZE probably requires a corresponding increase in the virtual storage (partition or region size) available to EREP. Refer to the following topics in the *EREP User's Guide* for more details and examples: MVS Storage Requirementsand VSE Storage Requirements.

SYSUM — System Summary (Report Parameter)

Tells EREP to

Produce a system summary (a comprehensive report of errors for each of your system's principle elements: CPU, channel, subchannel, storage, SCP, and I/O subsystem).

Syntax

SYSUM[=Y] | =N

Defaults

EREP does not produce a system summary.

Coding

- EREP produces a system summary only when you specifically code SYSUM.
- Specifying SYSUM is the same as SYSUM=Y.
- Take care when specifying TYPE with SYSUM as report results can be misleading.

Parameter Conflicts

DEVSER SHORT

Notes

- When you request a system summary EREP accumulates the records to an output (ACCDEV) file and zeroes the ERDS if the following are true:
  - The input records are on the ERDS
  - The record selection is not restricted by date and time
  - The default value for ACC of YES is not changed to NO

– The default value for ZERO of YES is not changed to NO

Important: When you code ACC=Y with SYSUM, EREP always clears the ERDS, even if you code ZERO=N.

- If you do not define an output (ACCDEV) file, EREP ABENDs.

TABSIZE — Sort Table Size (Processing Parameter)

Tells EREP to

Use a sort table of the specified size to process the records selected for the report.

The sort table is EREP's internal work space, where it arranges the records into the order required for a given report.

Syntax

TABSIZE=*nnnn*K

nnnn
is a 1–4 digit decimal number.

K The value is in thousands of bytes.

Defaults

Op.Sys.	Virtual Storage	Sort Table	Records Processed
MVS	100KB	24KB	2400
VM	100KB	24KB	2400
VSE	100KB	4KB	400

Coding

No special considerations.

Parameter Conflicts

None.

Notes

- EREP requires at least 100KB of virtual storage for its internal sort table. Depending on the kind of report you are running, and on the number of records involved, you might have to increase the sort table size for a single EREP run or for all your EREP reports. Refer to the following topics in the *EREP User's Guide* for information on increasing the table size: MVS Storage Requirementsand VSE Storage Requirements.
- The approximate maximum practical table size beyond which EREP may terminate due to insufficient storage is shown in the following table:

Op.Sys.	Sort Table Size	Region Size
MVS	1500KB	8 MB
VM	2500KB	16 MB

- Requests for a table size greater than 3328KB may exceed EREP's addressing capability.

TERMN — Terminal Name (Selection Parameter)

Tells EREP to

Select for the requested report only those VTAM OBR records that contain the specified terminal name.

VTAM OBR records are created only for local teleprocessing devices. The terminal name in these records is the NCP, or major node name. Remote attached TP devices produce only MDR records, which contain the minor node name. See Chapter 25, “Teleprocessing (TP) Devices,” on page 341 in Part 3, “Product-Dependent Information,” on page 295, for the devices to which this parameter applies.

Syntax

TERMN=*name*

name
: The valid one-to-eight character alphanumeric name assigned to a particular terminal.

Defaults

EREP processes VTAM OBR records regardless of the terminal name they contain.

Coding

No special considerations.

Parameter Conflicts

DEVSER	THRESHOLD
LIA/LIBADR	VOLID
SYMCDE	ZERO

Notes

- If you use the TERMN parameter, you cannot use ZERO=Y because you have excluded some records from processing.
- Although TERMN applies only to VTAM OBR records, EREP processes other types of records for the report unless you also code the appropriate DEV value and TYPE=O. See Chapter 25, “Teleprocessing (TP) Devices,” on page 341.

Examples

```
TERMN=T001
```

```
TERMN=TERM0025
```

THRESHOLD — Threshold Summary (Report Parameter)

Tells EREP to

Produce a threshold summary for your 3410, 3420, and 8809 tape devices. The report includes only those records with read/write error counts equal to or greater than the values specified on the parameter.

Syntax

THRESHOLD=(*xxx*,*yyy*)

xxx
The one-to-three digit decimal (leading zeros not required) threshold value for temporary read errors. Maximum value is 255.

yyy
The one-to-three digit decimal (leading zeros not required) threshold value for temporary write errors. Maximum value is 255.

Defaults

Unless you specifically code THRESHOLD and some threshold values, EREP produces no threshold summary.

Coding

- You cannot code THRESHOLD alone; you also need the threshold values on the parameter.
- If you do not specifically code DEV=(3410), DEV=(3420), or DEV=(8809), EREP processes records from all three device types. If you code DEV=(34XX), EREP processes records from all three device types.
- You cannot code ACC=Y with THRESHOLD.
- You cannot code ZERO=Y with THRESHOLD; not all the records are used for the report, so EREP does not clear the ERDS even if you request it.

Parameter Conflicts

ACC	CPUCUA	LIA/LIBADR	SHORT	TERMN	ZERO
CPU	ERRORID	MOD	SYMCDE	TYPE	

Notes

- The threshold summary uses only OBR and MDR records; you cannot select records by type.
- For this report, EREP accumulates STARTIO (SIO) counts for records flagged as demount records.

Examples

```
THRESHOLD=(1,5)
```

```
THRESHOLD=(005,015)
```

TIME — Time Range (Selection Parameter)

Tells EREP to

Select only those records created during the specified time period.

Syntax

TIME=({*hhmm*,*hhmm* | *hhmm*-*hhmm*})

hhmm
Is a valid time period, hours and minutes.

Defaults

EREP selects records regardless of when they were created.

Coding

- You must always code DATE when you code TIME.
- You code **hhmm** using a 24-hour clock (for example: 1400 for 2 p.m.).

Parameter Conflicts

ZERO

Notes

- If you use the TIME parameter, you cannot use ZERO=Y because that excludes some records from processing.
- If the second *hhmm* value is greater than or equal to the first, the time interval pertains to each day of the date range specified on the DATE parameter. For example:
  ```
  DATE=(89031,89033),TIME=(1000,1100)
  ```
  tells EREP to select records from 10:00 to 11:00 on each of three successive days.
- If the second *hhmm* value is less than the first, EREP assumes that the time interval crosses a day boundary. The interval is then regarded as two sub-intervals, one ending at 2400 and the other beginning at 0000. For example:
  ```
  DATE=(89031–89033),TIME=(1100–1000)
  ```
  tells EREP to select records from 1100 to 2400 on day 89031; from 000 to 1000 and 1100 to 2400 on day 89032; and from 000 to 1000 on day 89033.

TRENDS — Trends Report (Report Parameter)

Tells EREP to

Produce a trends report that shows the pattern and frequency of errors on a daily basis.

Syntax

TRENDS[=Y] | =N

Defaults

EREP produces no trends report.

Coding

EREP produces a trends report only when you specifically code TRENDS.

Specifying TRENDS is the same as TRENDS=Y.

Parameter Conflicts

DEVSER SHORT

Notes

- SIM generating devices will not be included in trends reports. (These devices include all of the devices in the 3390, 9345, and subsequent families.)
- If you request a trends report without specifying a date range on the DATE parameter, EREP processes the last 30 days of data, ending with the current date.
- If you do specify a date range, it cannot exceed 30 days.
- The default value for the ZERO parameter is NO with TRENDS; you must change the value of the ZERO parameter if you want EREP to clear the ERDS.

TYPE — Record Type (Selection Parameter)

Tells EREP to

Select only the specified types of records.

Syntax

TYPE=*code***[***code***]...**

Each *code* is one of the following:

Code	Record Type
A	A1 through AF records
B	B1 through BF records
C	CCH/CRW/SLH: Channel check/channel report word/subchannel logout records
D	DDR: Dynamic device reconfiguration records
E	System termination (EOD): End of day and other terminating events
F	F0 through FF records
H	MIH: Missing interrupt records
I	System initialization (IPL): Initial program load
M	MCH: Machine check records
O	OBR: Outboard records; unit checks
S	Software (SFT): System abends and other software events
T	MDR (formerly TPR): Miscellaneous data records
X	C0 through CF records
Y	D0 through DF records
Z	E0 through EF records

Defaults

EREP uses all types of records for the report.

Coding

Do not include parenthesis, commas, or blanks when coding TYPE.

Parameter Conflicts

THRESHOLD ZERO

Notes

- Take care when specifying TYPE with SYSUM or SYSEXN as report results can be misleading.
- If you use the TYPE parameter, you cannot use ZERO=Y because you have excluded some records from processing.
- Some other EREP selection parameters are meaningful with only some of the record types. The following table shows these parameters and the record-type codes they work with:

Parameter	Record Types
CPUCUA	C, D, H, O, T
CUA	C, D, H, O, T
DEV	A, C, D, H, O, T
DEVSER	O
ERRORID	M, S
LIA/LIBADR	T
SYMCDE	O
TERMN	O
VOLID	O, T

  Coding these selection parameters by themselves does not fully limit the types of records EREP processes; you also need the TYPE parameter to improve EREP's processing efficiency.

  For example:

  If you want a report using CCH records selected by CPUCUA, you must code TYPE=C as well as the CPUCUA parameter. Otherwise, EREP will use all the record types that contain a CPUCUA, which are DDR, MCH, MDR, MIH, and OBR, as well as CCH.
- If you use the TYPE selection parameter, EREP does not process records that are invalid or unknown.

Examples

To select machine-check and channel-check records:

```
TYPE=MC
```

To select all software-generated records:

```
TYPE=EIS
```

VOLID — Volume Identifier (Selection Parameter)

Tells EREP to

Select only those DASD and tape records associated with the specified volume identifiers.

Syntax

VOLID=(_volser_**[**,_volser_**]...)**

volser
A valid volume identifier (or serial number) that can be from one-to-six alphanumeric characters long.

Defaults

EREP selects DASD and tape records regardless of their volume identifiers.

Coding

Maximum of four entries.

No special considerations.

Parameter Conflicts

LIA/LIBADR SYMCDE TERMN ZERO

Notes

- The VOLID parameter is meaningful only for devices providing volume serial numbers.
- The VOLID parameter is not supported for A3 records, even if they contain a volume ID.
- If you use the VOLID parameter, you cannot use ZERO=Y, because you have excluded some records from processing.
- When you are using VOLID for a threshold summary, EREP assumes you want to see records from all your 34XX tape devices unless you specifically code DEV=(3410), DEV=(3420), or DEV=(8809).

Examples

```
VOLID=(TPONE,TPE2),DEV=(3420),THRESHOLD=(01,15)
```

```
VOLID=(TAPE5,CLPACK),PRINT=PS
```

ZERO — Clear the ERDS (Processing Parameter)

Tells EREP to

Reset the pointers in the ERDS header record so the operating system writing the records can start writing at the beginning of the ERDS (overwriting old, previously processed records). EREP uses the ERDS header record to know where to start and stop reading to get only the records written since the last time the ERDS pointers were reset.

Syntax

ZERO[=Y] | =N

Defaults

EREP does not clear the ERDS.

Coding

EREP clears the ERDS when you code ZERO (specifying ZERO is the same as ZERO=Y).

A few circumstances exist where EREP does not clear the ERDS even when you code ZERO=Y:

- If an overflow occurs in the sort table or work data set
- If you coded ACC=Y, but the output file cannot be opened
- If you coded ACC=Y, but EREP cannot process all the records because of table overflow

Important: Allow read-only users to read ERDS without a RACF ABENDs913 if ZERO=N is specified or defaulted. If you request a system summary report using the ERDS as input and code ACC=Y or allow it by default, EREP clears the ERDS even if you code ZERO=N. If you request a system summary report, you must have update access instead of read-only access. If your EREP run defines the ACCDEV file as DUMMY, the records are lost.

If you code ZERO=Y when requesting PRINT=SU or PRINT=NO, EREP assumes ACC=Y and expects you to define the output file.

Parameter Conflicts

ACC=N if ZERO=Y	DEV	MOD	TYPE
CPU	DEVSER	SYMCDE	VOLID
CPUCUA	ERRORID	TERMN	
CUA	HIST	THRESHOLD	
DATE	LIA/LIBADR	TIME	

Notes

MODE is a conflict except when ZERO=Y and MODE=ALL, which indicates no record selection.

Chapter 3. EREP Control Statements

Use EREP control statements in addition to EREP parameters to direct EREP processing. Control statements give EREP more information about your hardware configuration and about how you want it to organize the report you are requesting.

This topic covers the following subjects:

Coding Control Statements

Here are some considerations and recommendations to keep in mind when coding control statements:

- Several control statements are required for each EREP run.
- The same control statements may apply to several EREP runs.
- EREP ignores statements that do not apply.
- The control statements usually change only when your configuration changes.
- Some EREP control statements require considerable preparation.
- Putting control statements in a file is preferable to entering the statements in the input data stream.

Each EREP control statement has its own coding rules. Here are a few general coding rules that you must follow:

- Using ENDPARM

  Control statements cannot be mixed with EREP parameters. If parameters and control statements are in the same file, you must code **ENDPARM** to indicate the end of parameters before coding any control statements. **ENDPARM** must begin on column 1.
- Entering Control Statements

  The following table shows the operating system specific guidelines you must follow.

OP. SYSTEM	EREP CONTROL STATEMENT GUIDELINES
MVS	The EREP control statements must always be entered as SYSIN data. • You can enter the control statements as in-stream data. • You can put the control statements into a separate file specified by the SYSIN JCL statement. Refer to the SYSIN DD statement description in MVS System Controls and Coding the JCL in the *EREP User's Guide* for more information and examples.
VM	There are several ways to enter control statements: • You can enter CPEREPXA on the command line and supply the parameters and then the control statements in response to its prompting messages. • You can put the parameters and control statements in a file that is called as an operand to CPEREPXA. • You can use the CMS EXEC &STACK control statement to enter the parameters and then the control statements as in-stream data before coding the CPEREPXA EXEC. Refer to Entering CPEREPXA Operandsin the *EREP User's Guide* for more information and examples.
VSE	You must always code control statements as in-stream data in the SYSIPT data statement. Refer to Assignments at Initialization in the *EREP User's Guide* for more information.

- Continuing Control Statements

  You cannot continue a control statement from one line to the next. However, you can code several control statements by repeating complete statements on new lines in order to convey your information to the EREP program. See the control statement descriptions for more details.
- CPU Serial Number Restriction

  The combined number of CPUs or system images specified on all of the control statements for an EREP run cannot exceed 16.

  Use the SYSIMG statement to expand EREP's capabilities.

  The SYSIMG statement allows EREP to process records from an *n*-way processor so that those processors operating in the same system image are reported under the CPU serial number. See "SYSIMG Control Statement" on page 58 for additional information.

Summarizing Control Statements

EREP control statements provide information about your configuration and set overall criteria for the way you want EREP to create a report. The following table lists the types of control statements and describes how each affects the EREP run.

CONTROL STATEMENTS	WHAT THEY DO	REFER TO
CONTROLLER	Tells EREP to combine the error records associated with this particular control unit and its attached devices. This control statement only applies to the system summary and threshold reports.	"CONTROLLER Control Statement" on page 45

CONTROL STATEMENTS	WHAT THEY DO	REFER TO
DASDID	Tells EREP that this is the configuration of the 33XX DASDs within each subsystem; identifies those that do not provide physical IDs for the system exception report series. This control statement applies only to the system exception report series.	"DASDID Control Statement" on page 47
ENDPARM	Tells EREP that this is the end of the in-stream EREP parameters; the in-stream data that follows consists of EREP control statements.	
LIMIT	Tells EREP to produce output for the system exception reports only when the number of megabytes processed per error is less than the megabytes specified by the error frequency value and the number of times the error occurs is greater than or equal to the number specified by the count value. This control statement applies only to the system exception report series.	"LIMIT Control Statement" on page 52
SHARE	Tells EREP to combine the records for these devices that are shared between systems. This control statement applies to all the reports that generate I/O device summaries.	"SHARE Control Statements" on page 54
SYSIMG	Tells EREP to modify the CPU serial numbers for *n*-way processors so that those processors operating in the same system image are reported under the same CPU serial number.	"SYSIMG Control Statement" on page 58

Using Control Statements with Reports

Some EREP control statements are general-purpose, applying to most of the reports and most kinds of devices. Others are quite report-specific and product-specific.

Table 3 shows which control statements you can use with the various EREP report parameters.

Table 3. Valid Combinations of Control Statements and Report Parameters

PARAMETERS	CONTROLLER	DASDID	LIMIT	SHARE (1)	SYSIMG
EVENT				YES	YES
PRINT = AL				(2)	(3)
PRINT = DR				YES	(3)
PRINT = NO					(3)
PRINT = PS				(2)	(3)
PRINT = PT					(4)
PRINT = SD				(2)	(3)
PRINT = SU				YES	(3)
SYSEXN		YES	YES	(5)	YES
SYSUM	YES			YES	YES
THRESHOLD	YES			YES	YES
TRENDS				YES	YES

Table 3. Valid Combinations of Control Statements and Report Parameters (continued)

PARAMETERS	CONTROLLER	DASDID	LIMIT	SHARE (1)	SYSIMG

Notes:

1. SHARE statements are not used for DASD devices that provide product identifiers within their sense.
2. These PRINT options include detail summaries, which can include shared I/O devices.
3. Do not use if data is from the ERDS.
4. Use of the SYSIMG parameter does not affect the PRINT=PT parameter. The PRINT=PT parameter allows the processing of an unlimited number of CPUs; there is no need to alter serial numbers.
5. Use only for tape devices and DASD devices that do *NOT* provide product identifiers within their sense data.

Control Statement Syntax

The following table summarizes the syntax of individual EREP control statements and shows where to find the complete control statement descriptions.

SYNTAX	REFER TO
CONTROLLER=(*cpuser*.{*ccua* | *ccu***X** | *ccua-ccua*}**[,***cpuser*.{*ccua*|*ccu***X** | *ccua-ccua*}**]...)**	"CONTROLLER Control Statement" on page 45
370: **DASDID CPU=***nnnnnn***,CH=***xx***,SCU=***ss***,STR=***ccuu***,STR=***ccuu***,STR=***ccuu***,STR=***ccuu*,...	"DASDID Control Statement" on page 47
370XA: **DASDID CPU=X***nnnnn***,CHP=***xx***,SCU=***ss***,STR=***ccdddd***,STR=***ccdddd***,STR=***ccdddd***,STR=***ccdddd*,...	"DASDID Control Statement" on page 47
LIMIT {*dasd,dkeyword***[**,*dkeyword***]...** | *tape,tkeyword***[**,*tkeyword***]...** | *cpu,ckeyword***[**,*ckeyword* **]...**}	"LIMIT Control Statement" on page 52
SHARE=([XA.]*cpuser*.{*ccua*|*ccu***X** | *ccua-ccua*}**[,[XA.]***cpuser*.{*ccua* | *ccu* **X** | *ccua-ccua*}**]...)**	"SHARE Control Statements" on page 54
SYSIMG BASESN={**ALL** | *sssss*[,CPCTYPE=*tttt*][,CP=*n.n*...]}	"SYSIMG Control Statement" on page 58

Program Syntax Diagrams

Program syntax diagrams describe the syntax of the control statements. The following table contains samples and explanations of some of the syntax diagram elements:

PROGRAM SYNTAX DIAGRAM	DESCRIPTION
▶▶—*ccua*—*ccuX*——————▶◀	Required sequence of variables
▶▶—CPU=—*ccuX*——————▶◀	Required keyword followed by a required variable
▶▶——————————▶◀ └*ccua*—*ccuX*┘	Optional sequence of variables

<table>
<tr><th>PROGRAM SYNTAX DIAGRAM</th><th>DESCRIPTION</th></tr>
<tr><td><pre>
►►──┬─ccua──────┬──────────►◄
    ├─ccuX──────┤
    └─ccua-ccua─┘
</pre></td><td>Required choice between these variables</td></tr>
<tr><td><pre>
    ┌─,────┐
    ▼   │
►►──ccua───┴───────────►◄
</pre></td><td>Required variable that can be repeated after a separator character</td></tr>
</table>

CONTROLLER Control Statement

The CONTROLLER control statement provides EREP with channel control unit addresses (CUAs) or device numbers for the I/O devices attached to a control unit, allowing EREP to total the error counts for the control unit.

CONTROLLER control statements are:

- Used with the system summary report and the threshold report.
- Necessary when there are more than 16 devices on a control unit.
- Not used for DASD devices that provide product identifiers within their sense.

Indicates

The CUAs attached to a control unit.

Syntax

```
               ┌─,──────────────────────────┐
               ▼                            │
►►──CONTROLLER=──(───cpuser.──┬─ccua──────┬─┴─)──────────────────►◄
                              ├─ccuX──────┤
                              └─ccua-ccua─┘
```

cpuser
: Is a six-digit hexadecimal CPU serial number (digits 0–F).

ccua
: Is a three- or four-digit hexadecimal channel CUA or device number (digits 0–F). The first digit is the channel designated to the operating system as the primary CUA for the device.

ccuX
: Is a two- or three-digit hexadecimal channel-control unit number with X indicating all the device addresses attached to that control unit.

ccua-ccua
: Is a range of continuous addresses. The low end of the range must be first. The range must be at least one, and cannot exceed 32.

Defaults

None.

Coding

- CONTROLLER must be the first word in the statement, followed by an equal sign and the desired values in parentheses. No embedded blanks are allowed.
- Each entry on the CONTROLLER statement defines a controller grouping (the range of devices on a particular control unit). Additional entries on this and other CONTROLLER statements define other controller groupings.
- The combined number of CPUs (*cpuser*), specified on all of your control statements cannot exceed 16.
- Each control unit summary is limited to 16 device addresses unless CONTROLLER statements indicate otherwise.
- You can specify up to 32 CUAs for a single control unit.
- Every entry on a CONTROLLER statement must define the complete set of devices attached to that control unit.
- When a CONTROLLER statement specifies part of a 0–F range of device addresses and physical devices are attached to addresses in the remaining portion of the range, use another CONTROLLER entry to define the remaining devices, to prevent misleading output.
- You cannot overlap device address ranges on two CONTROLLER statements.
- Specify a range of addresses (*cpuser.ccua-ccua*) the same way each time you use it.
- If you specify a processor-device address combination on a CONTROLLER statement, you cannot specify a range that includes that combination on any other CONTROLLER statement.
- When you code a range of device addresses (*ccua-ccua*):

If the control unit digit, *u*, in the low CUA	For Example
Is **odd**, the high CUA must have the same *ccu* digits.	`0350–0357` is valid `0358–0367` is not valid
Is **even**, the high CUA must have the same even *ccu* digits, or the next greater odd *u* digit.	`0368–036F` is valid `0368–0377` is valid `0368–0388` is not valid
Note: The channel identifier can be one or two digits.	

Notes

- You can combine CONTROLLER statements with SHARE statements to make EREP combine the errors for shared devices by control unit. See “SHARE Control Statements” on page 54.
- The CPU entries that appear on CONTROLLER statements override the default number identifier assignments EREP makes for processors that appear in reports. See “How EREP Assigns Numbers to CPUs” on page 57 for details.

Examples

The following example illustrates the use of the CONTROLLER statement to define a controller grouping containing the full range of 32 devices:

```
CONTROLLER=(011111.0480–049F)
```

The result of this statement is that EREP combines the errors reported from the devices at addresses 0480 through 049F on CPU 011111 in one report entry.

DASDID Control Statement

The DASDID control statements identify the devices in your installation and the paths to the processors they work with.

You need DASDID control statements to provide EREP with *physical identifiers* for the DASD in your installation that do not provide their own physical IDs. See Chapter 17, “Direct-Access Storage Devices (DASD),” on page 307 for these devices.

EREP uses these *physical identifiers* to determine the probable failing unit (PFU) for the system exception report series.

The DASDID statements define the different paths from processors to devices in much the same way as do SHARE statements:

- You can use the DASDID statements to take the place of SHARE statements for the DASD subsystem exception reports.
- You can include the SHARE statements for DASD when you run the system exception report series, but EREP ignores them and uses the DASDID information instead.

Set up the DASDID statements, before you request the system exception report series. See “Setting up DASDID Controls” on page 49 for detailed directions on preparing DASDID controls.

Indicates

The paths from a processor through channels, storage control units and controllers to each drive.

Syntax

DASDID statement formats differ depending on whether the processor is running in 370 or 370XA mode.

The syntax of the *370 DASDID control statement* is:

```
                                                  ┌─,──────┐
                                                  ▼        │
►►──DASDID CPU=──nnnnnn──,──CH=──xx──,──SCU=──ss──,───STR=──ccuu─┴──────────►◄
```

nnnnnn
: Is a six-digit decimal CPU serial number.

xx
: Is a two-digit hexadecimal number identifying the channel (CH) between this CPU and the storage control unit.

ss
: Is the physical identifier of the storage control unit (SCU). Each SCU must have a unique ID number.

ccuu
: Is a four-digit hexadecimal value representing the controller and unit address for each DASD string (STR). The DASD string is the set of eight unit addresses assigned to one controller (or pair of controllers):

  cc Is the number you assign, in the range of 01–FE, to each controller. Each controller must have a unique ID number; however, controllers with string switch and 3350s with alternate controllers should have only one ID number.

uu Is the last two digits from the lowest address on the string. The second digit should be zero or eight.

The format of the *370XA DASDID control statement* is:

```
                                                    ┌─,──────────┐
                                                    ▼            │
►►──DASDID CPU=──Xnnnnn──,──CHP=──xx──,──SCU=──ss──,────STR=──ccdddd─┴──────────►◄
```

Xnnnnn
: Is a five-digit hexadecimal CPU serial number preceded by an *X* in the central processor (CP) identifier position.

xx Is the two-digit hexadecimal number identifying the channel path identifier (CHP) between this CPU and the storage control unit.

ss Is the physical identifier of the storage control unit (SCU). Each SCU must have a unique ID number.

ccdddd
: Is a five- or six-digit hexadecimal value representing the controller device number for each DASD string (STR). The DASD string is the set of eight device numbers assigned to one controller (or pair of controllers):

cc Is the number you assign, in the range of 01–FE, to each controller. Each controller must have a unique ID number; however, controllers with string switches and 3350s with alternate controllers should have only one ID number.

dddd
: Is the lowest device number on the string.

Defaults

None.

If you omit DASDID statements, those DASD that do not provide their own physical IDs are identified on the reports only by device type.

Coding

- DASDID must be the first word in the statement, followed by one blank and the CPU= keyword with its associated value.
- The keywords on this statement are positional and must be separated by commas.

Notes

The combined number of distinct CPUs specified on all of your control statements cannot exceed 256.

Examples

The following sections give you examples:

1. “Setting up DASDID Controls” describes how to set up DASDID control statements for your DASD subsystem.
2. “Checking Your DASDID Statements” on page 51 describes how to use the EREP messages file (TOURIST output) to make sure that your DASDID statements match your DASD subsystem configuration.
3. “DASDID Configuration Chart Notes” on page 51 describes how to use the notes that may accompany the DASDID configuration chart and their meanings.

Setting up DASDID Controls

You do not need DASDID statements for DASD that provide their own physical IDs (for example, 3375s and 3380s). If you choose to code control statements for these devices, make sure the physical IDs you create match those switched into the storage directors.

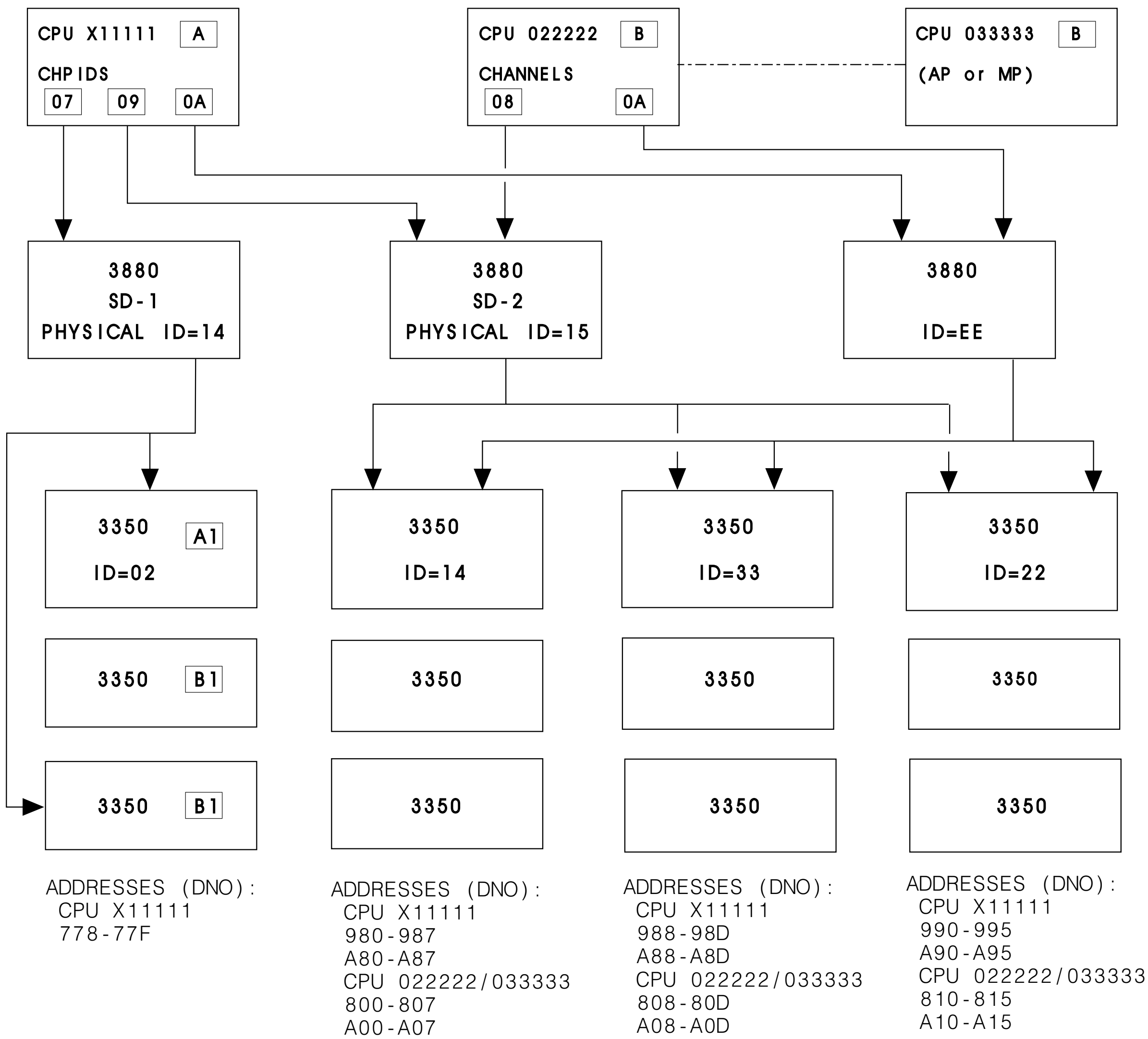
Use the following steps to set up DASDID controls for your DASD subsystem.

STEP	ACTION		
1	Set up a diagram of your DASD configuration (see Figure 1 on page 50).		
	a	Show all connections between DASD controllers, storage control units, and channels.	
	b	Include all processors that can record data on the ERDS. See CPU 033333 in Figure 1 on page 50.	
	c	Label each channel or channel path.	
	d	Label the devices that have physical IDs.	
	e	Create physical IDs for the devices that *do not provide their own*:	
		1)	Assign a unique ID to each 3880. Do not duplicate IDs used on other storage control units.
		2)	Assign a unique ID to each controller that does not have one. Do not duplicate IDs used on other controllers.
		3)	Determine the lowest unit address (or device number; the last two digits of the device address) for each string, by processor (CPU).
	f	Assign a unique label to each processor in the diagram.	
2	Create a comment line (as shown in Figure 2 on page 51) for each storage control unit, indicating the connected controllers and the DASD strings connected to them. For example: `*SCU15  CTRL14,33,22  CPU A (980-995) B (800-815)` describes one of the storage control units shown in Figure 1 on page 50. This is storage control unit 15, that is connected to strings 980–987, 988–98D, and 990–995 from CPU A (X11111); and to strings 800–807, 808–80D, and 810–815 from CPU B (022222). The paths to the devices are through controllers 14, 33, and 22, in that order.		
	a	The comment lines serve two purposes:	
		1)	They outline the DASDID statements.
		2)	They document the DASDID statements in case of future configuration changes.
	b	The STR value in the DASDID statement consists of the controller ID and the lowest address or device number from the string attached through that controller to the CPU.	

STEP	ACTION
3	Create DASDID statements according to the comment lines. Figure 2 on page 51 shows the completed comments and DASDID statements for the configuration shown in Figure 1.

Figure 1shows one way to define the DASD configuration in an installation.

Important: This is an example; *not* a model configuration.



Notes:

1. The PHYSICAL IDs for the 3880s (14 and 15) are those switched into the storage director.
2. The IDs for the 3350s are arbitrary unique numbers that you assign.

IFCUG005

Figure 1. DASD Configuration Diagram for DASDID Statements. DASD Configuration Diagram for DASDID Statements

Figure 2 on page 51 contains examples of the comment lines you create for each storage control unit, showing the controllers and the DASD strings connected to them.

```
:
*******************************************************************
SYSEXN,TABSIZE=512K,HIST,DATE=84348,ACC=N
ENDPARM
*******************************************************************
* CPU DEFINITIONS  A=X11111 B=022222 and 033333
* SCU 14     CTRL 02    A(778-77F)
DASDID CPU=X11111,CHP=07,SCU=14,STR=02778
* SCU 15     CTRL 14,33,22    A(980-995)  B(800-815)
DASDID CPU=X11111,CHP=09,SCU=15,STR=14980,STR=33988,STR=22990
DASDID CPU=022222,CH=08,SCU=15,STR=1400,STR=3308,STR=2210
DASDID CPU=033333,CH=08,SCU=15,STR=1400,STR=3308,STR=2210
* SCU EE     CTRL 14,33,22    A(A80-A95)  B(A00-A15)
DASDID CPU=X11111,CHP=0A,SCU=EE,STR=14A80,STR=33A88,STR=22A90
DASDID CPU=022222,CH=0A,SCU=EE,STR=1400,STR=3308,STR=2210
DASDID CPU=033333,CH=0A,SCU=EE,STR=1400,STR=3308,STR=2210
*******************************************************************
```

Figure 2. Examples of DASDID Control Statements

Checking Your DASDID Statements

The EREP messages file (TOURIST output) for the system exception report series includes:

- The DASDID statements used
- A table showing the generated configuration

Important: This report must agree with your configuration if you expect the probable failing unit assignments in the system exception reports to be accurate.

To check the accuracy of your DASDID statements, you can do the following:

STEP	ACTION
1	Run EREP, requesting the system exception reports. Refer to Generating System Exception Reportsin the *EREP User's Guide* for the location of examples on how to request these reports under each operating system.
2	Check the configuration chart in the EREP messages file (TOURIST) against your comment lines to be sure that your DASDID statements accurately show your configuration. Figure 5 on page 72 shows the configuration chart produced for the DASDID statements in Figure 2.

DASDID Configuration Chart Notes

Several notes may accompany the DASDID configuration chart.

```
NOTE
THE SCUs CANNOT BE FORMATTED. CC, CHANNEL, AND UA/DNO ARE GIVEN BY CPU.
THE SCUs INDICATED ABOVE COULD NOT BE FORMATTED FOR THE FOLLOWING REASONS.

 1. THE NUMBER OF CONTROLLER IDS DOES NOT EQUAL THE NUMBER OF UA/DNOS FOR A CPU.

 2. THE CONTROLLER IDS ARE NOT THE SAME FOR ALL THE CPUS ATTACHED TO THE SCU.

 3. THE UA/DNOS FOR A CPU ARE EXPECTED TO CONSECUTIVELY INCREASE BY EIGHT.
        THIS MAY NOT NECESSARILY BE AN ERROR.

 4. THERE ARE MORE THAN FOUR UA/DNOS FOR A CPU.

 5. THERE ARE MORE THAN THREE CHANNELS FOR A CPU IN 370 MODE.

 6. THERE ARE MORE THAN FOUR CHANNELS FOR A CPU IN 370XA MODE.

 7. THERE ARE MORE THAN FOUR CONTROLLER IDS FOR AN SCU.
```

Explanation of Notes:

1. The program generating the configuration table has found no controller ID for any set of addresses or device numbers. Because the controller ID defines a string of devices, there must be a unique controller ID for each string defined by its lowest unit address/device number. The controller ID is the first two digits of the STR parameter.
2. There should be only one SCU or controller assigned to a specific ID for the installation. The controller ID must be the same for a string no matter which CPU it is accessed from. Check the STR parameters to determine which strings have different controller IDs defined for the same string.
3. In order to format the unit addresses (UAs) or device numbers (DNOs) as a range (for example: 120–12F), the numbers must be consecutive. The numbers in the group have not been increasing consecutively by eight.
4. A maximum of four strings can connect to one SCU (unless a switch is used). At least one CPU is found to have more than four strings defined by controller ID or unit address/device number.
5. The configuration generator provides space in the format for only three channels from one CPU to an SCU, in 370 mode.
6. The configuration generator provides space in the format for only four channel paths from one CPU complex to an SCU, in 370XA mode.
7. Four is the maximum number of strings allowed per SCU.

LIMIT Control Statement

The LIMIT control statement allows you to set error thresholds for EREP to use with the subsystem exception reports:

- The values you specify on LIMIT statements control the processing of temporary and soft (nonterminating) errors.
- The reports include data only for devices with errors that equal or exceed limits you specify.
- You can cut down on the number of records EREP uses for the system exception reports by using the LIMIT control statements.

Indicates

The limits you want EREP to apply to temporary or soft errors produced by the device type or processor model for the system exception reports.

Syntax

```
                   ┌─,──────┐
                   ▼        │
►►──LIMIT──┬─dasd,───dkeyword─┴─┬──────────────────────────────────►◄
           │       ┌─,──────┐   │
           │       ▼        │   │
           ├─tape,───tkeyword─┴─┤
           │      ┌─,──────┐    │
           │      ▼        │    │
           └─cpu,───ckeyword─┴──┘
```

dasd
: Is the device type designation for DASD products.

tape
: Is the device type designation for tape products.

cpu
: Is the machine type designation for processor products.

dkeyword
: Is one or more DASD product-dependent keyword parameters with associated numeric limits.

tkeyword
: Is one or more tape product-dependent keyword parameters with associated numeric limits.

ckeyword
: Is one or more processor product-dependent keyword parameters with associated numeric limits.

Because the possible device types, keywords, and numeric expressions are product-specific, their descriptions are in Part 3, “Product-Dependent Information,” on page 295. See the LIMIT control statement sections of the device dependent topics shown in the following table for details:

- For DASD, see “LIMIT Control Statement” on page 314
- For magnetic tape drives, see:
  - “LIMIT Control Statement” on page 320
  - “LIMIT Control Statement” on page 323
- For processors, see “LIMIT Control Statement” on page 335

Defaults

The default action for the LIMIT statement varies according to the product involved. See the discussions of the LIMIT statement in Part 3, “Product-Dependent Information,” on page 295.

Coding

The LIMIT statement is different for each product group. The details are in Part 3, “Product-Dependent Information,” on page 295.

Here are a few general rules that apply:

- LIMIT must be the first word in the statement, followed by one blank, the device or machine type, and the keyword parameters, separated by commas.

- If you code more than one LIMIT statement for a device type, EREP uses the temporary error limits set in the latest LIMIT statement; the values on a second statement override those on a previous one.

Examples

See the DASD, tape, and processor sections of Part 3, “Product-Dependent Information,” on page 295, for the details and examples of using LIMIT statements.

SHARE Control Statements

The SHARE control statement directs EREP to combine errors for any device that is shared between processors or systems. The report associates all the errors for that device with the device address rather than with the different processors.

You can use SHARE statements to influence the way EREP assigns hexadecimal identifiers to the processors shown in the reports. See “How EREP Assigns Numbers to CPUs” on page 57 for details.

Indicates

The paths to devices shared by processors.

Syntax

```
                 ┌─,────────────────────────────────┐
                 ▼                                  │
►►──SHARE=──(──┬─────┬──cpuser.──┬─ccua──────────┬──┴──)──────────────────────►◄
               └─XA.─┘           ├─ccuX──────────┤
                                 └─ccua-ccua─────┘
```

[XA.]cpuser
: Is a six-digit hexadecimal CPU serial number (digits 0–F). Use *cpuser* to indicate that the processor is running in 370 mode. Use *XA.cpuser* to indicate that the processor is running in 370XA mode.

ccua
: Is a three- or four-digit hexadecimal channel-control unit-device address or device number (digits 0–F). The first digit is the channel designated to the operating system as the primary CUA for the device.

ccuX
: Is a two- or three-digit hexadecimal channel-control unit number with *X* indicating all the device addresses (0–F) attached to that control unit.

ccua-ccua
: Is a range of continuous addresses. The low end of the range must be first. The range must be at least one, and cannot exceed 32.

Defaults

None.

If you omit this control statement, EREP presents each device’s error records by device type.

If a device is shared between processors or systems and you omit this control statement:

- The EREP reports present the error records by processor and device type.
- The message, IFC221I NO SHARE CARD is generated and the job completes with a return code of 4 (RC=4).

Coding

- SHARE must be the first word in the statement, followed by the equal sign and the desired values in parentheses.
- You must put at least two entries (*cpuser.ccua* | *ccu*X | *ccua-ccua*) in each statement.
- You may need more than one SHARE statement to show all the possible paths to one device. If so, repeat the first entry in the statements for the remaining paths, because EREP equates all the paths in the SHARE statement to the one you specify first.

  For example:

  ```
  SHARE=(011111.01F0,022222.0330,022222.06F0,022222.0FF0)
  SHARE=(011111.01F0,033333.03F0,033333.0630,033333.0F30)
  ```
- The *cpuser* values in SHARE statements override the hexadecimal identifiers assigned by EREP for the CPUs in the report. See “How EREP Assigns Numbers to CPUs” on page 57 for details.
- Once you have specified a range (*cpuser.ccua-ccua*) in a SHARE statement, you must specify that range the same way each time you use it in any other SHARE statement.
- The combined number of CPUs, *cpuser*, specified in all of your control statements cannot exceed 255.
- When you code a range of device addresses (*ccua-ccua*):

If the control unit digit, *u*, in the low CUA	For Example
Is **odd**, the high CUA must have the same *ccu* digits.	`0350–0357` is valid `0358–0367` is not valid
Is **even**, the high CUA must have the same even *ccu* digits, or the next greater odd *u* digit.	`0368–036F` is valid `0368–0377` is valid `0368–0388` is not valid
Note: The channel identifier can be one or two digits.	

- If more than one address range is specified on one SHARE statement, the total number of addresses specified in each range must match.

Notes

- The SHARE control statements are not used for DASD devices that provide product identifiers within their sense (For example: 3990/3390).
- When you include SHARE statements in your EREP controls, each report indicates whether a particular set of error data represents a device that you have specified in SHARE statements.

Examples

The following sections give you more detailed instructions and examples:

- “Using SHARE Statements to Combine Data in EREP Reports” on page 56 describes how to set up share statements for the devices in your system.
- “How EREP Assigns Numbers to CPUs” on page 57 describes how to control the numbers EREP assigns to the CPUs.

Using SHARE Statements to Combine Data in EREP Reports

Figure 3 is an example of the kind of I/O configuration that requires SHARE statements. The text that follows explains how to set up SHARE controls for the illustrated configuration.

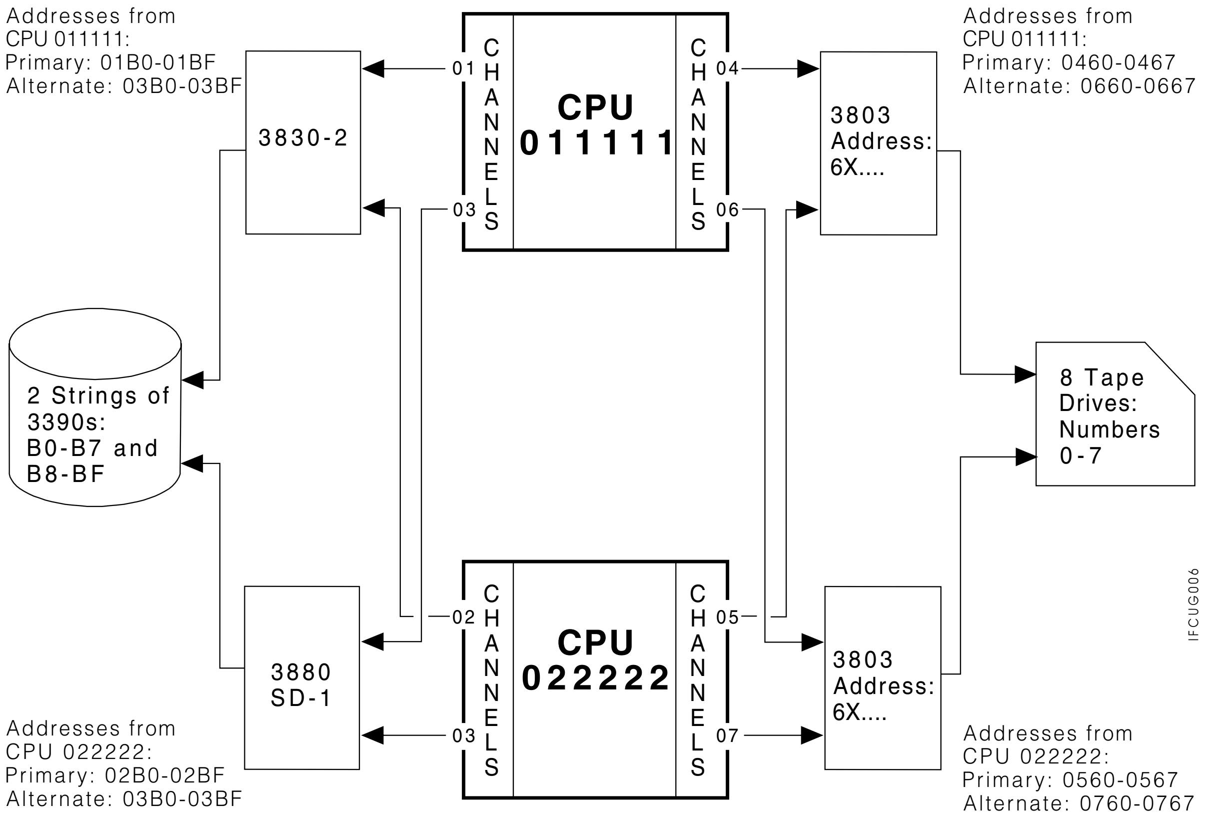


Figure 3. Configuration for SHARE Statements. An example of the kind of I/O configuration that requires SHARE statements

SHARE Statements for DASD Drives

EREP combines all records for the DASD drives in the strings when you use:

```
SHARE=(011111.01BX,022222.02BX)
```

OR

```
SHARE=(011111.01B0–01BF,022222.02B0–02BF)
```

Either of these SHARE statements causes the records from DASD drive 0 (device addresses/numbers 01B0 and 02B0) to be combined and presented as data for 01B0 on CPU 011111.

Without the SHARE statements the records are presented by the primary channel address for each processor as follows:

- Records for drive 0 on CPU 011111 are presented as 01B0, regardless of whether they have been recorded on channel 01 or 03.
- Records for drive 0 on CPU 022222 are presented as 02B0, regardless of whether they have been recorded on channel 02 or 03.

SHARE Statements for Tape Drives

EREP combines all records for the tape drives in the strings when you use:

```
SHARE=(011111.0460–0467,022222.0560–0567)
```

This SHARE statement causes all records from drive 7 (device address/numbers 0467 and 0567) to be combined and presented as data for 0467 on CPU 011111.

Without the SHARE statements the records are presented by the primary channel address for each processor as follows:

- Records for drive 5 on CPU 011111 are presented as 0465, regardless of whether they have been recorded on channel 04 or 06.
- Records for drive 5 on CPU 022222 are presented as 0565, regardless of whether they have been recorded on channel 05 or 07.

How EREP Assigns Numbers to CPUs

EREP identifies each processor by a two-digit hexadecimal number (`00–FF`). It assigns the number identifiers separately for each report, based on the model and serial number of each processor and when it is encountered.

Important: You can use SHARE or CONTROLLER control statements to force EREP to assign specific numbers to specific processors, and to use the same number for each processor in all the EREP reports.

EREP always assigns numbers to the processors you have specified on SHARE or CONTROLLER control statements, before reverting to the default method. The default method assigns numbers to processors in the order in which they occur in the input data. These number assignments can change from one report to the next, if the reports use different error records.

EREP assigns numbers to the processors in the following manner:

STAGE	DESCRIPTION
1	EREP examines the *first entry on every statement*, assigning the next hexadecimal number to each new CPU model or serial number it encounters.
2	After assigning numbers to the CPUs in all the first entries, EREP examines *the rest of the entries on each statement in turn*, assigning the next hexadecimal number to each new CPU serial number it finds.
3	After completing these assignments, EREP assigns numbers to *any processors it encounters in the input data that are not specified on SHARE or CONTROLLER statements*, using its default method.

The following example illustrates EREP's hexadecimal number assignments for CPUs that appear on SHARE or CONTROLLER statements:

```
SHARE=(000001.120,000002.120,000006.120)
SHARE=(000003.130,000004.130)
SHARE=(000005.140,000003.140)
```

If EREP also encounters CPU serial number 000007 in the input data. EREP assigns number identifiers to all of these processors as follows:

Number Identifier
CPU Serial Number

00 000001

01	000003
02	000005
03	000002
04	000006
05	000004
06	000007

SYSIMG Control Statement

The SYSIMG control statement directs EREP to process records by system image rather than CPU address.

Use SYSIMG control statements as follows:
- To request a report with records from a central processor complex (CPC) with more than one internal processor(CP).
- To define the CPs in a physically partitioned CPC as system images.
- To define the physical CPs associated with a logical partition as system images. See "PR/SM Feature" on page 337 for information on logical partitioning.
- When message IFC201I in the EREP messages (TOURIST) indicates that records are being ignored due to an excessive number of CPUs.

An *n*-way CPC produces up to *n* different CPU identification numbers. Use the SYSIMG control statement to group the CPU identification numbers into system images. Without a SYSIMG statement, EREP can process records from only 16 CPUs, with the following exceptions:
- PRINT=PT can process records from an unlimited number of CPUs
- EVENT can process records from 256 CPUs
- SYSEXN can process records from 255 CPUs
- SYSUM and TRENDS can group all CPUs after the first 15 under serial number X'FFFFFF'

System image processing involves replacing the CP address with a control digit (either `E` or `F`) during record processing. The CP addresses are changed as follows:
- To `F` for a single-image CPC
- To either `F` or `E` depending on the order of the SYSIMG control statements for a physically partitioned CPC

The CPU table at the end of system or subsystem reports reflects these changes. The changes occur in the internal EREP tables and output, no external records are changed.

Indicates

That records are processed by specific system images rather than CPU identification number.

Syntax

```
►►──SYSIMG BASESN=──┬─ALL──────────────────────────────────────────────────┬──►◄
                    └─sssss──┬──────────────────┬──┬──────────────────────┬─┘
                             └─,──CPCTYPE=──tttt─┘  │              ┌─.──┐ │
                                                    └─,──CP=──n──.──▼─n─┴─┘
```

ALL
Indicates that all processor complexes are single images (no physical or logical partitions) *or* all I/O devices have unique identifiers in their sense (unique addresses or device numbers).

sssss
Is the 5-digit serial number of a specific CPC. When the processor resource/system manager (PR/SM) feature is used to create logical partitions the high-order digit must be the same as the PR/SM partition identifier. See "PR/SM Feature" on page 337 for information on logical partitioning.

tttt
Is the 4-digit processor type.

n A single hexadecimal digit identifying the CPs in this system image.

Defaults

None.

If you omit this control statement EREP processes all records by the CPU identification number and machine type (CPUID).

Coding

- One control statement is sufficient for all system images, when **BASESN**=*ALL* is specified.

  Important: By coding **BASESN=***ALL* when devices do not have unique physical identifiers or unique addresses, you may cause incorrect or invalid results.
- There are no more than two system images per CPC unless logical partitioning is available.
- Code CPCTYPE= if there are records from processors with different machine types, but the same CPU identification numbers.
- SYSIMG controls apply to all report parameters except PRINT= as follows:
  - SYSIMG controls does not affect the PRINT=PT parameter.
  - SYSIMG controls apply for all other PRINT= selections when records are read from a history file.
  - SYSIMG controls do not apply when PRINT= is specified and records are read from the error recording data set.

    Important: No message is issued in this case.

Notes

- **BASESN**=*ALL* is particularly useful when producing reports on I/O devices with unique addresses or device numbers.

  Important: Do not use **BASESN**=*ALL* when reports include software or MIH records from partitioned CPCs.

- If the normal mode of operation is to physically partition the CPC during a reporting interval and the I/O devices do not have unique identifiers, then define each partition as a separate image system.
- The DASDID and SHARE control statements do not require changes when you use SYSIMG. EREP changes the high-order digit of the CPU serial number in the internal tables created by the DASDID and SHARE control statements.
- EREP issues message IFC262I to the EREP messages (TOURIST) informing the user that the CPU serial numbers in the CPU table have been modified as a result of the SYSIMG control statement.

Examples

The following example shows you how to code SYSIMG control statements:

Code as follows if all I/O units in the complex can be identified by unique identifiers within their sense data:

```
SYSIMG BASESN=ALL
```

This defines all CPCs as single images and changes the first two digits of the serial numbers in the CPU table to FF.

Chapter 4. Error Records for EREP

This topic contains reference information about the records EREP uses to produce reports, as recorded by the operating systems. It is intended to help the customer diagnose EREP problems.

Error-Recording Process

Each operating system writes error and operational records to its error-recording data set (ERDS). The records are created for the hardware (processors and devices) that makes up the environment, although the operating system also creates some records to document its own processing.

The ERDS is different for each operating system.

OP. SYSTEM	ERDS DESCRIPTION
MVS	The system data set ERDS resides on the system residence volume. The default name of the ERDS is SYS1.LOGREC. In MVS releases 5.1 and later, the name can be modified at installation. For MVS/XA* or MVS/ESA*, LOGREC can be another cataloged data set and does not need to be on the system residence volume. The data set is initialized by the IFCDIP00 service aid during system generation and can be reinitialized at IPL.
VM	The error-recording area is assigned on the system residence volume and initialized during system generation.
VSE	The system logical unit SYSREC (file name IJSYSRC) resides on the SYSRES disk. The data set is initialized by the IPL command SET RF=CREATE.

ERDS Formats

The error-recording data sets have an ERDS header record followed by error and operational records.

Important: The ERDS header records reside only in the ERDS; they do not exist in the HISTORY FILE (generated with the HIST=Y parameter).

The characteristics of each operating system determine the format of the ERDS, but the records on a system's ERDS conform to a standard of both format and content regardless of the system that records them.

ERDS Header Record

The *ERDS header record* provides the following information to the system recording routines about the device on which the ERDS resides:

- Where to write new records
- When the data set is getting full

The tables in this topic show the header records for each system.

The terms used in the table headings are described below:

Offset Is the numeric address of the field relative to the beginning of the data area.

Dec(hex)
Is the offset in decimal, followed by the hexadecimal equivalent in parentheses. For example: 16(10).

Size (bytes)
Is the field size in bytes.

Alignment (bits)
Shows the bit settings of switch or flag fields, as follows:

`.... ....`
Indicates the eight bit positions (0–7) in a byte. For ease of scanning, the high-order (left-hand) four bits are separated from the low-order four bits.

`x... ....`
Is a reference to bit 0.

`1... ....`
Indicates that bit 0 is on.

`0... ....`
Indicates that bit 0 is off.

`.... ..xx`
Is a reference to bits 6 and 7.

The record mappings include significant bit settings. Bits described as *reserved* are not significant for this release.

Field Name
Is a label (acronym) that identifies the field.

Description
Indicates how the field is used:

- Where the field's use relates directly to a value you would code, the coded value is shown.
- Where the hexadecimal code for a particular bit setting may be helpful, it is shown separated from the rest of the description.

MVS Header Record for the ERDS

Table 4 shows an example of the MVS header record for the ERDS.

Table 4. MVS ERDS Header Record

Offset Dec(Hex)	Size(bytes) Alignment(bits)	Field Name	Description
0(0)	2	CLASRC	Header-record identifier. Each bit in this field is set to 1 unless critical data has been destroyed.
2(2)	4	LOWLIMIT	Address of low extent. Track address (in CCHH format) of first extent of SYS1.LOGREC.
6(6)	4	UPLIMIT	Address of high extent. Track address (in CCHH format) of last extent of SYS1.LOGREC.
10(A)	1	MSGCNT	Count of the number of times LOGREC-full message has been issued (maximum is 15).
11(B)	7	RESTART	Address of record entry area, and address of time-stamp record. Starting track address (in BBCCHHR format) of the recording area on SYS1.LOGREC. If a time-stamp record is present, it begins at the address pointed to by this field.
18(12)	2	BYTSREM	Remaining bytes on track. Number of bytes remaining on the track upon which the last record entry was written.
20(14)	2	TRKCAP	Total bytes on track. Number of bytes that can be written on a track of the volume containing SYS1.LOGREC.
22(16)	7	LASTTR	Address of last record written. Track address (in BBCCHHR format) of last record written on SYS1.LOGREC.
29(1D)	2	TRKSPER	Highest addressable track for each cylinder on volume containing SYS1.LOGREC.
31(1F)	2	EWMCNT	Warning count. Number of bytes remaining on early-warning-message track of SYS1.LOGREC when 90%-full point of data set is reached. When this is detected by a recording routine, it issues a message and turns on the early-warning-message switch at displacement 38.
33(21)	1	DEVCODE	Device code, indicating the device type of the volume on which SYS1.LOGREC resides: **Code** **Device** **04** 2302 **07** 2305 MOD II **09** 3330 and 3333 MOD I or 3350 operating in 3330-1 compatibility mode **0A** 3340 and 3344 **0B** 3350 native mode **0C** 3375 **0D** 3330 and 3333 MOD II or 3350 operating in 3330-II compatibility mode **0E** 3380 **0F** 3390
34(22)	4	EWMTRK	Early-warning-message track. Track address (in CCHH format) on which 90% full point for data set exists.
38(26)	1	EWMSW	Switch byte:
	1...		90%-full-point message has been issued. This switch is turned on by the recording routine detecting 90% full point and is turned off by IFCEREP1 when clearing SYS1.LOGREC.
	.xxx xxxx		Reserved.
39(27)	1	SFTYBYTS	Check byte. Each bit in this field is set to 1; the field is used to check the validity of the header-record identifier.

VM Header Record for the Error Recording Area (Cylinder)

Table 5 shows an example of the VM header record for the error-recording area.

Table 5. VM Error Recording Cylinder Header Record

Offset Dec(Hex)	Size(bytes) Alignment(bits)	Field Name	Description
0(0)	4	RECCCPD	Address of this cylinder.
4(4)	2	RECNXT	Displacement to the next available space for records.
6(6)	1	RECFLAG1	Record usage flags:
	1...	RECPAGIU	The page contains valid data.
	.1..	RECPAGFR	The page is cleared. This bit is set by EREP when it clears the error-recording area.
	..1.	RECPAGFL	The page is full. When this bit is set, a message is issued to the operator to clear the error-recording area.
	...1	RECPAGER	The next page is unreadable.
	.... 1...	RECPAGFA	Frame records exist for this page.
	xxx		Reserved.
7(7)	1	RECFLAG2	Record format flags:
	1...	RECPAGFM	The cylinder is being formatted. This bit is turned on in the first page of a recording cylinder while the cylinder is being formatted. The field is reset only when all pages are cleared.
	0000 0000	RECPAGDN	The cylinder has been formatted. If this field is nonzero, the cylinder is in the process of being formatted.

VSE Header Record for SYSREC with CKD

Table 6 shows the format of the header record when IJSYSRC is on a count-key-data device.

Table 6. VSE CKD SYSREC Header Record

Offset Dec(Hex)	Size(bytes) Alignment(bits)	Field Name	Description
0(0)	2	CLASRC	Header record identifier. This field is set to X'FF00' unless critical data has been destroyed.
2(2)	4	LOWLIMIT	Address of low extent. Track address (in CCHH format) of first extent of SYSREC.
6(6)	4	UPLIMIT	Address of high extent. Track address (in CCHH format) of last extent of SYSREC.
10(A)	1	TRKSPER	Highest addressable track for each cylinder on the volume containing SYSREC.
11(B)	7	RESTART	Address of record entry area. Starting track address (in BBCCHHR format) for recording area on SYSREC.
18(12)	2	BYTSREM	Remaining bytes on track: number of bytes remaining on the track upon which the last record entry was written.
20(14)	2	TRKCAP	Total bytes on track. Number of bytes that can be written on a track of the volume containing SYSREC.
22(16)	7	LASTTR	Address of last record written. Track address (in BBCCHHR format) of last record written on SYSREC.
29(1D)	2	PUBNUM	Number of PUBS in the system.
31(1F)	2	EWMCNT	Warning count. Number of bytes remaining on early warning message track of SYSREC when 90% full point of data set is reached. When this is detected by a recording routine, it issues a message and turns on the early-warning-message switch at displacement 38.

Table 6. VSE CKD SYSREC Header Record (continued)

Offset Dec(Hex)	Size(bytes) Alignment(bits)	Field Name	Description
33(21)	1	DEVCODE	Device code. Code indicating device type of system volume on which SYSREC resides: **Code** **Device** **01** 2311 **02** 2301 **03** 2303 **04** 2302 **06** 2305 MOD 1 **07** 2305 MOD 2 **08** 2314 **09** 3330 and 3333 MOD 1 or 3350 operating in 3330-1 compatibility mode **0A** 3340 and 3344 **0B** 3350 native mode **0C** 3375 **0D** 3330 and 3333 MOD 11 or 3350 operating in 3330-11 compatibility mode **0E** 3380 **0F** 3390
34(22)	4	EWMTRK	Early warning message track. Track address (in CCHH format) on which the 90% full point will be found.
38(26)	1	EWMSW	Switch byte:
	1...		90% full point message has been issued. This switch is turned on by recording routine detecting 90% full point and is turned off by IFCEREP1 when clearing SYSREC.
	.1..		An emergency recording has occurred. This switch is turned on when the system terminates because SYSREC is full.
	..1.	FRAMES	Machine-check and channel-check frames exist on SYSREC.
	...x xxxx		Reserved.
39(27)	1	SFTYBYT	Check byte. Each bit in this field is set to 1 (X'FF'); used to check the validity of the header-record identifier.

VSE Header Record for SYSREC with FBA

Table 7 shows the format of the VSE header record when IJSYSRC is on a fixed-block-architecture device.

Table 7. VSE FBA SYSREC Header Record

Offset Dec(Hex)	Size(bytes) Alignment(bits)	Field Name	Description
0(0)	2	CLASRC	Header record identifier. This field is set to X‘FF00’ unless critical data has been destroyed.
2(2)	4	LOWLIMIT	Address of low extent. Block number of the first extent of SYSREC.
6(6)	4	UPLIMIT	Address of high extent. Block number of the last extent of SYSREC.
10(A)	1		Reserved.

Table 7. VSE FBA SYSREC Header Record (continued)

Offset Dec(Hex)	Size(bytes) Alignment(bits)	Field Name	Description
11(B)	4	RESTART	Address of record entry area. Block number of the start of the recording area of SYSREC.
15(F)	7		Reserved.
22(16)	4	LSTREC	Address of last record. Block number of the last record written on the recording area.
26(1A)	7		Reserved.
33(21)	1	DEVCODE	X'0F' Device code for FBA device.
34(22)	4	EWMTRK	Early-warning-message block. Block number on which the 90%-full point will be found.
38(26)	1	EWMSW	Switch byte:
	1...		90%-full-point message has been issued. This switch is turned on by recording routine detecting 90% full point and is turned off by IFCEREP1 when clearing SYSREC.
	.1..		An emergency recording has occurred. This switch is turned on when the system terminates because SYSREC is full.
	..1.	FRAMES	Machine-check and channel-check frames exist on SYSREC.
	...x xxxx		Reserved.
39(27)	1	SFTYBYT	Check byte. Each bit in this field is set to 1 (X'FF'); used to check the validity of the header-record identifier.

Time-Stamp Record for IPL Records

The time-stamp record consists of a standard 24-byte header plus 16 bytes that are reserved for system use. The system date and time fields are at offsets 8 and 12. These fields are updated at preset intervals, to keep the date and time current.

The recording routines take the current date and time from the time-stamp record and put them in the system date and time fields of the IPL record header.

The current date and time information in an IPL record allows you to measure the interval between system termination and reinitialization.

Information in Error and Operational Records

There are two types of records on the system's ERDS:

RECORD TYPE	DESCRIPTION
Hardware and software errors	Reflect the failure and recovery of processors, channels, I/O devices, and operating system software.
Software operational data	Indicate the time and circumstances of the failures and other conditions.

Although the records reflect different events and are of different lengths, they all contain the following kinds of information:

- Relevant system information at the time the record is generated
- Device hardware status at the time the record is generated
- Results of any device or control unit recovery attempt
- Results of any software system recovery attempt
- Statistical data about device usage and recoverable errors

Each record begins with a standard 24-byte header that contains the information to identify the type and origin of the records.

INFORMATION	DESCRIPTION
Type information	Includes the specific type of the record, the specific source of the record, the general reason the record is created, and special record-dependent data.
Origin information	Includes the operating system under which the record is generated, the date and time the record is generated, and the identity of the processor (CPU) on which the record is generated.

Note: For CCH, MCH and OBR records, the processor generating the record is also the processor associated with the error. In a tightly-coupled multiprocessing environment, this is not necessarily true for other types of records.

Hardware I/O errors are divided into the following groups in several of the EREP reports:

TYPE OF ERROR	DESCRIPTION	IN THE OBR
Temporary error	A read or write operation that failed, was retried, and eventually succeeded	Byte 3(Bit 1)=1 AND Byte 3(Bit 3)=0
Permanent error	A read or write operation that failed and was retried several times without success	Byte 3(Bit 1)=0 AND Byte 3(Bit 3)=0
Path error	A permanent error was found on one path and an alternate path was tried	Byte 3(Bit 3)=1
Note: Byte 3(Bit 1) is the temporary error bit and Byte 3(Bit 3) indicates whether or not another channel path has been tried.		

Standard Record Header: Data Common to All Record Types

Table 8 shows the contents of the fields that are the same for all records.

Table 8. Header Data Fields Common To All Records

Offset Dec(Hex)	Size(bytes) Alignment(bits)	Field Name	Description
0(0)	1	xxxKEY1	Class/Source:
1(1)	1	xxxKEY2	System/Format/Version/release level:
	xxx.		System.
	000.		OS/360.
	001.		VSE.
	010.		OS/VS1.
	011.		VM systems.
	100.		OS/VS2 and later MVS systems.
	101.		Transaction processing facility (TPF).
	111.		AIX ®.
	...x x...		Format (OLD/NEW):
	...0 0...		OLD Format:
	xxx		Release level 0–7
	...0 1...		NEW Format:
	...1 0...		
	...1 1...		
	...x xx..		Version 2–7.
	xx		Release level 0–3.
2(2)	1	xxxSMS	Record-independent switches:

Table 8. Header Data Fields Common To All Records (continued)

Offset Dec(Hex)	Size(bytes) Alignment(bits)	Field Name	Description
	1...		More records follow.
	0...		Last record.
	.x..		Time-of-Day clock instruction issued. **0** IBM System/360 ™. **1** IBM System/370 ™. Used in conjunction with date and time values at displacements 8 and 12.
	..1.		Record truncated.
	...1		370XA mode record.
	...x		XA mode bit:
	...1		AIX: indicates ESA.
	...1		MVS version 3 or higher (NEW FORMAT): indicates ESA.
	...1		VM version 1 or higher: indicates ESA.
	.... 1...		TIME macro used (MVS).
	.... 0...		Time in timer units (VSE).
	xxx		Reserved.
3(3)	1		Record-dependent data.
4(4)	1		Record-dependent data.
5(5)	1		Record-dependent data.
6(6)	1	xxxRCDCT	Record count:
	xxxx		Sequence number of this physical record.
	 xxxx		Total number of physical records in this logical record.
	1	Reserved.	
7(7)	1		Reserved.
	1	xxxRCDCT	Record count:
	xxxx		Sequence number of this physical record.
	 xxxx		Total number of physical records in this logical record.
8(8)	8	xxxDT	System date and time, as:
8(8)	4	xxxDATE	System date of incident.
12(C)	4	xxxTIME	System time of incident.
16(10)	8	xxxCPUID	CPU identification, as:
16(10)	1	xxxVER	Machine version code:
	xxxx xxx.		Reserved.
	0		Version I CPUs.
	1		Version II CPUs.
17(11)	3	xxxSER	CPU serial number.
20(14)	2	xxxMOD	CPU machine model number (3033, 4341, ...).
22(16)	2	xxxCEL	Maximum length of machine- (CPU-) dependent machine-check extended logout area.
	2		Reserved.

Record Type/Class Codes

The first field in the standard record header is a 1-byte hexadecimal code that identifies the type (or class) and source of the record.

Important: All of the operating systems create similar records, but they do not all record every possible kind of record. Some record types are not relevant for all operating systems. For information on which types of records are supported by specific products, see Part 3, "Product-Dependent Information," on page 295.

Table 9 on page 69 shows the record types that each of the operating systems records on its ERDS, listed according to the record class code.

Important: VM writes records on its own behalf or on behalf of another operating system running in a virtual machine, while MVS creates different versions of some records.

Table 9. Record Types and Systems Recording Them

Description	MVS	VM	VSE
1X Machine check errors			
10 MCH	Y	Y	Y
13 MCH in multiple storage environment	Y	Y[1]	Y
2X Channel check errors			
20 CCH	Y	Y[2]	Y
21 CCH in multiple storage environment	Y[3]		
23 SLH subchannel logout	Y[4]		
25 CRW channel report word	Y[4]		
3X Outboard errors			
30 OBR	Y	Y[1]	Y
34 BTAM OBR (VSE)			Y
36 VTAM OBR	Y		Y
3A DPA OBR	Y		
3C DPS OBR	Y		
4X Software errors			
40 Software-detected	Y		
42 Hardware-detected	Y		
44 Operator-detected	Y		
48 Hardware-detected hardware	Y		
4C Programming symptom code	Y		
4E Programming symptom code	Y		
4F Lost record	Y		
50 IPL	Y		Y
60 DDR	Y[3]	Y[5]	
7X Missing interrupt handler			
70 MIH	Y[3]	Y[2]	Y[6]
71 MIX	Y[4]	Y[4]	Y
8X System termination			
80 EOD Normal End of Day	Y		Y
81 Nonrestartable wait state (MCH) Forced	Y[3]		
84 EOD Restartable	Y[3]		
84 Restartable wait state (IOS) Forced	Y[3]		
9X Miscellaneous data record (MDR)			
90 MDR formatted by SVC91	Y		Y
91 MDR	Y	Y[1]	Y
A0 MCH frame	Y	Y	Y
A1 External Time Reference	Y	Y	Y
A2 Link Maintenance Information	Y	Y	Y
A3 Asynchronous Notification	Y	Y	Y
A4 through AF records	Y	Y	

Table 9. Record Types and Systems Recording Them (continued)

Description	MVS	VM	VSE
B0 CCH frame	Y	Y	Y
B1 through BF records	Y	Y	Y
C0 through CF records	Y	Y	Y
D0 through DF records	Y	Y	Y
E0 through EF records	Y	Y	Y
F0 through FF records	Y	Y	Y

Note:
1. For both VM and the virtual machine
2. For VM only; SVC 76 is reflected back to the virtual machine
3. MVS/370 only
4. XA and above only
5. For the virtual machine only
6. VSE/advanced functions only

Chapter 5. Correcting EREP Job Set-Up Problems

This topic provides information about methods to use to identify and correct EREP job set up problems.

The following subjects are covered:

Using the EREP Messages File (TOURIST Output)

If your EREP job does not run, you can use the EREP messages file (TOURIST output) to see how EREP interprets your control statements and parameters. See Chapter 6, "EREP Messages," on page 77 for descriptions of the EREP messages. Figure 4 is an example of the typical TOURIST output generated for an EREP report.

```
LEVEL = VERSION 3 RELEASE 5                         EREP INFORMATIONAL MESSAGES

INPUT PARAMETER STRING          PRINT=PS,DEV=(3380)

PARAMETER OPTIONS VALID FOR THIS EXECUTION
   RECORD TYPES(MCH,CCH,OBR,SOFT,IPL,DDR,MIH,EOD,MDR,AX,BX,CX,DX,EX,FX),MODE ALL
   DATE/TIME RANGE - ALL
   TABLE SIZE - 0024K,LINE COUNT - 050
   LINE LENGTH - 132
DEVICE ENTRIES
   DEVICE TYPES(CCH,SLH)-3380(ALL)
   DEVICE TYPES(OBR,MIH,DDR)-3380(200E),3380(202E),3380(201E),3380(2021),3380(20
   DEVICE TYPES(MDR)-3380(14),3380(1B),3380(1C),3380(21),3380(22),3380(23)
IFC120I       109  RECORDS THAT PASSED FILTERING
```

Figure 4. EREP Messages File (TOURIST Output) from a CPEREP Run

Figure 5 on page 72 shows an example of the EREP messages file using the DASDID configuration chart in "DASDID Control Statement" on page 47.

```
LEVEL = VERSION 3 RELEASE 5

INPUT PARAMETER STRING       HIST,ACC=N,SYSEXN

        * CPU DEFINITIONS  A=X11111 B=022222 C=033333
        * SCU 14    CTRL 02    A(778-77F)
        DASDID CPU=X11111,CHP=07,SCU=14,STR=02778
        * SCU 15    CTRL 14,33,22  A(980-995) B(800-815)
        DASDID CPU=X11111,CHP=09,SCU=15,STR=14980,STR=33988,STR=22990
        DASDID CPU=022222,CH=08,SCU=15,STR=1400,STR=3308,STR=2210
        DASDID CPU=033333,CH=08,SCU=15,STR=1400,STR=3308,STR=2210
        * SCU EE    CTRL 14,33,22  A(A80-A95) B(A00-A15)
        DASDID CPU=X11111,CHP=0A,SCU=EE,STR=14A80,STR=33A88,STR=22A90
        DASDID CPU=022222,CH=0A,SCU=15,STR=1400,STR=3308,STR=2210
        DASDID CPU=033333,CH=0A,SCU=15,STR=1400,STR=3308,STR=2210

DASDID CONFIGURATION CHART
 CPUs - CPUS WITH IDENTICAL CONFIGURATIONS ARE IN THE SAME COLUMN
 SCU - STORAGE CONTROL UNIT ID
 CC,CC,CC,CC - CONTROLLER IDS ORDERED BY PHYSICAL UNIT ADDRESS
 CHAN - CHANNELS WHICH CONNECT TO THE STORAGE CONTROL UNIT
 UA-UA - LOWEST PHYSICAL UNIT ADDRESS OF FIRST AND LAST STRING (370 MODE)
 DNO-DNO - LOWEST DEVICE NUMBER OF FIRST AND LAST STRING (370XA MODE)

        CPUs             CPUs

        X11111           022222
                         033333

 SCU    CC,CC,CC,CC     CHAN  DNO-DNO     CHAN  UA-UA
 -------------------------------------------------------------------------
 14     02               07  778
 -------------------------------------------------------------------------
 15     14,33,22         09  980-990       08  00-10
 EE     14,33,22         0A  A80-A90       0A  00-10

PARAMETER OPTIONS VALID FOR THIS EXECUTION

 RECORD TYPES(MCH,CCH,OBR,SOFT,IPL,DDR,MIH,EOD,MDR,MODE ALL),
     SYSTEM EXCEPTION,HISTORY
 DATE/TIME RANGE - ALL
 TABLE SIZE - 512K,LINE COUNT - 050
 NONE

IFC221I NO SHARE CARD
IFC120I     3 RECORDS SAVED FOR SYSEXN
IFC120I       3 RECORDS THAT PASSED FILTERING
```

Figure 5. EREP Messages File (TOURIST Output): DASDID Configuration Chart

Problem Determination Aids

Sometimes you must go through the process of problem determination in order to identify a failing hardware unit or program and determine who is responsible for fixing it. The following problem determination aids can help you determine the causes of problems encountered while running EREP jobs:

- EREP return codes
- Problem determination procedures
- Trouble-shooting flowchart
- DEBUG parameter

EREP Return Codes

EREP issues the following return codes whenever it stops processing:

RETURN CODE (Decimal)	MEANING	DESCRIPTION
00	No errors	None.
04	Warning	Processing and the report are complete but the report may not contain all possible records.
08	Severe error (nonterminating)	Processing may or may not continue to the end of the records depending on the kind of error EREP has encountered. If processing continues, the report may be incomplete.
10		
12	Severe error (terminating)	EREP has terminated abnormally and cannot complete the report.
16	Catastrophic error	

EREP (IFCEREP1) issues at least one IFCxxxI message for every return code greater than 04, and issues messages for some situations that produce return codes of 04. The messages appear in the EREP messages file or in the body of the report. See Chapter 6, "EREP Messages," on page 77 for descriptions of the EREP messages.

Problem Determination Procedures

Use the standard problem determination procedures specified by IBM to help you determine the probable causes of errors that result in EREP messages. The messages are described in Chapter 6, "EREP Messages," on page 77. The standard problem determination procedures are described in Table 10.

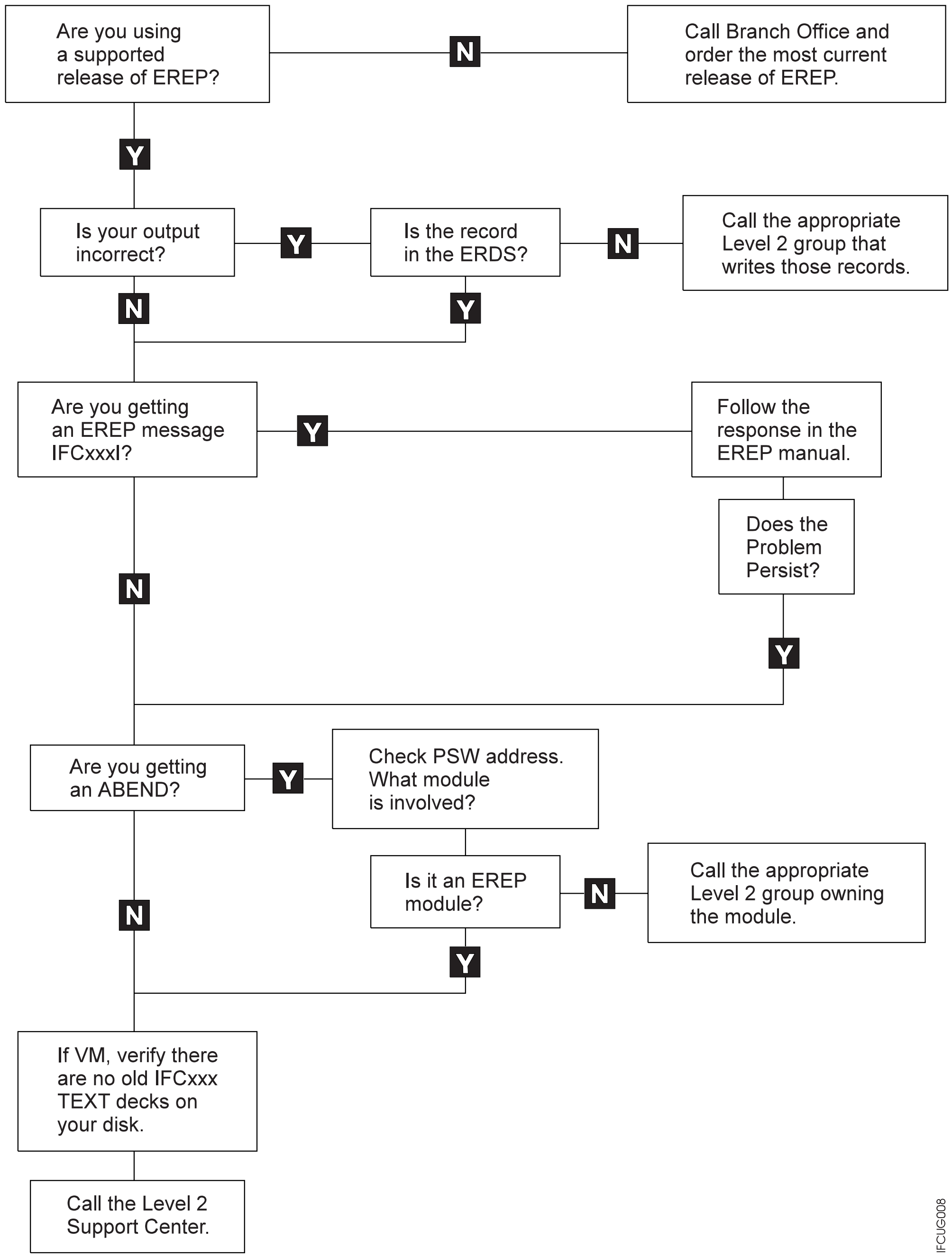
Table 10. Standard Problem Determination Procedures

STEP	ACTION
1	Save the console sheet from the operator console. In systems with a display operator console (DOC), save a copy of the hard copy log.
2	Save the system output associated with the job.
3	Save all the associated output.
4	Contact IBM for programming support.
5	Contact IBM for hardware support.

The standard problem determination procedures are recommended to diagnose problems with a system control program (SCP).

Trouble-Shooting Flowchart

Use the following flowchart to help you determine the probable causes of problems encountered while running EREP jobs.



Using the DEBUG Parameter

If a problem with your EREP run is associated with an input record, you must be able to look at the record. Use an event history report and include the DEBUG parameter with its option 17 in the EREP controls to see the records used, as shown in the following example:

```
EVENT
HIST
ACC=N
LINECT=60
DATE=(89040-93365)
DEBUG=(17)
```

The records in the report will appear one line item at a time with an unformatted hexadecimal dump immediately following each line item. See "DEBUG — Debug (Diagnostic Parameter)" on page 18 for coding details.

If you select a print report with DEBUG=(17) a hexadecimal dump of every record that passed filtering appears in the EREP messages file (TOURIST output).

The IBM service representative can help you interpret the records, by referring to the maintenance documentation for the device that generated the record.

Missing Records

To check for records you suspect are missing, run an event history report specifying the DEV and TYPE parameters to match the suspected missing records. This report includes data from every record that meets your selection criteria. Another way to look for a particular record is to run a detail edit report specifying DEV, TYPE, DATE, TIME, and any other parameter that narrows the choice.

Chapter 6. EREP Messages

This topic contains the messages issued by the IFCEREP1 program modules. These are the messages that appear in the EREP messages file (TOURIST output).

EREP messages begin with the prefix "IFC". EREP message numbers after the IFC prefix are followed by "I", meaning that the messages are informational. However, informational messages can also indicate:

- The status of EREP processing
- The occurrence of a problem with EREP processing
- The occurrence of a problem with your EREP or system controls

The EREP messages are listed in Chapter 6, "EREP Messages" in ascending order by the numbers.

Important: Not all messages apply to all operating systems.

Figure 6 is an example of the typical EREP messages file generated for an EREP report.

```
LEVEL = VERSION 3 RELEASE 5                         EREP INFORMATIONAL MESSAGES                    DATE - 032 94

INPUT PARAMETER STRING          SYSEXN,HIST,ACC=N,DATE=(89040-93365)

PARAMETER OPTIONS VALID FOR THIS EXECUTION
   RECORD TYPES(MCH,CCH,OBR,SOFT,IPL,DDR,MIH,EOD,MDR,AX,BX,CX,DX,EX,FX), MODE ALL,SYSTEM EXCEPTION,HISTORY INPUT
   DATE/TIME RANGE - 89040,93365/00000000:24000000
   TABLE SIZE - 0024K,LINE COUNT - 050
   LINE LENGTH - 132

IFC221I NO SHARE CARD
IFC120I    359 RECORDS SAVED FOR SYSEXN
IFC120I     403    RECORDS THAT PASSED FILTERING
```

Figure 6. TOURIST Output that Describes EREP Messages

IFC101I REQUEST FOR NON-EXISTENT IO SERVICE

Explanation: (MVS, VM, and VSE) An internal request for I/O service specifies an invalid request code.

System action: The request is ignored. No further input is processed.

Programmer response: Make sure the system controls are correct, and rerun the job. If the problem persists, perform problem determination.

Problem determination: Table 10 on page 73, items 1, 2, 4.

IFC102I *ddname* OPEN REQUESTED, ALREADY OPEN

Explanation: (MVS and VM) A second open has been requested for a data set that is already open.

System action: The request is ignored. No further input is processed.

Programmer response: Make sure the DD statements or FILEDEFs are correct, and rerun the job. If the problem persists, perform problem determination.

Problem determination: Table 10 on page 73, items 1, 2, 4.

IFC103I *ddname* DD STATEMENT MISSING OR INCORRECTLY CODED

Explanation: (MVS and VM) The named data set cannot be opened because the required DD statement or FILEDEF is missing or invalid. For an existing data set, the DD statement or FILEDEF may be correct but the attributes (RECFM, BLKSIZE) invalid. The data set may also be the result of a previous step FILEDEF pointing to the XAEREPIO RECORD file, rather than the SERLOG. SERLOG should always be used. Using XAEREPIO RECORD as input causes unpredictable results. The message will also be issued if the Data Set Name coded on this DD statement resides on Tape.

System action: EREP terminates.

Programmer response: Add or correct the indicated system control and rerun the job.

Problem determination: Table 10 on page 73, items 1, 2, 4.

IFC104I *ddname* **NOT OPEN WHEN {READ|WRITE} REQUESTED**

Explanation: **(MVS and VM)** The named data set is not open when a read or write is requested.

System action: The request is ignored. No further input is processed.

Programmer response: Make sure the DD statements and FILEDEFS are correct, and rerun EREP. If the problem persists, perform problem determination.

Problem determination: Table 10 on page 73, items 1, 2, 4.

IFC105I **RECORD IGNORED,** *ddname* **READ [DIRECT] ERROR**

Explanation: **(MVS and VM)** A permanent I/O error has occurred on the named data set.

System action: Processing continues. The physical record that has caused the error is ignored.

Programmer response: Move the volume containing the data set to another device, or move the data set to another volume, to determine if the problem was caused by a hardware malfunction.

Attention: Move the suspect volume only once to ascertain a fault. Indiscriminate mounting and demounting of the disk pack could cause the destruction of packs and drives.

For MVS systems: If the message does not recur, there probably is a hardware error on the device (or volume) originally used. If the error persists, execute the SPZAP (VS2), or HMASPZAP (VS1) service aid program to obtain a dump of the data set on which the input error has occurred. If the error has occurred on SYS1.LOGREC, execute IFCDIP00 to reinitialize the data set.

For VM systems: If the error has occurred in the error-recording area, issue the CPEREP EXEC, with the CLEAR/CLEARF operand, to reinitialize the cylinders.

Problem determination: Table 10 on page 73, items 1, 2, 4, 5.

IFC106I *ddname* **CLOSE REQUESTED,** *ddname* **NOT OPEN**

Explanation: **(MVS and VM)** The *ddname* data set is not open when a close is requested.

System action: The request is ignored.

Programmer response: Make sure the system controls are correct, and rerun the job. If the problem persists, perform problem determination.

Problem determination: Table 10 on page 73, items 1, 2, 4.

IFC107I **ACCIN RECORD FORMAT NOT V OR VB**

Explanation: **(MVS and VM)** The ACCIN DD statement or FILEDEF that defines the history input data set either:

- Does not specify RECFM, or
- Does not specify the RECFM as V or VB, or
- Specifies a volume or CMS file that does not contain variable format records.

System action: The job step terminates.

Programmer response: Verify that the record format of the data set is V or VB and is properly specified on the DD statement or FILEDEF.

IFC108I **ATTEMPTED TO READ OUTSIDE SERLOG EXTENT**

Explanation: **(MVS)** IOS indicates an attempt has been made to read outside the extent on SERLOG (SYS1.LOGREC). The LOGREC header may be bad.

System action: EREP continues processing. The record that has caused the input error is ignored. SYS1.LOGREC is not cleared.

Programmer response: Obtain a copy of the header record to verify the contents of the header. Determine if the problem is caused by a hardware malfunction. If the message does not recur, there probably is a hardware error on the device (or volume). Otherwise, it is probably a programming error. Execute the IFCDIP00 program to reinitialize SYS1.LOGREC.

IFC109I **SERLOG HEADER CANNOT BE READ**

Explanation: **(MVS)** The header record on the SYS1.LOGREC data set cannot be read.

System action: The job step terminates.

Programmer response: Obtain a copy of the header record to verify the contents of the header. Then execute the IFCDIP00 program to reinitialize the SYS1.LOGREC data set.

IFC110I SERLOG HEADER CHECK BYTE INCORRECT

Explanation: **(MVS)** A validity check of the header record on SYS1.LOGREC has uncovered an error.

System action: EREP terminates.

Programmer response: Obtain a copy of the header record to verify the contents of the header. Then execute the IFCDIP00 program to reinitialize the SYS1.LOGREC data set.

Problem determination: Table 10 on page 73, items 1, 2, 4.

IFC111I OPEN REQUESTED, DATA SET NOT SPECIFIED

Explanation: **(MVS, VM, and VSE)** An OPEN has been requested but the data set to be opened is not indicated.

System action: EREP terminates.

Programmer response: Make sure the DD statements or FILEDEFS are correct, and rerun the job. If the problem persists, perform problem determination.

Problem determination: Table 10 on page 73, items 1, 2, 4.

IFC112I READ REQUESTED, NO DATA SET OPEN

Explanation: **(MVS, VM, and VSE)** EREP cannot perform the requested read operation because no data set is open.

System action: EREP terminates.

Programmer response: Make sure the DD statements or FILEDEFS are correct, and rerun the job. If the problem persists, perform problem determination.

Problem determination: Table 10 on page 73, items 1, 2, 4.

IFC113I RECORDS IGNORED, INSUFFICIENT SPACE ON DIRECTWK

Explanation: **(MVS and VM)** Not enough space has been allocated to the DIRECTWK data set to allow EREP to process all the input records. Message IFC114I follows this message.

System action: Processing continues. Output is based on the input read prior to the record that cannot be written on DIRECTWK; no further input will be processed.

Programmer response: *For MVS:* Increase the space allocation for DIRECTWK and rerun the job.

For VM: Erase unnecessary files on the disk; or access a larger disk, possibly a temporary disk. (See the CP DEFINE command and the CMS FORMAT command.) Then rerun CPEREP.

IFC114I LAST RECORD PROCESSED WAS *text data...*

Explanation: This message follows IFC113I and provides a hexadecimal dump of the first 40 bytes of the last record processed before the space on DIRECTWK is exhausted.

IFC116I SYS1.LOGREC HEADER CANNOT BE RESET. USE IFCDIP00

Explanation: **(MVS)** The header record of the SYS1.LOGREC data set cannot be reset because of an uncorrectable output error.

System action: The program terminates normally.

Programmer response: Run the IFCDIP00 program to reinitialize the SYS1.LOGREC data set.

Problem determination: Table 10 on page 73, items 1, 2, 5.

IFC117I SERLOG CLOSED PREMATURELY. USE IFCDIP00

Explanation: **(MVS and VM)** When EREP tries to check the ERDS header for records written while processing, it finds that the data set is already closed.

System action: The request is ignored; the ERDS is not cleared.

Programmer response: If you get all the report output you have expected, run IFCDIP00 or CPEREP with CLEAR/CLEARF to reinitialize LOGREC. Records written on SYS1.LOGREC during processing will be lost.

Problem determination: Table 10 on page 73, items 1, 2, 4.

IFC118I GETMAIN FAILURE WHILE CLEARING SYS1.LOGREC

Explanation: **(MVS)** While EREP is clearing LOGREC, it tries to obtain storage for the records written to LOGREC during EREP's previous processing, but the GETMAIN has failed.

System action: Processing continues. However, those records for which EREP cannot obtain storage are lost.

Programmer response: The next time EREP is executed, increase the region size. Investigate the possibility that a large number of error records have been written on SYS1.LOGREC during EREP processing.

IFC119I RECORDS IGNORED, TABSIZE ALLOCATION TOO SMALL

Explanation: (MVS, VM, and VSE) EREP's internal sort table, controlled by the TABSIZE parameter, is too small for this report.

System action: Processing continues.

Programmer response: Increase the value of the TABSIZE parameter, increase the region, virtual machine storage or partition size if necessary, and rerun the job step. If running IFCOFFLD, you need only increase the region, virtual machine storage or partition size.

IFC120I *nnnnnn* **{RECORDS SAVED FOR** *rrrrrrrr* **|RECORDS THAT PASSED FILTERING}**

Explanation: (MVS, VM, and VSE)

1. Indicates the number of records that EREP used to generate the requested report; *rrrrrrrr* is one of the following:

   SYSEXN

   SYSUM PART1

   SYSUM PART2

   TREND PART1

   TREND PART2

2. Indicates the number of records that met the selection criteria (that is, DEV=, TYPE=, ...).

All records that meet the selection criteria pass filtering. It is possible, however, that not all of those records are used to generate the report. Only the records applicable to the report you have requested will be saved.

IFC121I GETMAIN FAILED FOR *ttttttt* **TABLE**

Explanation: (MVS and VM) EREP issues a GETMAIN for the amount of storage indicated by the TABSIZE parameter, but not enough storage is available; *ttttttt* is one of the following:

DASDID

LIMIT

SHARE

SYSTEM IMAGE

SORT

SUMM

System action: EREP terminates.

Programmer response: *For MVS:* Increase the region size on the job or EXEC statement and rerun the job; or if the TABSIZE value is larger than necessary, rerun with a smaller value for the TABSIZE parameter.

For VM: Rerun CPEREP in a virtual machine having a larger virtual storage capacity; or if the TABSIZE value is larger than necessary, rerun with a smaller value for the TABSIZE parameter.

IFC122I *nnnnnn* **RECORDS IGNORED BECAUSE TRUNCATED BIT ON**

Explanation: (MVS, VM, and VSE) Indicates the number of records EREP found that have the truncated bit set on.

System action: The records are ignored; when you code the TYPE parameter, EREP does not process truncated or unknown records.

IFC123I *nnnnnn* **RECORDS IGNORED BECAUSE OF UNKNOWN TYPE**

Explanation: (MVS and VM) Indicates the number of records EREP found that are from an unsupported source.

System action: The records are ignored; when you code the TYPE parameter, EREP does not process truncated or unknown records.

Programmer response: *For MVS:* Execute the SPZAP (VS2), or HMASPZAP (VS1) service aid program to obtain a dump of the output data set to verify the existence of the records of unknown type.

For VM: Try to determine which device triggered the error records.

IFC129I *nnnnnnnnn* **RCDS IGNORED BECAUSE DIRECTWK READ ERRORS**

Explanation: (MVS and VM) Indicates the number of records EREP cannot process because of I/O errors in reading the DIRECTWK data set.

System action: Processing continues.

Programmer response: Rerun the job. If the problem persists, check the DASD device or CMS disk on which the DIRECTWK data set resides.

Problem determination: Table 10 on page 73, items 1, 2, 5.

IFC130I UNABLE TO FIND MODULE SPECIFIED BY USERPGM

Explanation: (MVS) EREP is unable to find the requested program via the USERPRG parameter.

System action: EREP terminates.

Programmer response: Verify that the requested user program is correct, and that the program is in SYS1.LINKLIB.

IFC131I **SYNTAX ERROR AT ***

Explanation: **(MVS and VM)** The EREP controls that appear above this message contain a syntax error. The error is in the keyword or operand above the asterisk. This message also appears when EREP encounters a device type on the DEV parameter that it does not recognize.

System action: EREP terminates.

Programmer response: Correct the parameter and rerun the job.

IFC132I **DUPLICATION AT ***

Explanation: **(MVS and VM)** The EREP controls that appear above this message contain a duplicate keyword or operand. The duplicate is above the asterisk.

System action: EREP terminates.

Programmer response: Eliminate the duplicate keyword or operand and rerun the job.

IFC133I **PARAMETER CONFLICTS -** *parameter text*

Explanation: **(MVS and VM)** The EREP controls appearing above this message contain parameters, either specified or implied, that are mutually exclusive.

System action: EREP terminates.

Programmer response: Eliminate the conflicting parameters and rerun the job.

IFC134I **{EXCESSIVE CPUS ENCOUNTERED - sssssss MORE THAN {10 13 16} CPUS ENCOUNTERED - sssssss MORE THAN 16 CPUS SPECIFIED WITH SHARE CARDS SHARE CARDS SPECIFY EXCESSIVE CPUS FOR THIS REPORT}**

Explanation: **(MVS, VM, and VSE)** The number of CPUs is excessive; ssssss is the serial number of the first excess CPU. The following are possible reasons for the message:

- The data sets being processed contain records from an excessive number of CPUs, and the EREP controls do not include a valid combination of CPU or MOD selection parameters or SYSIMG control statements.

  OR
- EREP has found CONTROLLER, DASDID or SHARE statements specifying too many processors (CPUs) for the requested report.

The system summary report defaults to a maximum of 10 processors; all other reports can show up to 16, with the following exceptions:

- System exception reports on a maximum of 255 processors
- Event history reports on a maximum of 256 processors
- PRINT=PT reports on an unlimited number of processors
- Threshold reports on an unlimited number of processors

To increase the maximum number of processors for system summary to 16, see "LINELEN — Line Length (Processing Parameter)" on page 25.

System action: If it is a case of the data sets being processed containing records from an excessive number of CPUs, processing continues but the output does not show all possible processors, only the maximum allowed for the requested report.

If it is a case of CONTROLLER, DASDID or SHARE statements specifying too many processors, processing is terminated.

Programmer response: If excessive CPUs have been encountered, code the SYSIMG control statement and rerun the job. This reduces the number of CPUs to the actual number of system images. If you still have excessive CPUs, you may have to code the CPU or MOD selection parameter in addition to the SYSIMG control statement. This restricts the number of processors whose records can be processed.

If too many CPUs are defined in the control statements, recode the control statements using only one CPU serial number per system image and rerun the job. (Refer to the individual control statement descriptions for additional information.)

IFC135I **PROCESSING TERMINATED,** *ddname* **{READ|WRITE} ERROR**

Explanation: **(MVS and VM)** A permanent I/O error has occurred on the *ddname* data set.

MVS note: This message can be the result of a queuing situation or an inability to read the file.

VM note: If *ddname* is ACCDEV, the following may have occurred: the user does not want the records accumulated, but has failed to code ACC=N; so the default of ACC=Y is in effect. If tape 181 is not attached to the virtual machine, this I/O error results.

System action: EREP terminates; the records are not accumulated.

Programmer response: *For VM:* If the situation described in the note applies, rerun the job with ACC=N. Otherwise, move the volume containing the data set to another volume, to determine if the problem has been caused by a hardware malfunction.

For MVS: If the file was queued by another job, wait for the conflicting job to end and then rerun this job.

Otherwise, move the volume or data set to determine if the problem has been caused by a hardware malfunction. If the message recurs, execute the SPZAP (VS2), or HMASPZAP (VS1) service aid program to obtain a dump of the data set on which the input error has occurred. If the error occurs on SYS1.LOGREC, run the IFCDIP00 program to reinitialize the data set.

Problem determination: Table 10 on page 73, items 1, 2, 4, 5.

Attention: Move the suspect volume only once to ascertain a fault. Indiscriminate mounting and demounting of the disk pack can cause the destruction of packs and drives.

IFC136I CLOSE REQUESTED, NO DATA SET OPEN

Explanation: **(MVS, VM, and VSE)** EREP has received a request for the CLOSE of a data set, but no data set is open.

System action: EREP terminates.

Programmer response: Make sure the system controls are correct and rerun the job. If the problem persists, perform problem determination.

Problem determination: Table 10 on page 73, items 1, 2, 4.

IFC137I RECORD WITHOUT CPU SERIAL NUMBER ENCOUNTERED

Explanation: **(MVS, VM, and VSE)** EREP has encountered a record with a processor serial number of 000000.

System action: The record is ignored.

IFC142I *nnnnnn* **RECORDS FOUND WITH INVALID DATE FIELD**

Explanation: **(MVS, VM, and VSE)** EREP has encountered one or more records with an invalid date field. The last half byte is not an X'F'.

System action: The record is ignored and processing continues.

IFC143I INCOMPLETE DASD INPUT RECORD/DEFINITION

Explanation: **(MVS, VM, and VSE)** The following record is missing information for EREP processing.

This message is caused by one of the following conditions:

1. The record was for a non-IBM DASD Contact OEM hardware support.
2. Invalid sense information was generated by the DASD device. Contact your hardware support.
3. The operating system error recording program built the record incorrectly.

System action: Processing continues. This record is included in the report.

Programmer response:

Cause **Action**

Contact field support to determine where the error occurs.

Contact the IBM Support Center to order the correct level of code for the operating system controlling the recording.

Problem determination: Obtain the following documentation:

- The record following this message.
- The level of EREP on your system, including APAR/PTFs.
- The level of ERP on the system that created the record.

IFC149I *nnnnnn* **DIRECTWK READ FAILURES**

Explanation: **(MVS and VM)** Indicates the number of records that are lost while reading from the DIRECTWK data set.

System action: Processing continues.

Programmer response: Rerun the job. If the problem persists, check the direct access device on which the data set resides.

Problem determination: Save the console spool file. Contact IBM for hardware support.

IFC150I *nnnnnn* **RECORDS READ FROM INPUT SOURCE**

Explanation: **(MVS, VM, and VSE)** Indicates the number of records EREP read for the report.

IFC152I *nnnnnn* **RECORD(S) FOUND WITH A ZERO VOLID**

Explanation: **(MVS, VM, and VSE)** Indicates the number of records EREP has found that contain volume serial number 000000.

IFC153I {GETMAIN GETVIS} FAILED FOR MODULE *mmmmmmmm*

Explanation: **(MVS, VM, and VSE)** The region or storage size is too small to contain the tables for this module.

System action: EREP terminates.

Programmer response: Increase the region size or the virtual machine storage size and rerun the job.

IFC154I SORTBREAK FORCED DUE TO EXCESSIVE FAULT CODES

Explanation: **(MVS, VM, and VSE)** EREP has encountered more different fault symptom codes than the symptom code table can hold.

System action: The DASD device summary for this channel/control unit contains two (or more) reports rather than one.

Programmer response: Increase the region/partition or virtual machine storage size. If the problem continues, limit the amount of data by use of selection parameters.

IFC165I SORTBREAK FORCED DUE TO EXCESSIVE VOLIDS

Explanation: **(MVS, VM, and VSE)** EREP has encountered more unique volume identifiers than the VOLID table can hold.

System action: The DASD detail summary for this channel/control unit contains two (or more) reports rather than one.

Programmer response: Increase the region/partition or virtual machine storage size. If the problem persists, restrict the amount of data by use of selection parameters.

IFC166I ***ttttttt*** **TABLE IS FULL, INCREASE TABSIZE**

Explanation: **(MVS, VM, and VSE)** The area allocated to the specified table has been filled; *ttttttt* is one of the following:

DASDID

LIMIT

SHARE/CONTROLLER

SUMM

System action: EREP terminates.

Programmer response: Increase the TABSIZE value and, if necessary, the region/partition or virtual machine storage size as well. Then rerun the job.

IFC167I CUA RANGE IS INVALID ON A SHARE/CONTROLLER CARD

Explanation: **(MVS, VM, and VSE)** The range specified on the SHARE or CONTROLLER statement either exceeds the 32-address limit, or crosses an invalid control unit boundary. For example, the range on SHARE=(...130–14F) crosses from an odd to an even CUA and is invalid.

System action: EREP terminates.

Programmer response: Correct the SHARE/CONTROLLER statement and rerun the job.

IFC168I CUA OVERLAPS WITH ANOTHER SHARE/CONTROLLER ENTRY

Explanation: **(MVS, VM, and VSE)** The address range on one SHARE or CONTROLLER statement overlaps the range on another SHARE or CONTROLLER statement.

System action: EREP terminates.

Programmer response: Correct the SHARE or CONTROLLER statements and rerun the job.

IFC169I ***nnnn*** **RECORDS NOT USED BY** ***module name*** **FOR THIS CUX** ***xxx***

Explanation: **(MVS, VM, and VSE)** Indicates why the number of records used to build the maintenance device code does not equal the number of records present for this channel or control unit: all MDR and OBR records are passed to EREP, but only OBR records with particular fault symptom codes are used for the data reduction report.

System action: Processing continues.

IFC170I GETVCE FAILURE. LOGICAL UNIT SYS*xxx*

Explanation: **(VSE)** The get-device-characteristics SVC has failed. The device type needed to open SYS*xxx* cannot be obtained.

System action: The job step terminates.

Programmer response: Correct or add the // ASSGN statement for the appropriate logical unit.

IFC171I INVALID DEVICE TYPE SYS*xxx*

Explanation: **(VSE)** The device assigned to logical unit SYS*xxx* is invalid for the type of processing that must be performed.

System action: The job step terminates.

Programmer response: Correct the // ASSGN statement for SYS*xxx*.

IFC172I SEGMENTED RECORD INCOMPLETE (24-byte header)

Explanation: **(VSE)** A segment of a logical record on SYSREC is missing or incorrect. The first 24 bytes of the record are included in the message.

System action: Not all of the record segments are processed. If the segment involved belongs to a frame or to SYSREC, the entire frame set is deleted, so some MCH and CCH records might not be processed.

Programmer response: Check for a succeeding read error message. You may have to reallocate and reinitialize IJSYSRC. An error-recording transient may be executing incorrectly. Call IBM programming support.

IFC173I ERROR READING SYSREC, RECORD SKIPPED

Explanation: **(VSE)** A read error occurred on SYSREC.

System action: Processing continues.

Programmer response: Reallocate IJSYSRC and reinitialize SYSREC using the SET RF=CREATE IPL command.

IFC174I *nnnn* **RECORDS WITH SB 3 and 4 EQUAL TO SB 8 & 9**

Explanation: **(MVS, VM, and VSE)** OBR records with fault symptom code 191A should not have sense bytes 3 and 4 equal to sense bytes 8 and 9. This message indicates the number that do, nevertheless.

System action: Processing continues. However, these records are not used to determine the maintenance device code.

Programmer response: A hardware problem; notify your CE or other maintenance person.

Problem determination: Table 10 on page 73, item 5.

IFC175I *logical unit* **OPEN REQUESTED, ALREADY OPEN**

Explanation: **(VSE)** A second open has been requested for a data set that is already open.

System action: The request is ignored. No further input is processed.

Programmer response: Make sure the system controls are correct and rerun the job. If the problem persists, perform problem determination.

Problem determination: Table 10 on page 73, items 1, 2, 4.

IFC176I *logical unit* **FAILED TO OPEN**

Explanation: **(VSE)** The specified data set cannot be opened.

System action: The job step terminates.

Programmer response: Add or correct the // ASSGN statement for the specified data set and rerun the job.

IFC177I *logical unit* **NOT OPEN WHEN {READ|WRITE} REQUESTED**

Explanation: **(VSE)** The specified data set is not open when a read or write is requested.

System action: The request is ignored. No further input is processed.

Programmer response: Make sure the system controls are correct and rerun the job. If the problem persists, perform problem determination.

Problem determination: Table 10 on page 73, 1, 2, 4.

IFC178I RECORD IGNORED; *logical unit* **READ DIRECT ERROR**

Explanation: **(VSE)** A permanent I/O error has occurred on the specified data set. EREP has ignored one or more records.

System action: Processing continues. The physical record that caused the error is ignored.

Programmer response: Move the volume containing the data set to another device or move the data set to another volume, to determine if the problem is caused by a hardware malfunction. If the message does not recur, there probably is a hardware error on the device (or volume) originally used. If the error persists, execute a utility to obtain a dump of the data set on which the error occurred. If the error occurs on SYSREC, re-IPL and issue SET RF=CREATE to reinitialize the data set.

Attention: Move the suspect volume only once to ascertain a fault. Indiscriminate mounting and demounting of the disk pack can cause the destruction of packs and drives.

Problem determination: Table 10 on page 73, items 1, 2, 4, 5.

IFC179I *{ddname logical unit}* **CLOSE REQUESTED,** *logical unit* **NOT OPEN**

Explanation: **(VSE)** The specified data set is not open when a close is requested.

System action: The request is ignored.

Programmer response: Make sure the system controls are correct and rerun the job. If the problem persists, perform problem determination.

Problem determination: Table 10 on page 73, items 1, 2, 4.

IFC180I SYSREC HEADER CANNOT BE READ

Explanation: **(VSE)** EREP cannot read the header record on SYSREC.

System action: The job step terminates.

Programmer response: Execute a utility to obtain a dump of SYSREC. Then re-IPL and issue SET RF=CREATE to reinitialize the recorder file (SYSREC).

IFC181I SYSREC HEADER CHECK BYTE INCORRECT

Explanation: **(VSE)** A validity check of the header record on SYSREC has uncovered an error.

System action: The EREP program terminates.

Programmer response: Execute a utility to obtain a dump of SYSREC. Then re-IPL and issue SET RF=CREATE to reinitialize the recorder file (SYSREC).

Problem determination: Table 10 on page 73, items 1, 2, 4.

IFC182I RECORDS IGNORED; INSUFFICIENT SPACE ON SYS001

Explanation: **(VSE)** Not enough space was allocated on SYS001 to process all input records. Message IFC183I should follow this message.

System action: Processing continues. The report output includes only the records read prior to the record that cannot be written on SYS001. EREP reads no more records for the report.

Programmer response: Increase the space allocation for SYS001 and rerun the job.

IFC183I LAST RECORD PROCESSED WAS *text data ...*

Explanation: **(VSE)** This message follows IFC1821 and provides a hexadecimal dump of the first 40 bytes of the last record processed before the space on SYS001 is exhausted.

IFC184I RECORDER FILE HEADER CANNOT BE RESET

Explanation: **(VSE)** The header record of SYSREC cannot be reset because of an uncorrectable output error.

System action: The program terminates normally.

Programmer response: Re-IPL and issue SET RF=CREATE to reinitialize SYSREC.

Problem determination: Table 10 on page 73, items 1, 2, 5.

IFC185I {GETVIS|GETVCE} FAILED FOR *ttttttt*

Explanation: **(VSE)** A GETVIS has been issued for the value indicated by parameter TABSIZE and the partition GETVIS area is too small; *ttttttt* is one of the following:

DASDID TABLE	SYSTEM IMAGE TABLE
LIMIT TABLE	ALIAS LIST
SHARE TABLE	CI BUFFER
SORT TABLE	HEADER BUFFER
SUMM TABLE	

System action: The job step terminates.

Programmer response: Alter the SIZE parameter on the // EXEC statement to increase the partition size and rerun the job.

IFC186I *nnnnnn* **RECORDS IGNORED BECAUSE OF UNKNOWN TYPE**

Explanation: **(VSE)** EREP has encountered records from an unsupported device.

System action: The records are ignored; not used for the report.

Programmer response: Execute a utility to obtain a dump of the output data set to verify the existence of the unknown records.

IFC187I *nnnnnn* **RCDS IGNORED BECAUSE SYS001 READ ERRORS**

Explanation: **(VSE)** The message indicates the number of records EREP cannot process because of I/O errors in reading the SYS001 data set.

System action: Processing continues.

Programmer response: Rerun the job. If the problem persists, check the direct access device on which the data set resides.

Problem determination: Table 10 on page 73, items 1, 2, 5.

IFC188I UNABLE TO FIND MODULE SPECIFIED BY USERPGM

Explanation: **(VSE)** EREP is unable to find the program requested via the USERPGM parameter.

System action: EREP terminates.

Programmer response: Verify that the user program requested is correct and that the program is on the core image library.

IFC189I SYNTAX ERROR AT *

Explanation: **(VSE)** The EREP controls that appear above this message contain a syntax error. The error is in the keyword or operand above the asterisk. This message also appears when the DEV parameter includes a device type EREP does not recognize.

System action: The job step terminates.

Programmer response: Correct the parameter and rerun the job step.

IFC190I DUPLICATION AT *

Explanation: **(VSE)** The EREP controls that appear above this message contain a duplicate keyword or operand. The duplicate is above the asterisk.

System action: The job step terminates.

Programmer response: Eliminate one of the duplicates and rerun the job step.

IFC191I PARAMETER CONFLICTS - ***parameter text***

Explanation: **(VSE)** The EREP controls include parameters that are mutually exclusive.

System action: The job step terminates.

Programmer response: Eliminate the conflicting parameters and rerun the job step.

IFC192I PROCESSING TERMINATED; ***logical unit*** **{READ|WRITE} ERROR**

Explanation: **(VSE)** A permanent I/O error has occurred on the specified data set.

System action: The job step terminates; SYSREC is not cleared.

Programmer response: Move the volume containing the data set to another device, or move the data set to another volume, to determine if the problem has been caused by a hardware malfunction. If the message does not recur, there is probably a hardware error on the device (or volume) originally used. If the error persists, execute a utility to obtain a dump of the data set on which the input error has occurred. If the error has occurred on SYSREC, re-IPL and issue SET RF=CREATE to reinitialize the data set.

Attention: Move the suspect volume only once to ascertain a fault. Indiscriminate mounting and demounting of the disk pack can cause the destruction of packs and drives.

Problem determination: Table 10 on page 73, items 1, 2, 4, 5.

IFC199I ***nnnnnn*** **DIRECT READ FAILURES**

Explanation: **(VSE)** EREP lost *nnnnnn* records while reading from SYS001.

System action: Processing continues.

Programmer response: Rerun the job. If the problem persists, check the direct access device on which the data set resides.

Problem determination: Table 10 on page 73, items 1, 2, 5.

IFC200I NUMBER OF BYTES REPORTED DIFFERS FROM RECORD COUNT

Explanation: **(MVS, VM, and VSE)** The number of sense bytes, or bytes of statistical data, expected is not the same as the number of sense bytes recorded by the device and specified in the OBR record. EREP formats sense bytes according to the original engineering requirements for a device's EREP support. EREP has formatted the number of sense bytes it expects to find in the record.

Programmer response: This message can appear in the report output when either:

- The number of bytes formatted is less than the total number of bytes the device actually recorded in the OBR record. In this case, the message is informational; the unformatted sense bytes are not relevant to the EREP report.

  OR
- The number of bytes formatted is greater than the number of bytes the device actually recorded in the OBR record, implying that the byte counts (statistical or sense) were recorded erroneously. In this case, the message indicates a problem.

If you suspect that the second case applies, perform problem determination, focusing on the device as well as on the system recording process.

Problem determination: Table 10 on page 73, items 3 and 4.

IFC201I ***nnnn*** **RECORDS IGNORED DUE TO {EXCESSIVE CPUS|MORE THAN 15 CPUS}**

Explanation: **(MVS, VM, and VSE)** EREP encountered more than 16 unique CPUs in the input data.

System action: Processing continues.

Programmer response: Code the SYSIMG control statement to reduce the number of CPUs to the actual number of system images. Rerun the job.

If you still have excessive CPUs, you may need to code the CPU or MOD selection parameter in addition to the SYSIMG control statement. This restricts the number of processors whose records are processed.

IFC202I ***nnnn*** **RECORDS IGNORED DUE TO EXCESSIVE DIRECTOR IDS**

Explanation: **(MVS and VM)** Indicates the number of records EREP has to ignore because they represent more different storage directors than it can handle.

System action: Processing continues.

Programmer response: Increase the region or virtual machine storage size. If the problem persists, limit the amount of data by use of selection parameters.

IFC203I *nnnn* **RECORDS IGNORED DUE TO STORAGE DIRECTOR ID = ZERO**

Explanation: (MVS, VM, and VSE) Indicates the number of records EREP cannot use because they contain invalid storage director IDs.

System action: Processing continues.

IFC204I // ASSGN FOR LOGICAL UNIT SYS*xxx* **MISSING OR INVALID**

Explanation: (VSE) The device type needed to open SYS*xxx* cannot be obtained.

System action: The job step terminates.

Programmer response: Correct or add the // ASSGN statement for the appropriate logical unit.

IFC210I INVALID REQUEST CODE *xx:* **MOD** *yyyy* **SER** *zzzzzz*

Explanation: (MVS, VM, and VSE) EREP receives an invalid request relating to a 303X MCH or CCH detail Summary.

System action: The request is not processed.

Programmer response: Can be a software or hardware error. Rerun the job. If the error persists, perform problem determination.

Problem determination: Table 10 on page 73, items 3 and 4.

IFC214I CANNOT PROCESS RECORD: TYPE OR LENGTH INVALID

Explanation: (MVS, VM, and VSE) EREP encounters an MCH or CCH record with a logout-length field of zero, or a CCH record produced by a non-IBM system or a system other than MVS, VM or VSE.

System action: This record is not included in the summary.

Programmer response: Check the input record and rerun the job. If the error persists, perform problem determination.

Problem determination: Table 10 on page 73, items 3 and 4.

IFC217I 303X LOAD LIST IS FULL

Explanation: (MVS, VM, and VSE) EREP has found the 303X load list in the summary-table module already full.

System action: EREP terminates summary processing.

Programmer response: Rerun the job. If the error persists, perform problem determination. This can be a hardware or IBM software problem.

Problem determination: Table 10 on page 73, items 3 and 4

IFC218I 303X DEFAULT SUMMARY TABLE MODULE *mmmmmmmm* **USED**

Explanation: (MVS, VM, and VSE) EREP uses default module *mmmmmmmm* in place of the missing summary module identified in the previously issued IFC219I message.

System action: EREP continues summary processing using the default summary table module named in the message.

Programmer response: Make sure the latest release of EREP is installed on your system and rerun the job. If the error persists, perform problem determination.

Problem determination: Table 10 on page 73, items 3 and 4.

IFC219I 303X SUMMARY MODULE *mmmmmmmm* **NOT FOUND**

Explanation: (MVS, VM, and VSE) EREP cannot find the selected *mmmmmmmm* summary module.

System action: EREP omits this record from the summary and continues summary processing using the default summary module named in message IFC218I. If the default summary-table module is missing, EREP terminates summary processing and issues message IFC220I.

Programmer response: If message IFC218I immediately follows this message, see the programmer response for that message. If message IFC220I immediately follows, the proper level of EREP is probably not installed. Check with your software support.

IFC220I SEVERE ERROR: SUMMARY TERMINATED FOR THIS MODEL

Explanation: (MVS, VM, and VSE) The error mentioned in the immediately preceding message has caused EREP to terminate the summary.

System action: EREP terminates summary processing.

Programmer response: See the message immediately preceding this message for programmer response.

IFC221I NO SHARE CARD

Explanation: (MVS, VM, and VSE) EREP has found records for more than one processor in the input but has found no SHARE statements.

System action: EREP continues processing; however, the probable failing unit can be incorrect for tape devices.

Programmer response: Provide SHARE statements for tape devices.

IFC223I THRESHOLD TABLE ERROR

Explanation: (MVS, VM, and VSE) The table contains a value or other data that EREP does not recognize or does not contain the data EREP expects.

System action: EREP stops processing records.

Programmer response: The table either is incorrect or has been overlaid. Make sure the latest level of EREP is installed and includes all the applicable APAR/PTFs.

If the table has been replaced by PTF, remove the PTF and rerun the job.

In either case, contact your software support.

IFC227I NO DASDID CARD FOR ENTRIES FLAGGED WITH *

Explanation: (MVS, VM, and VSE) EREP found records for DASD devices for which there are no DASDID statements. The flagged entries are on the DASD subsystem exception report.

System action: EREP continues processing; however, probable failing unit analysis may be incorrect.

Programmer response: Include DASDID statements for your DASD that do not provide their own physical IDs and rerun the job.

IFC229I MODULE *mmmmmmmm*, RPA=*aaaaaaaa*, REQUESTED AN UNSUPPORTED SERVICE FUNCTION; FRF=*bbbbbbbb*, FCF=*cccccccc*

Explanation: (MVS, VM, and VSE) The named module made a service request that contains an invalid or unsupported code in the function request flag (FRF) or the function control flag (FCF).

System action: EREP ignores the request and returns control to the calling module at the specified return-point address (RPA). Register 15 contains the return code.

Programmer response: There is an error either in the product-dependent exit module or in the product control table (PCT) for the product. Make sure EREP support is installed for the products included in the module name.

Problem determination: Save any output for analysis.

IFC230I UNABLE TO TRANSFER CONTROL TO {MOD=*mmmmmmmm* | PROC *pppppppp*}; IFCXCST OVERFLOW—CRITICAL ERROR

Explanation: (MVS, VM, and VSE) The transfer-of-control stack table, IFCXCST, is full; EREP cannot transfer control to the named module or procedure as requested.

System action: EREP ignores the request and returns control to the calling module. Register 15 contains the return code.

Programmer response: Call IBM level two service.

IFC231I UNABLE TO LOAD MODULE *mmmmmmmm* FOR MODULE *xxxxxxxx*; LMAT OVERFLOW—CRITICAL ERROR

Explanation: (MVS, VSE, and VM) Module *xxxxxxxx* requested, via the IFCLOAD or IFCCALL macro, that EREP load module *mmmmmmmm*. EREP cannot satisfy the request because the load-module-address table (LMAT) is full.

System action: EREP ignores the request and returns control to the calling module. Register 15 contains the return code.

Programmer response: Call IBM level two service.

IFC232I UNABLE TO GET VIRTUAL STORAGE FOR MODULE *mmmmmmmm*; VSAT OVERFLOW—CRITICAL ERROR

Explanation: (MVS, VM, and VSE) The named module requests virtual storage via the IFCGETM macro. EREP cannot satisfy the request because its virtual storage address table (VSAT) is full.

System action: EREP ignores the request and returns control to the calling module. Register 15 contains the return code.

Programmer response: Call IBM level two service.

IFC233I INVALID FUNCTION - STE BUILD MODULE *mmmmmmmm*

Explanation: (MVS, VM, and VSE) The named module has been asked to do something it cannot do.

System action: Processing continues; EREP does not include this record in the system exception reports.

Programmer response: There is an error either in the product-dependent exit module or in the product control table (PCT) for the product. Make sure EREP support is installed for the products included in the module name.

Problem determination: Save any output for analysis.

IFC234I GETMAIN FAILED FOR EVTABLE

Explanation: (MVS and VM) EREP is unable to obtain virtual storage for the table of valid CPU serial numbers needed for the event history report.

System action: EREP terminates.

Programmer response: Increase the region or virtual storage size and rerun the job.

IFC235I GETVIS FAILED FOR EVTABLE

Explanation: **(VSE)** EREP is unable to obtain virtual storage for the table of valid CPU serial numbers needed for the event history report.

System action: EREP terminates.

Programmer response: Increase the partition size and rerun the job.

IFC236I GETMAIN FAILED FOR TREND TABLE PART 1

Explanation: **(MVS and VM)** EREP is unable to obtain virtual storage for the table needed to build Part 1 of the trends report.

System action: No more records are processed; EREP produces a partial report.

Programmer response: Increase the region or virtual storage size and rerun the job.

IFC237I GETVIS FAILED FOR TREND TABLE PART 1

Explanation: **(VSE)** EREP is unable to obtain virtual storage for the table needed to build Part 1 of the trends report.

System action: No more records are processed; EREP produces a partial report.

Programmer response: Increase the partition size and rerun the job.

IFC238I GETMAIN FAILED FOR PHYID TABLE

Explanation: **(MVS and VM)** EREP is unable to obtain virtual storage for the table of physical IDs.

System action: Processing continues; this record is excluded from the report.

Programmer response: Increase the region or virtual storage size and rerun the job.

IFC239I GETVIS FAILED FOR PHYID TABLE

Explanation: **(VSE)** EREP is unable to obtain virtual storage for the table of physical IDs.

System action: Processing continues; this record is excluded from the reports.

Programmer response: Increase the partition size and rerun the job.

IFC240I GETMAIN FAILED FOR ACLAS TABLE

Explanation: **(MVS and VM)** EREP is unable to obtain virtual storage for the additional-classification table used in building the system summary and trends reports.

System action: Processing continues; EREP does no additional classification of this record.

Programmer response: Increase the region or virtual storage size and rerun the job.

IFC241I GETVIS FAILED FOR ACLAS TABLE

Explanation: **(VSE)** EREP is unable to obtain virtual storage for the additional-classification table used in building the system summary and trends reports.

System action: Processing continues; EREP does no additional classification of this record.

Programmer response: Increase partition size and rerun the job.

IFC242I EXIT MOD *mmmmmmmm* COULD NOT OBTAIN ERROR CLASS

Explanation: **(MVS, VM, and VSE)** Either the named module cannot load the PCT containing the product-dependent data for this record, or the PCT does not contain the expected error class.

System action: Processing continues; this record is excluded from the report.

Programmer response: There is an error either in the product-dependent exit module or in the product control table (PCT) for the product. Make sure EREP support is installed for the products included in the module name.

IFC243I EXIT MOD *mmmmmmmm* COULD NOT OBTAIN PHYSICAL ID

Explanation: **(MVS, VM, and VSE)** Either the named module cannot load the PCT containing the product-dependent data for this record, or the PCT does not contain the expected physical ID.

System action: Processing continues; this record is excluded from the report.

Programmer response: There is an error either in the product-dependent exit module or in the product control table (PCT) for the product. Make sure EREP support is installed for the products included in the module name.

IFC244I EXIT MOD *mmmmmmmm* COULD NOT OBTAIN VOLID

Explanation: (MVS, VM, and VSE) Either the named module cannot load the PCT containing the product-dependent data for this record, or the PCT does not contain the expected volume serial number.

System action: Processing continues; this record is excluded from the report.

Programmer response: There is an error either in the product-dependent exit module or in the product control table (PCT) for the product. Make sure EREP support is installed for the products included in the module name.

IFC245I EXIT MOD *mmmmmmmm* COULD NOT OBTAIN SYMCDE

Explanation: (MVS, VM, and VSE) Either the named module cannot load the PCT containing the product-dependent data for this record, or the PCT does not contain the expected fault symptom code

System action: Processing continues; this record is excluded from the report.

Programmer response: There is an error either in the product-dependent exit module or in the product control table (PCT) for the product. Make sure EREP support is installed for the products included in the module name.

IFC246I EXIT MOD *mmmmmmmm* COULD NOT OBTAIN TERMINAL NAME

Explanation: (MVS, VM, and VSE) Either the named module cannot load the PCT containing the product-dependent data for this record, or the PCT does not contain the expected terminal name.

System action: Processing continues; this record is excluded from the report.

Programmer response: There is an error either in the product-dependent exit module or in the product control table (PCT) for the product. Make sure EREP support is installed for the products included in the module name.

IFC247I EXIT MOD *mmmmmmmm* COULD NOT OBTAIN LIA/LIBADR

Explanation: (MVS, VM, and VSE) Either the named module cannot load the PCT containing the product-dependent data for this record, or the PCT does not contain the expected line interface base address.

System action: Processing continues; this record is excluded from the report.

Programmer response: There is an error either in the product-dependent exit module or in the product control table (PCT) for the product. Make sure EREP support is installed for the products included in the module name.

IFC248I {GETMAIN GETVIS} FAILED FOR SYSUM TABLE PART 1

Explanation: (MVS, VM, and VSE) EREP is unable to obtain virtual storage for the table needed to build Part 1 of the system summary.

System action: No more records are processed; EREP produces a partial report.

Programmer response: Increase region or virtual storage size and rerun the job.

IFC250I EXIT MOD *mmmmmmmm* COULD NOT OBTAIN SFT DATA

Explanation: (MVS, VM, and VSE) The named module supplies product-dependent data for the event history report. It is unable to find the data for this software (SFT) record.

System action: Processing continues; however, the entry for this record does not include the product-dependent data.

Programmer response: There is an error either in the exit module or in the product control table (PCT) for the product. Make sure EREP support is installed for the products included in the module name.

IFC251I EXIT MOD *mmmmmmmm* COULD NOT OBTAIN OBR DATA

Explanation: (MVS, VM, and VSE)

The named module supplies product-dependent data for the event history report. It is unable to find the data for this OBR record.

The named exit module has detected an error, or there is an error in the product control table (PCT) for this product.

System action: Processing continues; however, the entry for this record does not include the product-dependent data.

Programmer response: Make sure EREP support is installed for the products included in the module name.

IFC252I EXIT MOD *mmmmmmmm* COULD NOT OBTAIN CCH DATA

Explanation: (MVS, VM, and VSE) The named module supplies product-dependent data for the event history report. It is unable to find the data for this CCH record.

System action: Processing continues; however, the entry for this record does not include the product-dependent data.

Programmer response: There is an error either in the exit module or in the product control table (PCT) for the product. Make sure EREP support is installed for the products included in the module name.

IFC253I **EXIT MOD** ***mmmmmmmm*** **COULD NOT OBTAIN MDRDASD DATA**

Explanation: **(MVS, VM, and VSE)** The named module supplies product-dependent data for the event history report. It is unable to find the DASD-specific data for this MDR record. A hexdump of the record is also printed after the message.

System action: Processing continues; however, the entry for this record does not include the product-dependent data.

Programmer response: There is an error either in the exit module or in the product control table (PCT) for the product. Make sure EREP support is installed for the products included in the module name.

IFC256I **UNABLE TO LOAD MODULE** ***mmmmmmmm*** **FOR MODULE IFCZIMGR**

Explanation: **(MVS, VM, and VSE)** During initialization of the EREP run, the named service module can not be found or loaded.

System action: EREP terminates.

Programmer response: Make sure the named module is included in the library being searched during initialization and try again to run EREP.

IFC257I **UNABLE TO INITIALIZE IFCZIMGR FOR** ***mmmmmmmm***

Explanation: **(MVS, VM, and VSE)** EREP cannot initialize its system interface manager (IFCZIMGR) for the named module. Either it cannot load a needed service module or it cannot open the TOURIST/SYSLST data set. The reason is indicated in the preceding message.

System action: EREP terminates.

Programmer response: Take the action recommended for the preceding message and try again.

IFC258I **EXIT MOD** ***mmmmmmmm*** **COULD NOT FORMAT REPORT FOR** ***ssrr***

Explanation: **(MVS, VM, and VSE)**

The named module produces the product-dependent detail summary report. It is unable to produce the report for this SCP (*ss*) and record type (*rr*). A hexdump of the record is also printed after the message.

The record type is byte 0 of the record. For a description of the various record types see Table 9 on page 69.

The SCP is byte 1 of the record and is one of the following:

- VM
- VE (VSE)
- V2 (MVS)

The named exit module has detected an error, or there is an error in the product control table (PCT) for this product.

System action: Processing continues; however, the detail summary report for this SCP and record type will not be produced.

Programmer response: Make sure EREP support is installed for the products included in the module name.

IFC259I **EXIT MOD** ***mmmmmmmm*** **COULD NOT OBTAIN DATA FOR** ***ssrr***

Explanation: **(MVS, VM, and VSE)**

The named module supplies product-dependent data for the event history report. It is unable to find the data for this SCP (*ss*) and record type (*rr*).

The record type is byte 0 of the record. For a description of the various record types, see Table 9 on page 69.

The SCP is byte 1 of the record and is one of the following:

- VM
- VE (VSE)
- V2 (MVS)

The named exit module has detected an error, or there is an error in the product control table (PCT) for this product.

System action: Processing continues; however, the entry for this record does not include the product-dependent data.

Programmer response: Make sure EREP support is installed for the products included in the module name.

IFC260I **USER EXIT MOD** ***mmmmmmmm*** **COULD NOT BE LOADED BY EREP**

Explanation: **(MVS, VM, and VSE)** The named module supplies product-dependent data for the event history report. EREP is unable to load it.

System action: Processing continues; however, the entry for this record does not include the product-dependent data.

Programmer response: There is an error in the product control table (PCT) for the product. Make sure EREP support is installed for the products included in the module name.

IFC261I SYSIMG STATEMENTS IGNORED WHEN PRINT=PT REQUESTED

Explanation: **(MVS, VM, and VSE)** When PRINT=PT is requested, SYSIMG control statements should not be coded.

System action: Processing continues. The SYSIMG control statements are ignored.

IFC262I SYSTEM IMAGE STATEMENTS ALTER CPU SERIAL NUMBERS

Explanation: **(MVS, VM, and VSE)** The first or the first and second digits of the CPU identification numbers in the CPU tables at the end of the report have been altered as a result of information given in the SYSIMG control statement.

IFC263I TABSIZE REQUEST EXCEEDS MAXIMUM ALLOWED VALUE

Explanation: **(MVS, VM, and VSE)** The TABSIZE request exceeds EREP's addressing capability.

System action: EREP terminates.

Programmer response: Run the job again specifying a smaller value for TABSIZE. See "TABSIZE — Sort Table Size (Processing Parameter)" on page 32 for information on allowable values.

IFC264I INVALID INFORMATION FOUND FOR DASD {OBR|MDR} CODE {*xxxx*|*xx*} IN RECORD

Explanation: **(MVS, VM, and VSE)** The following record contains information that is inconsistent with the OBR or MDR device type code found in the record. Device type codes are documented in "OBR Codes" on page 97 and "MDR Codes" on page 99.

This message is caused by one of the following conditions:

1. The record was for a non-IBM DASD. Contact OEM hardware support.
2. Invalid sense information was generated by the DASD device. Contact your hardware support.
3. The record should not have been recorded by the operating system.
4. The operating system error recording program built the record incorrectly because:
   a. The DASD device had never been on-line before the error recovery procedures (ERP) generated the record.
   b. The DASD device is not supported by the level of ERP that generated the record.
5. The DASD device is not supported by the level of EREP that generated the report.

System action: Processing continues but device-dependent information will not be printed for this record.

Programmer response:

Cause	Action
	Contact field support to determine where the error occurs.
	Vary the offline device online and then back offline to resolve the problem.
	Contact the IBM Support Center to order the correct level of code for the operating system controlling the recording.
	Contact the IBM Support Center to order the correct level of code for the device.

Problem determination: Obtain the following documentation:

- The record following this message.
- The level of EREP on your system, including APAR/PTFs.
- The level of ERP on the system that created the record.

IFC265I INVALID INFORMATION FOUND FOR DASD DEVICE *xxxx*

Explanation: **(MVS, VM, and VSE)** The following record contains sense information that is inconsistent with the indicated the device type code.

This message is caused by one of the following conditions:

1. The record was for a non-IBM DASD. Contact your OEM hardware support.
2. Invalid sense information was generated by the DASD device. Contact your hardware support.
3. The record should not have been recorded by the operating system.
4. The operating system error recording program built the record incorrectly because:
   a. The DASD device had never been on-line before the error recovery procedures (ERP) generated the record.
   b. The DASD device is not supported by the level of ERP that generated the record.
5. The DASD device is not supported by the level of EREP that generated the report.

System action: Processing continues but device-dependent information will not be printed for this record.

Programmer response:

Cause	**Action**
	Contact field support to determine where the error occurs.
	Vary the offline device online and then back offline to resolve the problem.
	Contact the IBM Support Center to order the correct level of code for the operating system controlling the recording.
	Contact the IBM Support Center to order the correct level of code for the device.

Problem determination: Obtain the following documentation:

- The record following this message.
- The level of EREP on your system, including APAR/PTFs.
- The level of ERP on the system that created the record.

IFC266I UNABLE TO OBTAIN VIRTUAL STORAGE FOR MODULE "*mmmmmmmm*", GETVIS FAILURE, SIZE=' 'X.

Explanation: **(VSE)** This error message indicates that the virtual storage request made for module *mmmmmmmm* cannot be honored as insufficient GETVIS storage remained to fulfill the request.

System action: EREP ignores the request and returns control to the calling module.

Programmer response: Increase the partition size and rerun the job.

Chapter 7. Codes for Control Units, OBRs, and MDRs

The control unit codes, outboard record (OBR) codes, and miscellaneous data record (MDR) codes are gathered in tables to help you cross-reference devices to the codes that represent them in EREP records.

This topic covers the following subjects:

TOPIC
"Control Unit Type Codes"
"OBR Codes" on page 97
"MDR Codes" on page 99

The following table contains an example of the four-byte field in the long OBR that contains the device type associated with an error.

Offset Dec(Hex)	Size(bytes) Alignment(bits)	Field Name	Description
⋮	⋮	⋮	⋮
52(34)	4		Device type for the device associated with the error.
	Byte 0		
	1...		Byte 1 contains a control unit ID.
	.xxx xxxx		Reserved.
	Byte 1		Control unit ID if byte 0(bit 0)=1. Otherwise system dependent data unused by EREP.
	Byte 2		Device class code.
	Byte 3		Device type code.
⋮	⋮	⋮	⋮

The four-byte field contains data gathered from different sources for different operating systems.

Some of the other types of error records contain a four byte-field at the same or a different offset.

MDRs have a one-byte field at an offset of four to hold the device code. Refer to the system product error recording manual for your operating system to find the error record layouts that show the size and offset of the device codes.

Control Unit Type Codes

This section contains tables sorted by both the control unit and the control unit type code to help you cross-reference control units and type codes.

The following table shows the control unit type codes and control units sorted by type code:

TYPE CODE	CONTROL UNIT
01	3880-3
02	3880-3 with Speed Matching Buffer
03	3880-13
04	3880-23
05	3990-2
06	3990-3
09	3880-3 (3380-JK attachment feature)
0A	3880-23
0B	3880-11
0C	3880-21
0D	3880-1
0E	3880-1 with Speed Matching Buffer (3375)
0F	3380-CJ (Direct Attach)
10	3990-1
11	9343-C02
12	9343-C04
13	9343-D04
14	9341
15	3990-6
17	3995-151
18	9343-CC4
19	9343-DC4
1A	9343-CC2
1B	2105
1C	9696 (IDSK)
1F	2107
20	3995-153
24	1750
30	9394

The following table shows the control unit type codes and control units sorted by control unit:

CONTROL UNIT	TYPE CODE
1750	24
2105	1B
2107	1F
3380-CJ (Direct Attach)	0F
3880-1	0D
3880-1 with Speed Matching Buffer (3375)	0E

CONTROL UNIT	TYPE CODE
3880-3	01
3880-3 with Speed Matching Buffer	02
3880-3 (3380-JK attachment feature)	09
3880-23	0A
3880-11	0B
3880-13	03
3880-21	0C
3880-23	04
3990-1	10
3990-2	05
3990-3	06
3990-6	15
3995-151	17
3995-153	20
9341	14
9343-C02	11
9343-C04	12
9343-CC2	1A
9343-CC4	18
9343-D04	13
9343-DC4	19
9394	30
9696 (IDSK)	1C

OBR Codes

This section contains tables sorted by both the OBR device class or type code (also called the OBR codes) and the device or family type to help you cross-reference OBR codes and devices.

The following table shows the OBR device class or type codes and the device type or family sorted by OBR code:

OBR Codes

0801 = 2540DD	082D = 1419	1013 = 5080	2183 = 3995	4102 = BCTC
0802 = 2540DD	082E = 1419	1014 = BA00	4000 = 7770	4105 = OSA
0803 = 1442	082F = 2495	2001 = 2311	4001 = 2702	4106 = OSAD
0804 = 2501	0830 = 3213	2002 = 2301	4002 = 2701	4107 = IQD
0805 = 2520	0831 = 1017	2003 = 2303	4003 = 2703	4120 = FCTC
0806 = 3505	0832 = 1018	2005 = 2321	4004 = 2955	4122 = 3995
0807 = 3525	0833 = 3210	2006 = 2305	4005 = 3705	4201 = 1030
0808 = 1403	0834 = 3215	2007 = 2305	4006 = 3705	4202 = 1050
0809 = 3211	0835 = 1255	2008 = 2314	4009 = 3704	4203 = 1060
080A = 1443	0836 = 1255	2009 = 3330	400A = 3968	4204 = 2740
080B = 3203	0837 = 1270	200A = 3340	4011 = 2702	4205 = 2740
080C = 3525	0838 = 1270	200B = 3350	4013 = 2703	4206 = 2741
080D = 3262	0839 = 2596	200C = 3375	4014 = 7772	4207 = 226T
080E = 3800-01	083A = SWCH	200D = 3330	4015 = 3705	4208 = 105T
080F = AFP1	083D = 7443	200E = 3380-A,B	4021 = 2702	4209 = 2760
0810 = 2671	0840 = 3890	201E = 3380-D	4022 = 2701	420A = 83B3
0811 = 4245	0841 = 3886	2021 = 3380-J	4023 = 2703	420B = 115A
0812 = 1012	0842 = 3850	2023 = 3380-K	4025 = 3705	420F = 1130
0813 = 4248	0844 = 3540	2024 = 3390-03	4031 = 2702	4210 = 2020
0813 = 6262	0846 = 2560	2026 = 3390-01	4032 = 2701	4211 = 2780
0814 = 2947	0847 = 3504	2027 = 3390-02	4033 = 2703	4212 = 2770
0816 = 3890	0848 = 5425	2028 = 9345-01	4035 = 3705	4213 = 2265
0817 = 3886	0849 = 3203	2029 = 9345-02	4041 = 2702	4214 = 2930
0818 = 2495	084C = 3838	202E = 3380-E	4042 = 2701	4215 = 2972
0819 = 3895	084D = 5203	2031 = 3395-151	4043 = 2703	4216 = 327T
081A = 1285	084E = 5203	2032 = 3390-09	4045 = 1060	4217 = 2970
081B = 1287	0880 = 5424	2033 = 9392-02	4051 = 2702	4218 = 3735
081C = 1288	0882 = 3848	2034 = 9392-01	4052 = 2701	4219 = 3945
081D = 1419	08A0 = 3800-03	2035 = 2105	4053 = 2703	421A = 2790
081E = 1419	1001 = 1015	2036 = 3995-153	4061 = 2702	421B = 3670
081F = 1275	1002 = 2250	2037 = 9395-01	4062 = 2701	4420 = 3700
0820 = 1052	1003 = 226D	2038 = 9395-02	4063 = 2703	8001 = 2400
0821 = 2150	1004 = 105D	203A = 9392-03	4071 = 2702	8003 = 3400
0822 = 3210	1005 = 2280	203B = IDSK	4072 = 2701	8004 = 3420
0823 = 3215	1006 = 2282	203C = 2107	4073 = 2703	8005 = 3410
0824 = 2956	1007 = 3278	203D = 1750	4081 = 2702	8006 = 8809
0825 = 2956	1008 = 3066	2101 = 3310	4082 = 2701	8007 = 3430
0826 = 2956	1009 = 327D	2102 = 3370	4083 = 2703	8008 = 7340
0827 = 2956	100A = 3284	2105 = 3370	4091 = 2702	8009 = 9347
0828 = 2956	100B = 3286	2106 = 9335	4092 = 2701	800A = 3422
0829 = 1419	100C = 3158	2107 = 9332	4093 = 2703	800C = 3424
082A = 1275	100D = 3036	2108 = 9313	40F1 = 3791	800E = 9348
082B = 1275	100E = 3138	2111 = 9336	4100 = CTCA	8080 = 3480
082C = 1275	100F = 3148	2112 = 0671	4101 = SCTC	8081 = 3490
		2180 = 9246		8083 = 3590
		2181 = 9247		8084 = 3591/3490 EMU
		2182 = 3995		8085 = 3590/3490 EMU

Note:
- OBR codes are *left* of the equal signs; device types are *right* of the equal signs.
- Some OBR codes may be used with multiple device types or models; for example: AFP1, CTCA, SWCH.

The following table shows the OBR device class or type codes (also called the OBR codes) and the device type or family sorted by device or family type:

AFP1 = 080F	226T = 4207	2703 = 4043	3330 = 2009	3848 = 0882
BA00 = 1014	2265 = 4213	2703 = 4053	3330 = 200D	3850 = 0842
BCTC = 4102	2280 = 1005	2703 = 4063	3340 = 200A	3886 = 0817
CTCA = 4100	2282 = 1006	2703 = 4073	3350 = 200B	3886 = 0841
FCTC = 4120	2301 = 2002	2703 = 4083	3370 = 2102	3890 = 0816
IDSK = 203B	2303 = 2003	2703 = 4093	3370 = 2105	3890 = 0840
IQD = 4107	2305 = 2006	2740 = 4204	3375 = 200C	3895 = 0819
OSA = 4105	2305 = 2007	2740 = 4205	3380-A,B= 200E	3945 = 4219
OSAD = 4106	2311 = 2001	2741 = 4206	3380-D = 201E	3968 = 400A
SCTC = 4101	2314 = 2008	2760 = 4209	3380-J = 2021	3995 = 2031
SWCH = 083A	2321 = 2005	2770 = 4212	3380-K = 2023	3995 = 2036
0671 = 2112	2400 = 8001	2780 = 4211	3380-E = 202E	3995 = 2182
1012 = 0812	2495 = 0818	2790 = 421A	3390-01 = 2026	3995 = 2183
1015 = 1001	2495 = 082F	2930 = 4214	3390-02 = 2027	3995 = 4122
1017 = 0831	2501 = 0804	2947 = 0814	3390-03 = 2024	4245 = 0811
1018 = 0832	2520 = 0805	2955 = 4004	3390-09 = 2032	4248 = 0813
1030 = 4201	2540DD = 0801	2956 = 0824	3400 = 8003	5080 = 1013
105D = 1004	2540DD = 0802	2956 = 0825	3410 = 8005	5203 = 084D
105T = 4208	2560 = 0846	2956 = 0826	3420 = 8004	5203 = 084E
1050 = 4202	2596 = 0839	2956 = 0827	3422 = 800A	5424 = 0880
1052 = 0820	2671 = 0810	2956 = 0828	3424 = 800C	5425 = 0848
1060 = 4045	2701 = 4002	2970 = 4217	3430 = 8007	6262 = 0813
1060 = 4203	2701 = 4022	2972 = 4215	3480 = 8080	7340 = 8008
1130 = 420F	2701 = 4032	3036 = 100D	3490 = 8081	7443 = 083D
115A = 420B	2701 = 4042	3066 = 1008	3504 = 0847	7770 = 4000
1255 = 0835	2701 = 4052	3138 = 100E	3505 = 0806	7772 = 4014
1255 = 0836	2701 = 4062	3148 = 100F	3525 = 0807	83B3 = 420A
1270 = 0837	2701 = 4072	3158 = 100C	3525 = 080C	8809 = 8006
1270 = 0838	2701 = 4082	3203 = 0849	3540 = 0844	9246 = 2180
1275 = 081F	2701 = 4092	3203 = 080B	3590 = 8083	9247 = 2181
1275 = 082A	2702 = 4001	3210 = 0822	3590 = 8085	9313 = 2108
1275 = 082B	2702 = 4011	3210 = 0833	3591 = 8084	9332 = 2107
1275 = 082C	2702 = 4021	3211 = 0809	3670 = 421B	9335 = 2106
1285 = 081A	2702 = 4031	3213 = 0830	3700 = 4420	9336 = 2111
1287 = 081B	2702 = 4041	3215 = 0823	3704 = 4009	9345-01 = 2028
1288 = 081C	2702 = 4051	3215 = 0834	3705 = 4005	9345-02 = 2029
1403 = 0808	2702 = 4061	3262 = 080D	3705 = 4006	9347 = 8009
1419 = 081D	2702 = 4071	327D = 1009	3705 = 4015	9348 = 800E
1419 = 081E	2702 = 4081	327T = 4216	3705 = 4025	9392-01 = 2034
1419 = 082D	2702 = 4091	3278 = 1007	3705 = 4035	9392-02 = 2033
1419 = 082E	2703 = 4003	3284 = 100A	3735 = 4218	9392-03 = 203A
1419 = 0829	2703 = 4013	3286 = 100B	3791 = 40F1	9395 = 2037
1442 = 0803	2703 = 4023	3310 = 2101	3800-01 = 080E	9395 = 2038
1443 = 080A	2703 = 4033		3800-03 = 08A0	
1750 = 203D			3838 = 084C	
2020 = 4210				
2105 = 2035				
2107 = 203C				
2150 = 0821				
2250 = 1002				
226D = 1003				

Note:

- Device types are *left* of the equal signs; OBR codes are *right* of the equal signs.
- Some OBR codes may be used with multiple device types or models; for example: AFP1, CTCA, SWCH.

MDR Codes

This section contains tables sorted by both the MDR device code (also called the MDR code) and the device or family type to help you cross-reference MDR codes and devices.

The following table shows MDR codes and device types sorted by MDR code:

```
01 = 3330
02 = 2305 MOD 2
03 = 3277
03 = 3286
03 = 3284 (non-NCP mode)
04 = 3211
05 = 3705 (non-NCP mode)
06 = 3670
07 = 3168
08 = 2715
09 = 3340
09 = 3344
0A = 3330 MOD 11
0B = 3277
0C = 3800 MOD 1
0D = 3895
0E = 3850
0F = IGAR Diskette
10 = 3203
10 = 3289
11 = 3350
12 = 2305 MOD 1
13 = 3277 (NCP mode)
14 = 3380 Mod A,B
15 = 3705 (NCP mode)
16 = 3310
17 = 3370 MOD 1
18 = 3375
19 = 9313
1A = 3370 MOD 2
1B = 3380 MOD E
1C = 3380 MOD D
1D = 9335
1E = 9332
1F = 9347
20 = 3800 MOD 3,8
21 = 3380 MOD J
23 = 3380 MOD K
24 = 3390-03
25 = 3725
26 = 3390-01
27 = 3390-02
28 = 9345-01
29 = 9345-02
2A = 0671
2B = 9336
2E = 3720
2F = 3745
30 = NMVT
31 = 3995-151
32 = 3390-09
33 = 9392-02
34 = 9392-01
35 = 2105
36 = 3995-153
37 = 9395
38 = 9395
3A = 9392-03
3B = IDSK
3C = 2107
3D = 1750
3E = 2107 EVA mod A
40 = 8809
41 = 3480
42 = 3490
44 = 3424
45 = 9348
46 = 3590
47 = 3591/3490 EMU
48 = 3590/3490 EMU
50 = 3995
F0 = 2946
F1 = 2948
F3 = 2703
```

Note: MDR codes are *left* of the equal signs; device types are *right* of the equal signs.

The following table shows MDR codes and device types sorted by Device Type.

0671	2A
1750	3D
2105	35
2107	3C
2107 EVA mod A	3E
2305 MOD 1	12
2305 MOD 2	02
2703	F3
2715	08
2946	F0
2948	F1
3168	07
3203	10
3211	04
3277	03
3277	0B
3277 (NCP mode)	13
3284 (non-NCP mode)	03
3286	03
3289	10
3310	16
3330	01
3330 MOD 11	0A
3340	09
3344	09
3350	11
3370 MOD 1	17
3370 MOD 2	1A
3375	18
3380 MOD A,B	14
3380 MOD J	21
3380 MOD K	23
3380 MOD E	1B
3380 MOD D	1C
3390-01	26
3390-02	27
3390-03	24
3390-09	32
3424	44
3480	41
3490	42
3590	46
3591/3490 EMU	47
3590/3490 EMU	48
3670	06
3705 (non-NCP mode)	05
3705 (NCP mode)	15
3720	2E
3725	25
3745	2F
3800 MOD 1	0C
3800 MOD 3,8	20
3850	0E
3895	0D
3995	50
3995-151	31
3995-153	36
9336	2B
8809	40
9313	19
9332	1E
9335	1D
9345-01	28
9345-02	29
9347	1F
9348	45
9392-01	34
9392-02	33
9392-03	3A
9395-01	37
9395-02	38
IDSK	3B
IGAR Diskette	0F
NMVT	30

Note: Device types are *left* of the equal signs; MDR codes are *right* of the equal signs.

Part 2. Examples of Output from Reports

To help you select which reports you need to adequately monitor your installation, this part of the EREP Reference provides descriptions and examples of each report generated by EREP.

EREP reports are designed to give you a variety of views of the data being processed. EREP produces:

- Overview reports, from which you can determine *if* there are problems
- Analysis reports, from which you can determine *where* there are problems
- Detail reports, from which you can determine *what* the problems are.

In order to decide which report to run at which time, you need to understand what each one is telling you. The following reports are described in this topic:

Topic
Chapter 8, "System Summary Report," on page 105
Chapter 9, "Trends Report," on page 113
Chapter 10, "Event History Report," on page 121
Chapter 11, "System Exception Report Series," on page 127
Chapter 12, "Threshold Summary Report," on page 207
Chapter 13, "Detail Edit and Summary Reports," on page 213

Note: The reports are listed from most general to most specific, because the most effective way to use EREP reports is to start with the most general and work toward the most specific.

Chapter 8. System Summary Report

The system summary report provides an overview of errors for each of your installation's principal parts or subsystems:

- Processors (CPU)
- Channels
- Subchannels
- Storage
- Operating system control programs (SCPs)
- I/O subsystems.

Important: The system summary report does not go into detail; it shows how many errors and exceptions were recorded overall. It is a good place to start when evaluating the performance of your system.

Description of the System Summary Report

The system summary report has the following two parts:

PART	DESCRIPTION
1	Summarizes errors by CPUs from all but the I/O subsystem.
2	Summarizes errors recorded in the I/O subsystem.

Note:

1. Record counts are listed by CPU. See "How EREP Assigns Numbers to CPUs" on page 57 for an explanation of the way the number identifiers are assigned.

   EREP can report information from a variable number of CPUs depending upon your operating system, type of printer and what parameters you specify. Information from the remaining CPUs are grouped together under serial number X'FFFFFF'.

   It is also possible to have multiple internal CPUs reported under one serial number. See "SYSIMG Control Statement" on page 58 for more information.
2. DASD and tape are listed by strings in the system summary.
3. A field with all 9's means that the number was larger than the print position allowed.
4. A dash (–) in part 2 of the system summary means there are no records for this DEVNO/CUA on this processor (CPU).
5. It is most useful to address the permanent errors first.

System Summary Part 1

The first part of the system summary report varies according to the mode of the records it summarizes.

RECORD MODE	CONTAINS
370	• Counts of machine checks (MCH records) • Channel checks (CCH records) by channel

RECORD MODE	CONTAINS
370XA	• Machine-check totals • Counts of subchannel logouts (SLH records) by channel path ID • Channel report words (CRW records) created by both hardware and software

Note:

1. For MVS only, actual software error records are included in the report.
2. Counts of software events that may or may not be associated with errors (IPLs and system termination) are shown in the first part of the system summary.

"System Summary Report, Part 1" on page 107 shows an example of the system summary part 1.

System Summary Part 2

The second part of the system summary is a condensed report of every permanent and temporary error recorded for the I/O devices in your installation, listed under the CPU associated with the error.

When your CPUs share I/O devices, you must use SHARE control statements for the system summary if you want to see I/O errors combined for all the possible paths to a device that is common to different systems. See "SHARE Control Statements" on page 54 for details.

The temporary errors appearing in part 2 of this report are totals of temporary read/write errors and statistical data.

The temporary and permanent I/O errors are listed by product or device groups. Table 11 shows the product groups in the order they appear in part 2 of the system summary and the trends reports.

Table 11. The Order of Product Groups in the Reports

ORDER	PRODUCT GROUP
1	Console and unit record devices: 1. Operator's console 2. Card reader 3. Card punch 4. Printer 5. OCR/MICR
2	Direct-access storage devices: 1. Disk 2. Drum/fixed-head file 3. Mass storage system 4. Optical
3	Tape devices
4	Displays (channel-attached)
5	Teleprocessing (TP) communications controllers
6	Terminals

Table 11. The Order of Product Groups in the Reports (continued)

ORDER	PRODUCT GROUP
7	Other devices: 1. Channel-to-channel adapter 2. Cryptographic unit 3. Dynamic pathing availability (DPA)
8	Unknown/unrecognized devices

Errors are presented by control unit or device address for each device type:

For 370 records	The device address is the CUA.
For 370XA records	The device address is the device number.
For both 370 and 370XA records	The errors are combined.

DASD is presented as follows:

- DASD with serial numbers or DASDIDs show only total counts since hardware error conditions are not caused by CPU.
- DASD with serial numbers in the sense records (for example, 3990 and 9343) indicate subsystems by type and SSID value (as set in the control unit).
- DASD with DASDID indicate the subsystem by the control unit ID (first byte of the DASDID).

The I/O error data is summarized by the control unit/device address or number of the device reporting each error.

Physical ID identifiers appear in the combination format of SCUID-CTLID-DEVID.

"System Summary Report, Part 2" on page 109 shows an example of the system summary part 2.

Examples of the System Summary Reports

Figures containing examples of these reports are on the pages shown in the following table:

REPORT	PAGE
System Summary Report, Part 1	"System Summary Report, Part 1"
System Summary Report, Part 2	"System Summary Report, Part 2" on page 109

System Summary Report, Part 1

```
S Y S T E M   S U M M A R Y             REPORT DATE 012 09
         (PART 1)                       PERIOD FROM 230 06
CPU/STORAGE/SCP                                  TO 263 06

                    TOTAL CPU-0 CPU-1 CPU-2 CPU-3 CPU-4 CPU-5 CPU-6 CPU-7 CPU-8 CPU-9
IPL                     11     8     1     0     1     1     0     0     0     0     0

MACHINE CHECK
```

```
  RECOVERABLE          163    75     0     0     0     0     0     0     0     0    88
  NON-RECOVERABLE        0     0     0     0     0     0     0     0     0     0     0

CHANNEL CHECK    1

 CHANNEL 0               0     0     0     0     0     0     0     0     0     0     0
 CHANNEL 1               9     9     0     0     0     0     0     0     0     0     0
 CHANNEL 2               0     0     0     0     0     0     0     0     0     0     0
 CHANNEL 3               3     3     0     0     0     0     0     0     0     0     0
 CHANNEL 4               0     0     0     0     0     0     0     0     0     0     0
 CHANNEL 5               0     0     0     0     0     0     0     0     0     0     0
 CHANNEL 6               0     0     0     0     0     0     0     0     0     0     0
 CHANNEL 7               2     2     0     0     0     0     0     0     0     0     0
 CHANNEL 8               0     0     0     0     0     0     0     0     0     0     0
 CHANNEL 9               7     7     0     0     0     0     0     0     0     0     0
 CHANNEL A               4     4     0     0     0     0     0     0     0     0     0
 CHANNEL B               0     0     0     0     0     0     0     0     0     0     0
 CHANNEL C              25    25     0     0     0     0     0     0     0     0     0
 CHANNEL D               1     1     0     0     0     0     0     0     0     0     0
 CHANNEL E               0     0     0     0     0     0     0     0     0     0     0
 CHANNEL F               0     0     0     0     0     0     0     0     0     0     0
 CHANNEL 10              0     0     0     0     0     0     0     0     0     0     0
 CHANNEL 11              0     0     0     0     0     0     0     0     0     0     0
 CHANNEL 12              0     0     0     0     0     0     0     0     0     0     0
 CHANNEL 13              0     0     0     0     0     0     0     0     0     0     0
 CHANNEL 14              2     2     0     0     0     0     0     0     0     0     0
 CHANNEL 15              0     0     0     0     0     0     0     0     0     0     0
 CHANNEL 16              0     0     0     0     0     0     0     0     0     0     0
 CHANNEL 17              0     0     0     0     0     0     0     0     0     0     0
 CHANNEL 18              0     0     0     0     0     0     0     0     0     0     0
 CHANNEL 19              0     0     0     0     0     0     0     0     0     0     0
 CHANNEL 1A              0     0     0     0     0     0     0     0     0     0     0
 CHANNEL 1B              0     0     0     0     0     0     0     0     0     0     0

PROGRAM ERROR

 ABEND               42488 11787    76   510    14    35 10825   100   321   518 18302
 PROGRAM CHECK        5295     7     1  3451     0     2   622    28   362   819     3
 SYMPTOM RECORD       1077   361    18    44     7    57    55    36   423    74     2

END OF DAY               1     0     1     0     0     0     0     0     0     0     0

CPU  MODEL  SERIAL NO.
 0   FFFFXA FFFFFF
 1   2084XA 05A8BA
 2   2084XA 05A5BA
 3   2084XA 04A8BA
 4   2084XA 03A8BA
 5   2084XA 0356BF
 6   2084XA 02A8BA
 7   2084XA 02A5BA
 8   2084XA 0256BF
 9   2084XA 019F1A
S Y S T E M  S U M M A R Y              REPORT DATE 012 09
         (PART 1 CONTINUED)             PERIOD FROM 230 06
SUBCHANNEL/CHANNEL                                TO 263 06

                    TOTAL CPU-0 CPU-1 CPU-2 CPU-3 CPU-4 CPU-5 CPU-6 CPU-7 CPU-8 CPU-9

SUBCHANNEL LOGOUT

 CHPID  00              44    17     0     0     0     0     0     0     0     0    27
 CHPID  01             280   163     0    27     0     0    29     0    34    27     0
 CHPID  05             304   187     0    27     0     0    29     0    34    27     0
 CHPID  72              11     5     0     1     1     0     1     1     1     1     0
 CHPID  81             421   232     0    33     0     0    34    47    40    35     0
```

```
 CHPID  85             404   219     0    32     0     0    34    43    41    35     0
 CHPID  86               3     0     0     0     3     0     0     0     0     0     0
 CHPID  87               3     0     1     0     2     0     0     0     0     0     0
 CHPID  F0               4     0     0     1     0     0     0     1     1     1     0
 CHPID  F1              11     6     0     1     0     0     1     1     1     1     0
 CHPID  F2              12     5     1     1     1     0     1     1     1     1     0
CHANNEL REPORT WORD

 HARDWARE                4     3     0     0     0     0     0     0     1     0     0
 SOFTWARE                0     0     0     0     0     0     0     0     0     0     0

TOTAL RECORDS        50536 13075    99  4128    29    95 11631   258  1260  1539 18422


CPU  MODEL  SERIAL NO.
 0   FFFFXA FFFFFF
 1   2084XA 05A8BA
 2   2084XA 05A5BA
 3   2084XA 04A8BA
 4   2084XA 03A8BA
 5   2084XA 0356BF
 6   2084XA 02A8BA
 7   2084XA 02A5BA
 8   2084XA 0256BF
 9   2084XA 019F1A
```

1 If there are 32 channels, then the channel check summary displays channels X'10' through X'1F' *only* if there is activity on one or more of the channels in the string.

System Summary Report, Part 2

```
S Y S T E M   S U M M A R Y           REPORT DATE 012 09
       (PART 2)                       PERIOD FROM 230 06
     I/O SUBSYSTEM                             TO 263 06

                ----- TOTAL ----    CPU-0     CPU-1     CPU-2     CPU-3     CPU-4     CPU-5     CPU-6     CPU-7     CPU-8     CPU-9
                  PERM  TEMP  PATH PERM TEMP PERM TEMP PERM TEMP PERM TEMP PERM TEMP PERM TEMP PERM TEMP PERM TEMP PERM TEMP PERM TEMP
CONS +UR     *******************************************************************************************************************

3525 000B            1     0     0    1    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3800 000F            2     1     0    2    1    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3505 0012            1     2     0    1    2    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3213 0016            3     0     0    3    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
02C7 0200            2     0     0    2    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
AFP1 0390            1     0     0    1    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
1403 041E            1     0     0    1    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3800 0803            4     3     0    4    3    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
     0803            1     0     0    -    -    -    -    -    -    -    -    1    0    -    -    -    -    -    -    -    -    -    -
3800 0B09            0     1     0    -    -    -    -    -    -    0    1    -    -    -    -    -    -    -    -    -    -    -    -
3800 0B17            1     0     0    -    -    -    -    -    -    1    0    -    -    -    -    -    -    -    -    -    -    -    -
     0B17            1     0     0    -    -    -    -    -    -    -    -    1    0    -    -    -    -    -    -    -    -    -    -

DASD         *******************************************************************************************************************

3350 0100            1     0     0    -    -    -    -    -    -    1    0    -    -    -    -    -    -    -    -    -    -    -    -
3350 010C            1     0     0    -    -    -    -    -    -    -    -    1    0    -    -    -    -    -    -    -    -    -    -
2305 01CX            4     0     0    4    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3340 03E8            0     1     0    0    1    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
2314 0530            4     0     0    4    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3310 0597            0  4096     0    0 4096    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
9246 0ACX            0     2     0    0    2    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
 1
3990-SSID 00C2       0     0     1    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
9343-SSID 0243       0     1     0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
UKNO-SSID A0-X       0     1     0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
UKNO-SSID 0002       0     2     0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
UKNO-SSID 02.        0    23    16    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3990-SSID 0243       0     0     1    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
  E2-XX-XX           7    28     0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
  17-XX-XX          11     0     0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -

DASD STRINGS *******************************************************************************************************************

3422 015X            1     0     0    1    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3400 0180            1     4     0    1    4    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3480 02B2            1     0     0    1    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
9348 049X           10     0     0   10    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3424 94AX            2     0     0    2    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
```

```
3490 04B0         0    1    0    0    1    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
2400 06A1         0    2    0    0    2    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
9347 0C7X        12  229    0   12  229    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
  E2-XX-XX        7   28    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
  17-XX-XX       11    0    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -

TAPE          ************************************************************************************************************************

3422 015X         1    0    0    1    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3400 0180         1    4    0    1    4    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3430 0190         1    0    0    1    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3480 02B2         1    0    0    1    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
9348 049X        10    0    0   10    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3424 04AX         2    0    0    2    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3490 04B0         0    1    0    0    1    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3490 04B1         2    0    0    2    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3490 04B2         2    1    0    2    1    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -

S Y S T E M   S U M M A R Y              REPORT DATE 012 09
         (PART 2)                        PERIOD FROM 230 06
      I/O SUBSYSTEM                               TO 263 06

              ----- TOTAL ----     CPU-0     CPU-1     CPU-2     CPU-3     CPU-4     CPU-5     CPU-6     CPU-7     CPU-8     CPU-9
               PERM  TEMP  PATH  PERM TEMP PERM TEMP PERM TEMP PERM TEMP PERM TEMP PERM TEMP PERM TEMP PERM TEMP PERM TEMP PERM TEMP
TAPE          ************************************************************************************************************************

3400 0574         0    4    0    0    4    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
     0574         0    2    0    -    -    -    -    -    -    -    -    0    2    -    -    -    -    -    -    -    -    -    -    -
3400 0575         0   13    0    0   13    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
     0575         1    2    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
2400 06A1         0    2    0    0    2    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
2400 06A4         1    0    0    1    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3400 0584         0    9    0    0    9    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
     0584         0    9    0    -    -    -    -    0    9    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
9347 0C7X        12  229    0   12  229    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
8809 0BA2         0  376    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    0  376    -    -
8809 0BA5         1    0    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    1    0    -    -
8809 0BA8         0  247    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    0  247    -    -
8809 0BAE         0  222    0    0  222    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -

DISPLAY       ************************************************************************************************************************

3286 0026         5    0    0    5    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3277 0361         2    0    0    2    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
     0361         3    0    0    -    -    -    -    -    -    3    0    -    -    -    -    -    -    -    -    -    -    -    -    -
     0361         1    0    0    -    -    -    -    -    -    -    -    1    0    -    -    -    -    -    -    -    -    -    -    -
3284 03E2         0    2    0    0    2    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3277 0B86         1    0    0    1    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -

TP CNTRL      ************************************************************************************************************************

2701 0011
   CNTRLR        1    0    0     1    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3705 0036
   CNTRLR        3    0    0     3    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3791 0319
   CNTRLR        0    3    0     0    3    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3705 0581
   LINES         1    0    0     1    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3705 06FF
   CNTRLR        0    3    0     0    3    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
   LINES         0    1    0     0    1    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
2703 0740
   CNTRLR        1    0    0     1    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
7770 0740
   CNTRLR        6    0    0     6    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -

OTHER       **************************************************************************************************************************

BA00 0040        1    0    0     1    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
3848 0330        0    3    0     0    3    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
DPA  0A82        0    0    1     -    -    -    -    0    1    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -
DPA  0AA0        0    0    1     -    -    -    -    -    -    -    -    0    1    -    -    -    -    -    -    -    -    -    -    -
CTCA 0B03       12    0    1     0   12    0    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -    -

TOTALS         163  5558   20   116 4838    0    0    0   10    5    1    4    3    0    0    0    0    0    0    1  623    0    0

CPU  MODEL  SERIAL NO.
 0   FFFFXA FFFFFF
 1   2084XA 05A8BA
 2   2084XA 05A5BA
 3   2084XA 04A8BA
 4   2084XA 03A8BA
 5   2084XA 0356BF
 6   2084XA 02A8BA
 7   2084XA 02A5BA
 8   2084XA 0256BF
 9   2084XA 019F1A
```

1 The first 4 characters of identifiers containing “SSID” are used only for records with 32 byte ECKD architecture sense (for example, 3990/3390, 9341/9345, or a 9343/9345). The characters “UNKO” are used for records containing other than 32 byte ECKD architecture sense.

Chapter 9. Trends Report

Trends reports present the pattern and frequency of errors on a daily basis. You can use this performance trend to see when the errors began, their pattern, and when they end.

Description of the Trends Report

The trends report presents error data in chronological order, by the Julian day (1 through 365) and consists of the following two parts:

PART	DESCRIPTION
1	Presents errors by type of failure: CPU, channel, storage, and SCP. It contains IPL, MCH, CCH/SLH/CRW, and program error (software) records for each processor (CPU).
2	Presents permanent and temporary I/O errors for the product groups in the order shown in Table 11 on page 106.

Note:

1. Trends reports do not report on SIM-producing devices such as 3990/3390 DASD.
2. 9340 direct access storage subsystems are not shown in the trends report.
3. Within product groups, errors are presented by device address or number or physical ID within generic device or product types.
4. CPUs associated with records appear on the line with the device address/number. Devices that provide physical IDs are associated with the control unit and not with a CPU.
5. DASD and tape devices are listed by DEVNO/CUA.

Examples of the Trends Report

Figures containing examples of these reports are on the pages shown in the following table:

REPORT	REFER TO
Trends Report, Part 1	“Trends Report, Part 1”
Trends Report, Part 2	“Trends Report, Part 2” on page 117

Trends Report, Part 1

```
T R E N D S   R E P O R T              REPORT DATE 071 97
        (PART 1)                       PERIOD FROM 041 97
 CPU/CHANNEL/STORAGE/SCP                      TO   058 97

 JULIAN   97
   DAY    41  42  43  44  45  46  47  48  49  50  51  52  53  54  55  56  57  58

 1           2
IPL
  CPU  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  1   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   1
```



```
  CPU  2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  3   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  4   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  5   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  6   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  7   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  8   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  9   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  A   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  B   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  C   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  D   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  E   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  F   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0

MACHINE CHECK
  CPU  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  1   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  3   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  4   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  5   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  6   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  7   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  8   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  9   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  A   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  B   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  C   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  D   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  E   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  F   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0

CHANNEL CHECK   3
  CPU  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  1   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  3   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  4   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  5   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  6   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  7   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  8   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  9   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  A   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  B   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  C   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  D   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  E   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  F   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0

PROGRAM ERROR
  CPU  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  1   0   0   0   0   0   0   0   0   0   0   0   0   0   1   0   2   0   0
  CPU  2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  3   0   0   0   0   0   0   0   0   0   0   0   2   0   0   0   0   0   0
  CPU  4   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  5   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  6   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  7   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   1
  CPU  8   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  9   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  A   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  B   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  C   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  D   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  E   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
```

```
  CPU  F   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0

CPU   MODEL   SERIAL NO.  4

 0    3090XA  654321
 1    3090XA  170028
 2    3084XA  321128
 3    3084XA  221128
 4    3084XA  121128
 5    3081XA  221170
 6    3084XA  121128
 7    3084XA  021103
 8    3081    220344
 9    3081XA  020447
 A    3081XA  020344
 B    3081    020063
 C    3033    021929
 D    3033    021928
 E    3033    020808
 F    0168    099111
      5
T R E N D S   R E P O R T              REPORT DATE 071 97
         (PART 1)                      PERIOD FROM 041 97
 SUBCHANNEL/CHANNEL                           TO   058 97

 JULIAN   97
   DAY    41  42  43  44  45  46  47  48  49  50  51  52  53  54  55  56  57  58

SUBCHANNEL

  CPU  0

 NO ERRORS FOR THIS CPU

  CPU  1

 NO ERRORS FOR THIS CPU

  CPU  2

 NO ERRORS FOR THIS CPU

  CPU  3

 NO ERRORS FOR THIS CPU

  CPU  4

 NO ERRORS FOR THIS CPU

  CPU  5

 NO ERRORS FOR THIS CPU

  CPU  6

CHPID 15   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0

  CPU  7

 NO ERRORS FOR THIS CPU

  CPU  8

 NO ERRORS FOR THIS CPU

  CPU  9
```

```
 NO ERRORS FOR THIS CPU

  CPU  A

 NO ERRORS FOR THIS CPU

  CPU  B

 NO ERRORS FOR THIS CPU

CHANNEL REPORT WORD
  CPU  0

HARDWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
SOFTWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  1

HARDWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
SOFTWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  2

HARDWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
SOFTWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  3
HARDWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
SOFTWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  4

HARDWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
SOFTWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  5

HARDWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
SOFTWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  6

HARDWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
SOFTWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  7

HARDWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
SOFTWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  8

HARDWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
SOFTWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  9

HARDWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
SOFTWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  A

HARDWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
SOFTWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  B

HARDWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
SOFTWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  C

HARDWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
SOFTWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  D

HARDWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
SOFTWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
```

```
  CPU  E

HARDWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
SOFTWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CPU  F

HARDWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
SOFTWARE   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0

CPU   MODEL   SERIAL NO.

 0    3090XA  654321
 1    3090XA  170028
 2    3084XA  321128
 3    3084XA  221128
 4    3084XA  121128
 5    3081XA  221170
 6    3084XA  121128
 7    3084XA  021103
 8    3081    220344
 9    3081XA  020447
 A    3081XA  020344
 B    3081    020063
```

1 System error types, by CPU.

2 Each column contains error counts for one day. Unless you specify a shorter date range, the report covers 30 days.

3 For CCH (and SLH) records, only those channels (channel paths) with errors appear in the report.

4 Processors (CPUs), identified from filtered data and share statements. XA indicates that the CPU is running in 370XA mode.

5 This section of the report appears only if 370XA mode records are present.

Trends Report, Part 2

```
T R E N D S   R E P O R T             REPORT DATE 071 97
         (PART 2)                     PERIOD FROM 041 97
     I/O SUBSYSTEM                           TO   058 97

 JULIAN   97
   DAY    41  42  43  44  45  46  47  48  49  50  51  52  53  54  55  56  57  58

CONS+UR  1
3800
000F C     2
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  TEMP     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
3505
0010 F
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  TEMP     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
0012 F
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  TEMP     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   1   0
AF01
0492 0
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  TEMP     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0

DASD   3

       SD A0-XX-XX
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  TEMP     0   0   0   0   0   0   0   0   1   0   0   0   0   0   0   0   0   0
```

```
  DEVICE FF.X-16
  PERM     0   0   0   0   0   0   4   0   0   0   0   0   0   0   0   0   0   0
  TEMP     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  DEVICE FF.X-17
  PERM     2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  TEMP     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  CNTRL XX-0D-XX
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  TEMP     0   0   0   0   0   0   0   0   1   0   0   0   0   0   0   0   0   0
  DEVICE 01.X-11
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  TEMP     1   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  DEVICE SD.02
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  TEMP     0   0   0   0   0   4   0   0   0   0   0   0   0   0   0   0   0   0
      SD 10114
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  TEMP     0   0   0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0

TAPE
3400   4
0180 2
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   0   1   0   0   0   0
  TEMP     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   4
0181 2  5
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   0   0   1   0   0   0
  TEMP     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
3480
018B 1
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  TEMP     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
3400
01A0 2
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  TEMP     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   5
3480
01B2 1
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2
  TEMP     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
02B2 1
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   1
  TEMP     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
0453 9
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   2   0   0   0   0   3
  TEMP     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
8809
0BA1 D
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  TEMP     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0 280   0   0
T R E N D S   R E P O R T             REPORT DATE 071 97
         (PART 2)                     PERIOD FROM 041 97
     I/O SUBSYSTEM                           TO   058 97

 JULIAN   97
   DAY    41  42  43  44  45  46  47  48  49  50  51  52  53  54  55  56  57  58

TP CNTRL
3705
00FE C
  CNTRLR
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  TEMP     0   0   0   0   0   0   0   0   0   0   0   1   0   0   0   0   0   0
0120 F
  LINES
  PERM     0   0   0   0   0   0   0   0   0   0   0   1   1   0   0   0   0   0
  TEMP     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
0581 F
```

```
  LINES
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   1   0   0   0   0   0
  TEMP     0   0   0   0   0   0   0   0   0   0   0   0 999   0   0   0   0   0
06FF C
  CNTRLR
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  TEMP     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0

OTHER
DPA
0453 9
  PERM     0   0   0   0   0   0   0   0   0   0   0   0   2   0   0   0   0   3
  TEMP     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
0A82 1
  PERM     0   0   0   0   0   2   0   0   0   0   0   0   0   0   0   0   0   0
  TEMP     0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0

CPU   MODEL   SERIAL NO.  6

 0    3090XA  654321
 1    3090XA  170028
 2    3084XA  321128
 3    3084XA  221128
 4    3084XA  121128
 5    3081XA  221170
 6    3084XA  121128
 7    3084XA  021103
 8    3081    220344
 9    3081XA  020447
```

1 Device group.

2 Each column represents one day. A field of all 9s indicates that this number is larger than the print positions allowed.

3 DASD with physical IDs (or serial numbers) list the DASD by the physical identifier. See “DASDID Control Statement” on page 47 for an explanation of DASD physical identifiers.

4 Device type.

5 CPU-CUA (or device number) path.

6 Processors (CPUs), identified from filtered data and share statements. XA indicates that the CPU is running in 370XA mode.

Chapter 10. Event History Report

The event history report consists of one-line abstracts of selected information from each record. The event history report shows errors in a time sequence that allows you to see how often and in what order errors occur. It allows you to establish a pattern and diagnose problems.

Description of the Event History Report

The event history is divided into the following three parts:

PART	DESCRIPTION	REFER TO
1	Is a template showing the headings used for the record-dependent data from each type of record. It does the following: • Guides in the interpretation of information in the other sections of the report • Explains terms • Provides one set of heading templates for 370 and another for 370XA reports	Figure 7 on page 122
2	Is the event history. It provides information for up to 256 processors (CPUs).	Figure 8 on page 123
3	Is a summary, by CPU identifier, of all the records presented in the report, with totals for each record type. It provides information for up to 16 CPUs. If your installation has more than 16 CPUs, EREP produces the report using records from the first 15 CPUs it encounters. Information from the remaining CPUs is grouped together under column heading `CPUS>E`. See "How EREP Assigns Numbers to CPUs" on page 57 for an explanation of the identifiers.	Figure 9 on page 124

Note: It is possible to have multiple internal CPUs reported under one serial number and thus increase EREP's capabilities. See "SYSIMG Control Statement" on page 58 for details.

Examples of the Event History Report

The following figures contain examples of the parts of an event history report:

```
                                               EVENT HISTORY TEMPLATE (S/370)

FOR RECORD TYPES:              RECORD DEPENDENT DATA

MCH:                                                  PSW-MCH /PROG-EC                                ERROR-ID

CCH:                           CUA  DEVT        CSW

OBR:                           CUA  DEVT    CMD CSW

MDR:                           CUA  DEVT                                                                    VOLUME/TERM NAME

MIH:                           CUA  DEVT SCUA                             CSID                              VOLUME/TERM NAME

DDR:                           CUA  DEVT                                                                    VOLUME/TERM NAME

OBRDMT, OBREOD:                CUA  DEVT                                                                    VOLUME/TERM NAME

OBRPRM, OBRTMP, OBRPTH:        CUA  DEVT    CMD CSW  SENSE    04  06   08  10   12  14   16  18   20  22   VOLUME    SEEK    SD CT

OBRDPA:                        CUA  DEVT    CMD CSW  SPID                  SNID

SFTLST:                                     REASON   PSW-MCH /PROG-EC  RCYRYXIT   COMP/MOD  CSECTID  ERROR-ID

IPL:                                SSYS ID  REASON

MDRDAS:                        CUA  DEVT             SENSE    04  06   08  10   12  14   16  18   20  22   VOLUME            SD CT

OTHER: ONLY COMMON PREFIX DATA APPLIES FOR ALL OTHER RECORD TYPES
COMMON PREFIX:  (FOR ALL RECORD TYPES)
   TIME     JOBNAME  RECTYP CP

                                               EVENT HISTORY TEMPLATE (S/370XA)

FOR RECORD TYPES:              RECORD DEPENDENT DATA

MCH:                                                  PSW-MCH /PROG-EC                               ERROR-ID

SLH:                           DNO  DEVT CHP     SCSW                    ESW

CRW:                           DNO  CRW

OBR:                           DNO  DEVT    CMD SCSW

MDR:                           DNO  DEVT CHP                                                                VOLUME/TERM NAME

MIH:                           DNO  DEVT CHP REASON                      CSID                               VOLUME/TERM NAME

DDR:                           DNO  DEVT                                                                    VOLUME/TERM NAME

OBRDMT, OBREOD:                DNO  DEVT CHP                                                                VOLUME/TERM NAME

OBRPRM, OBRTMP, OBRPTH:        DNO  DEVT CHP CMD SCSW SENSE   04  06   08  10   12  14   16  18   20  22   VOLUME    SEEK    SD CT

OBRDPA:                        DNO  DEVT CHP CMD SCSW SPID                 SNID

SFTLST:                                      REASON   PSW-MCH /PROG-EC  RCYRYXIT  COMP/MOD  CSECTID  ERROR-ID

IPL:                                SSYS ID  REASON

MDRDAS:                        DNO  DEVT CHP          SENSE   04  06   08  10   12  14   16  18   20  22   VOLUME            SD CT

OTHER: ONLY COMMON PREFIX DATA APPLIES FOR ALL OTHER RECORD TYPES
COMMON PREFIX:  (FOR ALL RECORD TYPES)
   TIME     JOBNAME  RECTYP CP
```

Figure 7. Event History Template

```
EVENT HISTORY (S/370 & S/370XA)                                                                          REPORT DATE  046 97
                                                                                                         PERIOD FROM  041 97
                                               1                                                         PERIOD TO    04
3 97
                                                      SPID                   SNID
                                    SSYS ID  REASON   PSW-MCH /PROG-EC  RCYRYXIT   COMP/MOD  CSECTID  ERROR-ID       2
   TIME     JOBNAME  RECTYP CP CUA  DEVT     CMD CSW  SENSE    04  06    08  10    12  14    16  18    20  22   VOLUME  SEEK      SD CT
                            *  DNO  CRW  CHP     SCSW                      ESW
                            3
DATE  041 97

04 11 37 21   N/A    OBREOD 12 03E2 3284  NA
06 54 49 45   N/A    ASYNCH 02 0883 3590B11 JANZ01    024098C0 1102F071 33010057 00211229 D1C1D5E9 F0F10089 48042300 00011010
09 26 32 65   N/A    ASYNCH 02 0887 3590A00           024098C0 1101F171 11910000 00730000 D1C1D5E9 F0F40081 28042300 5BA01010
11 33 17 21   N/A    MDR    0B 0905 3995  00
12 41 13 30   N/A    IPL    0E        00      DF
12 41 17 92          SFTLST 0E                        LOST RECORD SUMMARY - COUNT=  10                  N/A
14 30 22 51 *MASTER* SFTMCH 0C             900F3000 040C00008105E932  IEAVEDSR   IEAVEDS0  IEAVEDS0  0019004100010007F7EE

DATE  042 97

00 20 32 34   N/A    MCH    09                        070E000000000000                              3D8F0000000000000000
02 31 48 38 PACAH210 OBRTMP 11 0239 3390      07 0200 10000600 3932C143 00030000 01050404 22101842 11440C01 00000F01 0C000000 AH210
04 12 59 12 VARY     OBRDPA 0F 0A82 3380  40  AF 2210 000002112830849718 CEF0  0000000000000000000000
08 59 03 32 *MASTER* CCH    0D 0063 3277          0100000000020080        CSID=00,00
09 29 08 68 *MASTER* OBRTMP 02 0880 3590  1C  04 0200 004A8C5A 80100050 0004FF00 00000000 00000000 00000088 20042300 00011010
12 07 30 59          MCH    05                        070E000000000000                                  N/A
14 27 10 15   N/A    MDR    0B 0884 3590  29
20 10 52 49 T2SRTMRG OBR    03 04BC 3490  16  02 0400                                                       T2SRT1
20 32 10 71          DDR    0A 0580 3400      TO 0581 3400                                                  F22011
22 02 80 01   N/A    MDRDAS 10 030F 3390  03          00000600 0F32C000 FFFF0422 795AF780 00050410 02436F01 04100000 035BDA45 HHGK6

DATE  043 97

00 12 34 01   N/A    LINK   08 TYP-MOD S/N INTERF:  INC=3090-60J IBM 00 70039 0073  ATT=9032-002 IBM 02 10148 00DF   IC=03 DCI=N/A
01 08 12 32 SYSTEM   MIHCE  00 0C40 9332  C40 CHANNEL END                                                   VMRESA
06 54 28 40 CHNDRV   SLH    0C 01D0 3380  12     840240170032F0F800040000 00807482
10 03 14 36   N/A    CLOCK  02 NETWORK ID =  1, RC =  0, NO PROBLEMS REPORTED BY 9037
10 26 24 90 EREPHIST MIH    06 03B2 3380  NA  START PENDING                                                 CATLOG
12 36 03 09   N/A    EOD    07
15 39 44 04   N/A    ASYNCH 04 0350 3390-09 PACSM3    00900600 10328FC2 11010124 00000304 22204411 004143C0 05108202 FF003B0C B7425
17 08 15 64 ILVRAS04 CRW    01 0000 0903001E  HARDWARE GENERATED
21 06 44 42 *MASTER* OBR    0B 08AB 3590  29  03 0600
22 12 09 01 *MASTER* MIH    09 08A9 3590  NA  START PENDING
```

Figure 8. Event History Report

1 The header is written for 24 bytes of sense data, but is also used for 32 byte sense data. When you have 32 bytes of sense data, VOLUME and SEEK information do not appear on the report. Sense data for bytes 25 through 32 is shown instead.

2 The DASD cylinder head or block number is listed under SEEK. The storage director/controller physical ID for DASD is listed under SD CT.

3 The hexadecimal identifiers are internal to the event history report and should not be confused with external CPU machine identifiers. The first occurring serial number is assigned X'00'. The external CPU models and serial numbers associated with the hexadecimal identifiers are shown at the end of the report summary. (See in Figure 9 on page 124.)

NOTE: 3590/3490EMU and 3591/3490EMU device records will print on the EVENT report under their native device type only. They will not appear under the device being emulated. Also, OBR records that are handled as SIM or MIM records in the SYSEXN reports will be shown as OBR records on the EVENT report.

Event History Report

```
    1
RECORD TYPES              TOTAL  CPU-0 CPU-1 CPU-2 CPU-3 CPU-4 CPU-5 CP U-6 CPU-7 CPU-8 CPU-9 CPU-A CPU-B CPU-C CPU-D CPU-E CPUS>E

    MCH                       2      0     0     0     0     0     1      0     0     0     1     0     0     0     0     0      0
MACHINE CHECK                 2      0     0     0     0     0     1      0     0     0     1     0     0     0     0     0      0

    OBREOD                    1      0     0     0     0     0     0      0     0     0     0     0     0     0     0     0      1
    OBRTMP                    2      0     1     0     0     0     0      0     0     0     0     0     0     0     0     0      1
    OBRDPA                    1      0     0     0     0     0     0      0     0     0     0     0     0     0     0     0      1
    OBR                       2      0     1     0     1     0     0      0     0     0     0     0     0     0     0     0      0
OUTBOARD                      4      0     0     0     1     0     0      0     0     0     0     0     0     0     0     0      3

    SFTLST                    1      0     0     0     0     0     0      0     0     0     0     0     0     0     0     1      0
    SFTMCH                    1      0     0     0     0     0     0      0     0     0     0     0     0     1     0     0      0
SOFTWARE                      2      0     0     0     0     0     0      0     0     0     0     0     0     1     0     1      0

    IPL                       1      0     0     0     0     0     0      0     0     0     0     0     0     0     0     1      0
SYSTEM INITIALIZATION         1      0     0     0     0     0     0      0     0     0     0     0     0     0     0     1      0

    DDR                       1      0     0     0     0     0     0      0     0     0     0     1     0     0     0     0      0
SYSTEM RECONFIGURATION        1      0     0     0     0     0     0      0     0     0     0     1     0     0     0     0      0

    EOD                       1      0     0     0     0     0     0      0     1     0     0     0     0     0     0     0      0
SYSTEM TERMINATION            1      0     0     0     0     0     0      0     1     0     0     0     0     0     0     0      0

    MDRDAS                    1      0     0     0     0     0     0      0     0     0     0     0     0     0     0     0      1
    MDR                       2      0     1     0     0     0     0      0     0     0     0     0     1     0     0     0      0
BUFFER OFFLOAD                2      0     0     0     0     0     0      0     0     0     0     0     1     0     0     0      1

    CCH                       1      0     0     0     0     0     0      0     0     0     0     0     0     0     1     0      0
CHANNEL CHECK                 1      0     0     0     0     0     0      0     0     0     0     0     0     0     1     0      0

    CHANNEL END               1      1     0     0     0     0     0      0     0     0     0     0     0     0     0     0      0
MISSING INTERRUPT 370         1      1     0     0     0     0     0      0     0     0     0     0     0     0     0     0      0


RECORD TYPES              TOTAL  CPU-0 CPU-1 CPU-2 CPU-3 CPU-4 CPU-5 CP U-6 CPU-7 CPU-8 CPU-9 CPU-A CPU-B CPU-C CPU-D CPU-E CPUS>E

    START PENDING             2      0     1     0     0     0     0      1     0     0     0     0     0     0     0     0      0
MISSING INTERRUPT  XA 2       2      0     1     0     0     0     0      1     0     0     0     0     0     0     0     0
  0

    HARDWARE                  1      0     1     0     0     0     0      0     0     0     0     0     0     0     0     0      0
    SOFTWARE                  0      0     0     0     0     0     0      0     0     0     0     0     0     0     0     0      0
CHANNEL REPORTS               1      0     1     0     0     0     0      0     0     0     0     0     0     0     0     0      0

    LINK                      1      0     0     0     0     0     0      0     0     1     0     0     0     0     0     0      0
    CLOCK                     1      0     0     1     0     0     0      0     0     0     0     0     0     0     0     0      0
    ASYNCH                    2      0     1     0     0     1     0      0     0     0     0     0     0     0     0     0      0
AX RECORD TYPES               3      0     0     1     0     1     0      0     0     1     0     0     0     0     0     0      0

BX RECORD TYPES               0      0     0     0     0     0     0      0     0     0     0     0     0     0     0     0      0

CX RECORD TYPES               0      0     0     0     0     0     0      0     0     0     0     0     0     0     0     0      0

DX RECORD TYPES               0      0     0     0     0     0     0      0     0     0     0     0     0     0     0     0      0

EX RECORD TYPES               0      0     0     0     0     0     0      0     0     0     0     0     0     0     0     0      0

FX RECORD TYPES               0      0     0     0     0     0     0      0     0     0     0     0     0     0     0     0      0
RECORD TYPES              TOTAL  CPU-0 CPU-1 CPU-2 CPU-3 CPU-4 CPU-5 CP U-6 CPU-7 CPU-8 CPU-9 CPU-A CPU-B CPU-C CPU-D CPU-E CPUS>E

    CHPID-12                  1      0     0     0     0     0     0      0     0     0     0     0     0     1     0     0      0
SUBCHANNEL LOGOUTS            1      0     0     0     0     0     0      0     0     0     0     0     0     1     0     0      0
 3
 OVER ALL TOTALS             21      1     1     1     1     1     1      1     1     1     1     1     1     2     1     2      4
 4   5
CPU  MODEL   SERIAL
 00  2097XA  0E06C0
 01  2097XA  0C06C0
 02  2097XA  0A06C0
 03  2097XA  0906C0
 04  2097XA  0806C0
 05  2097XA  0106C0
 06  2094XA  096DD2
 07  2094XA  076DD2
 08  2094XA  066DD2
 09  2094XA  046DD2
 0A  2094XA  036DD2
 0B  2094XA  026DD2
 0C  2094XA  016DC2
 0D  2086XA  06AD2C
 0E  2086XA  05AD2C
 0F  2086XA  04AD2C
 10  2086XA  03AD2C
 11  2086XA  01AD2C
 12  2084XA  0356BF
```

Figure 9. Event History Summary

1 If 370 and 370XA mode records are used, the records common to both modes are combined. Exception: 370-mode MIH records are totaled separately.

2 These MIH errors are for 370XA mode records.

3 These totals include all errors recorded in both processing modes.

4 If the first record encountered has no CPU model number, `NONEXA` or `NONE` is listed as the first CPU model number.

5 CPUs, identified from filtered data. XA indicates that the CPU is running in 370XA mode.

Special Note: For products that record OBR records asynchronously, only the sense data reflects the origin of an error record. Other information in the record may reflect the recording device rather than the device that has the problems.

Chapter 11. System Exception Report Series

The system exception series is a series of reports that list software and hardware error data in a variety of ways to help you identify problems within your subsystems.

Description of the System Exception Series

The system exception report series can contain several separate reports:

REPORT	REFER TO
A two-part system error summary	"Examples of the System Error Summary"
A subsystem exception report series	"Examples of the Subsystem Exception Report Series" on page 133

Note:

1. EREP accumulates error data and usage statistics on subsystem components then summarizes the information by component for the subsystem exception reports.
2. These reports are produced for some hardware subsystems, but not all of them. To find which subsystems generate system exception reports see Part 3, "Product-Dependent Information," on page 295.

Examples of the System Error Summary

The system error summary presents data in chronological order. The report has the following two parts:

PART	DESCRIPTION
1	• Presents CPU errors and channel checks • Prints a summary of IPL, EOD, and restart records • Prints one page of output for each supported CPU in the installation
2	• Combines the I/O errors for all supported subsystems, DASD, optical, and tape • Includes physical IDs, error descriptions, and probable failing units

The probable failing unit (PFU) is the component on which the error most likely occurred and is shown for:

- CPU errors
- Channel errors
- DASD errors
- Tape errors

The following table shows the type of error records and their source in parts 1 and 2 of the system error summary.

TYPE	SOURCE
CCH	CPUs, channels
DDR	I/O devices; including channels, SCUs, controllers, volumes EOD operating systems
IPL	Operating systems
MCH	CPUs
OBR	I/O devices; including channels, SCUs, controllers, volumes

Figures containing examples of these reports are on the pages shown in the following table:

REPORT	REFER TO
System Error Summary, Part 1	Figure 10 on page 129
System Error Summary, Part 2	“System Error Summary, Part 2” on page 131

System Error Summary, Part 1

Part 1 of the system error summary is a chronological listing of all machine checks and channel checks. IPL, restart (software), and termination records are included for MVS and VSE/Advanced Function operating systems.

Figure 10 on page 129 shows an example of part 1 of the system error summary report.

```
SYSTEM ERROR SUMMARY                                 REPORT DATE 065 97
      (PART 1)                                       PERIOD FROM 041 97
                                                            TO   059 97

MODEL 3033   SERIAL 020557  CPU 01  1


IPL/RESTART/TERMINATION   2

               RECORD    TIME SINCE
     TIME       TYPE     LAST ACTIVE    REASON PROBABLE CAUSE

   DATE 042/97
  08:01:30:95  IPL       09:01:29:56    NM     NORMAL SYSTEM INITIALIZATION
  15:23:09:29  TERM                     MCH    FORCED TERMINATION
  15:26:30:76  IPL       00:02:29:56    NM     NORMAL SYSTEM INITIALIZATION
  19:15:56:22  RESTART                  NM     RESTART ABEND CODE 071


PROCESSOR CHECKS   3
                                                                          PROBABLE
     TIME      JOBNAME    CUA/TYPE   ERROR DESCRIPTION                  FAILING UNIT

   DATE 042/97
  08:40:55:52    N/A       N/A       BUFFER ERROR                       PROCESSOR
  12:07:30:41    N/A       N/A       SYSTEM DAMAGE                      PROCESSOR
  15:23:03:72    N/A       N/A       REGISTER/PSW INVALID               PROCESSOR


CHANNEL CHECKS   4
                                                                          PROBABLE
     TIME      JOBNAME    CUA/TYPE   ERROR DESCRIPTION                  FAILING UNIT

   DATE 042/97
  10:39:11:04  PAYROLL1  0384/3330   CHANNEL CONTROL CHECK              CHANNEL
  13:11:18:64  JOBLOADA  0233/3380   INTERFACE CONTROL CHECK            CONTROL UNIT
  *****     2 DUPLICATE LINES WITHIN THIS TIME INTERVAL HAVE NOT BEEN PRINTED  5
  13:14:33:09  JOBLOADA  0233/3380   INTERFACE CONTROL CHECK            CONTROL UNIT
SYSTEM ERROR SUMMARY                                 REPORT DATE 065 97
      (PART 1)                                       PERIOD FROM 041 97
                                                            TO   059 97

MODEL 2097XA SERIAL 0706C0  CPU 04


IPL/RESTART/TERMINATION

               RECORD    TIME SINCE
     TIME       TYPE     LAST ACTIVE    REASON PROBABLE CAUSE

   DATE 042/97
  08:30:06:49  TERM-XA                  EOD    NORMAL END OF DAY PROCESSING

   DATE 043/97
  05:03:54:33  TERM-XA                  EOD    NORMAL END OF DAY PROCESSING

   DATE 049/97
  11:10:00:07  TERM-XA                  EOD    NORMAL END OF DAY PROCESSING
  22:43:27:00  TERM-XA                  EOP    IOS ERROR
```

Figure 10. System Error Summary, Part 1

1 The report is generated by CPU. This line contains the CPU model number, serial number, and a CPU indicator that corresponds to the CPU indicators used throughout the system exception reports.

2 This section presents records of system events. It appears only when the operating system is MVS or VSE/Advanced Function. The column headed by `REASON` contains the IPL or the restart ABEND reason code. The column headed by `PROBABLE CAUSE` contains an explanation of the code.

Possible termination reason codes are:

REASON	PROBABLE CAUSE
EOD	END-OF-DAY RECORD

REASON	PROBABLE CAUSE
EOP	END OF PROCESSING FROM IOS
	RESTARTABLE WAIT STATE
DF	DEFAULT
MCH	MACHINE CHECK FORCED TERMINATION
	NONRESTARTABLE
NM	NORMAL SYSTEM INITIALIZATION
	RESTART ABEND CODE 071

3 This section appears when EREP encounters MCH records. MCH records are error records created when the machine check handler causes an interrupt as a result of an unsuccessful attempt to retry a failed instruction.

If the `JOBNAME` field is blank, the failure is within an operating system task.

Possible `ERROR DESCRIPTIONS` are:

BUFFER ERROR
EXTERNAL DAMAGE
HARD STORAGE ERROR
HIR SUCCESSFUL
INSTRUCTION PROCESSOR
INVALID LOGOUT
POWER WARNING
REGISTER OR PSW INVALID
STORAGE PROTECT KEY ERROR
SYSTEM DAMAGE
UNDEFINED ERROR

Possible `PROBABLE FAILING UNITS` are:

CHANNEL
CHANNEL/DIRECTOR
CONTROL UNIT
PROCESSOR
STORAGE
UNDEFINED
UNPROCESSED ENTRY

4 This section appears if EREP encounters CCH records. CCH records are error records created by the channel check handler when a channel error occurs.

If the `JOBNAME` field is blank, the failure is within an operating system task.

Possible `ERROR DESCRIPTIONS` are:

CHANNEL CONTROL CHECKS
CHANNEL CONTROL/INTERFACE CONTROL CHECKS
CHANNEL DATA/CHANNEL CONTROL CHECKS
CHANNEL DATA/CHANNEL CONTROL/INTERFACE CONTROL CHECKS
CHANNEL DATA CHECKS

CHANNEL DATA/INTERFACE CONTROL CHECKS
INTERFACE CONTROL CHECKS

Possible PROBABLE FAILING UNITS are the same as those shown in **3**.

5 EREP does not print out duplicates of records occurring together.

System Error Summary, Part 2

Part 2 of the system error summary is a chronological listing of the following:

- Permanent DASD, optical, and tape errors
- DDR calls

"System Error Summary, Part 2" shows an example of part 2 of the system error summary report.

System Error Summary, Part 2

```
SYSTEM ERROR SUMMARY                                        REPORT DATE 065 97
      (PART 2)                                              PERIOD FROM 041 97
                                                                   TO   059 97

                         PHYSICAL        PHYSICAL  ERROR                                                PROBABLE
    TIME       JOBNAME  CPU    ID     TYPE ADDRESS    PATH VOLUME   ERROR DESCRIPTION                 FAILING UNIT

 DATE 041/97
 11:59:12:87   GAM297    05 FF.X-17   3380-JK 0297 02-0297 RAS297   PERMANENT DATA CHECK               VOLUME
 12:07:58:52   P$SPOOL2  01 36-XX-XX  3880    0470 0C-0470          PERMANENT OVERRUN                  CHANNEL

 DATE 042/97
 02:24:35:55   I$ITA80   03 XX-10-02  3380    0A82 56-0A82          PERMANENT EQUIPMENT CHECK          DEVICE
 09:10:37:29   OCT9USG1  07   N/A     3422    0156 01-0156 340002   N/A                                HARDWARE
 09:55:02:83   MAINT     00   N/A     9347    0C70    0C70          N/A                                HARDWARE
 13:28:25:71   D#CLP471  01 32-XX-XX  3880    0471 02-0471          PERMANENT OVERRUN                  CHANNEL

 DATE 043/97
 00:F3:F9:4E   ICFSMPLB  08   N/A     3420    0180    0180          NOT CAPABLE                        HARDWARE
 01:53:41:99   PAUSEBG   00   N/A     9335    0D53    0D53 KEST53   PERMANENT EQUIPMENT CHECK          DEVICE
 04:22:15:46   SORTCHK   08   N/A     3430    0190    0190          N/A                                HARDWARE
 09:53:09:10   GAM704    00 20.X-04   3380-JK 0704 17-0704 RAS704   PERMANENT DATA CHECK               VOLUME
 14:28:49:77   TSIMLRW   04   N/A     3480    03EB    EB40 TPF490   PERMANENT EQUIPMENT CHECK          DEVICE

 DATE 044/97
 00:46:37:09   MAINT     00   N/A     9347    0C70    0C70          N/A                                HARDWARE
 01:01:EE:7B   ICFSMPLB  08   N/A     3420    0181    0181          UNDEFINED                          HARDWARE
 04:08:28:13   MAINT     00   N/A     9347    0C70    0C70          N/A                                HARDWARE
 12:31:46:69   GAM7C3    05 60.X-03   3380-JK 07C3 17-07C3 RAS7C3   PERMANENT EQUIPMENT CHECK          DEVICE
 12:31:46:70   GAM7C3    05 60.X-03   3380-JK 7C3B 07-07C3 RAS7C3   PERMANENT EQUIPMENT CHECK          DEVICE
 18:18:31:01   #IPORES   06   N/A     3330    0428    0428 IPORES   PERMANENT EQUIPMENT CHECK          DEVICE
 18:43:38:16   #IPORES   06   N/A     3330    0428    0E28 IPORES   PERMANENT EQUIPMENT CHECK          DEVICE

 DATE 045/97
 10:26:02:92   GAM7C3    05 60.X-03   3380-JK 07C3 17-07C3 RAS7C3   PERMANENT EQUIPMENT CHECK          DEVICE
 10:26:03:25   GAM7C3    05 60.X-03   3380-JK 07C3 17-07C3 RAS7C3   PERMANENT EQUIPMENT CHECK          DEVICE
 10:26:03:67   GAM7C3    05 60.1-XX   3380-JK 07C3 17-07C3 RAS7C3   PERMANENT EQUIPMENT CHECK          CONTROLL
ER
 14:25:47:01   DSF       0D XX-84-04  3380    0734    0734 PAK167   PERMANENT DATA CHECK               VOLUME
 18:03:30:85   #IPORES   06   N/A     3330    0428    0428 IPORES   PERMANENT EQUIPMENT CHECK          DEVICE
 18:48:02:12   BSAM01    0E XX-95-XX  3380-DE 0DB6 00-0DB6 EVERD6   PERMANENT PATH ERROR               CONTROLL
ER

 DATE 046/97
 03:00:13:92   RMF       0F A8-XX-XX  3880    0100 01=0100 PAGE01   PERMANENT SUB-STG EQPMT CHECK      SCU
 14:24:12:55   D15ELP1F  06   N/A     34XX     575     N/A L00200   DDR INDICATES SWAP TO PCUA 570     N/A
 18:10:48:55   MAINT     00   N/A     9347    0C70    0C70          N/A                                HARDWARE

 DATE 047/97
 01:50:41:32   DSSDUMP   0F   N/A     3480    02B2    02B2          N/A                                VOLUME/C
D
 02:41:29:62   PAGE ERR  03 A8-XX-XX  3880    0119 51-0111          SUB-STORAGE MUST BE INITIALIZED    SCU
 02:58:03:77   PAGE ERR  03 A8-XX-XX  3880    0119 01-0111          SUB-STORAGE IS UNUSABLE            SCU
 05:32:25:77   MAINT     00   N/A     9347    0C70    0C70          N/A                                HARDWARE
     *****    2 DUPLICATE LINES WITHIN THIS TIME INTERVAL HAVE NOT BEEN PRINTED
 10:14:52:90   MAINT     00   N/A     9347    0C70    0C70          N/A                                HARDWARE
```

```
 13:50:16:74   NO NAME   00   N/A     9335    0F50    0F50 DSFF50   PERMANENT EQUIPMENT CHECK              DEVICE
SYSTEM ERROR SUMMARY                                 REPORT DATE 065 97
      (PART 2)                                       PERIOD FROM 041 97
                                                            TO   059 97
                              1                                           2                                      3
                             PHYSICAL       PHYSICAL  ERROR                                                       PROBABLE
    TIME       JOBNAME  CPU    ID     TYPE ADDRESS    PATH VOLUME   ERROR DESCRIPTION                      FAILING UNIT

 DATE 054/97
 13:18:24:18   EREP      0A   N/A     9348    0490    0490 V00002   N/A                                    HARDWARE
 13:20:34:47   EREP      0A   N/A     9348    0490    0490 V00002   N/A                                    VOLUME/C
D
 13:27:02:64   EREP      0A   N/A     9348    0490    0490 V00002   N/A                                    HARDWARE
     *****    2 DUPLICATE LINES WITHIN THIS TIME INTERVAL HAVE NOT BEEN PRINTED
 13:27:52:33   EREP      0A   N/A     9348    0490    0490 V00002   N/A                                    HARDWARE
 14:00:22:39   EREP      0A   N/A     9348    0490    0490 V00004   N/A                                    HARDWARE
 14:00:29:43   EREP      0A   N/A     9348    0490    0490 V00004   N/A                                    VOLUME/C
D
 14:05:16:99   EREP      0A   N/A     9348    0490    0490 V00004   N/A                                    HARDWARE
 14:31:50:57   EREP      0A   N/A     9348    0490    0490 V00006   N/A                                    HARDWARE

************************************************************************ ***************************************************

CPU  MODEL   SERIAL
 00  9375    234567
 01  9371    000000
 02  9021XA  110947
 03  9021XA  210947
 04  4341    015760
 05  3033    021929
 06  2094XA  048940
 07  2084XA  05A8BA
 08  2084XA  05A5BA
 09  2084XA  04A8BA
 0A  2084XA  03A8BA
 0B  2084XA  0356BF
 0C  2084XA  02A8BA
 0D  2084XA  02A5BA
 0E  2084XA  0256BF
 0F  2084XA  019F1A
```

1 The PHYSICAL ID field contents are described in the following table:

DEVICE	FIELD CONTAINS
DASD providing physical ID or DASDID statements	A combination of the storage controller, control unit, and device (SCUID-CTLID-DEVID)
Tape	The field contains N/A (not available)
DASD without physical ID or DASDID statements	

2 The ERROR DESCRIPTION field contains subsystem-dependent information. The DDR swap description appears in this field.

3 The possible PROBABLE FAILING UNITS are:

CHANNEL	CONTROLLER
DEVICE	HARDWARE
SCU (Storage Control Unit)	UNDETERMINED
UNKNOWN	VOLUME
VOLUME/CD (for tape)	
Note: A PFU of N/A appears in the case of a DDR record.	

Examples of the Subsystem Exception Report Series

EREP formats each of the reports in the subsystem exception report series according to the requirements of the hardware involved.

EREP produces a different series of subsystem exception reports for each type of hardware.

The following table shows the location of subsystem exception report series examples:

REPORT
"Processor (CPU) Subsystem Exception"
"Channel Subsystem Exception" on page 135
"DASD Subsystem Exception" on page 137
"Optical Subsystem Exception" on page 158
"Tape Subsystem Exception" on page 170

The following table shows the type of error records and their source in the subsystem exception report series.

TYPE	SOURCE
A3	33XX DASD, 34XX Tape
CCH	CPUs, channels
MCH	CPUs
MDR	33XX DASD, 34XX Tape, 3995 Optical
OBR	33XX DASD, 34XX Tape, 3995 Optical, 9246 Optical, 9247 Optical

Processor (CPU) Subsystem Exception

The processor (CPU) subsystem exception report is organized by *service level* for:

TYPE	DESCRIPTION
Termination errors	The total number of incidents and the date and time of the last incident are shown for termination errors and hard errors.
Hard errors	
Soft machine checks	The total number of 60-minute intervals in which the number of events that occur equals or exceeds the LIMIT values is shown for soft machine checks. The LIMIT value is set by the LIMIT control statement, which sets the minimum number of errors (1–99). When the minimum has been reached, errors are recorded in the `EXCEPTION COUNT` column.

Figure 11 on page 134 shows an example of the processor subsystem exception report.

Processor (CPU) Subsystem Exception

```
    1

SUBSYSTEM EXCEPTION                       REPORT DATE 065 97
     PROCESSOR                            PERIOD FROM 041 97
                                                 TO   059 97
      2
MODEL 3033   SERIAL 021595   CPU B


   TERMINATION ERROR     3                          4           5
SERVICE LEVEL INDICATOR                         TOTAL COUNT    DATE/TIME OF LAST ERROR

    POWER WARNING   . . . . . . . . . . . . . . . .        2      042/97   11:23:45:37
    INVALID LOGOUT  . . . . . . . . . . . . . . . .        2      042/97   23:24:35:87



      HARD ERROR
SERVICE LEVEL INDICATOR                         TOTAL COUNT    DATE/TIME OF LAST ERROR

    REGISTER/PSW INVALID          . . . . . . . . .        8      042/97   13:25:46:57
    HARD STORAGE ERROR            . . . . . . . . .        4      045/97   13:35:58:77
    SYSTEM DAMAGE                 . . . . . . . . .        2      049/97   14:34:34:87
    INSTRUCTION PROCESSOR DAMAGE  . . . . . . . . .        2      053/97   11:43:45:47
    STORAGE PROTECT KEY ERROR     . . . . . . . . .        2      057/97   11:23:45:37


                                         6
  SOFT MACHINE CHECK              EXCEPTION COUNT
SERVICE LEVEL INDICATOR         60 MINUTE REFERENCE  TOTAL COUNT    DATE/TIME OF LAST ERROR

    EXTERNAL DAMAGE    . . . . . . .       2  . . .        4      044/97   13:35:58:77
    BUFFER ERROR       . . . . . . .       2  . . .        2      051/97   17:54:45:87
    HIR SUCCESSFUL     . . . . . . .       1  . . .        1      056/97   12:22:33:46



LIMITS APPLIED   EXTD=01,BUFE=01,HIRS=01   7
    0 UNITS EXCLUDED DUE TO LIMITS

   20 MCH RECORDS PROCESSED
    1 MCH RECORDS UNDEFINED TO MCH ALGORITHMS    8
```

Figure 11. Processor (CPU) Subsystem Exception Report

1 This space is used for self-explanatory SCP and device-dependent messages specific to this subsystem exception report. For example:

```
** WARNING ** REPORT SPANS MORE THAN 3 DAYS
```

2 This report is provided for the following CPUs only:

0158
0168
3031
3032
3033

3 The types of errors are:

TERMINATION ERROR
HARD ERROR
SOFT MACHINE CHECK

4 The count of input records containing this particular error.

5 Date and time of the last MCH record that includes this error. If the date and time are the same for several service level indicators, it means that a single record includes all the indicators.

6 The number of 60-minute intervals in which the number of events that occur equals or exceeds the LIMIT values for each type of soft machine check.

7 The LIMIT values applied to this report. If the LIMIT value is zero, the EXCEPTION COUNT field is also zero.

8 Execution-time notes. These may be:

NOTE	DESCRIPTION
nn UNITS EXCLUDED DUE TO LIMITS	If LIMIT values are present
nn MCH RECORDS PROCESSED	Number of valid MCH records processed
nn MCH RECORDS UNDEFINED	Not identifiable to EREP as valid MCH records
nn MCH RECORDS IGNORED DUE TO CCH DUPLICATION	0158 models only, from which MCH records might be double-reporting an assumed channel failure

Channel Subsystem Exception

This report is organized according to the possible *source* of channel checks:

- The channel
- The storage control unit
- The controller

It shows the number of times each of these error types exceeded the LIMIT values for specific channels or controllers.

Figure 12 on page 136 shows an example of the channel subsystem exception report.

Channel Subsystem Exception

```
 1

SUBSYSTEM EXCEPTION                        REPORT DATE 065 97
    CHANNEL                                PERIOD FROM 041 97
                                                  TO   059 97
       2
MODEL 3033   SERIAL 021595   CPU 01


     3                                 4                     5              6
SERVICE LEVEL INDICATOR          EXCEPTION COUNT      TOTAL COUNT    DATE/TIME OF LAST ERROR
                               60 MINUTE REFERENCE


  CHANNEL ERROR

      CHANNEL 6XX                         3                   4      043/97   18:47:38:67
      CHANNEL 1XX                         1                   1      048/97   21:22:23:43
      CHANNEL 2XX                         1                   1      052/97   11:34:43:65
      CHANNEL 8XX                         1                   1      059/97   11:43:32:87



  DIRECTOR ERROR

      DIRECTOR #1                         1                   1      041/97   19:32:54:89
      DIRECTOR #2                         1                   1      045/97   13:25:46:57
      DIRECTOR #3                         1                   1      057/97   11:24:36:57



  CONTROL UNIT ERROR

      CONTROL UNIT 34X                    1                   1      042/97   13:25:44:57
      CONTROL UNIT 456                    1                   1      056/97   13:32:22:37


LIMITS APPLIED   CHAN=01,DRCT=01,CTRL=01  7
    0 UNITS EXCLUDED DUE TO LIMITS

    2 CCH RECORDS UNDEFINED TO CCH ALGORITHMS
    2 CCH RECORDS IGNORED BECAUSE OF MCH DUPLICATION  8
```

Figure 12. Channel Subsystem Exception Report

1 This space is used for self-explanatory system control program and device-dependent messages specific to this subsystem exception report. For example:

`** WARNING ** REPORT SPANS MORE THAN 3 DAYS`

2 This report is provided for the following CPUs only:

0158

0168

3031

3032

3033

3 The sources of the channel checks are shown in the following table:

CHANNEL ERROR (31XX/303X)

CHANNEL STORAGE ERROR (31XX) or DIRECTOR ERROR (303X)

CONTROL UNIT ERROR

4 The number of unique 60-minute intervals that had at least the LIMIT value number of this kind of channel check.

5 The count of input records containing this particular error.

6 Date and time of the last CCH record that includes this error. If the date and time are the same for several service level indicators, it means that a single record includes all the indicators.

7 The LIMIT values applied to this report. If the LIMIT value is zero, the EXCEPTION COUNT field is also zero.

8 Execution-time notes. These may be:

NOTE	DESCRIPTION
nn `UNITS EXCLUDED DUE TO LIMITS`	If LIMIT values are present
nn `INPUT RECORDS UNDEFINED`	Not identifiable to EREP as valid CCH records
nn `CCH RECORDS IGNORED DUE TO MCH DUPLICATION`	The number of 0158 or 0168 channel storage errors, or 303X channel errors, ignored because they might be double-reporting a processor storage error
nn `CCH RECORDS FOUND GENERATED FOR SOFTWARE RECOVERY`	The number of sympathetic channel errors found; for 303X only

DASD Subsystem Exception

This report shows conditions that may need maintenance action. Records that are included in other reports may *not* be listed in the system exception reports.

This exception report can be used to determine if the DASD subsystem has excessive errors or is operating within acceptable limits.

This report is organized by *probable failing unit* (PFU) starting with the units closest to the processor (CPU) and working toward the volume. Within each section, the PFUs are ordered from most critical to least severe (or from the unit with the largest number of permanent errors to the unit with the smallest number of temporary errors).

The series contains the following types of reports:

TYPE	REPORT
1	"DASD Subsystem Exception, Part 1" on page 139
1	"DASD Subsystem Exception, Part 2" on page 143
2	"DASD String Summary, Part 1" on page 144 *DASD String Summary* helps you determine if a problem is unique to a particular device or is also occurring on other devices in the controller string.
2	"DASD String Summary, Part 2" on page 146
3	"DASD Service Informational Messages (SIMs)" on page 147 *Informational Messages* help you define a problem to IBM customer service personnel.
3	"DASD Informational Messages" on page 148

TYPE	REPORT
4	"DASD Data Transfer Summary" on page 149 *Data Transfer* is further broken down according to whether the PFU is the volume or something other than the volume.
5	"DASD Symptom Code Summary" on page 152 *Symptom Code* lists the errors by fault symptom code within each probable failing unit (PFU) group.
6	"DASD Storage Control Unit Summary" on page 157 *Storage Control Unit (SCU)* groups overruns under each interface between channel or subchannel and SCU.

These reports work together to provide a picture of the errors occurring in the system. The DASD subsystem exception report determines if your DASD subsystem is experiencing an excessive amount of errors.

The following table shows the type of error records and their source in the DASD subsystem exception reports:

TYPE	SOURCE
A3	DASD devices; including SCUs, controllers
MDR	DASD devices; including SCUs, controllers
OBR	DASD devices; including SCUs, controllers

A probable failing unit is identified through the physical ID of the device. The physical ID is the combined identifiers of storage controller, control unit, and device.

Note: You must code DASDID control statements to establish physical IDs for those DASD in your installation that do not provide their own physical IDs. That way, EREP recognizes units common to different systems and arrives at the correct PFUs.

Messages IFC264I and IFC265I are logged in the EREP messages (TOURIST) file for each invalid record. These records are not included in the system exception report and do not print device dependent information in other reports.

Valid records that do not indicate a need for maintenance action may be shown in reports other than the subsystem exception.

If errors are found, the necessary corrective action is shown on the next deeper level of DASD reports. See Figure 19 on page 149 through Figure 20 on page 157 and Chapter 17, "Direct-Access Storage Devices (DASD)," on page 307.

Figure 13 on page 139 through Figure 20 on page 157 show examples of the reports in the DASD subsystem exception series.

DASD Subsystem Exception, Part 1

This part of the exception report provides the primary listing of events to determine if the DASD subsystem has excessive errors or is operating within acceptable limits.

This report provides the information to connect these events to the other reports in the series that have more details.

This report is organized by PFU starting with the units closest to the CPU and working toward the volume.

The PFUs are ordered from most critical to least severe.

Figure 13 shows an example of the DASD subsystem exception, part 1.

Explanations for **1** through **12** shown in the following report begin on the following pages.

Figure 13. Subsystem Exception DASD Report, Part 1

```
          1
** WARNING ** REPORT WAS RUN FOR A PERIOD EXCEEDING 3 DAYS. PROBABLE UNIT ANALYSIS MAY BE IN ERROR.

SUBSYSTEM  EXCEPTION                            REPORT DATE 080 97
        DASD (1)  2                             PERIOD FROM 037 97
                                                       TO   079 97

B-BUS OUT PARITY CHK   C-CHECK DATA CHK   D-DISKETTE CHK   I-INVOKED OFF SETS
  3
PROBABLE                 4                  6                   7              ---IMPACT OF TEMPORARY ERRORS----
FAILING              FAILURE     5        PHYSICAL      -----TOTALS-----     EQU            8             9
UNIT                 AFFECT     CPU       ADDRESS       SIMS  PERM  TEMP     CHK    SKS     RD    OVRN   OTHER
********************************************************************** ****************************************
CHAN      0C        CHAN/SCU              TOTAL                  1
                                03        36-XX-XX               1
         10
          02        CHAN/SCU              TOTAL                  1
                                03        32-XX-XX               1

        05XX        CHAN/SCU              TOTAL                        1                             1
                                07        A0-XX-XX                     1                             1

        07XX        CHAN/SCU              TOTAL                        1                             1
                                07        61-XX-XX                     1                             1
SCU  10111.3        SCU                   TOTAL            6
        3990-02 11              00+       10111.3          6

     10114.2        SCU                   TOTAL            3
       3990-02                  01        10114.2          3

     A8-XX-XX       SCU                   TOTAL                  5     1        1
       3880                     2B+      *A8-XX-XX               5     1        1

     03.            SCU                   TOTAL                        2        2
       3880                     00        03.                          2        2

     *052X          SCU                   TOTAL                        1        1
       3830                     35        *0520                        1        1
** WARNING ** REPORT WAS RUN FOR A PERIOD EXCEEDING 3 DAYS. PROBABLE UNIT ANALYSIS MAY BE IN ERROR.

SUBSYSTEM  EXCEPTION                            REPORT DATE 080 97
        DASD (1)                                PERIOD FROM 037 97
                                                       TO   079 97

B-BUS OUT PARITY CHK   C-CHECK DATA CHK   D-DISKETTE CHK   I-INVOKED OFF SETS

PROBABLE                                                                       ---IMPACT OF TEMPORARY ERRORS----
FAILING              FAILURE              PHYSICAL      -----TOTALS-----     EQU
UNIT                 AFFECT     CPU       ADDRESS       SIMS  PERM  TEMP     CHK    SKS     RD    OVRN   OTHER
********************************************************************** ****************************************

CTLR 20.1-XX        SCU/CTLR              TOTAL                  8     3        3
       3380-JK                  01+       20.1-XX                2     2        2
                                00+       20.0-XX                6     1        1

     20.0-XX        CTLR/DEV              TOTAL                  4     2        2
```

```
       3380-JK                  00      20.0-03                1
                                01      20.0-00                1
                                01      20.0-0E                      1       1
                                00      20.0-0F                      1       1
                                00      20.0-05                1
                                01      20.0-07                1

     20.1-XX        MULTIPLE            TOTAL                  4     1       1
       3380-JK                  00      20.1-09                1
                                00      20.1-05                1
                                01      20.1-08                      1       1
                                00      20.0-06                1
                                01      20.0-07                1

     AH210.0-XX     CTLR                TOTAL                  1
       3390-09                  00      AH210.0-XX             1
------------------+----------+--------+------------+------+-----+-----+- -----+------+------+------+-------------+
MULT 20.X-XX        MULTIPLE            TOTAL                        7       7
       3380-JK                  00      20.0-0C                      1       1
                                01      20.0-0E                      1       1
                                00      20.0-0F                      1       1
                                01+     20.0-04                      2       2
                                00      20.0-05                      1       1
                                01      20.0-07                      1       1
------------------+----------+--------+------------+------+-----+-----+- -----+------+------+------+-------------+
DEV  XX-10-02       CTLR/DEV            TOTAL                  1
       3380                     02      76-10-02               1

    *04AE           SEEK                TOTAL                        7              7
       3330                     2A     *04AE                         7              7

     HANDY.X-08     DEV                 TOTAL                  1
       3390-09                  01      HANDY.0.08             1

     GRAM9.X-17     DATAXFR             TOTAL                  2
       3390-01                  0A      GRAM9.0-17             2
VOL   RAS70F        DATAXFR             TOTAL                  1     2                    2
       3380-JK                  01      20.0-OF                      1                    1
                                01+     20.1-OF                1     1                    1

      RAS296        DATAXFR             TOTAL                  4

    ** WARNING ** INVALID PHYSICAL ID ON NEXT LINE
       3380-JK                  00+     FF.0-16                2

    ** WARNING ** INVALID PHYSICAL ID ON NEXT LINE
       3380-JK                  01      FF.2-16                1
** WARNING ** REPORT WAS RUN FOR A PERIOD EXCEEDING 3 DAYS. PROBABLE UNIT ANALYSIS MAY BE IN ERROR.

SUBSYSTEM  EXCEPTION                                REPORT DATE 080 97
        DASD (1)                                    PERIOD FROM 037 97
                                                           TO   079 97

B-BUS OUT PARITY CHK   C-CHECK DATA CHK   D-DISKETTE CHK   I-INVOKED OFF SETS

PROBABLE                                                                   ---IMPACT OF TEMPORARY ERRORS----
FAILING              FAILURE            PHYSICAL      -----TOTALS-----     EQU
UNIT                 AFFECT     CPU     ADDRESS       SIMS  PERM  TEMP     CHK    SKS    RD    OVRN   OTHER
************************************************************************ *****************************************

      PACV07        DATAXFR             TOTAL                  1                        4096
       3390-09                  01      HANDY.0-01             1                        4096

      ERPVOL        DATAXFR             TOTAL                     4096                  4096
       3310                     26     *0597                      4096                  4096

      PAGE03        DATAXFR             TOTAL                      128                                 128
       3310                     26     *059D                       128                                 128-C
------------------+----------+--------+------------+------+-----+-----+- -----+------+------+------+-------------+
** WARNING ** NO DASDID CARD FOUND OR INVALID PHYSICAL ID - PROBABLE UNIT NOT ASSIGNED FOR THE FOLLOWING:

                    CTLR/DEV            TOTAL                        3       3
       3330                     19+    *0428                         3       3

******************************************************************************************************************
   0 UNIT(S) EXCLUDED DUE TO LIMITS 12


** ENTRIES WITH AN ASTERISK INDICATE THAT DASDID CARDS WERE NOT FOUND FOR THE UNIT.

NOTE: "IMPACT OF TEMPORARY ERRORS" IS THE NUMBER OF TIMES ERROR THRESHOLD HAS BEEN EXCEEDED.
NOTE: BLANK ENTRIES INDICATE ZERO VALUES OR NOT APPLICABLE. N/A = NOT AVAILABLE.
NOTE: ZERO ENTRIES INDICATE RECORDS EXIST IN EREP REPORTS BUT THRESHOLDS WERE NOT EXCEEDED.
```

1 This space is used for self-explanatory system control program and device-dependent messages specific to this subsystem exception report. For example:

```
** WARNING ** REPORT WAS RUN FOR A PERIOD EXCEEDING 3 DAYS. PROBABLE UNIT ANALYSIS MAY
BE IN ERROR.
```

2 This field includes conditions that require analysis of OBR records to evaluate if repair is required. Units that report service information messages (SIMs) only put information in the system exception report when the unit has a condition that prevents it from reporting a SIM.

3 This field shows the unit most likely to be the source of the failure, even if the failure is recorded against another unit. EREP identifies the PFU based on the failure affect and the units reporting errors. The accuracy of this analysis for devices without physical ID depends on DASDID control statements. See "DASDID Control Statement" on page 47 for details on DASDID statements. Possible PFUs are shown in the following table:

PFU	DESCRIPTION
CHAN	Channel (channel, program, or CPU)
SCU	Storage control unit (for example, 3830, FTA, ISC)
CTLR	Controller (drive string controller, or something common to more than one device on the string)
MULTIPLE	Failure common to more than one device
DEV	Device (addressable unit)
VOL	Volume (data on volume)
UNK	Unknown (cannot be determined by report algorithms)

If no DASDID entry exists or the physical ID is invalid, a warning message replaces the PFU line.

In the line for PFU are its identifier, the failure affect, and the total errors attributed to this combination of PFU and failure affect. Usage counts are not available (N/A) because the total usage of the device is not determined in generating the report (non-failing devices are not considered).

4 This field defines the function or machine area affected by the failure. Possible failure affects are shown in Table 12.

Table 12. Possible Failure Affects

FAILURE AFFECT	DESCRIPTION
CHAN/SCU	The channel, CPU, or program, or the channel/storage control unit interface.
SCU	The storage control unit.
SCU/CTLR	The storage control unit/controller interface.
CTLR	The controller.
CTLR/DEV	The controller/device interface.
MULTIPLE	Failure common to more than one device.
DEV	The device, including problems with a volume that must be handled by a service representative.
SEEK	The function of accessing the track; the failure may be in the controller, the drive, or the volume.
DATAXFR	Data transfer: the function of reading or writing data; the failure may be in the controller, the drive, or the volume.
DATAXFR(HDA)	Data transfer, where the failure is in the head disk assembly.
UNK	Unknown; it is possible that two failures exist, providing conflicting information.

5 The EREP-assigned CPU identifier. If there is more than one CPU, one is shown and a plus sign is printed to indicate that there is more than one.

6 Use the physical address to locate information on other EREP reports. EREP uses the primary channel and unit address (PCUA) or device number if the devices do not provide physical IDs.

7 This field contains the error totals under the error types shown in the following table:

TYPE	DESCRIPTION
SIMS	The count of SIM messages reported by the unit and totaled for the PFU within the given failure.
PERM	The count of permanent errors recorded against the unit and totaled for the PFU within the given failure affect. (A permanent error is indicated by a zero temporary error bit in the OBR record.)
TEMP	The sum of the counts shown for the line under `IMPACT OF TEMPORARY ERRORS`.

8 These fields indicate the number of temporary errors when the count exceeds a LIMIT value. Definitions of the counts of temporary errors are in the DASD maintenance manual. Types of temporary errors are:

TYPE	DESCRIPTION
EQU CHK	Temporary equipment checks.
SKS	Temporary seek checks.
RD	Temporary data checks during reading, corrected by retrying or by ECC (error correction code).
OVRN	Overruns (only applicable to a PFU of CHAN and if system retried). See "DASD Storage Control Unit Summary" on page 157 for total overrun count.
OTHER	All other temporary errors. The types are identified by the letter suffix; in the case of multiple error types, multiple letters follow the counter.

9 Definitions of the suffixes for the counters that can appear in the `OTHER` column under `IMPACT OF TEMPORARY ERRORS` are:

TYPE	DESCRIPTION
B	Bus Out Checks
C	Data Checks
D	Diskette Checks
O	Invoked Offset

10 An identifier appears for each PFU. Their formats are shown in Table 13.

Table 13. PFU Identifier Formats

PFU	IDENTIFIER FORMAT
CHAN	Channel **02XX** 02 is the channel address from the SCUAs reporting the failures **01** In 370XA mode, the channel path ID

Table 13. PFU Identifier Formats (continued)

PFU	IDENTIFIER FORMAT
SCU	`SS-XX-XX` **SS** storage control unit/director ID
	`SS-XX-XX SEQNUM.P`, if the PFU is 3390 **SS** storage control unit/director **SEQNUM** manufacturer's serial number of storage control **P** storage path
CTLR	`XX-CC-XX` **CC** controller ID
	`XX-CC-XX SEQNUM.P ____.P-XX`, if the PFU is 3390 **CC** controller ID **SEQNUM** manufacturer's serial number of storage control **____** indicates that the manufacturer's serial number of the controller is not known. The failure affect shows the manufacturer's serial number of the failing device. **P** controller
DEV	`XX-CC-DD` **CC** controller ID **DD** physical device ID
	`XX-CC-DD SEQNUM.X-DD`, if the PFU is 3390 **CC** controller ID **SEQNUM** manufacturer's serial number of failing device **DD** physical device ID
VOL	nnnnnn (The volume serial number from the OBR/MDR device-dependent VOLID field) When information in the DASDID is not adequate, the format is (*nnnn), where * indicates that DASDID information was inadequate and nnnn is the PCUA or device number.

11 Device type.

12 The number of PFUs with fewer temporary errors than the limits defined on LIMIT statements. EREP prints a message stating the number of PFUs not printed and the LIMIT values in effect. See "LIMIT Control Statement" on page 52 for details on LIMIT statements.

DASD Subsystem Exception, Part 2

Subsystem exception DASD (2) reports list only the SIM (A3) records. Units which rely on SIMs for statement of service requirement are shown in this report.

Figure 14 on page 144 shows an example of the DASD subsystem exception, part 2.

```
SUBSYSTEM  EXCEPTION                                REPORT DATE 105 97
        DASD (2)                                    PERIOD FROM 100 97
                                                           TO   104 97
PROBABLE
FAILING              FAILURE            PHYSICAL
UNIT                 AFFECT     CPU     ADDRESS     SIMS
**********************************************************************
CHAN    07          CHAN/SCU            TOTAL         1
                                01      10221.2       1
------------------+----------+--------+--------------+------+-------+
SCU  34988.3        SCU/CTRL            TOTAL         3
         9341                   03+     22887.3-XX    3
------------------+----------+--------+--------------+------+-------+
CTLR FFFFF.0-XX     SCU/CTLR            TOTAL         1
         9343                   01      FFFFF.0-XX    1
------------------+----------+--------+--------------+------+-------+
MULT 12245.X-XX     MULTIPLE            TOTAL         2
         9345                   01      12245.1-1A    1
                                02      12245.2-1B    1
------------------+----------+--------+--------------+------+-------+
DEV  23345.X-02     CTLR/DEV            TOTAL         2
         9345                   01+     23345.0-02    2
**********************************************************************
   0 UNIT(S) EXCLUDED DUE TO LIMITS
```

Figure 14. DASD Subsystem Exception, Part 2

DASD String Summary, Part 1

Provides information about the following:
- Failure affect and usage data
- Usage statistics
- CPUs

The usage information in the DASD string summary can help you determine whether a failure affect reported in the DASD subsystem exception report is associated with just one device or is common to more than one device in the same controller string.

The report is useful in helping analyze error causes. It is used in conjunction with the DASD subsystem exception report.

The *DASD STRING SUMMARY (1)* includes units that report usage statistics. It shows the following:
- Physical ID
- Volume ID
- Error types that are shown as equipment checks, seek errors, or data transfer errors
- Thousands of accesses
- Megabytes processed
- Total number of seeks and megabytes processed for the report regardless of failure affect

Note: The `MEGABYTES WRITTEN WITH VERIFY` column is used for 3310s and 3370s that have write with verify commands.

Figure 15 on page 145 shows an example of the DASD subsystem exception, part 2.

```
DASD STRING SUMMARY (1)                          REPORT DATE  105 97
                                                 PERIOD FROM  100 97
                                                          TO  104 97
REPORT INCLUDES ALL DASD WITH PHYSICAL IDS OR A VALID DASDID
                                               ERROR TYPES       SEEK                 MEGABYTES
                                             EQU. ³SEEK ³DATA   ACCESSES   MEGABYTES   WRITTEN
SSID     SCU       CTLR     DEV      VOLUME  CHKS ³     ³XFER    X 1000      READ     W/VERIFY
**********************************************************************************************
          26       34                                  1                          2
          27       35
                            08       MX1RS1                           8        137
                            09       MX1DL1                                     66
          22       66.0
          23       60.1
                            02
                            02       RAS7C2     Y    Y     Y
                            03       RAS7C3     Y    Y     Y
          07       80
          23       80.1
                            02       RAS7C2     Y
                            03       RAS7D3                Y
                            05       IBM355     Y
          03       A5
                            02       RAS712                          35         73
                            03       RAS713                          34         80
                            0C       RAS71C                          31         68
                            0E       RAS71E                          31         77
                            0F       RAS71F                          31         69
0004    10114.0    0F.0
        10114.2    0F.2
                            01       RAS841                          65          3
                            05       RAS845                          65          3
                            06       RAS846                          65          3
0041         .1    01.1
                            11       RAS291    Y
0243         .0    00
        HHGK6.0    00
                         ZZZ23-0F  SOQV04                           131        112
                         ZZZ23-0F  SOQV06    Y
1144         .0    00
        DBDMC.0    00
                         AH210-02  SLT221                                        2
                         AH210-02  SOQV01                             65         2
                         95122-14  SOQV19    Y
                         RM102-16  SOQV09    Y
                         GRAM9-17  SOQV31              Y
                         95122-1E  SOQV21              Y
                         *****-1F  SOQV13    Y
1144         .0    01
        DBDMC.0    01
                         GRAM9-10  SOQV03                             65       287
                         GRAM9-10  SOQV05    Y

ALL DASD PROCESSED FOR EXCEPTION REPORT                            1530       9325 3
**********************************************************************************************

NOTE:  THE COUNTS FOR SEEK ACCESSES X 1000, MEGABYTES READ, AND
       MEGABYTES WRITTEN W/VERIFY ARE SIX DIGIT POSITIONS.  IF THE
       SPACE IS EXCEEDED, THE COUNT IS DIVIDED BY 1000 AND A K IS
       PLACED AT THE END OF THE NUMBER.  IF THE COUNT IS EXCEEDED
       WITH A K AT THE END, 99999K WILL BE PRINTED.
```

Figure 15. DASD String Summary, Part 1

1 The failure affect for each unique combination of volume and physical ID belonging to every controller string that appeared on the subsystem exception report. A Y is placed in one or more of the columns under the ERROR TYPES heading to indicate which types of error have occurred. The following table shows failure affects and the error types:

FAILURE AFFECT	ERROR TYPE COLUMN WITH A Y
CTLR	EQU.CHKS
CTLR/DEV	EQU.CHKS
DEV	EQU.CHKS
SEEK	SEEK

FAILURE AFFECT	ERROR TYPE COLUMN WITH A Y
DATAXFR	DATAXFER
DATAXFR(HDA)	DATAXFER
MULTIPLE	Any combination

2 The usage data for each volume/physical ID appears under three possible headings:
- SEEK ACCESSES X 1000
- MEGABYTES READ
- MEGABYTES WRITTEN W/VERIFY

3 The usage statistics for *all* DASD processed for the subsystem exception report.

Note: To generate a DASD string summary, EREP needs valid physical IDs for the devices, relevant failure affect data from the exception report, or usage data for the selected devices. If these items are not present, the first part of the report is replaced by a message explaining the absence of report data.

DASD String Summary, Part 2

The DASD STRING SUMMARY (2) includes only units that do not log usage statistics (such as the 9340, 2107, 2105, 1750 etc. control units).

A line in the report is generated by data from an MDR record. Each line is presented in the following columns:

COLUMN	ORIGINATION
SSID	From sense bytes 20–21.
CONTROL UNIT	Control unit type and model with the sequence number and string (underneath).
DEVICE	Top line defines type and model with sequence number and physical device for each drive following this.
VOLUME	VOLID as obtained from MDR record.
MODE	FBA or CKD as indicated by selection criteria table; FBCK, if both are indicated for the same identifiers.
Note: The lines are sorted alphabetically by volume under the appropriate controller.	

Figure 16 on page 147 and Figure 17 on page 147show examples of the DASD String Summary, Part 2.

```
DASD STRING SUMMARY (2)                         REPORT DATE  132 97
                                                PERIOD FROM  123 97
                                                         TO  123 97
SSID    SCU       DEVICE           VOLUME     MODE
*******************************************************
0505    9341
        43541.X   9345-1  37426-0A  SAWV15     CKD
                  9345-1  38722-0D  SAWV16     CKD
1144    9343-C02
        17204.X   9345-1  N6210-02  SAWV09     CKD
                  9345-1  N6210-03  SAWV10     CKD
2020    9343-C04
        21044.X   9345-1  N2114-08  SAWV12     CKD
                  9345-1  N9282-17  SAWV11     CKD
3030    9343-D04
        21299.X   9345-1  A1091-04  SAWV13     CKD
                  9345-1  A1091-05  SAWV14     CKD
*******************************************************
```

Figure 16. DASD String Summary, Part 2 (1)

```
DASD STRING SUMMARY (2)                         REPORT DATE  220 07
                                                PERIOD FROM  104 06
                                                         TO  104 06
SSID    SCU       DEVICE           VOLUME     MODE
*******************************************************
4E43    2107
        BXXN1.X   2107+   *****-19  NWD359     CKD
                  2107+   *****-1A  NWD35A     CKD
                  2107+   *****-1B  NWD35B     CKD
                  2107+   *****-1C  NWD35C     CKD
                  2107+   *****-1D  NWD35D     CKD
                  2107+   *****-1E  NWD35E     CKD
                  2107+   *****-1F  NWD35F     CKD
4E43    2107
                  2107+   *****-00  NWD360     CKD
*******************************************************
```

Figure 17. DASD String Summary, Part 2 (2)

DASD Service Informational Messages (SIMs)

This report relates to hardware or media failures that may require the customer to call for service or run ICKDSF.

SIMs always appear ahead of other informational messages.

The DASD informational messages report appears after all SIMs.

Refer to the device maintenance library for information about the SIMs and actions required.

Figure 18 on page 148 shows an example of the DASD service informational messages.

```
DASD SERVICE INFORMATION MESSAGES (SIMS)           REPORT DATE 028 97
                                                   PERIOD FROM 023 97
                                                          TO   028 97

 1                      2                          3
COUNT           FIRST OCCURRENCE           LAST OCCURRENCE
********************************************************************************
 1   023/97 00:10:05:00         023/90  00:10:05:00
   * SERVICE ALERT  9345-1   S/N 0113-N6968 REFCODE D100-11C1-9000 ID=05
   * DASD EXCEPTION ON SSIS 1123, PHYSICAL DEVICE 02, VOLSER SUTUXX
     DEVICE ADDRESS= 0B02, 11
   * REPAIR WILL DISABLE STORAGE CLUSTER 1 AND INTERFACE A-B

 1   023/97 00:10:06:00         023/90  00:10:06:00
   * MODERATE ALERT 9345-1   S/N 0113-P1337 REFCODE D800-22D2-0000 ID=06
   * DASD SERVICE OPERATION COMPLETED ON SSID 2123
   * REPAIR WILL DISABLE STORAGE CLUSTER 0 AND SERIAL INTERFACES 00-01

 1   023/97 00:10:07:00         023/90  00:10:07:00
   * SERIOUS ALERT  9345-1   S/N 0113-P5706 REFCODE E300-33E3-1000 ID=07
   * DASD EXCEPTION ON SSID 3123 DEVICE PATH 3
  ** INVALID SERVICE CODE 3 FOR SENSE BYTE 28 = AE
  ** S/N 0113-P5706  NO FORMATTED MESSAGE - SENSE DATA:
     00001200 2428CF07 93808333 E3100004 23603D5A 3123E300 05100200 AE020700

 1   028/97 00:00:32:03         223/90  00:00:32:03
   * SERIOUS ALERT  9343-C02 S/N 0113-T0003 REFCODE 2300-251D-9000 ID=17
   * SCU EXCEPTION ON SSID 3123, STORAGE CLUSTER 1 DEVICE PATH 2
   * NO SERVICE ACTION REQUIRED

 1   028/97 00:00:01:00         123/90  00:00:01:00
   * SERVICE ALERT  9345-1   S/N 0113-Y1989 REFCODE 4121-1634-5678 ID=21
   * MEDIA EXCEPTION ON SSID 0127, VOLSER SUTEFG DEVICE ADDRESS= 0B00, CH  1F
      PHYSICAL DEVICE 00, CYLINDER 01B1 HEAD 01
   * REFERENCE MEDIA MAINTENANCE PROCEDURE 1
```

Figure 18. DASD Service Information Messages (SIMS)

1 The number of occurrences of this particular SIM based on the SEQNUM and SIM ID.

2 The date and time of the first occurrence of this particular SIM.

3 The date and time of the last occurrence of this particular SIM.

DASD Informational Messages

This report provides information for the hardware service representative. The records involved may relate to hardware failures that can degrade performance; but the records are not standard sense records resulting from an error condition.

This report automatically follows the DASD subsystem exception report. The information within the two reports is connected by the physical ID address.

The symptom code in the report tells you if any action is required.

Information about the actions required for the various messages is in the maintenance library for the device identified in the *PHYSICAL ID* field.

Figure 19 on page 149 shows an example of the DASD informational messages.

```
DASD INFORMATIONAL MESSAGES                          REPORT DATE 175 97
                                                     PERIOD FROM 041 97
                                                            TO   174 97
PHYSICAL        SYMPTOM
ID              CODE      COUNT                      MESSAGE
********************************************************************** ****************************
03-01-06        0001        1      THRESHOLD LOGGING COMPLETE FOR SEEK CHECKS
04.0-XX         0002        1      THRESHOLD LOGGING COMPLETE FOR DATA CHECKS WITHOUT OFFSET
20.1-XX         0002        1      THRESHOLD LOGGING COMPLETE FOR DATA CHECKS WITHOUT OFFSET
AH210            N/A        1      CUU 0402 DEVICE FENCED FROM STORAGE PATH
04.1-00         0001        1      THRESHOLD LOGGING COMPLETE FOR SEEK CHECKS
04.1-XX         0002        1      THRESHOLD LOGGING COMPLETE FOR DATA CHECKS WITHOUT OFFSET
21.             000F        1      THRESHOLD LOGGING COMPLETE FOR SUBSYSTEM STORE CHECKS
22.             000F        1      THRESHOLD LOGGING COMPLETE FOR SUBSYSTEM STORE CHECKS
60.0-02         0001        1      THRESHOLD LOGGING COMPLETE FOR SEEK CHECKS
23.             000F        1      THRESHOLD LOGGING COMPLETE FOR SUBSYSTEM STORE CHECKS
AA-CC-01        1010        1      SECTOR RETRY THRESHOLD EXCEEDED RBN     33694
AA-CC-01        1313        1      THRESHOLD LOGGING COMPLETE FOR EQUIPMENT CHECKS
AA-CC-01        1616        1      THRESHOLD LOGGING COMPLETE FOR SEEK CHECKS
AA-CC-01        1919        1      THRESHOLD LOGGING COMPLETE FOR DATA CHECKS
AA-CC-01        2121        1      ALTERNATE BLOCKS NEARLY EXHAUSTED
BB-DD-01        101F        1      SECTOR RETRY THRESHOLD EXCEEDED RBN    260753
BB-DD-01        2072        1      CALL FOR SERVICE
```

Figure 19. DASD Informational Messages

DASD Data Transfer Summary

This report further explains the data checks listed in the DASD subsystem exception report.

The DASD data transfer summary lists:

- Each volume that experienced data checks, giving the error locations for each
- Cylinder and head error locations
- Probable failing unit (PFU)
- Other information which helps narrow down the cause of errors

It can be in two parts:

1. PFU of volume
2. PFU of other than volume

Since the report is sequenced by PFU, it is helpful for looking up failures categorized by PFU.

All data checks listed on the system error summary part 2 and the DASD subsystem exception report will be listed under the PFU—Volume part of this report.

If volume is specified as the PFU, the customer should try to correct the problem using a utility program such as the device support facility. This will correct the errors by:

- Rewriting the data
- Generating a skip displacement
- Assigning an alternate track
- Indicating a bad drive

The IBM service representative should correct errors listed as Other by using the report information and the maintenance package. These errors have a very high probability of being caused by hardware.

Compare later reports to ensure that failing addresses no longer appear in the reports.

The DASD string summary can be used to verify that a drive is also being used.

"DASD Data Transfer Summary—PFU-Volume" shows the PFU by Volume. The report may also show the PFU by Other.

DASD Data Transfer Summary—PFU-Volume

```
DASD DATA TRANSFER SUMMARY                            REPORT DATE 175 97
PROBABLE FAILING UNIT - VOLUME                        PERIOD FROM 041 97
                                                             TO   059 97

                                                              SENSE COUNTS 1
                                                                TEMPORARY
                                                               OFFSET INVK THRESHOLD
                                                          PERM   NO   YES   LOGGING
***********************************************************************************
SEQUENCE BY VOLUME LABEL, HEAD, CYLINDER
    2
UNITADDRESS 0380   DEVTYPE 3310        VOLUME DOSAF3  5
      3
     CPU 26   PHYSICAL ADDRESS 0590  4
     FAILURE AT BLOCK: 3834      CCHS 0010-09-26          0     1     0     0
   08015000 0A091A50 06000012 0000004D 004D01C4 28000000  6
                     LAST SENSE AT: 045/97  07:52:15:81

UNITADDRESS 06C7   DEVTYPE 3330        VOLUME TSO190
     CPU 27   PHYSICAL ADDRESS 06C5

     FAILURE AT ADDRESS: CYLINDER 0158  HEAD 01           1     0     0     0
   08800000 159E0143 009E0001 0A1F301B 60000000 00004943
                     LAST SENSE AT: 044/97  10:43:02:62


UNITADDRESS 0921   DEVTYPE 3350        VOLUME DSAPAK
     CPU 35   PHYSICAL ADDRESS 0921
           7
     FAILURE AT ADDRESS: CYLINDER 0385  HEAD 26           0     1     0     0
   00001000 40813A40 0181801A 00000000 00000000 00004940
                     LAST SENSE AT: 050/97  16:18:38:16


UNITADDRESS 0381   DEVTYPE 3370        VOLUME DOSAF3
     CPU 30   PHYSICAL ADDRESS 0380

     FAILURE AT BLOCK: 3413      CCHS 0004-05-49          0     0     0     1
   08015000 04053150 06000006 00000059 00590093 06000000
                     LAST SENSE AT: 045/97  07:52:05:07

UNITADDRESS 0734   DEVTYPE 3380        VOLUME PAK167
     CPU 07   PHYSICAL ADDRESS XX-84-04

     FAILURE AT BLOCK: CYLINDER 0148  HEAD 07             1     0     0     0
   08800000 84940743 00020007 066C8400 00000000 00314943
                     LAST SENSE AT: 043/97  14:25:47:01

UNITADDRESS 0D17   DEVTYPE 3390-01      VOLUME SOQV31
     CPU 0A   PHYSICAL ADDRESS GRAM9.X-17
```

```
     FAILURE AT BLOCK: CYLINDER 0025  HEAD 14               0     0     2     0
   18000504 1726CE98 00001E00 08400004 2224CB83 11444320
   00800E01 0000109E LAST SENSE AT: 058/97  13:56:55:11
UNITADDRESS 0F50   DEVTYPE 9335         VOLUME DSFF50
     CPU 13   PHYSICAL ADDRESS 0F50

     FAILURE AT BLOCK: 4097      CCHS 0083-01-50            1     0     0     0
   08800000 53013241 00000000 00000000 00000000 10014401
                     LAST SENSE AT: 048/97  16:25:17:43

-----------------------------------------------------------------------------------
THE FOLLOWING ENTRIES HAVE ONLY MDR RECORD TYPES. THEREFORE, NO CYLINDER/HEAD   8
ADDRESSES ARE REPORTED. SEE THE EXCEPTION REPORT FOR THE ERROR COUNTS.

UNITADDRESS 0597   DEVTYPE 3310         VOLUME ERPVOL
     CPU 26   PHYSICAL ADDRESS 0597


NOTE: CYLINDER/HEAD/BLOCK NUMBERS ARE DECIMAL VALUES
NOTE: UNITADDRESS IS THE LOGICAL ADDRESS OF THE DEVICE
NOTE: ? FOLLOWING THE PHYSICAL ADDRESS DENOTES MULTIPLE
      PHYSICAL UNITS HAD ERRORS WITH THIS VOLUME LABEL
```

1 These columns contain counts of the data checks for the particular cylinder/head or block. The permanent data checks appear in the first column. The temporary data checks are broken down as follows:

COLUMN	DESCRIPTION
OFFSET INVK (offset invoked)	Indicates the number of recovered temporary data checks, and whether it was necessary to offset the access mechanism with the NO and the YES sub-columns
THRESHOLD LOGGING	Indicates the number of temporary data checks recorded when the device was in logging mode because the threshold for data checks was exceeded.

2 The keyword used by the device support facility to identify the device. It is the logical address (SCUA) or device number of the volume reporting the error.

3 The CPU identified for the last sense record.

4 For devices providing physical IDs, this is the physical ID; for other devices, it is the PCUA or physical device number.

5 The volume serial number of the volume reporting the error.

6 There may be either 24 or 32 sense bytes in the last sense record received for this cylinder and head or block. The format of the sense record is in byte 7 and is shown in the following table:

FORMAT	DESCRIPTION
4	The symptom code is in the last two sense bytes
5	The value in byte 7 is repeated in the last two sense bytes

The date and time follow the sense bytes.

7 The location of the data check as shown in the following table:

FOR	ADDRESS
Count key data (CKD) devices	The address is expressed as *cylinder and head*
Fixed block (FBA) devices	The address is expressed as *block number*

FOR	ADDRESS
Note: • The values are in decimal. • When a volume records data checks at more than one location, the report includes an entry for each location and puts them in ascending order.	

8 In cases where the only error data is from error counters, meaning that failure addresses are not available, only the lines that define the device and volume appear.

DASD Symptom Code Summary

This report provides information required for hardware maintenance. The service representative uses it to locate the failures noted in the DASD subsystem exception report and to note the symptom code and first sense record for each failure.

The data in this report is taken from each sense record in the corresponding DASD subsystem exception report.

Each sense (OBR) record reported in the exception report is listed by probable failing unit (PFU), fault symptom code, and physical ID.

Data is organized by PFU. The PFUs are listed in order of severity beginning with channel and ending with volume. The sequence of the report is different for each PFU.

The symptom code, which is listed under the PFU, is to be used with the maintenance procedures and documentation for the device. Symptom codes with an asterisk (*) are counted as errors in the exception report. The following is shown for each symptom code:

- Physical ID
- Device type
- Permanent and temporary errors
- Function or machine area affected
- Physical address
- Error path
- Date and time (first and last occurrence)
- CPUs
- Sense record from the first occurrence

The physical address is the same as the physical ID if the physical ID is provided. Otherwise, the physical address is the device number or physical control unit address (PCUA).

Data checks (symptom codes 4XXX and 5XXX) that appear in the DASD data transfer summary, also appear here for use when hardware repair is required.

"DASD Symptom Code Summary" on page 153 shows an example of the DASD symptom code summary.

Note: Explanations for **1** through **11** follow the example.

DASD Symptom Code Summary

```
DASD SYMPTOM CODE SUMMARY                         REPORT DATE 065 97
                                                  PERIOD FROM 041 97
                                                         TO   059 97

SEQUENCE BY PROBABLE FAILING UNIT  1

SYMPTOM  PHYSICAL OCCURRENCES FAILURE                DATE AND TIME OF
CODE     ID       PERM/TEMP   AFFECT     FIRST OCCURRENCE      LAST OCCURRENCE
                                               SENSE FROM FIRST OCCURRENCE
           DEVICE           0 0 0 0  0 0 0 0  0 0 1 1  1 1 1 1  1 1 1 1  2 2 2 2  2 2 2 2  2 2 3 3
           TYPE             0 1 2 3  4 5 6 7  8 9 0 1  2 3 4 5  6 7 8 9  0 1 2 3  4 5 6 7  8 9 0 1

                              PHYSICAL                ERROR
                              ADDRESS   SSID-STRING    PATH   CPUS
***************************************************************************************************

PROBABLE FAILING UNIT: CHANNEL---------------------------------------------------------------------
SEQUENCE BY SCUID, SYMPTOM CODE -------------------------------------------------------------------
0F00 *   70-XX-XX     0    1   CHAN/SCU   049/97 05:11:43:08    049/97 05:11:43:08
            3880            04000100 83080100 00000000 00000000 00000000 00700F00
                              70-XX-XX              02-0283   03
  2         3         4          5           6                       6
0F00 *   E1-XX-XX     1    0   CHAN/SCU   048/97 04:21:11:80    048/97 04:21:11:80
            3880            04000100 84000100 00000000 00000000 00000000 00E10F00  7
              8               E1-XX-XX              22-0284   03
                                 9                    10

PROBABLE FAILING UNIT: STORAGE CONTROL UNIT--------------------------------------------------------
SEQUENCE BY PCUA, SYMPTOM CODE --------------------------------------------------------------------

3930 *      N/A       0    1   SCU        042/97 18:44:51:51    042/97 18:44:51:51
            3830            10000000 00050030 56340000 00040000 00000000 00003930
                                 0520               20-0520   04
                                                              11
FA08 *      N/A       3    0   SCU        049/97 03:51:39:59    049/97 03:52:00:95
            3880            10100100 000000F4 08000000 FFFFFFFF FFFFFFFF 040EFA08
                                 013C               41-0130   03
                                 013D               01-0131   03
                                 0138               01-0130   03

FA04 *      N/A       2    0   SCU        049/97 03:29:44:54    049/97 03:31:11:23
            3880            10100100 000000F4 04000000 FFFFFFFF FFFFFFFF 040FFA04
                                 0124               11-0120   03
                                 013C               51-0130   03
DASD SYMPTOM CODE SUMMARY                         REPORT DATE 065 97
                                                  PERIOD FROM 041 97
                                                         TO   059 97

SEQUENCE BY PROBABLE FAILING UNIT

SYMPTOM  PHYSICAL OCCURRENCES FAILURE                DATE AND TIME OF
CODE     ID       PERM/TEMP   AFFECT     FIRST OCCURRENCE      LAST OCCURRENCE
                                               SENSE FROM FIRST OCCURRENCE
           DEVICE           0 0 0 0  0 0 0 0  0 0 1 1  1 1 1 1  1 1 1 1  2 2 2 2  2 2 2 2  2 2 3 3
           TYPE             0 1 2 3  4 5 6 7  8 9 0 1  2 3 4 5  6 7 8 9  0 1 2 3  4 5 6 7  8 9 0 1
                              PHYSICAL                ERROR
                              ADDRESS   SSID-STRING    PATH   CPUS
***************************************************************************************************

SEQUENCE BY SCUID, SYMPTOM CODE -------------------------------------------------------------------

2800 *   14-XX-XX     0    1   SCU        050/97 08:52:47:37    050/97 08:52:47:37
            3880            10000096 81360B2F 04000020 09A00760 00210000 00142800
                              14-XX-XX              00-0AB1   03

2810 *      22.       0    1   SCU/CTLR   049/97 21:47:18:81    050/97 21:47:18:81
            3880            10008260 03A6622F 82000002 09F30060 05880005 10222810
                                 60.0-XX    22-0    07-07C3   00

SEQUENCE BY PCUA, SYMPTOM CODE --------------------------------------------------------------------

3F29 *      N/A       0    1   CHAN/SCU   041/97 15:59:16:46    041/97 15:59:16:46
            3880            10000000 00106839 00000000 00D60900 07000040 02603F29
                                 0840               22-0840   04

27F9 *      N/A       1    0   CHAN/SCU   050/97 02:55:57:79    050/97 02:55:57:79
            3880            10000000 10050028 80000002 0903838F 86800400 006527F9
```

```
                                 0443              54-0443   03

F223        N/A       0    2   SCU        042/97 02:37:38:85    049/97 05:24:46:26
            3880            00001100 000000F2 17100000 00020000 00000883 CCA8F223
                                 0105              41-0101   03
                                 011D              01-0111   03

F426 *      N/A       1    0   SCU        046/97 02:30:14:17    046/97 02:30:14:17
            3880            10900100 000000F2 21800000 00020040 C0004881 CCA8F426
                                 0100              01-0100   03

FB04 *      N/A       4    0   SCU        049/97 02:41:29:60    049/97 02:45:21:41
            3880            00900100 000000F5 04000000 00000000 00000000 CCA8FB04
                                 0104              01-0100   03
                                 0109              51-0101   03
                                 0118              41-0110   03
                                 0119              51-0111   03


PROBABLE FAILING UNIT: CONTROLLER-----------------------------------------------------------------
SEQUENCE BY CTLID, SYMPTOM CODE ------------------------------------------------------------------

834D *   XX-11-XX     1    0   CTLR/DEV   042/97 01:53:15:92    042/97 01:53:15:92
            3380            10000011 83000083 50100200 01004D00 825A00FF FF59834D
                              59-11-03             56-0A83   03
DASD SYMPTOM CODE SUMMARY                          REPORT DATE 065 97
                                                   PERIOD FROM 041 97
                                                          TO   059 97

SEQUENCE BY PROBABLE FAILING UNIT

SYMPTOM  PHYSICAL OCCURRENCES FAILURE                DATE AND TIME OF
CODE     ID       PERM/TEMP   AFFECT     FIRST OCCURRENCE      LAST OCCURRENCE
                                               SENSE FROM FIRST OCCURRENCE
           DEVICE            0 0 0 0  0 0 0 0  0 0 1 1  1 1 1 1  1 1 1 1  2 2 2 2  2 2 2 2  2 2 3 3
           TYPE              0 1 2 3  4 5 6 7  8 9 0 1  2 3 4 5  6 7 8 9  0 1 2 3  4 5 6 7  8 9 0 1
                              PHYSICAL               ERROR
                              ADDRESS   SSID-STRING    PATH   CPUS
***************************************************************************************************


838D *   XX-11-XX     3    0   CTLR/DEV   042/97 03:57:48:93    042/97 03:57:48:93
            3380            10000011 82000083 50100200 01008D00 03FA00FF FF59838D
                              59-11-02             56-0A82   03

E780 *   20.1-XX      1    0   MULTIPLE   047/97 18:18:36:92    047/97 18:18:36:92
            3880-JK         10000020 49796180 81100100 08000200 0F80D4FF FF03E780
                             20.1-09        03-0    17-070C   00

D310 *   20.0-XX      2    0   SCU/CTRL   047/97 20:24:09:43    047/97 20:24:09:73
            3880-JK         10000020 061A0C70 81008286 00100000 0A9A0A7A 0002D310
                             20.0-XX        02-0    07-0705   00
                             20.0-XX        02-0    07-0706   01

B02A *   AH210.0-XX   0    1   CTLR       044/97 09:31:36:47    044/97 09:31:36:47
            3880-JK         10000600 0132C143 00030000 01050404 22101842 0023B021 00000E01 00000000
                             AH210.0-XX     0023-0  0101      00
PROBABLE FAILING UNIT: MULTIPLE ------------------------------------------------------------------
SEQUENCE BY CTLID, SYMPTOM CODE ------------------------------------------------------------------

E7C0 *   20.X-XX      0    2   MULTIPLE   044/97 11:18:07:01    044/97 11:19:01:07
            3380-JK         10000020 0E886580 81100100 08000200 0FC094FF FF02E7C0
                             20.0-0E        02-0    07-070E   01
                             20.0-07        02-0    07-0707   01

EBF9 *   20.X-XX      0    3   MULTIPLE   044/97 09:04:32:95    047/97 18:18:39:26
            3380-JK         10000020 04040180 81100100 08008100 0FC0D4FF FF02EBF9
                             20.0-04        02-0    07-0704   01+
                             20.0-05        02-0    07-0705   01

PROBABLE FAILING UNIT: DEVICE---------------------------------------------------------------------
SEQUENCE BY PCUA, SYMPTOM CODE -------------------------------------------------------------------

150A *      N/A       1    1   SEEK       043/97 08:03:12:71    043/97 10:52:05:00
            3340            01008200 00B74B1B 290A61ED 00000000 5A010000 0000150A
                                 03EB                 EB40   0A

1911 *      N/A       0    3   DEV        049/97 15:43:01:34    049/97 15:43:22:71
            3330            10000000 383E0F11 08000000 01303185 00000000 00001911
```

```
                                0428                  0E2F   01
                                0428                  042F   01
DASD SYMPTOM CODE SUMMARY                          REPORT DATE 065 97
                                                   PERIOD FROM 041 97
                                                          TO   059 97

SEQUENCE BY PROBABLE FAILING UNIT

SYMPTOM  PHYSICAL OCCURRENCES FAILURE                DATE AND TIME OF
CODE     ID       PERM/TEMP   AFFECT     FIRST OCCURRENCE      LAST OCCURRENCE
                                               SENSE FROM FIRST OCCURRENCE
           DEVICE           0 0 0 0  0 0 0 0  0 0 1 1  1 1 1 1  1 1 1 1  2 2 2 2  2 2 2 2  2 2 3 3
           TYPE             0 1 2 3  4 5 6 7  8 9 0 1  2 3 4 5  6 7 8 9  0 1 2 3  4 5 6 7  8 9 0 1
                             PHYSICAL               ERROR
                             ADDRESS   SSID-STRING    PATH   CPUS
***************************************************************************************************

SEQUENCE BY CTLID, DEVID, SYMPTOM CODE -----------------------------------------------------------

191A     XX-01-06     0    3   SEEK       050/97 08:01:16:14    050/97 08:01:31:72
            3375           00001001 0636401A 38400008 000000FF 0A0D8000 9005191A
                             05-01-06                 0286   01
8343 *   XX-A0-07     0    1   CTLR/DEV   042/97 03:53:19:04    042/97 03:53:19:04
            3380           100000A0 87000483 50100200 01084300 02EA0008 027D8343
                             7D-A0-07              13-0877   03

1316 *   XX-01-06     0    1   DEV        042/97 16:32:45:55    042/97 16:32:45:55
            3375           10000001 0600011E 84882929 000000FF 168C0001 99031316
                             03-01-06                 0186   31

45C1 *   GRAM9.X-17   2    0   DATAXFER   048/97 13:56:55:11    058/97 13:56:55:11
            3390-01        18800504 1726CE98 00001E00 08400004 2224CB83 1114445C1 00800E02 0002D805
                            GRAM9.0-17   1144-0    2A-0D17   0A
PROBABLE FAILING UNIT: VOLUME---------------------------------------------------------------------
SEQUENCE BY PCUA, SYMPTOM CODE -------------------------------------------------------------------

5050        N/A       0    3   DATAXFER   043/97 07:28:45:43    043/97 07:52:25:25
            3370           08015001 3E013A50 0600000A 000001F6 000E01B2 10000000
                                0381                  0381   02

4945 *      N/A       0    1   DATAXFER   045/97 07:52:33:22    045/97 07:52:33:22
            3310           08011000 14051B45 06000003 0000005C 005C0000 3B5D4945
                                0590                  0380   01

45C0 *      N/A       2    0   DATAXFER   041/97 11:59:10:97    041/97 11:59:12:87
            3380-JK        08800001 57030445 00070001 022BFF00 00010000 004145C0 04084CE1 00000304
                                0297     0013-0    02-0297   01
                                0297     0041-0    12-0297   01

4943 *      N/A       1    0   DATAXFER   044/97 10:43:02:62    044/97 10:43:02:62
            3330           08800000 159E0143 009E0001 0A1F301B 60000000 00004943
                                06C5               23-06C7   27

4401 *      N/A       1    0   DATAXFER   048/97 16:25:17:43    048/97 16:25:17:43
            9335           08800000 53013241 00000000 00000000 00000000 10014401 00000000 00000000
                                0F50                  0F50   13
DASD SYMPTOM CODE SUMMARY                          REPORT DATE 065 97
                                                   PERIOD FROM 041 97
                                                          TO   059 97

SEQUENCE BY PROBABLE FAILING UNIT

SYMPTOM  PHYSICAL OCCURRENCES FAILURE                DATE AND TIME OF
CODE     ID       PERM/TEMP   AFFECT     FIRST OCCURRENCE      LAST OCCURRENCE
                                               SENSE FROM FIRST OCCURRENCE
           DEVICE           0 0 0 0  0 0 0 0  0 0 1 1  1 1 1 1  1 1 1 1  2 2 2 2  2 2 2 2  2 2 3 3
           TYPE             0 1 2 3  4 5 6 7  8 9 0 1  2 3 4 5  6 7 8 9  0 1 2 3  4 5 6 7  8 9 0 1
                             PHYSICAL               ERROR
                             ADDRESS   SSID-STRING    PATH   CPUS
***************************************************************************************************

SEQUENCE BY CTLID, DEVID, SYMPTOM CODE -----------------------------------------------------------

40C0 *   20.X-04      1    3   DATAXFER   043/97 09:53:09:10    043/97 09:53:09:10
            3380-JK        08800000 445D3440 035D0004 00022000 02000000 000340C0
                            20.1-04        03-0    17-0704   00

43C0 *   HANDY.X-01   1    0   DATAXFER   048/97 13:05:18:65    050/97 00:58:49:33
            3390-09        10800600 2132E243 00030000 01050404 2215EA85 00CA43C0 00000E00 00001B08
```

```
                            HANDY.0-01   00CA-1       0EA1   01

4180 *   60.X-02      0    2   DATAXFER   044/97 18:10:50:65    044/97 18:15:33:47
            3380-JK        00003000 42010E41 0001000E 0C8B6000 01000000 00234180
                            60.0-02        22-0    07-07C2   01
                            60.1-02        23-0    17-07C2   01

4320 *   GRAM9.X-17   0    2   DATAXFER   048/97 13:56:55:11    058/97 13:56:55:11
            3390-01        18000504 1726CE98 00001E00 08400004 2224CB83 11444320 00800E01 0000190E
                            GRAM9.0-17   1144-0    2A-0D17   0A


PROBABLE FAILING UNIT: NO DASDID CARD OR UNKNOWN-------------------------------------------------
SEQUENCE BY PCUA, SYMPTOM CODE -----------------------------------------------------------------

900F *      N/A       0    1   CTLR/DEV   044/97 15:16:49:03    044/97 15:16:49:03
            3350           10000000 00001412 090960B5 00000000 0E010F03 0000900F
                                0523              15-0523   03

9101 *      N/A       0    3   CTLR/DEV   041/97 08:57:00:37    044/97 17:16:58:53
            3330           10000000 388D4010 08000000 00017D85 00008001 00009101
                                0428                 0E28   19
                                0428                 0E28   19+

***************************************************************************************************

NOTE: SYMPTOM CODES WITH AN ASTERISK ARE COUNTED AS ERRORS IN EXCEPTION REPORT
NOTE: PHYSICAL ID OF N/A MEANS THERE WERE NO DASDID CARDS
```

1 The overall sequence of this report is by probable failing unit.

2 A fault symptom code recorded for this PFU. All symptom codes except those for records collected in logging mode are followed by an asterisk (*). (Records collected in logging mode do not appear on the subsystem exception report.) The symptom code that appears for the format 5 (ECC correctable) OBR record is a dummy created by duplicating the contents of sense byte 7. (If sense byte 7=53, the symptom code is 5353.)

3 For DASD providing physical IDs or DASDID statements, this field contains some combination of SCUID-CTLID-DEVID, which is used to identify the probable failing unit related to a TOTAL line in the report, (See "Subsystem Exception Report" on page 313 for exceptions). See Table 13 on page 142 for the format of the physical ID. For other devices the field contains N/A.

4 The number of permanent and temporary errors encountered for this symptom code, this physical ID, and this failure affect.

5 This field defines the function or machine area affected by the failure. The possible failure affects are shown in Table 12 on page 141.

6 The date and time of the first and last occurrences of the sense records for this symptom code.

7 The first sense record received for this symptom code. There may be either 24 or 32 bytes of sense data.

8 Device type.

9 If the DASD device provides physical ID, this field is the same as the physical ID and is used to identify the device related to a SUBTOTAL line in the report. Otherwise, it is the PCUA or device number.

10 The address from which the record was received. In 370XA mode, the format is CHPID device number (01–0120).

11 The EREP assigned CPU identifier. If more than one CPU, one is shown and a plus sign is printed to show there is more than one.

DASD Storage Control Unit Summary

This report looks for balanced loads on the interfaces. It is designed for use by customers.

It defines the physical channel interface over which overruns occurred for the 3830, 3880, and 3990 storage control units (SCU).

A few overruns on most or all interfaces indicates that the DASD subsystems are balanced in terms of interface utilization. If overruns show on some interfaces, but not others, the load is unbalanced.

To correct an unbalanced situation, the customer can reconfigure the system to balance the load.

Figure 20 shows an example of the DASD storage control unit summary.

```
DASD STORAGE CONTROL UNIT SUMMARY                   REPORT DATE 065 97
                                                    PERIOD FROM 041 97
                                                           TO   059 97

******************************************************************************
PHYSICAL ID 101114.0  DEVTYPE 3990-02

CPU/CHANNEL                  04
  OVERRUNS  INTF-A  INTF-B  INTF-C  INTF-D  INTF-E  INTF-F  INTF-G  INTF-H  1
  CMND          0       2       0       0       0       0       0       0
  DATA          0       0       0       0       0       0       0       0


PHYSICAL ID N/A       DEVTYPE 3830    PHYSICAL ADDR 032X       CPU(S) 19 27

  OVERRUNS  INTF-A  INTF-B  INTF-C  INTF-D
  CMND          0       2       4       0
  DATA          0       0       0       0


PHYSICAL ID A0-XX-XX  DEVTYPE 3880

CPU/CHANNEL  03
  OVERRUNS  INTF-A  INTF-B  INTF-C  INTF-D  INTF-E  INTF-F  INTF-G  INTF-H
  CMND          4       0       0       0       0       0       0       0
  DATA          0       0       0       0       0       0       0       0

  DISKETTE READER    SEEK      DATA
  TEMPORARY CHECKS      0         0

******************************************************************************

CPU  MODEL   SERIAL
 00  9375    234567
 01  3090XA  170028
 02  3084XA  321128
 03  3084XA  121128
 04  3081XA  021170
 05  3084XA  221103
 06  3081XA  220447
 07  3081XA  020447
 08  3062    511352
 09  3083XA  221573
```

Figure 20. DASD Storage Control Unit Summary

1 The storage control unit channel interface.

Optical Subsystem Exception

This section covers the following reports:

REPORT
"3995 Optical Subsystem Exception Report Series"
"9246/9247 Optical Subsystem Exception Report Series" on page 164

3995 Optical Subsystem Exception Report Series

This optical subsystem exception report series shows permanent error data (OBRs) and cartridge statistical data (MDRs), which are used for analytical and predictive maintenance for 3995 optical library data servers serving in non-emulating roles.

It consists of the following summaries:

DEVICE	REPORT
3995	• Permanent error summary • Optical drives error summary • Volume statistics summary • DEVNO/CUA statistics summary

Figures containing examples of these reports are on the pages shown in the following table:

REPORT	REFER TO
3995 Permanent Error Summary	Figure 21 on page 159
3995 Optical Drives Error Summary	Figure 22 on page 160
3995 Volume Statistics Summary	Figure 23 on page 162
3995 DEVNO/CUA Statistics Summary	Figure 24 on page 163

3995 Permanent Error Summary

This permanent error summary presents all 3995 permanent errors sorted by CUA, date, and time.

Figure 21 on page 159 shows an example of the 3995 permanent error summary.

```
3995 PERMANENT ERROR SUMMARY                        1 REPORT DATE 167 97
                                                      PERIOD FROM 102 97
                                                             TO   118 97
**** SORTED BY CUA, DATE AND TIME ****
 2  3     4  5  6      7        8      9    10    11     12             13
          C            LIB/     VOLUME      TASK  FAULT  SCSI
CHP DEVNO P      TIME  DRIVE    SERIAL FAIL RQBLK SYMPTM SENSE          SENSE BYTES 4 THROUGH 31
ID  /CUA  U  DTE HHMMSS NAME    NUMBER CMD  RETCD CODE   KEY
--  ----- -- --- ------ -------- ------ ---- ----- ------ -------------- --------------------------------------------------------
00  0280  00 117 104727 LIB2     000677 02   00111 02FF   HARDWARE ERROR 0415010020910300803D000000000000000000000000000000000000
00  0282  01 117 104727 L2D1     000673 02   00166 02A0   HARDWARE ERROR 041501B890880100803B000000000000000000000000000000000000
00  0285  01 117 104727 L2D4     000671 02   00172 02A0   HARDWARE ERROR 041501BB90880400803A000000000000000000000000000000000000
00  0285  00 117 110545 L2D4     000578 0A   00171 02A0   HARDWARE ERROR 041501BB94900C008504000000000000000000000000000000000000
00  0285  01 117 111014 L2D4     000602 0A   00171 02A0   HARDWARE ERROR 041501BB949018008504000000000000000000000000000000000000
00  0285  01 117 111726 L2D4     000642 0A   00171 02A0   HARDWARE ERROR 041501BB94902C008504000000000000000000000000000000000000
 14
CPU   MODEL    SERIAL NUMBER
00    9021XA   110947
01    9021XA   210947
02    9021XA   010947
```

Figure 21. 3995 Permanent Error Summary

1 REPORT DATE is the Julian date the report ran.

PERIOD FROM is the Julian date of the earliest record.

PERIOD TO is the Julian date of the latest record.

2 CHPID is the channel path ID.

3 DEVNO/CUA is the device number consisting of channel address and unit address.

4 CPU is the CPU version/serial number.

5 DTE is the date of incident.

6 TIME HHMMSS is the time of incident.

7 LIB/DRIVE NAME is the library or drive name.

8 VOLUME SERIAL NUMBER is the volume ID used with the FAIL CMD.

9 FAIL CMD is the command to be processed for the addressed device.

10 TASK RQBLK RETCD is the task request block return code.

11 FAULT SYMPTM CODE is the device fault symptom code, FSC.

12 SCSI SENSE KEY is the textual description of the SCSI sense key.

13 SENSE BYTES 4 THROUGH 31 is the device sense data.

14 CPU, MODEL, SERIAL NUMBER further identifies the CPU listed in the report (370-XA mode if MODEL ends in X'XA').

3995 Optical Drives Error Summary

This optical drives error summary presents all 3995 cartridge statistical data, counted and sorted by CUA and CPU, followed by totals and averages.

Figure 22 on page 160 shows an example of the 3995 optical drives error summary.

```
3995 OPTICAL DRIVES ERROR SUMMARY                 1 REPORT DATE 167 97
                                                    PERIOD FROM 102 97
**** SORTED BY CUA AND CPU ****                     TO   118 97
```

2 DEVNO /CUA	3 CPU	4 DRIVE NAME	5 CARTRIDGE MOUNTS	6 MB/ERR PERM READ(CT)	7 WRITE(CT)	8 MB/ERR TEMP READ(CT)	9 WRITE(CT)	10 TOTAL MB READ	WRITE	11 SEEK ERRS PERM	TEMP	12 LOAD ERRS PERM	TEMP
0242	00	L0D1	19	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	0
0242	01	L0D1	33	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	0
0242	02	L0D1	19	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	0
0243	00	L0D2	14	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	0
0243	01	L0D2	26	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	0
0243	02	L0D2	32	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	0
0244	00	L0D3	23	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	0
0244	01	L0D3	30	-- (0)	-- (0)	619(111)	22(7)	68761	155	0	0	0	0
0244	02	L0D3	19	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	1
0245	00	L0D4	15	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	0
0245	01	L0D4	35	-- (0)	-- (0)	715(48)	67(1)	34360	67	0	0	0	0
0245	02	L0D4	22	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	0
0282	00	L2D1	8	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	0
0282	01	L2D1	18	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	1
0282	02	L2D1	15	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	0
0283	00	L2D2	9	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	1
0283	01	L2D2	17	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	0
0283	02	L2D2	14	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	1
0284	00	L2D3	10	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	0
0284	01	L2D3	16	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	0
0284	02	L2D3	14	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	0
0285	00	L2D4	1	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	0
0285	01	L2D4	1	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	0
0285	02	L2D4	2	-- (0)	-- (0)	-- (0)	-- (0)	0	0	0	0	0	0
TOTALS: 13			412	0	0	159	8	103121	222	0	0	0	4

```
14
AVERAGE MEGABYTES/TEMPORARY READ ERROR        =     648        (*) = THERE WERE NO ERRORS LOGGED FOR CALCULATION
AVERAGE MEGABYTES/TEMPORARY WRITE ERROR       =      27
AVERAGE MEGABYTES/TEMPERARY READ/WRITE ERROR  =     618
AVERAGE MEGABYTES/PERMANENT READ ERROR        =       *
AVERAGE MEGABYTES/PERMANENT WRITE ERROR       =       *
AVERAGE MEGABYTES/PERMANENT READ/WRITE ERROR  =       *
TOTAL MEGABYTES PROCESSED                     =  103343
```

15

CPU	MODEL	SERIAL NUMBER
00	9021XA	110947
01	9021XA	210947
02	9021XA	010947

Figure 22. 3995 Optical Drives Error Summary

1 REPORT DATE is the Julian date the report ran.

PERIOD FROM is the Julian date of the earliest record.

PERIOD TO is the Julian date of the latest record.

2 DEVNO/CUA is the device number.

3 CPU is the CPU serial number.

4 DRIVE NAME is the name of the drive.

5 CARTRIDGE MOUNTS is the count of cartridge mounts on a specific CUA/CPU.

6 Total number of megabytes read (READ) divided by the number of permanent read errors (CT) on a specific CUA/CPU.

7 Total number of megabytes written (WRITE) divided by the number of permanent write errors (CT) on a specific CUA/CPU.

8 Total number of megabytes read (READ) divided by the number of temporary read errors (CT) on a specific CUA/CPU.

9 Total number of megabytes written (WRITE) divided by the number of temporary write errors (CT) on a specific CUA/CPU.

10 Total number of megabytes read (READ) and total number of megabytes written (WRITE) on a specific CUA/CPU.

11 Total number of permanent (PERM) and temporary (TEMP) seek errors on a specific CUA/CPU.

12 Total number of permanent (PERM) and temporary (TEMP) load/unload errors on a specific CUA/CPU.

13 TOTALS by column of all the CUA/CPUs.

14 AVERAGE MEGABYTES/TEMPORARY READ ERROR is the total number of megabytes read divided by the total number of temporary read errors for all CUAs/CPUs. AVERAGE MEGABYTES/TEMPORARY WRITE ERROR is the total number of megabytes written divided by the total number of temporary write errors for all CUAs/CPUs. AVERAGE MEGABYTES/TEMPORARY READ/WRITE ERROR is the total number of megabytes processed (both read and write) divided by the total of temporary errors for all CUAs/CPUs. AVERAGE MEGABYTES/ PERMANENT READ ERROR is the total number of megabytes read divided by the total number of permanent read errors for all CUAs/CPUs. AVERAGE MEGABYTES/PERMANENT WRITE ERROR is the total number of megabytes written (on all CUAs/CPUs) divided by the total number of permanent write errors for all CUAs/CPUs. AVERAGE MEGABYTES/PERMANENT READ/WRITE ERROR is the total number of megabytes read/written divided by the total number of permanent errors for all CUAs/CPUs. . TOTAL MEGABYTES PROCESSED is the total number of megabytes read/written for all CUAs/CPUs.

15 CPU, MODEL, SERIAL NUMBER further identifies the CPU listed in the report (370-XA mode if MODEL ends in X'XA').

3995 Volume Statistics Summary

This volume statistics summary presents all 3995 cartridge statistical data and all 3995 permanent errors counted and sorted by volume, date, and time.

Figure 23 on page 162 shows an example of the 3995 volume statistics summary.

```
3995 VOLUME STATISTICS SUMMARY                     1 REPORT DATE 167 97
                                                     PERIOD FROM 102 97
**** SORTED BY VOLUME DATE AND TIME ****                    TO   118 97
 2     3         4   5      6    7  8   9   10  11     12         13          14          15          16            17
                                                PCT TOTAL
                                  C             SPR NO.
VOLUME USER INFO. DTE TIME        P  DRV MED. SEC SPARE   MB/ERR PERM----------- MB/ERR TEMP----------- SEEK ERRS---- LOAD ERRS----
ID     10 BYTES   DAY HHMMSS CUA  U  NO. TYPE USD SECTRS  READ(CT)   WRITE(CT)   READ(CT)   WRITE(CT)   PERM   TEMP   PERM   TEMP
------ ---------- --- ------ ---- -- --- ---- --- ------  ---------------------- ---------------------- ------------- -------------
000578            117 110545 0285 00   0 0000  0      0     --  (  0)  --  (  0)   --  (  0)  --  (  0)      0      0      0      0
000578 NAME OF CO 117 110653 0284 01   3 8000  0      0     --  (  0)  --  (  0)   --  (  0)  --  (  0)      0      0      0      0
000578 NAME OF CO 117 110702 0284 01   3 8000  0      0     --  (  0)  --  (  0)   --  (  0)  --  (  0)      0      0      0      0

000582            117 104727 0280 01   0 0000  0      0     --  (  0)  --  (  0)   --  (  0)  --  (  0)      0      0      0      0
000582 NAME OF CO 117 110629 0283 00   2 8000  0      0     --  (  0)  --  (  0)   --  (  0)  --  (  0)      0      0      0      0
000582 NAME OF CO 117 110638 0283 01   2 8000  0      0     --  (  0)  --  (  0)   --  (  0)  --  (  0)      0      0      0      0

000602            117 111014 0285 01   0 0000  0      0     --  (  0)  --  (  0)   --  (  0)  --  (  0)      0      0      0      0
000602 NAME OF CO 117 111119 0284 01   3 8000  0      0     --  (  0)  --  (  0)   --  (  0)  --  (  0)      0      0      0      0
000602 NAME OF CO 117 111129 0284 02   3 8000  0      0     --  (  0)  --  (  0)   --  (  0)  --  (  0)      0      0      0      0

000642            117 111726 0285 01   0 0000  0      0     --  (  0)  --  (  0)   --  (  0)  --  (  0)      0      0      0      0
000642 NAME OF CO 117 111833 0283 01   2 8000  0      0     --  (  0)  --  (  0)   --  (  0)  --  (  0)      0      0      0      0
000642 NAME OF CO 117 111844 0283 01   2 8000  0      0     --  (  0)  --  (  0)   --  (  0)  --  (  0)      0      0      0      0

000671            117 104727 0285 01   0 0000  0      0     --  (  0)  --  (  0)   --  (  0)  --  (  0)      0      0      0      0

000673            117 104727 0282 01   0 0000  0      0     --  (  0)  --  (  0)   --  (  0)  --  (  0)      0      0      0      0

000677            117 103340 0280 00   0 0000  0      0     --  (  0)  --  (  0)   --  (  0)  --  (  0)      0      0      0      0
000677            117 104727 0280 00   0 0000  0      0     --  (  0)  --  (  0)   --  (  0)  --  (  0)      0      0      0      0

 18
CPU   MODEL    SERIAL NUMBER
00    9021XA   110947
01    9021XA   210947
02    9021XA   010947
```

Figure 23. 3995 Volume Statistics Summary

1 REPORT DATE is the Julian date the report ran.

PERIOD FROM is the Julian date of the earliest record.

PERIOD TO is the Julian date of the latest record.

2 VOLUME ID is the volume ID used with the command to be processed for the addressed device.

3 USER INFO. 10 BYTES are the first 10 bytes of owner information.

4 DTE DAY is the date of incident.

5 TIME HHMMSS is the time of incident.

6 CUA is the device number consisting of channel address and unit address.

7 CPU is the CPU version/serial number.

8 DRV NO. is the drive number.

9 MED. TYPE is the media type.

10 PCT SPR SEC USD is the percent used of spare sectors.

11 TOTAL NO. SPARE SECTRS is the total number of spare sectors.

12 Total number of megabytes read (READ) divided by the number of permanent read errors (CT) on a specific CUA/CPU.

13 Total number of megabytes written (WRITE) divided by the number of permanent write errors (CT) on a specific CUA/CPU.

14 Total number of megabytes read (READ) divided by the number of temporary read errors (CT) on a specific CUA/CPU.

15 Total number of megabytes written (WRITE) divided by the number of temporary write errors (CT) on a specific CUA/CPU.

16 Total number of permanent (PERM) and temporary (TEMP) seek errors on a specific CUA/CPU.

17 Total number of permanent (PERM) and temporary (TEMP) load/unload errors on a specific CUA/CPU.

18 CPU, MODEL, SERIAL NUMBER further identifies the CPU listed in the report (370-XA mode if MODEL ends in X'XA').

3995 DEVNO/CUA Statistics Summary

This DEVNO/CUA statistics summary presents all 3995 cartridge statistical data and all 3995 permanent errors sorted by CPU, date, and time. A separate summary is generated for each device (CUA).

Figure 24 shows an example of the 3995 DEVNO/CUA statistics summary.

```
3995 DEVNO/CUA STATISTICS SUMMARY FOR-0285       1 REPORT DATE 167 97
                                        2          PERIOD FROM 102 97
**** SORTED BY DATE AND TIME ****                          TO   118 97
 3 4       5       6   7   8          9           10         11             12             13            14
DTE TIME    VOLUME      MED.  MB/ERR PERM----------- MB/ERR TEMP-----------  TOTAL MB------  SEEK ERRS---- LOAD ERRS----
DAY HHMMSS  ID     CPU TYPE  READ(CT)   WRITE(CT)   READ(CT)   WRITE(CT)     READ   WRITE   PERM   TEMP   PERM   TEMP
--- ------  ------ --- ----  ----------------------  ----------------------  --------------  ------------- -------------
105 081325  000662 00  8000     -- (  0)   -- (  0)    -- (  0)   -- (  0)       0      0       0      0      0      0
117 110545  000578 00  0000     -- (  0)   -- (  0)    -- (  0)   -- (  0)       0      0       0      0      0      0
102 132005  000662 01  8000     -- (  0)   -- (  0)    -- (  0)   -- (  0)       0      0       0      0      0      0
117 104727  000671 01  0000     -- (  0)   -- (  0)    -- (  0)   -- (  0)       0      0       0      0      0      0
117 111014  000602 01  0000     -- (  0)   -- (  0)    -- (  0)   -- (  0)       0      0       0      0      0      0
117 111726  000642 01  0000     -- (  0)   -- (  0)    -- (  0)   -- (  0)       0      0       0      0      0      0
102 125718  000654 02  8000     -- (  0)   -- (  0)    -- (  0)   -- (  0)       0      0       0      0      0      0
105 083534  000670 02  8000     -- (  0)   -- (  0)    -- (  0)   -- (  0)       0      0       0      0      0      0
 15
CPU   MODEL    SERIAL NUMBER
00    9021XA   110947
01    9021XA   210947
02    9021XA   010947
```

Figure 24. 3995 DEVNO/CUA Statistics Summary

1 REPORT DATE is the Julian date the report ran.

PERIOD FROM is the Julian date of the earliest record.

PERIOD TO is the Julian date of the latest record.

2 FOR- is the device number consisting of channel address and unit address.

3 DTE DAY is the date of incident.

4 TIME HHMMSS is the time of incident.

5 VOLUME ID is the volume ID used with the command to be processed for the addressed device.

6 CPU is the CPU version/serial number.

7 MED. TYPE is the media type.

8 Total number of megabytes read (READ) divided by the number of permanent read errors (CT) on a specific CUA/CPU.

9 Total number of megabytes written (WRITE) divided by the number of permanent write errors (CT) on a specific CUA/CPU.

10 Total number of megabytes read (READ) divided by the number of temporary read errors (CT) on a specific CUA/CPU.

11 Total number of megabytes written (WRITE) divided by the number of temporary write errors (CT) on a specific CUA/CPU.

12 Total number of megabytes read (READ) and total number of megabytes written (WRITE) on a specific CUA/CPU.

13 Total number of permanent (PERM) and temporary (TEMP) seek errors on a specific CUA/CPU.

14 Total number of permanent (PERM) and temporary (TEMP) load/unload errors on a specific CUA/CPU.

15 CPU, MODEL, SERIAL NUMBER further identifies the CPU listed in the report (370-XA mode if MODEL ends in X'XA').

9246/9247 Optical Subsystem Exception Report Series

This optical subsystem exception report series shows permanent error data (OBRs) that is used for analytical and predictive maintenance for 9246 optical libraries and 9247 optical disk drives.

It consists of the following summaries:

DEVICE	REPORT
9246	• Permanent/temporary error summary • Permanent/temporary error summary by CUA
9247	• Permanent/temporary error summary • Error code summary • Volume error summary

Figures containing examples of these reports are on the pages shown in the following table:

REPORT	REFER TO
9246 Optical Library Permanent/Temporary Error Summary	Figure 25 on page 165
9246 Optical Library Permanent/Temporary Error Summary by CUA	Figure 26 on page 166
9247 Optical Disk Drive Permanent/Temporary Error Summary	Figure 27 on page 167
9247 Optical Disk Drive Error Code Summary	Figure 28 on page 168
9247 Optical Disk Drive Volume Error Summary	Figure 29 on page 169

9246 Permanent/Temporary Error Summary

This permanent/temporary error summary presents 9246 permanent and temporary errors sorted by overall library status, CUA, date, and time.

Figure 25 on page 165 shows an example of the 9246 permanent/temporary error summary.

```
9246 PERMANENT/TEMPORARY ERROR SUMMARY            1 REPORT DATE 064 97
                                                    PERIOD FROM 052 97
                                                           TO   054 97
****SORTED BY:OVERALL LIBRARY STATUS, CUA, DATE AND TIME****
 2   3     4   5   6      7        8       9       10      11     12        13      14     15      16
                                   LIBRARY LIBRARY                ADAPTER   OVERALL        BACKUP
 CHP DEVNO          TIME  LIBRARY  SERIAL  FAILING NO. OF  PROTO  RETURN    LIBRARY FAULT  MODE
 -ID /CUA  CPU DTE HHMMSS NAME     NUMBER  COMMAND RETRIES STATUS CODE      STATUS  CODE   CODE   PERM/TEMP


  00  0AC0  00 052 143355 LIB1     0000001   FL001          1111   1005                          TEMPORARY
  00  0AC0  00 054 143355 LIB1     0000001   FL002          2222   2005                          TEMPORARY
 17
CPU    MODEL    SERIAL NUMBER
 00    3090XA       073676
```

Figure 25. 9246 Optical Library Permanent/Temporary Error Summary

1 REPORT DATE is the Julian date the report ran.

PERIOD FROM is the Julian date of the earliest record.

PERIOD TO is the Julian date of the latest record.

2 CHP-ID is the channel path ID.

3 DEVNO/CUA is the device number consisting of channel address and unit address.

4 CPU is the CPU version/serial number.

5 DTE is the date of incident.

6 TIME HHMMSS is the time of incident.

7 LIBRARY NAME is the name of the library.

8 LIBRARY SERIAL NUMBER is the library serial number.

9 LIBRARY FAILING COMMAND is the failing command issued to library.

10 NO. OF RETRIES is the number of I/O retries.

11 PROTO STATUS is the protocol status.

12 ADAPTER RETURN CODE is the library adapter return code.

13 OVERALL LIBRARY STATUS is the library status characters.

14 FAULT CODE is the library fault code.

15 BACKUP MODE CODE is the code for the backup mode.

16 PERM/TEMP is the identifier of permanent versus temporary errors.

17 CPU, MODEL, SERIAL NUMBER provides further information on the CPU listed **4** in the lines of the report (370-XA mode if MODEL ends in X'XA').

9246 Permanent/Temporary Error Summary by CUA

This permanent/temporary error summary by CUA presents a frequency table of library failing commands versus overall library statuses.

Figure 26 on page 166 shows an example of the 9246 permanent/temporary error summary by CUA.

```
9246 PERMANENT/TEMPORARY ERROR SUMMARY BY CUA     1 REPORT DATE 064 97
                                                   PERIOD FROM 052 97
                                                          TO   054 97
 2          3
CUA:0AC0    LIBRARY NAME:LIB1
 4                                 5
LIBRARY FAILING COMMAND            FREQUENCY

  FL001                                  1
  FL002                                  1
 6                                 7
OVERALL LIBRARY STATUS             FREQUENCY

  0*** UNDETERMINED                      2
   8
  TOTAL                                  2
```

Figure 26. 9246 Optical Library Permanent/Temporary Error Summary by CUA

1 REPORT DATE is the Julian date the report ran.

PERIOD FROM is the Julian date of the earliest record.

PERIOD TO is the Julian date of the latest record.

2 CUA: is the device number consisting of channel address and unit address.

3 LIBRARY NAME is the name of the library.

4 LIBRARY FAILING COMMAND is the failing command issued to library.

5 FREQUENCY is the accumulated number of each LIBRARY FAILING COMMAND **4**.

6 OVERALL LIBRARY STATUS is the library status characters.

7 FREQUENCY is the accumulated number of each OVERALL LIBRARY STATUS **6**.

8 TOTAL is the accumulated number of FREQUENCYs **7**.

9247 Permanent/Temporary Error Summary

This permanent/temporary error summary presents:

- 9247 permanent and temporary errors sorted by CUA, date, and time
- A frequency table of failing SCSI commands versus optical device sense keys.

Figure 27 on page 167 shows an example of the 9247 permanent/temporary error summary.

```
9247 PERMANENT/TEMPORARY ERROR SUMMARY          1 REPORT DATE 064 97
                                                  PERIOD FROM 054 97
                                                         TO   056 97

****SORTED BY:CUA, DATE AND TIME****
 2   3     4  5   6      7        8      9               10      11   12   13   14             15   16
                                                                 SCSI SCSI
           C                          VOLUME FAILING         NUMBER  ADPT ADPT SCSI                 PERM SENSE
 CHP DEVNO P       TIME  DRIVE        SERIAL SCSI            OF      RTRN CMPL CMPL SENSE            OR  BYTE
 -ID /CUA  U  DTE HHMMSS NAME         NUMBER COMMAND         RETRIES CODE CODE STAT KEY             TEMP DATA


  00  0AC0 00 054 142833 L1D2                INQUIRY               1   00   21   06 NO SENSE        PERM 00000000000000000000000000000000
  00  0AC0 00 056 142833 L1D2                INQUIRY               1   00   21   06 NO SENSE        PERM 00000000000000000000000000000000
 17
CPU    MODEL    SERIAL NUMBER
 00    3090XA       073676
 18                               19
FAILING SCSI COMMAND:             FREQUENCY:  .

  INQUIRY            .                  2
 20                               21
SENSE KEY                         FREQUENCY

  NO SENSE                              2
  22
  TOTAL                                 2
```

Figure 27. 9247 Optical Disk Drive Permanent/Temporary Error Summary

1 REPORT DATE is the Julian date the report ran.

PERIOD FROM is the Julian date of the earliest record.

PERIOD TO is the Julian date of the latest record.

2 CHP-ID is the channel path ID.

3 DEVNO/CUA is the device number consisting of channel address and unit address.

4 CPU is the CPU version/serial number.

5 DTE is the date of incident.

6 TIME HHMMSS is the time of incident.

7 DRIVE NAME is the name of the drive.

8 VOLUME SERIAL NUMBER is the volume serial number of the mounted volume.

9 FAILING SCSI COMMAND is the SCSI command attempted when the failure occurred.

10 NUMBER OF RETRIES is the number of I/O retries.

11 SCSI ADPT RTRN CODE is the SCSI adapter return code.

12 SCSI ADPT CMPL CODE is the SCSI adapter completion code.

13 SCSI CMPL STAT is the SCSI completion status byte.

14 SENSE KEY is the sense key at the time of the failure.

15 PERM OR TEMP is the identifier of permanent versus temporary errors.

16 SENSE BYTE DATA is the 9247 device dependent sense data.

17 CPU, MODEL, SERIAL NUMBER provides further information on the CPU listed **4** in the lines of the report (370-XA mode if MODEL ends in X'XA').

18 FAILING SCSI COMMAND is the heading for the failing SCSI command summary.

19 FREQUENCY is the accumulated number of each FAILING SCSI COMMAND **18**.

20 SENSE KEY is the heading for the sense key summary.

21 FREQUENCY is the accumulated number of each SENSE KEY **20**.

22 TOTAL is the accumulated total of column **21**.

9247 Error Code Summary

This error code summary presents 9247 permanent and temporary errors sorted by sense key (PFU), CUA, date, and time.

Figure 28 shows an example of the 9247 error code summary.

```
9247 ERROR CODE SUMMARY                             1 REPORT DATE 065 97
                                                      PERIOD FROM 054 97
                                                             TO   056 97
****SORTED BY SENSE KEY(PFU), CUA, DATE AND TIME****
 2              3   4     5  6   7      8        9      10           11      12   13   14   15   16
                                                                             SCSI SCSI
                          C                      VOLUME FAILING      NUMBER  ADPT ADPT SCSI PERM SENSE
 SENSE          CHP DEVNO P       TIME  DRIVE    SERIAL SCSI         OF      RTRN CMPL CMPL  OR  BYTE
 KEY            -ID /CUA  U  DTE HHMMSS NAME     NUMBER COMMAND      RETRIES CODE CODE STAT TEMP DATA


 NO SENSE        00  0AC0 00 054 142833 L1D2            INQUIRY            1   00   21   06 PERM 00000000000000000000000000000000
 NO SENSE        00  0AC0 00 056 142833 L1D2            INQUIRY            1   00   21   06 PERM 00000000000000000000000000000000
 17
CPU    MODEL    SERIAL NUMBER
 00    3090XA       073676
```

Figure 28. 9247 Optical Disk Drive Error Code Summary

1 REPORT DATE is the Julian date the report ran.

PERIOD FROM is the Julian date of the earliest record.

PERIOD TO is the Julian date of the latest record.

2 SENSE KEY is the sense key at the time of the failure.

3 CHP-ID is the channel path ID.

4 DEVNO/CUA is the device number consisting of channel address and unit address.

5 CPU is the CPU version/serial number.

6 DTE is the date of incident.

7 TIME HHMMSS is the time of incident.

8 DRIVE NAME is the name of the drive.

9 VOLUME SERIAL NUMBER is the volume serial number of the mounted volume.

10 FAILING SCSI COMMAND is the SCSI command attempted when the failure occurred.

11 NUMBER OF RETRIES is the number of I/O retries.

12 SCSI ADPT RTRN CODE is the SCSI adapter return code.

13 SCSI ADPT CMPL CODE is the SCSI adapter completion code.

14 SCSI CMPL STAT is the SCSI completion status byte.

15 PERM OR TEMP is the identifier of permanent vs. temporary errors.

16 SENSE BYTE DATA is the 9247 device dependent sense data.

17 CPU, MODEL, SERIAL NUMBER provides further information on the CPU listed **5** in the lines of the report (370-XA mode if MODEL ends in X'XA').

9247 Volume Error Summary

This volume error summary presents:

- 9247 permanent and temporary errors sorted by volume, CUA, date, and time
- A frequency table of failing SCSI commands versus optical device sense keys
- A frequency table of volume serial number versus drive

Figure 29 shows an example of the 9247 volume error summary.

```
9247 VOLUME ERROR SUMMARY                          1 REPORT DATE 065 97
                                                     PERIOD FROM 054 97
                                                            TO   056 97
****SORTED BY:VOLUME, CUA, DATE AND TIME****
 2      3   4     5  6   7      8        9              10      11   12   13   14              15   16
                                                                SCSI SCSI
 VOLUME          C                       FAILING        NUMBER  ADPT ADPT SCSI                PERM SENSE
 SERIAL CHP DEVNO P       TIME  DRIVE    SCSI           OF      RTRN CMPL CMPL SENSE           OR  BYTE
 NUMBER -ID /CUA  U  DTE HHMMSS NAME     COMMAND        RETRIES CODE CODE STAT KEY            TEMP DATA


        00  0AC0 00 054 142833 L1D2     INQUIRY              1   00   21   06 NO SENSE      PERM 00000000000000000000000000000000
        00  0AC0 00 056 142833 L1D2     INQUIRY              1   00   21   06 NO SENSE      PERM 00000000000000000000000000000000
 17
CPU    MODEL    SERIAL NUMBER
 00    3090XA       073676
 18                                19
FAILING SCSI COMMAND               FREQUENCY

  INQUIRY                                 2
 20                                21
SENSE KEY                          FREQUENCY

  NO SENSE                                2
  22
  TOTAL                                   2
```

Figure 29. 9247 Optical Disk Drive Volume Error Summary

1 REPORT DATE is the Julian date the report ran.

PERIOD FROM is the Julian date of the earliest record.

PERIOD TO is the Julian date of the latest record.

2 VOLUME SERIAL NUMBER is the volume serial number of the mounted volume.

3 CHP-ID is the channel path ID.

4 DEVNO/CUA is the device number consisting of channel address and unit address.

5 CPU is the CPU version/serial number.

6 DTE is the is the date of incident.

7 TIME HHMMSS is the time of incident.

8 DRIVE NAME is the name of the drive.

9 FAILING SCSI COMMAND is the SCSI command attempted when the failure occurred.

10 NUMBER OF RETRIES is the number of I/O retries.

11 SCSI ADPT RTRN CODE is the SCSI adapter return code.

12 SCSI ADPT CMPL CODE is the SCSI adapter completion code.

13 SCSI CMPL STAT is the SCSI completion status byte.

14 SENSE KEY is the sense key at the time of the failure.

15 PERM OR TEMP is the identifier of permanent versus temporary errors.

16 SENSE BYTE DATA is the 9247 device dependent sense data.

17 CPU, MODEL, SERIAL NUMBER provides further information on the CPU listed **5** in the lines of the report (370-XA mode if MODEL ends in X'XA').

18 FAILING SCSI COMMAND is the heading for the failing SCSI command summary.

19 FREQUENCY is the accumulated number of each FAILING SCSI COMMAND **18**.

20 SENSE KEY is the heading for the sense key summary.

21 FREQUENCY is the accumulated number of each SENSE KEY **20**.

22 TOTAL is the accumulated total of column **21**.

Tape Subsystem Exception

The tape subsystem exception report series shows error data and usage statistics for tape subsystems. Data is summarized by component.

The series comprises any combination of the following tape reports:

Subsystem exception	Permanent/recovered error summary
Permanent error summary	Error code summary report
Temporary error summary	Temporary error summary device
Forced error log	Temporary error summary channel
DEVNO/CUA statistics summary	Library permanent/recover report
Volume statistics summary	Library error code summary report
FRU summary	CUA statistics summary

Refer to your device maintenance information (MI) manual for the list of EREP reports that appear under the subsystem exception report for your specific device.

The reports are organized as shown in the following table:

ORGANIZED BY	DESCRIPTION
Exception type	Permanent errors and temporary errors that exceed the values in the LIMIT control statement
Suspected source of the error	Either hardware or the volume and the drive it has been created on.

The following table shows the type of error records and their source in the tape subsystem exception reports.

TYPE	SOURCE
A3	Tape devices (not 3590s) ; including controllers
MDR	Tape devices (not 3590s) ; including controllers
OBR	Tape devices (not 3590s) ; including controllers

If the tape subsystem exception report indicates that corrective action is necessary, the summary reports provide the details required for correction.

The errors may relate to the megabytes processed and depend on product type and usage.

Set the values for temporary errors in the LIMIT control statement so the reports can be used as a maintenance tool. Refer to your MI manual for additional information.

Look for temporary errors that cause system degradation.

Figures containing examples of these reports are on the pages shown in the following table:

REPORT	REFER TO
3490 Subsystem Exception Report Example	Figure 30 on page 172
3490 Forced Log Report Example	Figure 31 on page 175
3490 Temporary Error Summary Channel Example	Figure 32 on page 178
3490 Temporary Error Summary Device Example	Figure 33 on page 180
3420/3410 Temporary Error Summary	Figure 34 on page 182
9347 Temporary Error Summary	Figure 35 on page 183
3490 Volume Statistics Summary	Figure 36 on page 184
3490 Permanent/Recovered Error Summary Example	Figure 37 on page 187
3420/3410 Permanent Error Summary	Figure 38 on page 189
3424 Permanent / Recovered Error Summary	Figure 39 on page 189
3490 FRU Summary Report Example	Figure 40 on page 190
3490 Error Code Summary Example	Figure 41 on page 192
3490 DEVNO/CUA Statistics Summary Report Example	Figure 42 on page 194
3422 DEVNO/CUA Statistics Summary	Figure 43 on page 196
9347 DEVNO/CUA Statistics Summary	Figure 44 on page 197
Tape Library Permanent Error Summary Example	Figure 45 on page 198
Tape Library Service Alert Summary Example	Figure 46 on page 200
Tape Library Error Code Summary Example	Figure 47 on page 202

Important: Because the reports are hardware-specific, sample output may not match what you see when you request the system exception series for yourself.

Tape Subsystem Exception Report

This report indicates if the tape subsystem has permanent errors or is operating within acceptable limits. It is a good tool to use for system maintenance.

The following are recommendations for using this report:

- Set LIMITS on temporary errors to prevent printing excessive errors. See "LIMIT Control Statement" on page 52 for LIMIT control statement details.
- Use temporary errors to track system degradation.

- The errors shown may relate to megabytes processed.
- The tape subsystem exception report format and content vary somewhat according to the device type involved. See for more information about specific products.

Figure 30 shows an example of the tape subsystem exception report.

Note: The following example is for a 3490E tape subsystem. Column headings may differ depending upon the specific device.

```
SUBSYSTEM EXCEPTION                               1    REPORT DATE  063 97
       3490                                            PERIOD FROM  049 97
                                                              TO    052 97

 2                                      TEMP WRT(CT)   TEMP RD(CT)
CURRENT LIMITS              HARDWARE        999  5        999  1
  MBYTES/ERR                VOLUME           40  3        200  1

                                                                                         12           13
   3         4         5   6   7        8                    9                 10  11
           VOLUME      DEVNO    EQU  ----MB/ERR PERM----  ----MB/ERR TEMP----     BUS OVR     TOTAL - MBYTES    HDR
EXCEPTION  SERIAL      /CUA CPU CHK  READ(CT)    WRITE(CT) WRITE(CT)   READ(CT)    OUT RUN      READ   WRITE     SER

HARDWARE
  PERMANENT ERROR
                        5A3   E   1    0   0      0   0  1339 1      0   0      0   0      3249      1339
                        5A7   E   0    0   0      0   0   0   0      0   0      0   0      3985      1160
HARDWARE
  FAILED TEMPORARY READ OR WRITE LIMITS
                        5BC   E   0    0   0      0   0   0   0    428   1      0   0       428         1

VOLUME OR CREATING DRIVE
  PERMANENT READ OR WRITE ERRORS ON MORE THAN ONE DRIVE
           L30570   1  5A5   F   1    0   0      3   1   0   0      0   0      0   0         0         3    00000
           L27530      5A2   E   0    0   0      5   1   0   0      0   0      0   0         0         5    00000

VOLUME OR CREATING DRIVE
  FAILED TEMPORARY READ OR WRITE LIMITS ON MORE THAN ONE DRIVE
           L70630      5A4   F   0    0   0      0   0   0   12     0   0      0   0         0         0    00000
           L72930      5B2   F   0    0   0      0   0   0   0     39   1      0   0        39         0    00000
VOLUME
  FAILED TEMPORARY READ OR WRITE LIMITS
           B42750      5BC   E   0    0   0      0   0   0   0      0   1      0   0         0         0
           B07146      5A2   E   0    0   0      0   0   0   0     73   1      0   0        73        73

 15                                                     16
TOTAL NUMBER OF DRIVES FAILING LIMITS   004 (20%)       TOTAL NUMBER OF  VOLUMES USED   = 823
                       PASSING LIMITS   016 (80%)        TOTAL NUMBER OF VOLUMES LISTED =   6

 14
CPU  MODEL SERIAL NUMBER
 E   3081      210819
 F   3081      010819
```

Figure 30. 3490 Subsystem Exception Report Example

1 REPORT DATE is the Julian date the report ran.

PERIOD FROM is the Julian date of the earliest record.

PERIOD TO is the Julian date of the latest record.

2 CURRENT LIMITS and megabytes/error for both the hardware and the volume are the limit values from the limit control statement. For details on using the LIMIT statement, see “LIMIT Control Statement” on page 52 and Chapter 19, “Magnetic Tape Devices,” on page 319.

3 There are five exception categories:

- **Hardware Permanent Error**

  All CUAs with a tape permanent error are listed, or there are read/write errors on more than one drive not identified by a common volume identifier. Details of the permanent errors are found on the Tape

Permanent Error Summary report. When the CUA has an X as the last digit, sense bytes 16-17 have indicated a control unit failure.

- **Hardware Failed Temporary Read or Write Limits**

  All CUAs that have an error rate equal to or exceeding the specified limits are shown (but are not identified by a common volume identifier). Use the Temporary Error Summary report and the Volume Statistics Summary report for more details.
- **Volume or Creating Drive Permanent Read or Write Errors on More Than One Drive**

  The indicated volume has permanent errors on more than one drive. The volume may have been written (created) on one drive but has read errors detected on another drive. Use the Permanent Error Summary report and the Volume Statistics Summary report for more details.
- **Volume or Creating Drive Failed Temporary Read or Write Limits on More Than One Drive**

  The indicated volume has an error rate equal to or exceeding the specified limit on more than one drive. The volume may have been written (created) on one drive but has read errors detected on another drive. Use the Temporary Error Summary report and the Volume Statistics Summary report for more details.
- **Volume Failed Temporary Read or Write Limits**

  The indicated volumes has an error rate equal to or exceeding the specified volume limits as shown. Use the Temporary Error Summary report and the Volume Statistics report for more details.

4 The volume serial number.

5 The device number in XA mode or the primary control unit address (PCUA).

6 Identifies the host processor reporting the exception, and is shown as a value of A through H. The actual CPU model and serial number are shown at the bottom of the report **14**.

7 The number of equipment checks that have occurred.

8 **MB/ERR PERM** is the reliability and error counts for permanent errors as shown in the following table:

TYPE	DESCRIPTION
READ	Is the average number of megabytes read per permanent read error.
CT	Is the number of permanent read errors that have occurred.
WRITE	Is the average number of megabytes written per permanent write error.
CT	Is the number of permanent write errors that have occurred.

9 **MB/ERR TEMP** is the reliability and error counts for temporary errors as shown in the following table:

TYPE	DESCRIPTION
WRITE	Is the average number of megabytes written per temporary write error.
CT	Is the number of temporary write errors that have occurred.
READ	Is the average number megabytes read per temporary read error.
CT	Is the number of temporary read errors that have occurred.

10 The number of bus out checks that have occurred.

11 The number of overruns that have occurred.

12 **Total-MBYTES**

READ is the total number of megabytes read.

WRITE is the total number of megabytes written.

13 The header serial number on the tape volume. The header number is derived from the last 4 digits of the control unit serial number that wrote the volume, with the drive address added to the last position.

For example:

Header serial is 3892F.

The last 4 digits of the control unit serial number are 3892.

Drive address is F.

14 Identifies the CPU **6** listed in the error summary lines of the report.

15 Lists the total number of drives:

FAILING LIMITS	The number and the percentage of drives that exceeded the limit controls for temporary errors and lists all drives that had permanent errors. These drives are included in this report.
PASSING LIMITS	The number and the percentage of drives that were within the limit controls for temporary errors and had no permanent errors. These drives are not included in this report.

16 Lists the total number of volumes:

USED	Is the number of volumes used during the report period that did not exceed the limit controls for temporary errors and had no permanent errors.
LISTED	Is the number of volumes used during the report period that exceeded the limit control values for temporary errors and all volumes that had permanent errors.

Tape Forced Error Log/Permanent Error Summary Reports

The tape forced log report and the permanent error summary report summarize the temporary error OBR records. Look for clusters of errors that occur within a string of drives or at specific times. This could indicate a control unit problem.

The Forced Error Log report is generated only when the forced error logging bit has been set.

Both types of reports have the same format. The only difference is the heading, one titled Permanent Error Summary and the other Forced Error Log. Sense byte 7 will be 19 to indicate format 19 sense (temporary errors) on the Forced Error Log report or 20 to indicate format 20 sense (permanent errors) on the Permanent Error Summary report.

Only the 3422, 3430, 3480, and 3490 devices produce this report.

The errors are listed by channel unit address (CUA) for hardware errors and by volume identifier (VOLID) for suspected volume errors. The errors are listed by the CUA unless they occur on the same VOLID on at least two different drive addresses, then they are listed by VOLID.

Figure 31 shows an example of the tape forced error log/permanent error summary reports.

```
3490 FORCED LOG REPORT                   1  REPORT DATE 063 97
                                            PERIOD FROM 049 97
                                                   TO   052 97
                                                                          11       13          15
**** HARDWARE ****            8          18      10                            12       14
        16
2       4       6            17                                          1    1    1    1    1    2
2    2    2    2    3
    3   C   5           7    R  9 SENSE BYTES--> 0    2    4    6    8    0    2    4    6    8    0
2    4    6    8    0
CHP DEVNO P     TIME         W     CCW SCSW64-95                         -------CU---------     ---DR----          CU
-ID /CUA  U DTE HHMMSS  VOLID E CMD FLG /CSW32-63                        ERR1 ERR2 ERRL  HW      ERR1 ERR2          SER#

 22  5A3  E 051 192213 B35790 E  01  64 060079E0  1044 394A 0000 2C20 0000 7151 7607 CCBB D708 0002 0000 0000 F680 0CE1 0813 3319
 06  5A4  F 051 214532        O  00  00 26000000  4048 3934 0000 0020 730C 8E06 0000 0000 0000 0002 192C 0000 F680 0CE1 0813 4419
 22  5A7  E 051 221637 TAPENO O  02  44 06000050  0049 402E 0000 0020 0000 7161 7161 7161 0000 0002 0000 0000 F680 0CE1 0813 7700


**** VOLUME OR CREATING DRIVE ****

     5A5  F 051 190322 L30570 W  01  64 0E007FF8  0A44 7025 0007 3F20 0000 7404 7401 7407 D007 0002 0000 0000 F680 0CE1 0819 5519
     5A2  E 051 203122 L27530 W  01  64 06002090  0A44 3025 000C C620 0000 7401 7407 7401 D002 0002 0000 0000 F680 09E1 0813 2219
     5B2  F 051 183221 L30570 W  01  64 0E007FF8  0A44 7025 0007 3F20 0000 7405 7405 7407 D012 0002 0000 0000 F680 0CE1 0819 2219


**** OPERATOR OR OPERATIONAL ****

 06  5A3  E 051 205124 M11047 O  01  64 0E002B63  4244 783B 0001 BF20 0000 8202 0000 0000 0000 0002 0000 0000 F680 0CE1 0819 3319



CPU  MODEL  SERIAL NUMBER
 E    3081     210819
 F    3081     010819




3490E FORCED LOG REPORT

                                                                          1    1    1    1    1    2    2    2    2    2    3
          C                  R   SENSE BYTES---> 0    2    4    6    8    0    2    4    6    8    0    2    4    6    8    0
CHP DEVNO P                  W      CCW SCSW64-95                         --------CU---------     ---DR----          CU
-ID /CUA  U DTE  TIME  VOLID  E CMD  FLG /CSW32-63                        FC-1 FC-2 FC-L HWFC     FC-1 FC-2          SER#

 06  05B3 F 051 192536 B04012 O  01  64  00000000  0244 6048 000F 5619 0000 7401 7401 0000 D002 0002 0000 0000 F680 0CE1 1249 330E

 06  05BB F 051 155433 TAPENO O  03  20  00000000  4240 6048 0000 0019 6C00 8E06 0000 0000 0000 0302 0075 0075 F680 0CE1 1249 BB00


 19
CPU  MODEL  SERIAL NUMBER
 E    3081     210819
 F    3081     010819
```

Figure 31. 3490 Forced Log Report Example

1 REPORT DATE is the Julian date the report ran.

PERIOD FROM is the Julian date of the earliest record.

PERIOD TO is the Julian date of the latest record.

2 **CHPID** is the channel path ID (used in XA mode).

3 **DEVNO/CUA** is the device number in XA mode or the primary control unit address (PCUA).

4 **CPU** identifies the host processor reporting the exception and is shown as a value of A through H. The actual CPU model and serial number are shown at the bottom of the report.

5 **DTE** is the Julian date from the OBR record.

6 **TIME** is the time from the OBR record.

7 **VOLID** is the volume serial number.

8 **R/W/E/O** defines the type of check as Read, Write, Equipment or Other check.

9 **CMD** is the command code from the channel command word (CCW) in the OBR record.

10 **SENSE BYTES** is the sense data from the OBR record.

11 **CU-ERR1** is the microcode-detected error code for the first error (control unit or drive), from the OBR record (sense bytes 10 and 11). This error code should not be used as an entry to the maintenance package unless efforts using CU-HW **14** or DR-ERR1 **15** or both have not corrected the subsystem problem.

12 **CU-ERR2** is the microcode-detected error code for the second error (control unit or drive), from the OBR record (sense bytes 12 and 13). This error code can be a result of the first error indicated in CU-HW **14**, DR-ERR1 **15**, or CU-ERR1 **11**.

13 **CU-ERRL** is the microcode-detected error code for the last error (control unit or drive), from the OBR record (sense bytes 14 and 15). This error code can be a result of the first error indicated in CU-HW **14**, DR-ERR1 **15**, CU-ERR1 **11**, DR-ERR2 **16**, or CU-ERR2 **12**.

14 **CU-HW** is the control unit hardware-detected error code from the OBR record (sense bytes 16 and 17). This error code defines a control unit failure and should be used to enter the maintenance package if you have multiple drive failures.

15 **DR-ERR1** is the drive hardware-detected error code, from the OBR record (sense bytes 20 and 21). This error code defines the first failure for any drive and should be used to enter the maintenance package if you have single drive failures.

16 **DR-ERR2** is the drive hardware-detected error code, from the OBR record (sense bytes 22 and 23). This error code defines the second or last failure for any drive and should not be used to enter the maintenance package if you have single drive failures. This error information provides supplemental information and may be a result of the first failure (DR-ERR1) in the drive.

17 **CCW FLG** is CCW bits 32 to 39 from the OBR.

18 **SCSW/CSW** is:

SCSW64—95 (in XA Mode)

CSW32—63

These are the SCSW or CSW bits from the OBR record.

19 **CPU, MODEL, SERIAL NUMBER** provides further information on the CPU listed **4** in the error summary lines of the report.

Tape Temporary Error Summary

This report presents *all* the temporary read/write errors recorded for tape hardware during the report period for all MDR records. Errors are listed by CUA or device number and density regardless of whether or not they exceeded the LIMIT values and appeared in the subsystem exception report.

The LIMIT control values specified when invoking EREP are ignored for this report.

The column headings may differ depending upon the specific device.

Only the 3480 and 3490 devices can produce a two-part temporary error summary report: one displaying device activity and the other displaying channel activity. The rest of the 34XX devices combine them in one report.

Figures containing examples of these reports are on the pages shown in the following table:

REPORT	REFER TO
3490 Temporary Error Summary Channel Example	Figure 32 on page 178
3490 Temporary Error Summary Device Example	Figure 33 on page 180
3420/3410 Temporary Error Summary	Figure 34 on page 182
9347 Temporary Error Summary	Figure 35 on page 183

Tape Subsystem Exception

```
3490 TEMPORARY ERROR SUMMARY  CHANNEL         1   REPORT DATE 067 97
                                                  PERIOD FROM 049 97
                                                         TO   052 97

  2    3     4     5      6            7               8          9
  10
                                                                TOTAL BLOCKS                 11
  DEVNO  DRIVE           --WRITE----- --READ------  TOTAL MBYTES -PROCESSED- --READ------ --WRITE----
  /CUA   ID    CPU MOUNTS MB/ERR ERRCT MB/ERR ERRCT  READ  WRITE  READ  WRITE MB/COR   ECC MB/COR  ECC

   5A0   08160  0F    101    --     0    --      0  2495   2328 530176 300288    68    71     62  100
   5A1   08151  0F     94    --     0    --      0  4070   1691 458240 237824    74   146     49  101
   5A2   08152  0F    118   866     1   7030     1  7030    866 653056  94720    35   391     33   56
   5A3   08153  0F    151  2108     1    --      0  5563   2108 793088 330752    34   318     20  207
   5A4   08154  0F     94   179    12    --      0  6114   2148 802408 243968    49   243     41  102
   5A5   08155  0F    109  1516     1    --      0  6492   1516 797440 200448    60   215     59   51
   5A6   08156  0F    106    --     0    --      0  1676   1590 190464 283392    45    79     20  166
   5A7   08157  0F    127    --     0    --      0  5697   1970 705792 227072    85   248     56  121
   5B0   12450  0F     23    --     0    --      0    42    142   5376  13568    27     1     10   13
   5B1   12451  0F     35    --     0    --      0  2584    195 173070  25600    27   182      4   42
   5B2   12452  F0     29    --     0    528     1   528     55  95744   4096   132    15     44    1
   5B3   12453  F0     25   383     1    --      0    22    383   4864  46848    --     0     82   22
   5B4   12454  F0     18    --     0    --      0   541    481  48384  26112    19    87     80   17
   5B5   12455  F0     17    --     0    --      0    19      8   2048   1024    14     3      8    1
   5B8   12458  F0     21    --     0    --      0     5    553   3840  18432    --     0     66   21
   5B9   12459  F0     25    --     0    --      0   856    185  77568   6144    35    53    185    1
   5BA   1245A  F0     19    --     0    --      0     6      4    768      0    --     0      0    0
   5BB   1245B  F0     15    --     0    --      0    12    256   1024  23040    --     0     42   15
   5BC   1245C  F0     12    --     0    609     1   609     13  53760   3328    64    26      3    4
   5BD   1245D  F0     16    --     0    --      0   728     83  65792   6912    52    43     41    4




TOTAL               1155          16           3 45076  17076 5534K  1899K        1843        950

 17
AVERAGE MEGABYTES/TEMPORARY READ ERROR      =   15025
AVERAGE MEGABYTES/TEMPORARY WRITE ERROR     =    1067
AVERAGE MEGABYTES/RECOVERED ERROR           =   15538
AVERAGE MEGABYTES/PERMANENT READ ERROR      =       *
AVERAGE MEGABYTES/PERMANENT WRITE ERROR     =    8538
AVERAGE MEGABYTES/PERMANENT ERROR     #     =   12430      (#) = THERE WERE NO ERRORS LOGGED FOR CALCULATION
AVERAGE MEGABYTES/PERMANENT HARDWARE ERROR  =   20717
AVERAGE MEGABYTES/PERMANENT VOLUME ERROR    =   31076
AVERAGE MEGABYTES/PERMANENT OTHER ERROR     =       *
TOTAL MEGABYTES PROCESSED                   =   62152

 18
CPU  MODEL  SERIAL NUMBER
 0E  3081      210819
 F0  3081      010819
```

Figure 32. 3490 Temporary Error Summary Channel Example

1 REPORT DATE is the Julian date the report ran.

PERIOD FROM is the Julian date of the earliest record.

PERIOD TO is the Julian date of the latest record.

2 **DEVNO/CUA** is the device number in XA mode or the primary control unit address (PCUA).

3 **DRIVE ID** is the last 4 digits of the control unit serial number that wrote the volume, with the drive address added as the last digit.

4 **CPU** identifies the host processor reporting the exception. The actual CPU model and serial number are shown at the bottom of the report.

5 **MOUNTS** is the total number of all mounts on this device.

6 **WRITE**

MB/ERR is the average number of megabytes written per temporary write error from the channel.

ERRCT is the total count of all temporary write errors from the channel.

7 **READ**

MB/ERR is the average number of megabytes read per temporary read error from the channel.

ERRCT is the total count of all temporary read errors from the channel.

8 **TOTAL MBYTES READ WRITE**

READ is the total number of megabytes read on the channel.

WRITE is the total number of megabytes written on the channel.

9 **TOTAL BLOCKS PROCESSED READ WRITE**

READ is the total number of blocks read from the channel.

WRITE is the total number of blocks written from the channel.

10 **READ MB/COR ECC**

MB/COR is the average number of megabytes read on the device, per read ECC error.

ECC is the number of read ECC corrected blocks read from the device.

11 **WRITE MB/COR ECC**

MB/COR is the average number of megabytes written on the device, per correctable error.

ECC is the number of blocks that have been written with read ECC correctable errors, as determined by read-back ECC checking.

17 **TOTAL and AVERAGE**

- AVERAGE is the total number of megabytes divided by the total number of errors of a particular type, for all 3490 drives used by the operating system.

  For example:

  Average Megabytes/Temporary Read Errors is the total number of the megabytes read divided by the total number of the temporary read errors.

  The PERMANENT ERROR values are meant to provide a source of performance information for all 3490 drives in the operating system. The TOTAL MEGABYTES read, written and processed are for all 3490 drives used by the operating system.

  An asterisk (*) in the calculation field (to the right of the equal sign) indicates that no errors were logged.

18 **CPU, MODEL, SERIAL NUMBER** further identifies the CPU listed in the error summary lines of the report.

```
3490 TEMPORARY ERROR SUMMARY  DEVICE          1    REPORT DATE 067 97
                                                   PERIOD FROM 049 97
                                                          TO   052 97
                                                                                                      13          15
                                                                                          11          12
   2      3    4    5         6           7              8            9
   10
                                                                 TOTAL BLOCKS                          READ  WRITE  DRV  CU   16 :
erk.
  DEVNO  DRIVE           --WRITE----- --READ------  TOTAL MBYTES -PROCESSED- --READ------ --WRITE----  RECVY ERASE  DET  EQC  TRA
  /CUA   ID     CPU MOUNTS MB/ERR ERRCT MB/ERR ERRCT  READ  WRITE  READ  WRITE MB/COR   ECC MB/COR  ECC  ACTS  GAPS  ERR  CHK  ERR

   5A0   08160  0F    101     --     0     --     0 2495   2328 530176 300288    68    71     62  100     0     0    0    0    0
   5A1   08151  0F     94     --     0     --     0 4070   1691 458240 237824    74   146     49  101     0     0    0    0    0
   5A2   08152  0F    118    866     1   7030     1 7030    866 653056  94720    35   391     33   56     3     0    0    0    0
   5A3   08153  0F    151   2108     1     --     0 5563   2108 793088 330752    34   318     20  207     0     0    0    0    0
   5A4   08154  0F     94    179    12     --     0 6114   2148 802408 243968    49   243     41  102     0     0    1    0    0
   5A5   08155  0F    109   1516     1     --     0 6492   1516 797440 200448    60   215     59   51     0     0    0    0    0
   5A6   08156  0F    106     --     0     --     0 1676   1590 190464 283392    45    79     20  166     0     0    0    0    0
   5A7   08157  0F    127     --     0     --     0 5697   1970 705792 227072    85   248     56  121     0     0    0    0    0
   5B0   12450  0F     23     --     0     --     0   42    142   5376  13568    27     1     10   13     0     0    0    0    0
   5B1   12451  0F     35     --     0     --     0 2584    195 173070  25600    27   182      4   42     0     0    0    0    0
   5B2   12452  F0     29     --     0    528     1  528     55  95744   4096   132    15     44    1     0     0    0    0    0
   5B3   12453  F0     25    383     1     --     0   22    383   4864  46848    --     0     82   22     0     1    0    0    0
   5B4   12454  F0     18     --     0     --     0  541    481  48384  26112    19    87     80   17     0     0    0    0    0
   5B5   12455  F0     17     --     0     --     0   19      8   2048   1024    14     3      8    1     0     0    0    0    0
   5B8   12458  F0     21     --     0     --     0    5    553   3840  18432    --     0     66   21     0     0    0    0    0
   5B9   12459  F0     25     --     0     --     0  856    185  77568   6144    35    53    185    1     0     0    0    0    0
   5BA   1245A  F0     19     --     0     --     0    6      4    768      0    --     0      0    0     0     0    0    0    0
   5BB   1245B  F0     15     --     0     --     0   12    256   1024  23040    --     0     42   15     0     0    0    0    0
   5BC   1245C  F0     12     --     0    609     1  609     13  53760   3328    64    26      3    4     0     0    0    0    0
   5BD   1245D  F0     16     --     0     --     0  728     83  65792   6912    52    43     41    4     0     0    0    0    0




TOTAL               1155          16           3 45076  17076 5534K  1899K        1843         950     3     1    1    0    0

 17
AVERAGE MEGABYTES/TEMPORARY READ ERROR      =   15025
AVERAGE MEGABYTES/TEMPORARY WRITE ERROR     =    1067
AVERAGE MEGABYTES/RECOVERED ERROR           =   15538
AVERAGE MEGABYTES/PERMANENT READ ERROR      =       *
AVERAGE MEGABYTES/PERMANENT WRITE ERROR     =    8538
AVERAGE MEGABYTES/PERMANENT ERROR     #     =   12430      (#) = THERE WERE NO ERRORS LOGGED FOR CALCULATION
AVERAGE MEGABYTES/PERMANENT HARDWARE ERROR  =   20717
AVERAGE MEGABYTES/PERMANENT VOLUME ERROR    =   31076
AVERAGE MEGABYTES/PERMANENT OTHER ERROR     =       *
TOTAL MEGABYTES PROCESSED                   =   62152

 18
CPU  MODEL  SERIAL NUMBER
 0E  3081      210819
 F0  3081      010819
```

Figure 33. 3490 Temporary Error Summary Device Example

1 REPORT DATE is the Julian date the report ran.

PERIOD FROM is the Julian date of the earliest record.

PERIOD TO is the Julian date of the latest record.

2 **DEVNO/CUA** is the device number in XA mode or the primary control unit address (PCUA).

3 **DRIVE ID** is the last 4 digits of the control unit serial number that wrote the volume, with the drive address added as the last digit.

4 **CPU** identifies the host processor reporting the exception. The actual CPU model and serial number are shown at the bottom of the report.

5 **MOUNTS** is the total number of all mounts on this device.

6 **WRITE**

MB/ERR is the average number of megabytes written per temporary write error on the device.

ERRCT is the total count of all temporary write errors on the device.

7 **READ**

MB/ERR is the average number of megabytes read per temporary read error on the device.

ERRCT is the total count of all temporary read errors on the device.

8 **TOTAL MBYTES READ WRITE**

READ is the total number of megabytes read from the device.

WRITE is the total number of megabytes written on the device.

9 **TOTAL BLOCKS PROCESSED READ WRITE**

READ is the total number of blocks read on the device.

WRITE is the total number of blocks written on the device.

10 **READ MB/COR ECC**

MB/COR is the average number of megabytes read on the device, per read ECC error.

ECC is the number of read ECC corrected blocks read from the device.

11 **WRITE MB/COR ECC**

MB/COR is the average number of megabytes written on the device, per correctable error.

ECC is the number of blocks that have been written with read ECC correctable errors, as determined by read-back ECC checking.

12 **READ RECVY ACTS** is the total number of correctable read errors detected during 3490 read error recovery.

13 **WRITE ERASE GAPS** is the total number of blocks rewritten during error recovery.

14 **DRV DET ERR** is the number of unit checks set by the drive.

15 **CU EQU CHK** is the number of errors found in the use of external regs in the CU for a given device.

16 **TRA ERR** Flag indicating that transient errors have been detected by hardware checkers.

17 **TOTAL and AVERAGE**

- AVERAGE is the total number of megabytes divided by the total number of errors of a particular type, for all 3490 drives that were used by the operating system.

  For example:

  Average Megabytes/Temporary Read Errors is the total number of the megabytes read divided by the total number of the temporary read errors.

  The PERMANENT ERROR values are meant to provide a source of performance information for all 3490 drives in the operating system.

  The TOTAL MEGABYTES read, written and processed are for all 3490 drives used by the operating system.

  An asterisk (*) in the calculation field (to the right of the equal sign) indicates that no errors were logged.

18 **CPU, MODEL, SERIAL NUMBER** further identifies the CPU listed in the error summary lines of the report.

```
3420/3410 TEMPORARY ERROR SUMMARY                  REPORT DATE 065 97
                                                   PERIOD FROM 041 97
                                                          TO   059 97

      TAPE  C                           WRITE              READ
DEVNO UNIT  P  DEN-  TOTAL    TOTAL      STATISTICS         STATISTICS     ENV  MTE  SRC  EDC  VEL SKEW R/W WTM PAR/ OVER IBG
/CUA  SER   U  SITY  I/O CNT  MOUNT   MB/ERR(CT) ERSGAP   MB/ERR(CT) CLNACT VRC  LRC  /PC  CRC  CHG  ERR VRC CHK TACH  RUN DET

 0180 59437 07 6250      10      0     -- (   0)      0    -- (   0)      0   0    0    0    0    0    0   0   0    0    0   0
 0180 59437 07 1600    7526      1      0 (   4)      4    -- (   0)      0   2    0    0    0    2    0   0   0    0    0   0

 0181 N/A   07 6250       6      0     -- (   0)      0    -- (   0)      0   0    0    0    0    0    0   0   0    0    0   0

 0570 N/A   03 6250    3961      2     -- (   0)      0    -- (   0)      0   0    0    0    0    0    0   0   0    0    0   0

 0570 N/A   08 OTHR       7      1     -- (   0)      0    -- (   0)      0   0    0    0    0    0    0   0   0    0    0   0

 0572 N/A   09 6250     539      1     -- (   0)      0    -- (   0)      0   0    0    0    0    0    0   0   0    0    0   0

 0573 N/A   03 6250    2314      1     -- (   0)      0    -- (   0)      0   0    0    0    0    0    0   0   0    0    0   0

 0573 N/A   06 1600    1073      1     -- (   0)      0    -- (   0)      0   0    0    0    0    0    0   0   0    0    0   0

 0575 N/A   03 1600       3      1     -- (   0)      0    -- (   0)      0   0    0    0    0    0    0   0   0    0    0   0


 6250BPI TOTALS:       6830      4        (   0)      0       (   0)      0

 1600BPI TOTALS:       8602      3        (   4)      4       (   0)      0

 OTHRBPI TOTALS:          7      1        (   0)      0       (   0)      0


    TOTALS:           15439      8        (   4)      4       (   0)      0

    AVERAGE MEGABYTES/TEMPORARY READ ERROR        =   ------
    AVERAGE MEGABYTES/TEMPORARY WRITE ERROR       =        0
    AVERAGE MEGABYTES/PERMANENT READ ERROR        =   ------
    AVERAGE MEGABYTES/PERMANENT WRITE ERROR       =   ------
    AVERAGE MEGABYTES/PERMANENT ERROR             =   ------
    TOTAL MEGABYTES PROCESSED                     =        0
    TOTAL MEGABYTES READ                          =        0
    TOTAL MEGABYTES WRITTEN                       =        0


CPU    MODEL    SERIAL NUMBER
 00    9375         234567
 01    3090XA       170028
 02    3084XA       321128
 03    3084XA       121128
 04    3081XA       221170
 05    4341         015085
 06    3081XA       220447
 07    4331         013078
 08    3081XA       221573
 09    3033         021928
```

Figure 34. 3420/3410 Temporary Error Summary

```
9347 TEMPORARY ERROR SUMMARY                        REPORT DATE 065 97
                                                    PERIOD FROM 041 97
                                                           TO   059 97

      C
DEVNO P      TIME    VOLUME  I/O--COUNTS  PERM ERROR  TEMP ERROR    RETRIES   REPSN  ---------------- COUNT ----------------
/CUA  U  DTE HHMMSS  SERIAL   READ WRITE  READ WRITE  READ WRITE  READ WRITE  COUNT  OVR MLT RUP IBG WPC SKW TR4 TR5 TRP ECC

 0C70 00 047 181315              0  1249     0     0     0     0     0     0    105    0   0   0   0   0   0   0   0   0   0
 0C70 00 049 060759            227     0     6    15     1     0    58    92    192    0   7   3   1   0   0   7   7   4 224
 0C70 00 049 061239            229     0     0     0     1     0     1     0    226    0   0   1   0   0   0   0   1   0 224


CPU    MODEL    SERIAL NUMBER
 00    9375        234567
 01    3090XA      170028
 02    3084XA      321128
 03    3084XA      121128
 04    3081XA      221170
 05    4341        015085
 06    3081XA      220447
 07    4331        013078
 08    3081XA      221573
 09    3033        021928
```

Figure 35. 9347 Temporary Error Summary

Tape Volume Statistics Summary

This report provides an easy-to-use list of volumes with exceptions. It is useful in finding the media that is causing problems.

It is generated whenever a volume is listed on the tape subsystem exception report; therefore, only volumes that have permanent errors or have failed the temporary error limits are listed.

All the activity for every volume listed as an exception on the tape subsystem exception report as well as errors against the unit addresses (shown in the DEVNO/CUA statistics summary reports) is shown in chronological order. Entries are grouped by volume serial and listed in order of occurrence.

The report shows:

- Channel path ID
- Device or control unit address
- Number of permanent and temporary errors
- Serial number of the tape drive that created the volume

Note: This can be used to find a device that generates volumes which cause problems when used on other devices.

Erase gaps indicate the following sequence has occurred:

1. A write error has occurred.
2. The tape has been repositioned for the retry.
3. The second attempt also detected an error.
4. The tape has been repositioned again.
5. A section of tape is erased and the write operation is retried again.

Note: Excessive write erase gaps indicate a problem with a cartridge or a drive.

Figure 36 on page 184 shows an example of the tape volume statistics summary.

```
3490 VOLUME STATISTICS SUMMARY                   1 REPORT DATE 067 97
                                                   PERIOD FROM 051 97
                                                          TO   051 97

            VOLUMES FAILING LIMITS OR PERMANENT ERRORS
          2 CURRENT LIMITS                TEMP WRT(CT)  TEMP RD(CT)
              MBYTES/ERR      VOLUME          40 ( 3)     200 ( 1)
                                                                                    14         15    16
                                   8                                       12
     17
 3      4        5      6    7   R 9          10                 11
    READ  13
VOLUME  DATE     TIME   CHP DEVNO W BLOCK ----MB/ERR PERM--- ----MB/ERR TEMP---- RECVY ERASE  -BLKS PROC-    BLK   --JOB--- P
SERIAL DAY YR  HH:MM:SS -ID  /CUA E  ID   READ(CT) WRITE(CT) WRITE(CT)  READ(CT) ACTNS GAPS   READ  WRITE    LEN   --NAME-- U

B07146 051 97  18:48:31  00   5A2         -- (  0) --  (  0)  -- (  0)  -- (  0)     3     0   6144  6144   0000            E

B42750 051 97  15:34:33  00   5BC         -- (  0) --  (  0)  -- (  0)   0 (  1)     0     0      0     0   0000            E

M11407 051 97  20:51:24  06   5A3 O 001BF -- (  0) --  (  0)  -- (  0)  -- (  0)     0     0      0     0   2EE4  C4KCC33E  E
M11407 051 97  20:57:53  00   5A3   001BF -- (  0) --  (  0)  -- (  0)  -- (  0)     0     0      0   256   0000            E
M11407 051 97  21:07:11  00   5A1   001C5 -- (  0) --  (  0)  -- (  0)  -- (  0)     0     0      0     0   0000

TAPENO 051 97  22:16:18  22   5A7         -- (  0) --  (  0)  -- (  0)  -- (  0)     0     0      0     0   0000   EOX EXIT E
TAPENO 051 97  22:16:37  22   5A7 O       -- (  0) --  (  0)  -- (  0)  -- (  0)     0     0      0     0   0050   OPERX    E
TAPENO 051 97  22:18:40  22   5A7         -- (  0) --  (  0)  -- (  0)  -- (  0)     0     0      0     0   0000   EOS EXIT E

L30570 051 97  19:03:22  22   5A5 W       -- (  0) --  (  0)   3 (  1)  -- (  0)     0     0      0  5934   0234   EOS EXIT E

L27530 051 97  20:31:22  06   5A2 W       -- (  0) --  (  0)   5 (  1)  -- (  0)     0     0      0 10120   0256   EOS EXIT E

L70630 051 97  16:24:33  06   5A4         -- (  0) --  (  0)  -- ( 12)  -- (  0)     0     0      0  9050   1250   EOS EXIT E

L72930 051 97  11:22:19  22   5B2         -- (  0) --  (  0)  -- (  0)  39 (  1)     0     0  20302     0   2350   EOS EXIT E

B35790 051 97  19:22:13  22   5A3 E       -- (  0) --  (  0)  -- (  0)  -- (  0)     0     0      0     0   0000            E


      COLUMN TOTALS:                         (  0)     (  0)     ( 14)     (  2)  (  3)  (  0)


             TOTALS:     MOUNTS =       9
             TOTALS:     MEGABYTES PROCESSED =   201
 18
CPU MODEL  SERIAL NUMBER
 A   3081    210819
 B   3081    010819
```

Figure 36. 3490 Volume Statistics Summary

1 REPORT DATE is the Julian date the report ran.

PERIOD FROM is the Julian date of the earliest record.

PERIOD TO is the Julian date of the latest record.

2 **CURRENT LIMITS (MB/ERR)** is the megabyte per temporary error limit threshold from the limit control cards. For details on using the LIMIT statement, see .

3 **VOLUME SERIAL** is the volume serial number.

4 **DATE DAY YR** is the Julian date and year from the OBR or MDR record.

5 **TIME** is the time from the OBR or MDR record.

6 **CHP-ID** is the channel path ID (used in XA mode) and only appears if all errors have occurred on 1 CHP-ID.

7 **DEVNO/CUA** is the device number in XA mode or the primary control unit address (PCUA).

8 **R/W/E** defines the type of permanent error as a read, write, or equipment check.

9 **BLOCK ID** is the logical block position for permanent errors.

10 **MB/ERR PERM**

READ is the average number of megabytes read per permanent read error.

CT is the total count of all permanent read errors.

WRITE is the average number of megabytes written per permanent write error.

CT is the total count of all permanent write errors.

11 **MB/ERR TEMP**

READ is the average number of megabytes read per temporary read error.

CT is the total count of all temporary read errors.

WRITE is the average number of megabytes written per temporary write error.

CT is the total count of all temporary write errors.

12 **READ RECVY ACTNS** is the total count of recoverable read errors detected during 3490 read error recovery.

13 **ERASE GAPS** is the number of times a block is rewritten during error recovery for the listed volumes.

14 **BLKS PROCESSED**

READ is the total number of blocks read for a volume that has had at least one temporary, but no permanent, errors.

WRITE is the total number of blocks written for a volume that has had at least one temporary error, but no permanent errors.

15 **BLK LEN** is the block length as taken from the OBR record for any listed volume that had permanent errors.

16 **JOB NAME** is the job name from the OBR record for any listed volume that had permanent errors.

17 **CPU** identifies the host processor reporting the exception.

18 **CPU, MODEL, SERIAL, NUMBER** further identifies the CPU listed in the error summary lines of this report.

Tape Permanent/Recovered Error Summary

The tape permanent error summary report helps you analyze the causes of permanent errors. These errors require immediate attention because they indicate that something in the system needs to be fixed.

This report describes in more detail the permanent errors that appear on the tape subsystem exception report.

The following table shows how sense bytes 7 and 3 indicate the error type:

ERROR TYPE	SENSE BYTE VALUES
Permanent	Sense byte 7 will be 20 to indicate format 20 sense.
	Sense byte 3 will be a value other than 48.
Recovered	Sense byte 7 will be 20.
	Sense byte 3 will always indicate 48. See note.

Tape Subsystem Exception

ERROR TYPE	SENSE BYTE VALUES
Service alert	Sense byte 7 will be 20.
	Sense byte 3 will always indicate 48. See note.
Note: This indicates that an error occurred and it took host interaction to recover from the error (CU error recovery was not adequate).	

The errors are grouped under separate headings indicating classification of probable failures and are listed by CUA or VOLID (volume serial number) in the order they occurred.

Two groups of permanent errors are shown:
- Hardware
- Volume or creating drive

The following details are provided in the report:
- Channel path ID
- Device number
- CPU connection, which tells were the error was detected
- Date and time the error was logged
- Volume ID (VOLID), which indicates which volume experienced the failure
- Read, write, or equipment (RWE) column, which shows what type of error was experienced
- Channel command word (CCW) that failed, which supplies data such command code, flag byte, and byte count
- Bits and bytes of pertinent inform from command status word (CSW)
- Sense information from outboard records (OBR)
- Header serial (HDRSER) number (serial number of the creating drive)

The information is organized so that permanent errors are shown in the order in which they occur.

The long OBR format is used with tape drives.

The column headings may differ depending upon the specific device.

Figures containing examples of these reports are on the pages shown in the following table:

REPORT	REFER TO
3490 Permanent/Recovered Error Summary Example	Figure 37 on page 187
3420/3410 Permanent Error Summary	Figure 38 on page 189
3424 Permanent/Recovered Error Summary	Figure 39 on page 189

```
3490 PERMANENT / RECOVERED ERROR SUMMARY         1 REPORT DATE 063 97
                                                   PERIOD FROM 049 97
                                                          TO   052 97
                                                                          11   12   13   14
                                                  10                                           15   16
          4                  8     17    18                                1    1    1    1    2    2
2    2    2    3
2    3    C         6         R    SENSE BYTES--> 0    2    4    6    8    0    2    4    6    8    0    2    4
   6    8    0
CHP DEVNO P  5  TIME      7   W  9  CCW SCSW64-95                         -------CU----------    ---DR----
        CU
-ID /CUA  U DTE HHMMSS  VOLID E CMD FLG /CSW32-63                         ERR1 ERR2 ERRL  HW     ERR1 ERR2          SER#

                                          *****  PERMANENT ERRORS *****
**** DRIVE ****

22  05A3  07 051 192213 B35790 E  01  64 060079E0  1044 394A 0000 2C20 0000 7151 7607 CCBB D708 0002 0000 0000 F680 0CE1 0813 3319
06  05A4  17 051 214532        O  00  00 26000000  4048 3934 0000 0020 730C 8E06 0000 0000 0000 0002 192C 0000 F680 0CE1 0813 4419
22  05A7  07 051 221637 TAPENO O  02  44 06000050  0049 402E 0000 0020 0000 7161 7161 7161 0000 0002 0000 0000 F680 0CE1 0813 7700

**** VOLUME OR CREATING DRIVE ****

    05A5  17 051 190322 L30570 W  01  64 0E007FF8  0A44 7025 0007 3F20 0000 7404 7401 7407 D007 0002 0000 0000 F680 0CE1 0819 5519
    05A2  07 051 203122 L27530 W  01  64 06002090  0A44 3025 000C C620 0000 7401 7407 7401 D002 0002 0000 0000 F680 0CE1 0813 2219

**** OPERATOR OR OPERATIONAL ****

06  05A3  07 051 205124 M11047 O  01  64 0E002B63  4244 783B 0001 BF20 0000 8202 0000 0000 0000 0002 0000 0000 F680 0CE1 1249 330E


                                          *****  RECOVERED ERRORS *****

**** CONTROL UNIT ****

22  05A7  07 051 040633        O  01  64 0E007FF8  0A44 7048 0000 0020 0000 A130 3300 0000 D5C1 0002 0000 0000 F680 0CE1 0813 7719
22  05A7  07 051 221838        O  02  43 00000000  0044 4048 0002 1720 0040 3300 0000 0000 0000 0002 0000 0000 F680 0CE1 0819 7700

**** DRIVE ****

06  05A7  17 051 221618        O  02  24 00000000  0048 3948 0000 0020 0000 7161 7161 7161 0000 0002 0000 0000 F680 0CE1 0813 7700
22  05A7  17 051 221840        O  02  24 00000000  0048 3948 0000 0020 0000 7161 7161 7161 0000 0002 0000 0000 F680 0CE1 0819 7719


CPU  MODEL  SERIAL NUMBER                                                              Note: CU SER# = last four digits
 07  3081      210819
 17  3081      010819  19
3490 PERMANENT / RECOVERED ERROR SUMMARY           REPORT DATE 117 97
                                                   PERIOD FROM 062 97
                                                          TO   062 97
                                                                                 10
                                                                           1    1    1    1    1    2    2    2    2    2    3
          C                   R    SENSE BYTES--> 0    2    4    6    8    0    2    4    6    8    0    2    4    6    8    0
CHP DEVNO P                   W     CCW SCSW64-95                         HDW- STR- V/C-
-ID /CUA  U DTE  TIME   VOLID E CMD FLG /CSW32-63                         PSC  DEV  FSC
                                                                           20   21   22
                                                   ******* SERVICE ALERTS *******
**** CONTRL UNIT ****

    0188  FF 062 081932        O  00  00 0E004000  0244 2048 002F 8820 0000 B010 8000 B180 D007 0002 0000 0000 F680 08E1 0140 6F00

**** STRING 0 - 7 ****

    0185  FF 062 081932        O  00  00 0E004000  0244 2048 002F 8820 0000 B011 0400 B181 D007 0002 0000 0000 F680 08E1 0140 6F00

**** STRING 8 - F ****

    0189  FF 062 081932        O  00  00 0E004000  0244 2048 002F 8820 0000 B012 2000 B140 D007 0002 0000 0000 F680 08E1 0140 6F00

**** DEVICES ****

    0186  FE 062 081932        O  00  00 0E004000  0244 2048 002F 8820 0000 B013 0200 B108 D007 0002 0000 0000 F680 08E1 0140 6F00

    0189  FE 062 081933        O  00  00 0E004000  0244 2048 002F 8820 0000 B013 1000 B120 D007 0002 0000 0000 F680 08E1 0140 6F00


CPU  MODEL  SERIAL NUMBER                                                              Note: CU SER# = last four digits
 A   3031      010847  19
```

Figure 37. 3490 Permanent/Recovered Error Summary Example

1 REPORT DATE, PERIOD FROM, PERIOD TO

REPORT DATE is the Julian date the report ran.

PERIOD FROM is the Julian date of the earliest record.

PERIOD TO is the Julian date of the latest record.

2 **CHPID** is the channel path ID (used in XA mode).

3 **DEVNO/CUA** is the device number in XA mode or the primary control unit address (PCUA).

4 **CPU** identifies the host processor reporting the exception. The actual CPU model and serial number are shown at the bottom of the report.

5 **DTE** is the Julian date from the OBR record.

6 **TIME** is the time from the OBR record.

7 **VOLID** is the volume serial number.

8 **R/W/E/O** defines the type of check as read, write, equipment, or other check.

9 **CMD** is the command code from the channel command word (CCW) in the OBR record.

10 **SENSE BYTES** is the sense data from the OBR record.

For sense byte definitions see the SENSE section of the maintenance information (MI) manual.

11 **CU-ERR1** is the microcode-detected error code for the first error (control unit or drive), from the OBR record (sense bytes 10 and 11). This error code should not be used as an entry to the maintenance package unless efforts using CU-HW 14 and/or DR-ERR1 15 have not corrected the subsystem problem.

12 **CU-ERR2** is the microcode-detected error code for the second error (control unit or drive), from the OBR record (sense bytes 12 and 13). This error code can be a result of the first error indicated in CU-HW 14, DR-ERR1 15, or CU-ERR1 11.

13 **CU-ERRL** is the microcode-detected error code for the last error (control unit or drive), from the OBR record (sense bytes 14 and 15). This error code can be a result of the first error indicated in CU-HW 14, DR-ERR1 15, CU-ERR1 11, DR-ERR2 16, or CU-ERR2 12.

14 **CU-HW** is the control unit hardware-detected error code from the OBR record (sense bytes 16 and 17). This error code defines a control unit failure and should be used to enter the maintenance package if you have multiple drive failures.

15 **DR-ERR1** is the drive hardware-detected error code, from the OBR record (sense bytes 20 and 21). This error code defines the first failure for any drive and should be used to enter the maintenance package if you have single drive failures.

16 **DR-ERR2** is the drive hardware-detected error code, from the OBR record (sense bytes 22 and 23). This error code defines the second or last failure for any drive and should not be used to enter the maintenance package if you have single drive failures. This error information provides supplemental information and may be a result of the first failure (DR-ERR1) in the drive.

17 **CCW FLG** is CCW bits 32 to 39 from the OBR.

18 **SCSW/CSW** is:

SCSW64—95 (in XA Mode)

CSW32—63

These are the SCSW or CSW bits from the OBR record.

19 **CPU, MODEL, SERIAL NUMBER** provides further information on the CPU listed **4** in the error summary lines of the report.

20 **HDW-FSC** is sense bytes 10 and 11. This is the error code for statistical analysis of temporary errors and will always be a B0*nn* type error code. This error code can be used for entry into the maintenance package.

21 **STR-DEV** is sense bytes 12 and 13. These sense bytes identify the drives within the string that are failing. See the FSI section table of contents for FSC B011 or B012 for a detailed explanation.

22 **V/C-FSC** is sense bytes 14 and 15. These sense bytes identify the types of unacceptable temporary errors. If sense byte 14 = B1, then sense byte 15 = the type of temporary errors that are unacceptable. See the FSI section table of contents a detailed explanation of B011 or B012.

```
3420/3410 PERMANENT ERROR SUMMARY                  REPORT DATE 065 97
                                                   PERIOD FROM 041 97
                                                          TO   059 97


          C                   R                                            ...SENSE...
CHP DEVNO P                   W              SCSW64-95/                          1        1        2         EXPLANATION   HDR
-ID /CUA  U DTE  TIME  VOLID  E CMD FLG   CNT CSW32-63  0        4        8        2        6        0                       SER

**** HARDWARE ****

    0180  1B 043 00F3F9         02  20000050 0E000050 00430004 00400400 00080000 002F1F24 DD910100 001A0002 NOT CAPABLE     00000

    0181  1B 044 0101EE         02  20000050 0C080000 00000000 00000000 00000000 00000000 00000000 00000002 UNDEFINED       00000

    NOTE: TO CONVERT 'HDR SER' TO 'CUA' USE 'TAPE UNIT SER' IN 'TAPE TEMPORARY ERROR SUMMARY' (NEXT REPORT).
```

Figure 38. 3420/3410 Permanent Error Summary

```
3424 PERMANENT / RECOVERED ERROR SUMMARY           REPORT DATE 065 97
                                                   PERIOD FROM 041 97
                                                          TO   059 97

                                                                           1    1    1    1    1    2    2    2    2    2    0
          C                    R   SENSE BYTES--->  0    2    4    6    8    0    2    4    6    8    0    2    4    6    8    0
CHP DEVNO P                    W     CCW  SCSW64-95        ER BLOCK  SN      -- CU --               DR.
-ID /CUA  U  DTE  TIME  VOLID  E CMD FLG  /CSW32-63        PA  ID    FM      FSC  LVL               FSC              SERIAL#

                                                ****** PERMANENT ERRORS ******


**** DEVICE ****

      4A1 21 045 090359 UA2940 W 00 00   00000000  0082 3825 0017 1D20 0080 3300 0000 0000 0000 0002 0000 0000 F680 0CF1 1783 6620


**** OTHER ****

      4A3 21 045 090438 UC2942 O 00 00   00000000  0042 3821 0017 1D20 0080 3300 0000 0000 0000 0002 0000 0000 F680 0CF1 1783 6620
```

Figure 39. 3424 Permanent / Recovered Error Summary

3490 FRU Summary Report

THE FRU summary report provides a summary of error codes logged and is listed by CUA. THE FRU codes can provide an entry into the maintenance information (MI) manual for both drive and control unit failures.

Figure 40 shows an example of the 3490 FRU summary report.

```
3490 FRU SUMMARY                                      1 REPORT DATE 063 97
                                                        PERIOD FROM 049 97
                                                               TO   052 97


DEVICE TYPE 3490

                  3                                                                  13
  2     C   C       P    4   5    6   7    8    9   10   11
DEVNO   P   H   C   T              **** FRU CODE ****                   **** DATE/TIME  ****
/CUA    U   A   U   H    CU-1 F  CU-2 CU-L CUHW DR-1 F  DR-2  OCCURRENCES  **** LAST ENTRY ****

 5A2    E   B   0   0    7401 00 7407 7401 D002 0000 00 0000        00001  051/97   19:22:13:31

 5A3    E   B   0   1    7151 00 7607 CCBB D708 0000 00 0000        00001  051/97   19:03:22:23

 5A4    F   B   0   1    8E06 0C 0000 0000 0000 192C 00 0000        00001  051/97   21:45:32:21

 5A5    F   B   1   0    7407 00 7401 7407 D007 0000 00 0000        00001  051/97   20:31:22:45

 5A7    F   B   0   0    A130 00 3300 0000 D5C1 0000 00 0000        00001  051/97   04:06:33:44
 5A7    E   B   0   0    7161 00 7161 7161 0000 0000 00 0000        00001  051/97   22:16:37:22
 5A7    E   B   0   1    7161 00 7161 7161 0000 0000 00 0000        00001  051/97   22:16:18:54
 5A7    F   B   0   0    3300 40 0000 0000 0000 0000 00 0000        00001  051/97   22:18:38:52
 5A7    F   B   0   0    7161 00 7161 7161 0000 0000 00 0000        00001  051/97   22:18:40:60


 CPU MODEL  SERIAL NUMBER 14
  E  3081      210819
  F  3081      010819
```

Figure 40. 3490 FRU Summary Report Example

1 **REPORT DATE, PERIOD FROM, PERIOD TO**

REPORT DATE is the Julian date the report ran.

PERIOD FROM is the Julian date of the earliest record.

PERIOD TO is the Julian date of the latest record.

2 **DEVNO/CUA** is the device number in XA mode or the primary control unit address (PCUA).

3 **CPU** identifies the host processor reporting the exception and is shown as a value of A through H. The actual CPU model and serial number are shown at the bottom of the report. **CHA** identifies the channel adapter that was in use at the time of error. **CU** identifies the control unit containing the channel adapter. **PTH** identifies the control unit containing the buffer and data flow in use at the time of error.

4 **CU-ERR1** is the microcode-detected error code for the first error (control unit or drive), from the OBR record (sense bytes 10 and 11). This error code should not be used as an entry to the maintenance package unless efforts using CU-HW **8** and/or DR-ERR1 **9** have not corrected the subsystem problem.

5 **CU-F** is a microcode-developed flag byte, from the OBR record (sense byte 9). This byte provides additional information, if available, for CU-ERR1 **4**.

6 **CU-ERR2** is the microcode-detected error code for the second error (control unit or drive), from the OBR record (sense bytes 12 and 13). This error code can be a result of the first error indicated in CU-HW **8**, DR-ERR1 **9** or CU-ERR1 **4**.

7 **CU-ERRL** is the microcode-detected error FRU code for the last error (control unit or drive), from the OBR record (sense bytes 14 and 15). This error code can be a result of the first error indicated in CU-HW **8**, DR-ERR1 **9**, CU-ERR1 **4**, DR-ERR2 **11**, or CU-ERR2 **6**.

8 **CU-HW** is the control unit hardware-detected error code from the OBR record (sense bytes 16 and 17). This error code defines a control unit failure and should be used to enter the maintenance package if you have multiple drive failures.

9 **DR-ERR1** is the drive hardware-detected error code, from the OBR record (sense bytes 20 and 21). This error code defines the first failure for any drive and should be used to enter the maintenance package if you have single drive failures.

11 **DR-ERR2** is the drive hardware-detected error code, from the OBR record (sense bytes 22 and 23). This error code defines the second or last failure for any drive and should not be used to enter the maintenance package if you have single drive failures. This error information provides supplemental information and can be a result of the first failure (DR-ERR1) in the drive.

12 **OCCURRENCES** is the total number of times this error code occurs.

13 **DATE/TIME** is the Julian date and time of the last occurrence.

14 **CPU, MODEL, SERIAL NUMBER** further identifies the CPU listed in the FRU SUMMARY REPORT.

3490 Error Code Summary

This report shows error codes for the control unit (CU) and the drive (DRV). Only the 3480/3490 devices produce this report.

The Error Code Summary report provides a summary of error codes logged and is listed by CUA. The error codes can provide an entry into the maintenance information (MI) manual for both drive and control unit failures.

Figure 41 on page 192 shows an example of the 3490 error code summary.

```
3490 ERROR CODE SUMMARY REPORT                    1 REPORT DATE 063 97
                                                    PERIOD FROM 049 97
                                                           TO   052 97
                                                                                     13
 2           3           4   5    6   7    8     9   10   11
        12
        C   C   C   C
DEVNO   P   H   U   U    ----------CU---------- -----DR-------             **** DATE/TIME  ****
/CUA    U   R   R   D    ERR1 F  ERR2 ERRL HW   ERR1 F  ERR2     OCCURRENCES **** LAST ENTRY ****

 5A2    E0  B   0   0    7401 00 7407 7401 D002 0000 00 0000           00001  051/97   19:22:13:31

 5A3    E0  B   0   1    7151 00 7607 CCBB D708 0000 00 0000           00001  051/97   19:03:22:23

 5A4    F0  B   0   1    8E06 0C 0000 0000 0000 192C 00 0000           00001  051/97   21:45:32:21

 5A5    F0  B   1   0    7407 00 7401 7407 D007 0000 00 0000           00001  051/97   20:31:22:45

 5A7    F0  B   0   0    A130 00 3300 0000 D5C1 0000 00 0000           00001  051/97   04:06:33:44
 5A7    E0  B   0   0    7161 00 7161 7161 0000 0000 00 0000           00001  051/97   22:16:37:22
 5A7    E0  B   0   1    7161 00 7161 7161 0000 0000 00 0000           00001  051/97   22:16:18:84
 5A7    E0  B   0   0    3300 40 0000 0000 0000 0000 00 0000           00001  051/97   22:18:38:52
 5A7    F0  B   0   0    7161 00 7161 7161 0000 0000 00 0000           00001  051/97   22:18:40:60

 CPU MODEL  SERIAL NUMBER 14
  E0 3081      210819
  F0 3081      010819
```

Figure 41. 3490 Error Code Summary Example

1 **REPORT DATE, PERIOD FROM, PERIOD TO**

REPORT DATE is the Julian date the report ran.

PERIOD FROM is the Julian date of the earliest record.

PERIOD TO is the Julian date of the latest record.

2 **DEVNO/CUA** is the device number in XA mode or the primary control unit address (PCUA).

3 **CPU** identifies the host processor reporting the exception. The actual CPU model and serial number are shown at the bottom of the report. **CHR** identifies the channel adapter that was in use at the time of error. **CUR** identifies the control unit containing the channel adapter. **CUD** identifies the control unit containing the buffer and data flow in use at the time of error.

4 **CU-ERR1** is the microcode-detected error code for the first error (control unit or drive), from the OBR record (sense bytes 10 and 11). This error code should not be used as an entry to the maintenance package unless efforts using CU-HW **8** and/or DR-ERR1 **9** have not corrected the subsystem problem.

5 **CU-F** is a microcode-developed flag byte, from the OBR record (sense byte 9). This byte provides additional information, if available, for CU-ERR1 **4**.

6 **CU-ERR2** is the microcode-detected error code for the second error (control unit or drive), from the OBR record (sense bytes 12 and 13). This error code can be a result of the first error indicated in CU-HW **8**, DR-ERR1 **9** or CU-ERR1 **4**.

7 **CU-ERRL** is the microcode-detected error FRU code for the last error (control unit or drive), from the OBR record (sense bytes 14 and 15). This error code can be a result of the first error indicated in CU-HW **8**, DR-ERR1 **9**, CU-ERR1 **4**, DR-ERR2 **11**, or CU-ERR2 **6**.

8 **CU-HW** is the control unit hardware-detected error code from the OBR record (sense bytes 16 and 17). This error code defines a control unit failure and should be used to enter the maintenance package if you have multiple drive failures.

9 **DR-ERR1** is the drive hardware-detected error code, from the OBR record (sense bytes 20 and 21). This error code defines the first failure for any drive and should be used to enter the maintenance package if you have single drive failures.

10 **DR-F** is a microcode-developed flag byte, from the OBR record (sense byte 18). This byte provides additional information, if available, for DR-ERR1 **9**.

11 **DR-ERR2** is the drive hardware-detected error code, from the OBR record (sense bytes 22 and 23). This error code defines the second or last failure for any drive and should not be used to enter the maintenance package if you have single drive failures. This error information provides supplemental information and can be a result of the first failure (DR-ERR1) in the drive.

12 **OCCURRENCES** is the total number of times this error code occurred.

13 **DATE/TIME** is the Julian date and time of the last occurrence.

14 **CPU, MODEL, SERIAL NUMBER** further identifies the CPU listed in the Error Code Summary report.

Tape DEVNO/CUA Statistics Summary

This report allows you to quickly see what has been happening to a device. Since all normal data is included, you can see how much activity has been experienced by a device and the pertinent exception data for the device.

The data in this report is listed by CUA for all device addresses that exceed hardware limits or had permanent errors. The data is a summary of all activity on the device for the given period in which the report was run. This includes permanent, temporary and statistical data.

Temporary errors for devices and control unit addresses are shown when the error count exceeds the LIMIT control statement.

Errors are listed by volume serial number in the order (date and time) in which they occur. The following are shown on the report:

- Date
- Time
- VOLID
- Permanent errors
- Megabytes processed per error shown

This report is different from other tape reports because the statistical data comes from the 3480 miscellaneous data record (MDR), which gets its information from the buffered tape control units. 3420 tape drives get statistical data from OBR demounts received and counts are kept in main storage by the operating system.

One of these reports is generated for each device (device number or CUA) that appears as a hardware exception on the tape subsystem exception report.

The report presents the DEVNO/CUA's temporary errors that have failed the limits set in LIMIT control statements.

Figures containing examples of these reports are on the pages shown in the following table:

REPORT	REFER TO
3490 DEVNO/CUA Statistics Summary Report Example	Figure 42
3422 DEVNO/CUA Statistics Summary	Figure 43 on page 196
9347 DEVNO/CUA Statistics Summary	Figure 44 on page 197

```
        3490 DEVNO/CUA STATISTICS SUMMARY FOR]0480                 1 REPORT DATE  063 97
                                                                     PERIOD FROM  049 97
                                                                             TO   052 97

           DEVICES FAILING LIMITS OR PERMANENT ERRORS

        2  CURRENT LIMITS                      TEMP WRT (CT)   TEMP READ (CT)
           MBYTES/ERR            HARDWARE          999  ( 5)       999   ( 1)                                         17
  19
                                         8          9                                 13                   16
                      5   6    7       CRITERIA      ERP                   11   12
                   ECC
  3                4     ER  F  MB PROC  DATA CHK   DATA ERROR   MB/ERROR  ERSE READ DRV  CU   INSTANT     BLK PROC   BLK COR
  HDR     C
  DTE   TIME  VOLID PA   M WRT   RD  WRT  RD  WRT  RD  RD    TEMPORARY GAPS  RTY DET  EQU SPD VAR   WRT  READ  WRT  READ   SER    P
                         T                         FWD BKWD  WRITE READ                CHKS  RD WRT                                  U
                                                               10                      14   15
         18
  049 021022 L32345 2B 21  40   0   0   0   0   0   0    ]]   ]]   0    0    0    0   0   0     96   12    1    0  00000   E
  049 021228 L32345 2B 21   1  45   0   0   0   0   0    ]]   ]]   0    0    0    0   0   0    866   12    0    0  00000   E
  049 025623 L32345 2B 21   1  76   0   0   0   0   0    ]]   ]]   0    0    0    0   0   0   2821   14    7    9  00000   E
  050 069527 L18500 2B 21 201   0   0   0   0   0   0    ]]   ]]   0    0    0    0   0   0   2097   12    1    0  00000   E
  050 182840 L33825 2B 21   1  23   0   0   0   0   0    ]]   ]]   0    0    0    0   0   0     12   12    0    0  00000   E
  050 185954 L31800 2B 21   1  56   0   0   0   0   0    ]]   ]]   0    0    0    0   0   0    262   12    0    0  00000   E
  050 193136 L16550 2B 21 119   0   0   0   0   0   0    ]]   ]]   0    0    0    0   0   0    197   12    0    0  00000   E
  050 200742 L31720 2B 21   1  79   0   0   0   0   0    ]]   ]]   0    0    0    0   0   0   4198 6368   11    7  00000   E
  050 232824 L31918 2B 21 200   0   0   0   0   0   0    ]]   ]]   0    0    0    0   0   0   2884   12    0    0  00000   E
  051 022619 L13221 2B 21 173   1   0   0   0   0   0    ]]   ]]   0    0    0    0   0   0    544   32    0    0  00000   E
  051 035419 L22277 2B 21 178   1   7   0   7   0   0   178   ]]   0    0    0    0   0   0   5375   12    3    0  00000   E
  051 035510 L22814 2B 21   1  29   0   0   0   0   0    ]]   ]]   0    0    0    0   0   0   5505   12   12    0  00000   E
  051 035849 L22814 2B 21   1  41   0   0   0   0   0    ]]   ]]   0    0    0    0   0   0   1966   12    1    0  00000   E
  051 050204 L22814 2B 21   1  68   0   0   0   0   0    ]]   ]]   0    0    0    0   0   0     64   12    0    0  00000   E
  051 193036 L34645 2B 21   1  92   0   0   0   0   0    ]]   ]]   0    0    0    0   0   0     66   12    0    0  00000   E
  051 214532        34 20   0   0   0   0   0   0   0    ]]   ]]   0    0    1    0   0   0                            43000   E
  051 230711 L16553 2B 21 147   2   0   0   0   0   0    ]]   ]]   0    0    0    0   0   0   2687   12    2    0  00000   E
  051 233355 L16546 2B 21 200   1   5   0   5   0   0   200   ]]   0    0    0    0   0   0   3808  224    0    0  00000   E

CPU  MODEL  SERIAL NUMBER
 A  3081       210819
 B  3081       010819
 C  3081       170563
 D  3081       371074
 E  3081       271280
```

Figure 42. 3490 DEVNO/CUA Statistics Summary Report Example

1 **Report Date, Period From, Period To** REPORT DATE is the Julian date the report ran. PERIOD FROM is the Julian date of the earliest record. PERIOD TO is the Julian date of the latest record.

2 **Current Limits, MB/Err** CURRENT LIMITS and megabytes/error for both the hardware and the volume are the limit values from the limit control cards.

3 **DTE** is the Julian date from the OBR or MDR record.

4 **VOLID** is the volume serial number.

5 **ERA** is the error recovery action code to the host (contents of Sense Byte 3).

6 **FMT** is the format of the sense record. Valid formats are 19, 20, 21 or 30.

7 **MBPROC** is the number of megabytes processed. (Data from sense byte 14–15 for write and 16–17 for read in the format 21 statistical record. Data from sense bytes 38–40 for write and sense bytes 32–35 for read in format 30.)

8 **DATA CHK** is the number of data checks corrected. (Criteria) (Data from sense byte 22 for write and 23 for read in format 21 statistical record or from sense byte 13 for write and sense byte 12 for read from format 30.)

9 **DATA ERR** is the number of Hardware ERP made. (Data from sense byte 10 for write, from sense byte 8 for read forward, and from sense byte 9 for read backward in format 21 statistical record or data from sense byte 9 for write, from sense byte 8 for read forward and from sense byte 10 for read backward from format 30.)

10 **MB/ERR**

WRITE is the average number of megabytes written per temporary write error.

READ is the average number of megabytes read per temporary read error.

11 **ERSE GAPS** is the total number of blocks re-written during error recovery. (Data from sense byte 24 of the format 21 statistical record or from sense byte 15 from format 30.)

12 **READ RTY** is the total number of correctable read errors detected during 3490 read error recovery. (Data from sense byte 30 of the format 21 or from sense byte 14 of format 30 statistical record.)

13 **DRV DET** is the number of unit checks set by the drive. (Data from sense byte 25 of the format 21 or 30 statistical record.)

14 **CU EQU CHKS** is the number of errors found in the use of external regs in the CU for a given device. (Data from sense byte 13 of the format 21 statistical record.)

15 **INSTANT SPD VAR** flag indication that tape speed variations have been detected by hardware checkers. (A function of control unit microcode or sense bytes 22, 23 and 24 of format 30.)

16 **BLK PROC** is the total number of blocks processed. (Data from sense byte 19 on a write and 18 on a read of the format 21 Statistical Record or sense bytes 47–49 on a write and sense bytes 50–52 on read from format 30.)

17 **BLK COR** is the total number of blocks corrected. (ECC corrected) (Data from sense byte 12 on a write and 11 on a read of the format 21 statistical record or sense byte 19 on a write and sense byte 18 on a read from format 30.)

18 **HDR SER** is the header serial number on the tape volume. The header number is derived from the last 4 digits of the control unit serial number that wrote the volume, with the drive address added to the last position. For example:

Header Serial is 3892F

The last 4 digits of control unit serial number is 3892

Drive address is F

19 **CPU** is the host processor reporting the data.

All error and statistical data (MDR records) are shown for devices which were listed in the Subsystem Exception Report. They are listed by CUA for the period indicated.

Note: Due to space limitations, this report does not show activity on all devices listed in the Subsystem Exception Report.

```
3422 DEVNO/CUA STATISTICS SUMMARY FOR-0156           REPORT DATE 065 97
                                                     PERIOD FROM 041 97
                                                            TO   059 97

                                         ----------------------- 3422 -----------------------
                                                 1600 BPI                    6250 BPI
            CURRENT LIMITS                TEMP WRT(CT)  TEMP RD(CT)  TEMP WRT(CT)  TEMP RD(CT)
              MBYTES/ERR      HARDWARE       NONE (  )    NONE (  )     NONE (  )    NONE (  )

DTE  TIME  VOLID-    R/W ------MB/ERR TEMP------          LD   BST       FLS  EDC       VEL  OVR  RST                     TIE  CPU DEN-
                     E/U   WRITE(CT)    READ(CT) SIOCOUNT FAL  CHK  VRC  END  CRC  MTE  CHK  RUN  INK  CU1  CU2  CU3  P 07 ID  SITY

042 091037 340002     R    --  (  0)    -- (  0)      101   0    0    0    1    1    0    0    0    0    0    0    0  0 00  1D 6250
050 084059 TAP156          --  (  0)    -- (  0)       84   0    0    0    0    0    0    0    0    0    0    0    0  0 00  1D 6250

     COLUMN TOTALS:          (    0)    -- (  0)      185   0    0    0    1    1    0    0    0    0    0    0

            TOTALS:     MOUNTS          1

     AVERAGE MEGABYTES/TEMPORARY READ ERROR  = --
     AVERAGE MEGABYTES/TEMPORARY WRITE ERROR = --


CPU    MODEL    SERIAL NUMBER
 00    9375         234567
 01    3090XA       170028
 02    3084XA       321128
 03    3084XA       121128
 04    3081XA       221170
 05    3084XA       221103
 06    3081XA       220447
```

Figure 43. 3422 DEVNO/CUA Statistics Summary

```
9347 DEVNO/CUA STATISTICS SUMMARY FOR-0C70          REPORT DATE 065 97
                                                    PERIOD FROM 041 97
                                                           TO   059 97

                                                                        ---------------- SENSE DATA ----------------

               TIME          R/W         SCSW64-95  FAULT                                  1        1        2        2        2
-ID  CPU DTE HH:MM:SS VOLID  E/O CMD FLG /CSW32-63  SYMCD   0        4        8        2        6        0        4
  8

      00 042 09 55 02         R   02  04 0E000000    2007  08C00409 10000010 38280000 00004000 80000400 00000000 00000000 00002007
      00 044 00 46 37         E   02  04 0E000000    3006  10240003 10000010 28380000 40000000 80000400 48C00000 00000000 00003006
      00 044 04 08 28         W   02  04 0E000000    2003  0844000F 10100010 38380000 00200000 80000400 00000000 00000000 00002003
      00 045 18 55 37         W   02  04 0E000000    2001  08441D07 10000010 38380000 00800000 80000400 00000000 00000000 00002001
      00 045 20 02 06         E   02  04 0E000000    3006  10240003 10000010 28380000 40000000 80000400 48C00000 00000000 00003006
      00 049 05 32 25         W   02  04 0E000000    2003  0844000F 10100010 38380000 00200000 80000400 00000000 00000000 00002003
      00 049 05 38 59         W   02  04 0E000000    2003  0844000F 10100010 38380000 00200000 80000400 00000000 00000000 00002003
      00 049 06 34 24         W   02  04 0E000000    2001  08440407 10000010 38380000 00800000 80000400 00000000 00000000 01002001
      00 049 10 14 52         W   02  04 0E000000    2003  0844000F 10100010 38300000 00200000 80000400 00000000 00000000 00002003

     TIME    VOLUME  I/O--COUNTS PERM ERROR TEMP ERROR   RETRIES    REPSN    ------------------ COUNT ----------
DTE HH:MM:SS SERIAL   READ WRITE READ WRITE READ WRITE  READ WRITE  COUNT OVR  MLT  RUP  IBG  WPC  SKW  TR4  TR5  TRP  EC
C

047 18 13 15             0  1249    0     0    0     0     0     0    105   0    0    0    0    0    0    0    0    0    0
049 06 07 59           227     0    6    15    1     0    58    92    192   0    7    3    1    0    0    7    7    4  224
049 06 12 39           227     0    0     0    1     0     1     0    226   0    0    1    0    0    0    0    1    0  224


CPU    MODEL    SERIAL NUMBER
 00    9375         234567
 01    3090XA       170028
 02    3084XA       321128
 03    3084XA       121128
 04    3081XA       221170
 05    3084XA       221103
```

Figure 44. 9347 DEVNO/CUA Statistics Summary

EREP Reports for the Tape Library

The EREP reports for the tape library are included in the Subsystem Exception Report for the 3490E. The reports unique to the tape library are identified by “Tape Library” in the report title.

Important: The Tape Library report cannot be sorted by device type.

The following detail reports are available for the tape library:

- Permanent and Recovered Error Summary
  - Permanent Error
  - Recovered Error
  - Service Alert
- Error Code Summary Report

Figures containing examples of these reports are on the pages shown in the following table:

REPORT	REFER TO
Tape Library Permanent Error Summary Example	Figure 45 on page 198
Tape Library Service Alert Summary Example	Figure 46 on page 200
Tape Library Error Code Summary Example	Figure 47 on page 202

Tape Library Permanent and Recovered Error Summary Report

Figure 45 on page 198 shows a tape library permanent error summary report.

Note: Permanent errors are outboard recorder (OBR) format 23 records with the temporary bit off. Recovered errors are OBR format 23 records with the temporary bit on.

```
PERMANENT / RECOVERED ERROR       SUMMARY        1 REPORT DATE 285 93
          TAPE LIBRARY                             PERIOD FROM 156 92
                                                        TO     156 92

                                                        1  1 1    1 1 1 1 1 1    1   2    2 2 2   2   2   2     2 2 2   3    3
     2 SENSE BYTES --> 0 1 2     3     4 5 6   7     8   9 0  1 2    3 4 5 6 7 8    9   0    1 2 3   4   5   6     7 8 9   0    1

                                                  ERROR CODE                  SW  SS            -------CU--------          SENSE
CHP DEVNO                                                                                                                  VOLSER
-ID /CUA  DTE   TIME   CPU STATUS  ERA  BLK ID  FMT MOD  LM    OTH   VOL SERIAL   EC  ID    SEQ    IF  SF  EC  HW-SER DR

 3   4     5     6      7    8      9     10     11  12   13    14       15        16  17    18    19  20  21   22    23  24  25
                                                      *****  PERMANENT  ERRORS  *****

60  0810  156  005317  00  00419C  6F  000000  23   03  6236  0000  D7D6D6F2F4F8  07  02  0F4003  FE  BE  56  297247  00  00  P00248
60  0810  156  005317  00  00419C  60  000000  23   03  6236  0000  D6D5D6F2F4F3  07  02  0F4003  FE  BE  56  297247  00  00  ON0243
60  0810  156  005317  00  00419C  62  000000  23   03  6236  0000  D6D4D7F2F9F3  07  02  0F4003  FE  BE  56  297247  00  00  OMP293
60  0810  156  005317  00  00419C  63  000000  23   03  6236  0000  D6D3D7F3F9F8  07  02  0F4003  FE  BE  56  297247  00  00  OLP398
60  0810  156  005317  00  00419C  6B  000000  23   03  6236  0000  D5D2D8F3F8F8  07  02  0F4003  FE  BE  56  297247  00  00  NKQ388
61  0810  156  171237  00  004180  75  000000  23   03  623D  0000  C1C2C3F6F4F1  07  02  0F4003  FE  BE  56  297247  00  00  ABC641
61  0810  156  203549  00  004184  7B  000000  23   03  62A1  0000  D7D8D2F1F2F3  07  02  0F4003  FE  BE  55  297247  00  00  PQK123
61  0810  156  203549  00  004184  70  000000  23   03  62A1  0000  D7D6D3F1F4F3  07  02  0F4003  FE  BE  55  297247  00  00  POL143
61  0810  156  203549  00  004184  71  000000  23   03  62A1  0000  D7D4D9F1F3F3  07  02  0F4003  FE  BE  55  297247  00  00  PMR133

61  0811  156  033355  01  024080  6B  000000  23   00  76E0  0000  D1D2D3F8F5F2  07  02  0F4003  FE  BE  56  297247  11  00  JKL852
                                                                                                                         A05M0017
```

```
PERMANENT / RECOVERED ERROR       SUMMARY        1 REPORT DATE 285 93
          TAPE LIBRARY                             PERIOD FROM 156 92
                                                        TO     156 92

                                                        1  1 1    1 1 1 1 1 1    1   2    2 2 2   2   2   2     2 2 2   3    3
     2 SENSE BYTES --> 0 1 2     3     4 5 6   7     8   9 0  1 2    3 4 5 6 7 8    9   0    1 2 3   4   5   6     7 8 9   0    1

                                                  ERROR CODE                  SW  SS            -------CU--------          SENSE
CHP DEVNO                                                                                                                  VOLSER
-ID /CUA  DTE   TIME   CPU STATUS  ERA  BLK ID  FMT MOD  LM    OTH   VOL SERIAL   EC  ID    SEQ    IF  SF  EC  HW-SER DR

 3   4     5     6      7    8      9     10     11  12   13    14       15        16  17    18    19  20  21   22    23  24  25
                                                      *****  RECOVERED  ERRORS  *****

61  0811  156  211946  00  024084  69  000000  23   00  6B6C  0000  CIC2C3F6F4F9  07  02  0F4003  FE  BE  55  297247  11  00  ABC649
60  0813  156  035026  01  804098  6D  000000  23   00  FB44  0000  E7E8E9F8F8F8  07  02  0F4003  FE  BE  56  297247  33  00  XYZ888
61  0816  156  082617  02  024084  76  000000  23   00  68E2  0000  D1D2D3F3F7F9  07  02  0F4003  FE  BE  56  297247  66  00  JKL379
61  0817  156  215731  01  024084  81  000000  23   00  76FD  0000  D5D1D8F3F8F4  07  02  0F4003  FE  BE  55  297247  77  00  NJQ384
61  0810  156  020013  02  024084  78  000000  23   00  6B12  0000  D1D2D3F7F2F4  07  02  0F4003  FE  BE  56  297247  DD  00  JKL724
77  0823  156  205353  05  024080  73  000000  23   00  6B6C  0000  D8D3D9F7F74F  27  03  0F4003  FE  BE  55  297253  33  00  QLR771
                                                                                                                         A05M0020
```

Figure 45. Tape Library Permanent Error Summary Example

1 **Report Date, Period From, Period To**

REPORT DATE is the Julian date the report ran.

PERIOD FROM is the Julian date of the earliest record.

PERIOD TO is the Julian date of the latest record.

2 The sense data from the OBR 23 log record.

3 The channel path ID obtained from byte 49 (or offset 49 decimal) of the OBR 23 log record.

4 The device number or the control unit address obtained from the offset (decimal) OBR format 23 log record.

Because of the way unsolicited unit checks are handled, this field can contain the address of devices that are not physically present.

5 The date obtained from bytes 8–11 of the OBR 23 log record.

6 The time obtained from bytes 12–15 of the OBR 23 log record.

7 The central processing unit obtained from bytes 20–21 of the OBR 23 log record.

8 The status obtained from sense bytes 0–2.

9 The ERA code obtained from sense byte 3 of the OBR 23 log record.

10 The channel logical block number obtained from sense bytes 4–6 of the OBR 23 log record.

11 The sense format obtained from sense byte 7 of the OBR 23 log record. Sense byte 7 is 23 to indicate format 23.

12 The library error modifier obtained from sense byte 8 of the OBR 23 log record.

13 The library manager error code obtained from sense bytes 9–10 of the OBR 23 log record.

14 Contains zeros or contains additional information obtained from sense bytes 11–12 of the OBR 23 log record.

15 The volume serial number of sense bytes 13–18 of the OBR 23 log record.

16 The software EC level obtained from sense byte 19 of the OBR 23 log record.

17 The subsystem ID obtained from sense byte 20 of the OBR 23 log record.

18 The encoded serial number of the 3494 library.

19 The control unit channel interface information obtained from sense byte 24 of the OBR 23 log record.

20 The subsystem features obtained from sense byte 25 of the OBR 23 log record.

21 The control unit microcode EC level obtained from sense byte 26 of the OBR 23 log record.

22 The control unit hardware information and serial number obtained from sense bytes 27–29 of the OBR 23 log record.

23 The drive address obtained from sense byte 30 of the OBR 23 log record.

24 Reserved—obtained from sense byte 31 of the OBR 23 log record.

25 The volume serial number in printable form obtained and converted from sense bytes 13–18 of the OBR 23 log record.

Tape Library Permanent and Recovered Error Summary Report (Service Alerts)

Figure 46 on page 200 shows an example of the service alerts contained in the Permanent and Recovered Error Summary Report.

All service alerts are noted by ERA 74 (library information data) in sense byte 3. The ERA modifier field (sense byte 8) specifies which group or category the particular ERA 74 belongs to, while the OTH (Other) field (sense bytes 11 and 12) contains additional information about ERA 74.

The modifier and OTH fields combined with the library manager error code (sense bytes 9 and 10) describe the specific reason for each ERA 74 service alert entry.

The following table lists the definitions of the OTH field for ERA 74 and addresses component unavailability (modifier byte 01) and component availability (modifier byte 02) for the OTH field.

OTH Field	Definition
0011	The convenience input station is made unavailable or available. (See note.)
0021	The convenience output station is made unavailable or available. (See note.)
004X	The hard disk is made unavailable or available. (See note.) The X is 1 for the primary disk or 2 for the backup disk.
0051	The dual write is made unavailable or available. (See note.)
0111	The cartridge accessor is made unavailable or available. (See note.)
021X	The vision system is made unavailable or available. (See note.) The X is 1 for the bar code reader.
111X	The grip is made unavailable or available. (See note.)
Note: Check the modifier where 01 is unavailable and 02 is available.	

```
PERMANENT / RECOVERED ERROR       SUMMARY          1 REPORT DATE 285 93
          TAPE LIBRARY                               PERIOD FROM 156 92
                                                          TO     156 92

                                                    1  1 1    1 1 1 1 1 1    1   2    2 2 2   2   2   2    2 2 2   3    3
     2 SENSE BYTES --> 0 1 2     3    4 5 6   7    8  9 0 1 2    3 4 5 6 7 8    9   0    1 2 3   4   5   6    7 8 9   0    1

                                                 ERROR CODE                                  -------CU--------
CHP                                                                          SW  SS                                          SENSE
-ID        DTE   TIME  CPU STATUS  ERA BLK ID  FMT MOD  LM   OTH   VOL SERIAL   EC  ID    SEQ    IF  SF  EC  HW-SER  DR        VOLSER

3          4     5     6   7       8   9       10  11   12   13    14           15  16    17     18  19  20  21      22  23    24
                                                 *****  SERVICE ALERTS  *****

OTHER

61         156  091542  01  024080  74  000004  23  00  60B7  0000  C4C3C9F2F5F7  07  02  0F4003  FE  BE  56  297247  AA  00   DCI257
60         156  101802  00  02409C  74  000000  23  00  85EF  0111  D4D7D4F7F3F3  F3  02  0F4003  FE  BF  56  297247  22  00   MPM733

LIBRARY COMPONENT UNAVAILABLE

61         156  092803  00  024080  74  400049  23  01  60B7  0000  D3D1D2F4F8F7  F6  02  0F4003  FE  BE  56  297247  44  00   LJK487

OTHER

61         156  091842  01  024080  74  000000  23  03  60B7  0000  C6C5C8F1F4F7  1F  12  0F4003  FE  BF  56  297247  11  00   FEH147
60         156  101826  00  024098  74  000000  23  03  85EF  1111  D6D2D8F4F0F0  F0  02  0F4003  FE  BE  56  297247  33  00   OKQ400

OTHER

61         156  093415  02  024080  74  000004  23  7F  60B7  0000  C6C9C6F5F5F5  F5  F2  0F4003  FE  BE  56  297247  CC  00   FEH147
61         156  101844  02  024080  74  000000  23  7F  85EF  1112  D8D7D4F3F2F9  F4  02  0F4003  FE  BF  56  297247  33  00   QPM329

PREVENTIVE MAINTENANCE

61         156  101751  00  024080  74  000000  23  80  76F0  0081  E8E8E8F7F6F4  F2  02  0F4003  FE  BF  56  297247  33  00   YYY764
60         156  101900  00  02409C  74  000000  23  80  76F0  0091  D8D1D9F5F3F4  F2  F2  0F4003  FE  BF  56  297247  22  00   QJR534

THRESHOLD EXCEEDED

61         156  101755  00  024080  74  000000  23  81  76F0  0082  E8E5E5F4F5F9  07  02  0F4003  FE  BF  56  297247  11  00   YVV459
60         156  101902  00  024098  74  000000  23  81  76F0  0092  E4E8E9F4F6F6  F6  02  0F4003  FE  BE  56  297247  33  00   UYZ466

OTHER

61         156  101802  00  024080  74  000000  23  FF  85EF  0111  D8D5D4F5F9F9  07  02  0F4003  FE  BF  56  297247  11  00   QNM599

CPU   MODEL    SERIAL NUMBER

00    3090XA       345783
01    3090XA       545783
02    3090XA       445783
                                                                                                                          A05M0018
```

Figure 46. Tape Library Service Alert Summary Example

1 **Report Date, Period From, Period To** REPORT DATE is the Julian date the report ran. PERIOD FROM is the Julian date of the earliest record. PERIOD TO is the Julian date of the latest record.

2 The sense data from the OBR 23 log record.

3 The channel path ID obtained from byte 49 (or offset 49 decimal) of the OBR 23 log record.

4 The date obtained from bytes 8–11 of the OBR 23 log record.

5 The time obtained from bytes 12–15 of the OBR 23 log record.

6 The central processing unit obtained from bytes 20–21 of the OBR 23 log record.

7 The status obtained from sense bytes 0–2 of the OBR 23 log record.

8 The ERA obtained from sense byte 3 of the OBR 23 log record.

9 The channel logical block number obtained from sense bytes 4–6 of the OBR 23 log record.

10 The sense format obtained from sense byte 7 of the OBR 23 log record.

11 The library error modifier obtained from sense byte 8 of the OBR 23 log record.

12 The library manager error code obtained from sense bytes 9–10 of the OBR 23 log record.

13 Contains zeros or contains additional information obtained from sense bytes 11–12 of the OBR 23 log record.

14 The volume serial number of the OBR 23 log record.

15 The software EC level obtained from sense byte 19 of the OBR 23 log record.

16 The subsystem ID obtained from sense byte 20 of the OBR 23 log record.

17 The encoded serial number of the 3494 library.

18 The control unit channel interface information obtained from sense byte 24 of the OBR 23 log record.

19 The subsystem features obtained from sense byte 25 of the OBR 23 log record.

20 The control unit microcode EC level obtained from sense byte 26 of the OBR 23 log record.

21 The control unit hardware information and serial number obtained from sense bytes 27–29 of the OBR 23 log record.

22 The drive address obtained from sense byte 30 of the OBR 23 log record.

23 Reserved—obtained from sense byte 31 of the OBR 23 log record.

24 The volume serial number in printable form obtained and converted from sense bytes 13–18 of the OBR 23 log record.

Tape Library Error Code Summary Report

The Tape Library Error Code Summary Report provides a summary of error codes logged and is listed by control unit address. Figure 47 on page 202 shows an example of this report.

The error codes can provide an entry into the maintenance information manual for both drive and control unit failures.

```
TAPE LIBRARY ERROR CODE SUMMARY REPORT                 1 REPORT DATE 285 93
                                                   PERIOD FROM 156 92
                                                       TO     156 92

                  C  C  C  C
         DEVNO    P  H  U  U                                    **** DATE/TIME ****
 SEQ     /CUA     U  R  R  D     LM      OTH    OCCURRENCES    *** LAST  ENTRY ***

  2        3      4  5  6  7     8        9          10               11

LIBRARY MANAGER

0F4003   0811    01  D  0  0    60B7     0000          1     156/92   09:18:42:81
0F4003   0814    00  D  0  0    60B7     0000          1     156/92   09:28:03:87
0F4003   081A    01  D  0  0    60B7     0000          1     156/92   09:15:42:58
0F4003   081C    02  D  0  0    60B7     0000          1     156/92   09:34:15:28
0F4003   0810    00  D  1  1    6236     0000          5     156/92   00:53:49:45
0F4003   0810    00  D  0  0    623D     0000          1     156/92   17:12:37:35
0F4003   0810    00  D  0  0    62A1     0000          3     156/92   20:35:49:45
0F4003   0816    02  D  0  0    68E2     0000          1     156/92   08:26:17:57
0F4003   081D    02  D  0  0    6B12     0000          1     156/92   02;19:46:93
0F4003   0811    00  D  0  0    6B6C     0000          1     156/92   21:19:46:93
0F4003   0823    05  D  0  0    6B6C     0000          1     156/92   20:53:53:23

LIBRARY MANAGER

0F4003   0811    01  D  0  0    76E0     0000          1     156/92   03:33:55:54
0F4003   0813    00  D  0  0    76F0     0081          1     156/92   10:17:51:96
0F4003   0811    00  D  0  0    76F0     0082          1     156/92   10:17:55:96
0F4003   0812    00  D  1  1    76F0     0091          1     156/92   10:19:00:88
0F4003   0813    00  D  1  1    76F0     0092          1     156/92   10:19:02:49
0F4003   0817    01  D  0  0    76FD     0000          1     156/92   21:57:31:75

LIBRARY MANAGER

0F4003   0812    00  D  1  1    85EF     0111          1     156/92   10:18:02:32
0F4003   0811    00  D  0  0    85EF     0111          1     156/92   10:18:02:32
0F4003   0813    00  D  1  1    85EF     1111          1     156/92   10:18:26:05
0F4003   0813    02  D  0  0    85EF     1112          1     156/92   10:18:44:52

3490 CONTROL UNIT

0F4003   0813    01  D  1  1    FB44     0000          1     156/92   03:50:26:74

CPU   MODEL    SERIAL NUMBER

00    3090XA     345783
01    3090XA     545783
02    3090XA     445783
03    3090XA     475783
04    3090XA     375783
05    3090XA     575783
                                                                          A05M0019
```

Figure 47. Tape Library Error Code Summary Example

1 **Report Date, Period From, Period To**

REPORT DATE is the Julian date the report ran.

PERIOD FROM is the Julian date of the earliest record.

PERIOD TO is the Julian date of the latest record.

2 The sequence number obtained from sense bytes 21–23 of the OBR 23 log record.

3 The device number or the control unit address obtained from the offset (decimal) OBR format 23 log record.

Because of the way unsolicited unit checks are handled, this field may contain the address of devices that are not physically present.

4 The central processing unit obtained from bytes 20–21 of the OBR 23 log record.

5 Identifies the associated channel adapter to which command the error was reported.

6 Identifies the control unit reporting the error and refers to sense byte 2, bit 3 of the OBR 23 log record.

7 Identifies the control-unit-detected error and refers to sense byte 2, bit 4 of the OBR 23 log record.

8 The library manager error code obtained from sense bytes 9–10 of the OBR 23 log record.

9 Contains zeros or contains additional information obtained from sense bytes 11–12 of the OBR 23 log record.

10 Obtained by adding each of the same values from the error codes.

11 Obtained from bytes 8–11 and 12–15 of the OBR log record.

TAPE Subsystem Exception

This report shows conditions that may need maintenance action. Records that are included in other reports may *not* be listed in the system exception reports.

This exception report can be used to determine if the TAPE subsystem has excessive errors or is operating within acceptable limits.

The series contains the following types of reports:

TYPE	REPORT
1	"TAPE Subsystem Exception Report"
2	"TAPE Service Informational Messages (SIMs)" on page 206 *Informational Messages* help you define a problem to IBM customer service personnel.
3	"TAPE Media Informational Messages (MIMs)" on page 206 *Informational Messages* help you define a problem to IBM customer service personnel. These reports work together to provide a picture of the errors occurring in the system. The TAPE subsystem exception report determines if your TAPE subsystem is experiencing an excessive amount of errors.

The following table shows the type of error records and their source in the TAPE subsystem exception reports.

TYPE	SOURCE
A3	Tape devices (only 3590s) ; including controllers
OBR	Tape devices (only 3590s) ; including controllers

Valid records that do not indicate a need for maintenance action may be shown in reports other than the subsystem exception.

TAPE Subsystem Exception Report

This part of the exception report series provides the primary listing of events to determine if the TAPE subsystem has excessive errors or is operating within acceptable limits.

This report provides the information to connect these events to the other reports in the series that have more details.

Examples of these reports are listed as follows.

REPORT	REFER TO
3592 Subsystem Exception Report Example	Figure 49 on page 205

```
TAPE SUBSYSTEM EXCEPTION REPORT                     REPORT DATE 080 97
                                                           PERIOD FROM 037 97
                                                           TO   079 97

*** SEQUENCE BY PROBABLE FAILING UNIT ***
                                                                                 6
PROBABLE   DEVICE                                          4    5          --------TOTALS--------
FAILING    TYPE/     FAILURE                                    DEVNO                   OBR   OBR
UNIT       VOLID     AFFECT                                CPU  /CUA       SIMS  MIMS  PERM  TEMP

*****************************************************************************************************
 2          1           3
MEDIA                                                           TOTAL        0     2     0     0

           JANZ01       DATA DEGRADED IN PARTITION         08   0883         0     1     0     0

           JANZ99       DATA DEGRADED IN PARTITION         00   08A9         0     1     0     0


DEVICE                                                          TOTAL        1     0     0     1

           3590-B11     PREVENTIVE MAINTENANCE COMPLETED   08   0883         1     0     0     0

           3590-B11     LOADER INTERVENTION REQUIRED       0A   0883         0     0     0     1


CONTROLLER                                                      TOTAL        1     0     0     3

           3590-A00     RESETTING EVENT                    08   0880         0     0     0     1

           3591/3490EMU RECOVERED CHECK-ONE FAILURE        08   0880         0     0     0     1

           3590/3490EMU TAPE LENGTH INCOMPATIBLE           08   0880         0     0     0     1

           3590-A00     EFFECT OF FAILURE IS UNKNOWN       08   0887         1     0     0     0


CPU   MODEL     SERIAL NUMBER
00    3090XA    045783
01    9021XA    110341
02    9221XA    0D0481
03    3090XA    245783
04    3090XA    145783
05    3090XA    155783
06    3090XA    055783
07    3090XA    255783
08    9672XA    061035
09    9672XA    461035
0A    9672XA    161035
```

Figure 48. 3590 Subsystem Exception Report Example

1 If the record is a MIM, the information appearing in this column will be the volid. If the record is any other type, the device type will appear in this column.

2 This field shows the unit most likely to be the source of the failure, even if the failure is recorded against another unit. EREP identifies the PFU based on the failure affect and the units reporting errors.

PFU	DESCRIPTION
MEDIA	Media (tape volume)
DEVICE	Device involved (3590)
CONTROLLER	Controller (drive string controller, or something common to more than one device on the string)
LIBRARY	Tape library

3 This field defines the function or machine area affected by the failure.

4 The EREP-assigned CPU identifier. If there is more than one CPU, one is shown and a plus sign is printed to indicate that there is more than one.

5 Use the physical address to locate information on other EREP reports. EREP uses the primary channel and unit address (PCUA) or device number if the devices do not provide physical IDs.

6 This field contains the error totals under the error types shown in the following table:

TYPE	DESCRIPTION
SIMS	The count of SIM messages reported by the unit and totaled for the PFU within the given failure.
MIMS	The count of MIM messages reported by the unit and totaled for the PFU within the given failure.
PERM	The count of permanent errors recorded against the unit and totaled for the PFU within the given failure affect. (A permanent error is indicated by a zero temporary error bit in the OBR record.)
TEMP	The count of temporary errors recorded against the unit and totaled for the PFU within the given failure affect.

```
TAPE SUBSYSTEM EXCEPTION REPORT                    REPORT DATE 220 05
                                                   PERIOD FROM 076 02
                                                          TO   077 02

*** SEQUENCE BY PROBABLE FAILING UNIT ***

PROBABLE   DEVICE                                            --------TOTALS----------
FAILING    TYPE/     FAILURE                                 DEVNO                OBR   OBR
UNIT       VOLID     AFFECT                           CPU    /CUA      SIMS  MIMS  PERM  TEMP

*******************************************************************************************************

LIBRARY                                                      TOTAL       0     0     0     1

           3570-CXX LIBRARY INFORMATIONAL DATA        00     07C2        0     0     0     1


DEVICE                                                       TOTAL       0     0     2     1

           3590-H1X LIBRARY DRIVE NOT UNLOADED        02     0C24        0     0     1     0

           3592-J1X WORM OVERWRITE REJECTED           03     0C27        0     0     0     1

           3592-E05 LIBRARY DRIVE NOT UNLOADED        00     1B90        0     0     0     1

           3592-E06 LIBRARY DRIVE NOT UNLOADED        00     1B90        0     0     0     1
```

Figure 49. 3592 Subsystem Exception Report Example

```
3590 DEVICE SUMMARY                                REPORT DATE 295 07
                                                   PERIOD FROM 195 06
                                                          TO   195 06

DEVICE ADDRESS      REAL   / EMULATED DEVICE TYPE

0FA2              3592-J1X / 3490-CXX

0FA3              3592-E05 / 3590-B1X
0FA4              3592-E06 / 3590-B1X


CPU   MODEL     SERIAL NUMBER
00    2084XA        132906
01    2084XA        142906
```

Figure 50. 3592 Emulated Device Summary Report

TAPE Service Informational Messages (SIMs)

This report relates to hardware failures that may require the customer to call for service.

Refer to the device maintenance library for information about the SIMs and actions required.

Figure 51 shows an example of the TAPE service informational messages.

```
TAPE SERVICE INFORMATION MESSAGES (SIMS)                    REPORT DATE 028 97
                                                            PERIOD FROM 023 97
                                                                   TO   028 97

*********************************************************************************
 DEVICE-0883  S/N 0113-00001  DATE-023/90  TIME-06:54:49:45    ID=21
   * SERVICE ALERT       D/T-3590-B11     REF1-D1C1  REF2-D5E9  REF3-F0F2  UM-1229
   * DV PREVENTIVE MAINTENANCE COMPLETED
   * DV CLEANING COMPLETE

 DEVICE-0887  S/N 0113-23456  DATE-023/90  TIME-09:26:32:65    ID=73
   * SERIOUS ALERT       D/T-3590-A00     REF1-D1C1  REF2-D5E9  REF3-F0F4  UM-0000
   * EFFECT OF FAILURE IS UNKNOWN
   * REPAIR IMPACT IS UNKNOWN

 DEVICE-08A9  S/N 0113-23456  DATE-023/90  TIME-15:35:30:19    ID=73
   * SERIOUS ALERT       D/T-3590/3490EMU  REF1-D1C1  REF2-D5E9  REF3-F0F4 UM-0000
   * EFFECT OF FAILURE IS UNKNOWN
   * REPAIR IMPACT IS UNKNOWN
```

Figure 51. TAPE Service Information Messages (SIMS)

TAPE Media Informational Messages (MIMs)

This report relates to media failures that may require the customer to call for service.

Refer to the device maintenance library for information about the MIMs and actions required.

Figure 52 on page 207 shows an example of the TAPE media informational messages.

```
TAPE MEDIA INFORMATION MESSAGES (MIMS)              REPORT DATE 028 97
                                                    PERIOD FROM 023 97
                                                           TO   028 97

*******************************************************************************
VOLUME-JANZ01  DEVICE-0883  DATE-023/90 TIME-06:54:49:45
   * D/T-3590-B11      S/N 0113-00001
   * SERVICE ALERT    REFCODE-0057  MEDIA IDENTIFIER-0021  FORMAT IDENTIFIER-00
   * DATA DEGRADED IN PARTITION 1229
   * REFERENCE MEDIA MAINTENANCE PROCEDURE 57

VOLUME-JANZ98  DEVICE-08A9  DATE-023/90 TIME-15:35:30:19
   * D/T-3590-A00      S/N 0113-23456
   * SERIOUS ALERT    REFCODE-0000  MEDIA IDENTIFIER-0073  FORMAT IDENTIFIER-00
   * EXCEPTION 00
   * REFERENCE MEDIA MAINTENANCE PROCEDURE 00

VOLUME-JANZ99  DEVICE-08A9  DATE-023/90 TIME-15:35:30:19
   * D/T-3590/3490EMU  S/N 0113-23456
   * SERIOUS ALERT    REFCODE-0000  MEDIA IDENTIFIER-0073  FORMAT IDENTIFIER-00
   * EXCEPTION 00
   * REFERENCE MEDIA MAINTENANCE PROCEDURE 00

VOLUME-SL0001  DEVICE-0DC1  DATE-297/07 TIME-08:39:56:05
   * D/T-3592-E06      S/N 0000-00000
   * SERIOUS ALERT    REFCODE-1011  MEDIA IDENTIFIER-0120  FORMAT IDENTIFIER-01
   * EXCEPTION 10
   * REFERENCE MESSAGE CODE 10
```

Figure 52. TAPE Media Information Messages (MIMS)

Chapter 12. Threshold Summary Report

The threshold summary report shows all the permanent read/write errors, temporary read/write errors, and media statistics for each volume mounted, using the OBR and MDR records, for 3410, 3420, and 8809 tape devices.

Note: The system exception series is a replacement for the threshold summary. Consider switching to the system exception series.

Description of the Threshold Summary Report

The data in the threshold summary report is grouped by tape subsystem. The report has four sections as shown in the following table:

SECTION	DESCRIPTION
DEV(ice) STATISTICS	Shows one line of statistical and error data for every demount record whose error count exceeds the read or write threshold you coded on the report parameter.
PERMANENT ERROR SUMMARY	Shows a one-line entry for *every* permanent error. A permanent error can be a read error, a write error, or an equipment check. This section ignores threshold settings so there are no limits.
TEMPORARY ERROR SUMMARY	Shows a summary of all temporary errors recorded for each device number or CUA, whether they exceeded your threshold or not.
VOLUME STATISTICS	Shows the errors and usage statistics by volume serial number using *each* MDR and OBR record from the first three sections of the report. This section also ignores threshold settings so there are no limits.

SECTION	DESCRIPTION
Note: • The first three sections appear once for each processor in your installation. • The columns in the fourth section of the report are titled differently depending on the device type involved. • See “Threshold Summary Report Information” on page 320 for how the columns differ and for the device types supported by the threshold summary reports. • Information for up to 256 CPUs can be provided in the threshold summary. • It is possible to have multiple internal processors reported under one serial number and thus increase EREP’s capabilities. See “SYSIMG Control Statement” on page 58 for details.	

Examples of the Threshold Summary Reports

Figures containing examples of these reports are on the pages shown in the following table:

REPORT	REFER TO
34XX/3803/8809 Subsystem Summary	“34XX/3803/8809 Subsystem Summary”
34XX/3803/8809 Subsystem Summary–Volume Statistics	“34XX/3803/8809 Subsystem Summary–Volume Statistics” on page 211

34XX/3803/8809 Subsystem Summary

```
                                  1    XXXXX 34XX/3803/8809 SUBSYSTEM SUMMARY XXXXX
                                        XXXXX    PRIMARY DEV   0180-018F       XXXXX
                   2   DEV STATISTICS - DEVS EQUAL TO OR EXCEEDING 001 TEMP RDS OR 001 TEMP WRTS

        TU    DATE   VOLUME     TIME      --TEMP--   IO   DEN- NRZI  R/W WR TG  LRC  CRC  ECC  SKEW ERLY VEL   ----CPU----  HDR
 DEV   SERIAL DAY YR  SERIAL  HH MM SS.TH   RDS WRTS COUNT SITY NOISE VRC  VRC   MTE  EDC  ENV  ERR  BOR  CHG   ID  SERIAL  SER

0180   59437  047 97  XXXXXX  01 07 52.89     0    4  7526 1600  N/A     0    0    0    0    2     0    0    2 4331 013078  N/A
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

                                     1    PERMANENT ERROR SUMMARY

PW  PERMANENT WRITE                        PR  PERMANENT READ                        PF  CAUSE UNKNOWN
EC  EQUIPMENT CHECK, CAUSE UNKNOWN         EE  ERASE HEAD                            EB  TAPE BOTTOM, LEFT OR RIGHT
EL  LOAD FAILURE                           EP  AIR BEARING PRESSURE                  ET  TACH START FAILURE
EV  VELOCITY CHECK                         ER  RESET KEY                             WC  WRITE CURRENT CHECK
EM  MODE SET
                                                                              ...SENSE BYTES....
                                                                                       1  1  1  1  1  1  1  1  1  1  2  2  2  2
 DEV  SERIAL ERR VOLID  LAST CCW           STATUS     0  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6  7  8  9  0  1  2  3
                        CC CA      FL CT   US CS CT

 0180 59437  PR         02 003751   20 0050 0E 00 0050 00 43 00 04 00 40 04 00 00 08 00 00 00 2F 1F 24 DD 91 01 00 00 1A 00 FE
 0181  N/A   PR         02 003751   20 0050 0C 08 0000 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

                                  1    34XX/3803/8809 SUBSYSTEM TEMPORARY ERROR SUMMARY
      ERRORS/100K                                     READ            WRITE        ECC
         IOS          DATE      TOTAL    TOTAL    STATISTICS       STATISTICS     VRC    STRD  PART   OVER  VEL  IBG
DEV   READ  WRITE  -FROM---TO--    IOS    MOUNTS. ERRORS  CLNRAC . ERRORS  ERSGAP . ENV    CHK   RECK   RUN   CHG  DET

0180   0.00  53.10 04797  04797     7532      2 .      0       0 .      4       4 .   2     0     0     0     2     0

TOTAL  0.00  53.10                  7532      2        0                4
                                        XXXXX 34XX/3803/8809 SUBSYSTEM SUMMARY XXXXX
                                        XXXXX    PRIMARY DEV   01A0-01AF       XXXXX
                 DEV STATISTICS - DEVS EQUAL TO OR EXCEEDING 001 TEMP RDS OR 001 TEMP WRTS

        TU    DATE   VOLUME     TIME      --TEMP--   IO   DEN- NRZI  R/W WR TG  LRC  CRC  ECC  SKEW ERLY VEL   ----CPU----  HDR
 DEV   SERIAL DAY YR  SERIAL  HH MM SS.TH   RDS WRTS COUNT SITY NOISE VRC  VRC   MTE  EDC  ENV  ERR  BOR  CHG   ID  SERIAL  SER

01A0    N/A   047 97  XXXXXX  01 03 55.35     0    5  7508  N/A  N/A     5 N/A     0    0    5     0 N/A  N/A  4331 013078  N/A
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

                                              PERMANENT ERROR SUMMARY

                   NO PERMANENT ERRORS ENCOUNTERED: 97047 TO 97047
```

```
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

                                       34XX/3803/8809 SUBSYSTEM TEMPORARY ERROR SUMMARY
      ERRORS/100K                                      READ            WRITE        ECC
         IOS             DATE      TOTAL    TOTAL    STATISTICS       STATISTICS     VRC    STRD  PART    OVER  VEL  IBG
DEV   READ  WRITE  -FROM---TO--     IOS    MOUNTS. ERRORS  CLNRAC . ERRORS  ERSGAP . ENV    CHK   RECK    RUN   CHG  DET

01A0   0.00  66.54 04797  04797     7514      2 .      0       0 .      5       5 .    5     0     0     0     0     0

TOTAL  0.00  66.54                  7514      2        0                5
                                       XXXXX 34XX/3803/8809 SUBSYSTEM SUMMARY XXXXX
                                       XXXXX    PRIMARY DEV   0570-057F       XXXXX
                 DEV STATISTICS - DEVS EQUAL TO OR EXCEEDING 001 TEMP RDS OR 001 TEMP WRTS

        TU    DATE   VOLUME     TIME      --TEMP--   IO   DEN- NRZI  R/W WR TG  LRC  CRC  ECC  SKEW ERLY VEL   ----CPU----  HDR
 DEV   SERIAL DAY YR  SERIAL  HH MM SS.TH   RDS WRTS COUNT SITY NOISE VRC  VRC   MTE  EDC  ENV  ERR  BOR  CHG   ID  SERIAL  SER

0574    N/A   042 97  D12213  01 17 46.99     0    1  1018  N/A  N/A     0    0    0    0    1     0    0    0 3081 020447  4092
0574    N/A   042 97  RMFD01  02 11 43.07     0    1   563  N/A  N/A     0    0    0    0    1     0    0    0 3081 020447  4092
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

                                           PERMANENT ERROR SUMMARY

                   NO PERMANENT ERRORS ENCOUNTERED: 97042 TO 97044

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

                                       34XX/3803/8809 SUBSYSTEM TEMPORARY ERROR SUMMARY
      ERRORS/100K                                      READ            WRITE        ECC
         IOS             DATE      TOTAL    TOTAL    STATISTICS       STATISTICS     VRC    STRD  PART    OVER  VEL  IBG
DEV   READ  WRITE  -FROM---TO--     IOS    MOUNTS. ERRORS  CLNRAC . ERRORS  ERSGAP . ENV    CHK   RECK    RUN   CHG  DET

0570   0.00   0.00 04497  04497      805      3 .      0       0 .      0       0 .    0     0     0     0     0     0
0573   0.00   0.00 04297  04297      609      1 .      0       0 .      0       0 .    0     0     0     0     0     0
0574   0.00  86.65 04297  04297     2308      5 .      0       0 .      2       2 .    2     0     0     0     0     0

TOTAL  0.00  53.73                  3722      9        0                2
                                       XXXXX 34XX/3803/8809 SUBSYSTEM SUMMARY XXXXX
                                       XXXXX    PRIMARY DEV   0570-057F       XXXXX
                   NO DEVS EXCEEDED THRESHOLD: 97047 TO 97058

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

                                           PERMANENT ERROR SUMMARY

                   NO PERMANENT ERRORS ENCOUNTERED: 97047 TO 97058

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

                                       34XX/3803/8809 SUBSYSTEM TEMPORARY ERROR SUMMARY
      ERRORS/100K                                      READ            WRITE        ECC
         IOS             DATE      TOTAL    TOTAL    STATISTICS       STATISTICS     VRC    STRD  PART    OVER  VEL  IBG
DEV   READ  WRITE  -FROM---TO--     IOS    MOUNTS. ERRORS  CLNRAC . ERRORS  ERSGAP . ENV    CHK   RECK    RUN   CHG  DET

0571   0.00   0.00 05797  05797     1224      1 .      0       0 .      0       0 .    0     0     0     0     0     0
0572   0.00   0.00 04797  04797     4525      2 .      0       0 .      0       0 .    0     0     0     0     0     0

TOTAL  0.00   0.00                  5749      3        0                0
                                       XXXXX 34XX/3803/8809 SUBSYSTEM SUMMARY XXXXX
                                       XXXXX    PRIMARY DEV   0570-057F       XXXXX
                   NO DEVS EXCEEDED THRESHOLD: 97041 TO 97056

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

                                           PERMANENT ERROR SUMMARY

                   NO PERMANENT ERRORS ENCOUNTERED: 97041 TO 97056

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

                                       34XX/3803/8809 SUBSYSTEM TEMPORARY ERROR SUMMARY
      ERRORS/100K                                      READ            WRITE        ECC
         IOS             DATE      TOTAL    TOTAL    STATISTICS       STATISTICS     VRC    STRD  PART    OVER  VEL  IBG
DEV   READ  WRITE  -FROM---TO--     IOS    MOUNTS. ERRORS  CLNRAC . ERRORS  ERSGAP . ENV    CHK   RECK    RUN   CHG  DET

0570   0.00   0.00 05297  05297       30      1 .      0       0 .      0       0 .    0     0     0     0     0     0
0571   0.00   0.00 05597  05697     4174      2 .      0       0 .      0       0 .    0     0     0     0     0     0
0572   0.00   0.00 04797  04797     4525      2 .      0       0 .      0       0 .    0     0     0     0     0     0
0574   0.00   0.00 05397  05397     1707      1 .      0       0 .      0       0 .    0     0     0     0     0     0
0575   0.00   0.00 04597  04597       20      1 .      0       0 .      0       0 .    0     0     0     0     0     0
0577   0.00   0.00 05497  05497        5      1 .      0       0 .      0       0 .    0     0     0     0     0     0

TOTAL  0.00   0.00                 10461      8        0                0
                                       XXXXX 34XX/3803/8809 SUBSYSTEM SUMMARY XXXXX
                                       XXXXX    PRIMARY DEV   0570-057F       XXXXX
                 DEV STATISTICS - DEVS EQUAL TO OR EXCEEDING 001 TEMP RDS OR 001 TEMP WRTS

        TU    DATE   VOLUME     TIME      --TEMP--   IO   DEN- NRZI  R/W WR TG  LRC  CRC  ECC  SKEW ERLY VEL   ----CPU----  HDR
 DEV   SERIAL DAY YR  SERIAL  HH MM SS.TH   RDS WRTS COUNT SITY NOISE VRC  VRC   MTE  EDC  ENV  ERR  BOR  CHG   ID  SERIAL  SER
```

```
0575    N/A   041 97  SMP010  18 12 27.52     2    0    10  N/A  N/A     2    0    2    2    0     0    0     0 3033 021928  5560
0571    N/A   041 97  T28375  18 13 28.09     0    1  1647  N/A  N/A     1    0    1    0    1     0    0     0 3033 021928  3758
0578    N/A   046 97  69945   13 32 08.20     2    0     9  N/A  N/A     0    0    0    0    1     0    0     0 3033 021928  3964
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

                                           PERMANENT ERROR SUMMARY

PW  PERMANENT WRITE                        PR  PERMANENT READ                        PF  CAUSE UNKNOWN
EC  EQUIPMENT CHECK, CAUSE UNKNOWN         EE  ERASE HEAD                            EB  TAPE BOTTOM, LEFT OR RIGHT
EL  LOAD FAILURE                           EP  AIR BEARING PRESSURE                  ET  TACH START FAILURE
EV  VELOCITY CHECK                         ER  RESET KEY                             WC  WRITE CURRENT CHECK
EM  MODE SET
                                                                              ...SENSE BYTES....
                                                                                         1  1  1  1  1  1  1  1  1  1  2  2  2  2
 DEV  SERIAL ERR VOLID  LAST CCW           STATUS     0  1  2  3  4  5  6  7  8  9  0  1  2  3  4  5  6  7  8  9  0  1  2  3
                        CC CA      FL CT   US CS CT

 0575 55560  EC         1F 000000   40 0050 26 00 0050 18 44 00 28 00 40 34 00 10 08 10 00 00 BA 2F 15 B8 91 02 D8 00 1A 00 00
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

                                       34XX/3803/8809 SUBSYSTEM TEMPORARY ERROR SUMMARY
      ERRORS/100K                                       READ            WRITE        ECC
         IOS           DATE      TOTAL    TOTAL    STATISTICS       STATISTICS     VRC    STRD  PART    OVER  VEL  IBG
DEV   READ  WRITE  -FROM---TO--    IOS    MOUNTS. ERRORS  CLNRAC . ERRORS  ERSGAP . ENV    CHK   RECK    RUN   CHG  DET

0570   0.00   0.00 04197  04197      103      1 .      0       0 .      0       0 .   0      0     0      0     0     0
0571   0.00  60.71 04197  04197     1647      1 .      0       0 .      1       1 .   1      0     0      0     0     0
0572   0.00   0.00 04197  04197      539      1 .      0       0 .      0       0 .   0      0     0      0     0     0
0574   0.00   0.00 04197  04197     2945      1 .      0       0 .      0       0 .   0      0     0      0     0     0
0575  100+    0.00 04197  04197       38      2 .      2       0 .      0      45 .   0      0     0      0     0     0
0577   0.00   0.00 04197  04197      636      2 .      0       0 .      0       0 .   0      0     0      0     0     0
0578  100+    0.00 04697  04697        9      1 .      2       0 .      0       0 .   1      0     0      0     0     0

TOTAL 67.60  16.90                  5917      9       4               1
                                       XXXXX 34XX/3803/8809 SUBSYSTEM SUMMARY XXXXX
                                       XXXXX    PRIMARY DEV   0BA0-0BAF       XXXXX
                             DEV STATISTICS - DEVS EQUAL TO OR EXCEEDING 001 TEMP RDS OR 001 TEMP WRTS

       DATE   VOLUME     TIME          TEMP    IO  COUNT
DEV   DAY YR  SERIAL  HH MM SS TH    RDS WRTS  RDS  WRTS   MTE EDC SRC RBF ENV NOP CRE SKEW VEL MODEL SERIAL

0BAE  045 97          16 08 04.23    77  145    18     0     0   0   0  33   0   0   1    0   0 3033  020808
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

                                           PERMANENT ERROR SUMMARY

                   NO PERMANENT ERRORS ENCOUNTERED: 97045 TO 97045



                                       34XX/3803/8809 SUBSYSTEM TEMPORARY ERROR SUMMARY

        ERRORS/100K                                        READ            WRITE
           IOS         DATE      TOTAL IOS     TOTAL     STATISTICS      STATISTICS    OVER   VEL
  DEV   READ  WRITE -FROM---TO--  READ WRITE    MOUNTS  ERRORS RETRIES  ERRORS ERS GAP  RUN    CHK

   0BAE  100+   0.00 04597  04597    18     0       0      77     1      145    256        0    0

TOTAL   100+   0.00                 18     0       0      77            145
                              XXXXX 34XX/3803/8809 SUBSYSTEM SUMMARY XXXXX
                              XXXXX    PRIMARY DEV   0BA0-0BAF       XXXXX
                 DEV STATISTICS - DEVS EQUAL TO OR EXCEEDING 001 TEMP RDS OR 001 TEMP WRTS
DATE   VOLUME     TIME          TEMP    IO  COUNT
DEV   DAY YR  SERIAL  HH MM SS TH    RDS WRTS  RDS  WRTS   MTE EDC SRC RBF ENV NOP CRE SKEW VEL MODEL SERIAL
0BA2  045 97  SSAG03  16 07 45.45    78   46    18     0     0   0   0  33   0   0   1    0   4 3033  020868
0BA2  045 97  SSAG25  16 08 58.51    26   97     6     0     0   6  55  33   0   0   0    0   0 3033  020868
0BA1  045 97  SSAG02  16 09 07.02    26  254     6     0     0   6  92  33   0   0   0    0   0 3033  020868
0BA2  045 97  SSAG03  16 11 49.05    78   51    18     0     0   0   0  33   0   0   0    0   0 3033  020868
0BA8  045 97  SSAG20  16 13 22.22   104  143    24     0     0  24 139  33   0   0   0    0   0 3033  020868
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

                                           PERMANENT ERROR SUMMARY

PW  PERMANENT WRITE                        PR  PERMANENT READ                        PF  CAUSE UNKNOWN
EC  EQUIPMENT CHECK, CAUSE UNKNOWN         EE  ERASE HEAD                            EB  TAPE BOTTOM, LEFT OR RIGHT
EL  LOAD FAILURE                           EP  AIR BEARING PRESSURE                  ET  TACH START FAILURE
EV  VELOCITY CHECK                         ER  RESET KEY                             WC  WRITE CURRENT CHECK
EM  MODE SET
                                                         DATE       TIME       100         SYMP
DEV   ERR   VOL ID   LAST CCW            STATUS        DAY YR   HH MM SS TH    IPS   LGM   CODE
                     CC CA      FL CT    US CS CT
0BA0  WC    T2DLIB   00 000000  00 0000  00 00 0000    041 97   01 05 07.33     0     0    1E1F
0BA2  WC    T2DLIB   00 000000  00 0000  00 00 0000    041 97   01 30 02.09     0     0    3E3F
0BA3  WC    T2DLIB   00 000000  00 0000  00 00 0000    041 97   01 47 17.48     0     0    5E5F
0BA7  WC    T77371   00 000000  00 0000  00 00 0000    041 97   08 45 21.71     0     0    7E7F
0BA8  WC    T75537   00 000000  00 0000  00 00 0000    041 97   08 58 44.67     0     0    9E9F
0BAA  WC    DUMPTP   00 000000  00 0000  00 00 0000    041 97   11 40 33.00     0     0    BEBF
0BA5  WC    12121    01 CAEF30  20 0050  0E 00 0000    041 97   11 41 09.86     0     0    DEDF
0BA0  WC    B61204   00 000000  00 0000  00 00 0000    041 97   11 41 46.48     0     0    FEFF
```

```
0BA5  WC    12121    00 000000   00 0000   00 00 0000    041 97   11 41 53.25     0     1    1100
0BA1  PF    ZDA12A   00 000000   00 0000   00 00 0000    041 97   11 42 45.57     1     0    EEFF
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

                                       34XX/3803/8809 SUBSYSTEM TEMPORARY ERROR SUMMARY

        ERRORS/100K                                       READ            WRITE
           IOS           DATE      TOTAL IOS     TOTAL     STATISTICS      STATISTICS    OVER    VEL
  DEV   READ  WRITE -FROM---TO--  READ WRITE    MOUNTS  ERRORS RETRIES  ERRORS ERS GAP  RUN     CHK

  0BA1  100+   0.00 04597  04597     6     0        0     26      0      254      0         0    0
  0BA2  100+   0.00 04597  04597    42     0        0    182      1      194    256         0    4
  0BA8  100+   0.00 04597  04597    24     0        0    104      1      143      1         0    0

TOTAL   100+   0.00                 72     0        0    312             591
```

1 The first three parts of this report are produced for each processor (CPU) involved.

2 DEV is the device number; same as the CUA.

34XX/3803/8809 Subsystem Summary–Volume Statistics

1

```
  VOLUME STATISTICS - VOLUMES EQUAL TO OR EXCEEDING 001 TEMPORARY READS OR 001 TEMPORARY WRITES OR PERMANENT ERRORS
VOLUME  DATE      TIME            TU    RD/  --PERM--   --TEMP-- RD RTRY/ ERASE  IO  COUNT BLOCK  PROGRAM  ----CPU----  MOD  DEN- HDR
SERIAL DAY YR HH MM SS TH DEV  SERIAL WRT  RDS WRTS   RDS WRTS CLNR ACT  GAPS  RDS  WRTS LENGTH   ID     ID   SERIAL   #   SITY SER

       041 97 16 23 48.93 0575 55560  E     0    0     0    0       0      0    9         80 E17JWS1C 3033 021928  5   800  5347
       043 97 00 13 49.44 0180 59437  R     0    0     0    0       0      0   10          0 ICFSMPLB 4331 013078  5  1600     0
       044 97 01 01 33.70 0181  N/A   R     0    0     0    0       0      0    6          0 ICFSMPLB 4331 013078 N/A  N/A  N/A
       045 97 16 08 04.23 0BAE                        77  145       1    256   18    0     0          3033 020808
B61204 041 97 11 41 46.48 0BA0  N/A   W                                                 32768 H92RCS1B 3033 020868 N/A  N/A 57569
DUMPTP 041 97 11 40 33.00 0BAA  N/A   W                                                 24576 REL3DUMP 3033 020868 N/A  N/A 41121
D12213 042 97 01 17 46.99 0574  N/A         0    0     0    1       0      1 1018          0 BATCH    3081 020447 N/A  N/A  4092
LM2.0C 058 97 09 38 39.23 0574  N/A         0    0     0    4       0      4 8069          0 D58RAM10 3084 121128 N/A  N/A  4309
L00000 046 97 12 14 06.32 0575  N/A         0    0     0   13       0     14 4112          0 D15ELP1F 3033 021929 N/A  N/A  5560
RMFD01 042 97 02 11 43.07 0574  N/A         0    0     0    1       0      1  563          0 BATCH    3081 020447 N/A  N/A  4092
SMP010 041 97 18 12 27.52 0575  N/A         1    0     2    0       0      0   10       3200 E17JWS1E 3033 021928 N/A  N/A  5560
SSAG02 045 97 16 09 07.02 0BA1                        26  254       0      0    6    0     0          3033 020868
SSAG03 045 97 16 07 45.45 0BA2                        78   46       0    256   18    0     0          3033 020868
SSAG03 045 97 16 11 49.05 0BA2                        78   51       1      0   18    0     0          3033 020868
SSAG20 045 97 16 13 22.22 0BA8                       104  143       1      1   24    0     0          3033 020868
SSAG25 045 97 16 08 58.51 0BA2                        26   97       0      0    6    0     0          3033 020868
T2DLIB 041 97 01 05 07.33 0BA0  N/A   R                                                  4096 D86RAS11 3033 020868 N/A  N/A     1
T2DLIB 041 97 01 30 02.09 0BA2  N/A   R                                                  8192 D86RAS13 3033 020868 N/A  N/A  8225
T2DLIB 041 97 01 47 17.48 0BA3  N/A   R                                                 12288 D86RAS14 3033 020868 N/A  N/A 16449
T28375 041 97 18 13 28.09 0571  N/A         0    0     0    1       0      1 1647          0 #IPORS2  3033 021928 N/A  N/A  3758
T69217 047 97 19 50 58.03 0583  N/A         0    0     0    1       0      1 2671          0 #TSO013  3084 221128 N/A  N/A 24793
T69299 047 97 19 52 36.88 0584  N/A         0    0     0    9       0     12 2609          0 #TSO105  3084 321128 N/A  N/A 53793
T69299 057 97 19 52 36.88 0584  N/A         0    0     0    9       0     12 2609          0 #TSO105  3084 021103 N/A  N/A 53793
T75537 041 97 08 58 44.67 0BA8  N/A   W                                                 20480 D24WLF1M 3033 020868 N/A  N/A 32897
T77371 041 97 08 45 21.71 0BA7  N/A   R                                                 16384 D24WLF1L 3033 020868 N/A  N/A 24673
T81582 046 97 04 26 26.14 0572  N/A         0    0     0    1       0      1 1781          0 D10LLC1C 3084 121128 N/A  N/A  4201
XXXXXX 047 97 01 07 6D.B9 0180 59437        0    0     0    4       0      4 7526         0          4331 013078  5  1600     0
XXXXXX 047 97 01 03 65.35 01A0  N/A         0    0     0    5       0      5 7508         0          4331 013078 N/A  N/A  N/A
ZDA12A 041 97 11 42 45.57 0BA1  N/A   W                                                 40960 D24LAC1A 3033 020868 N/A  N/A 65518
12121  041 97 11 41 09.86 0BA5 55560  W                                                 28672 E17JWS1A 3033 020868  5   800 49345
12121  041 97 11 41 53.25 0BA5  N/A   R                                                 36864 E17JWS1A 3033 020868 N/A  N/A    17
69945  046 97 13 32 08.20 0578  N/A         0    0     2    0       0      0    9          0 D10LEM1B 3033 021928 N/A  N/A  3964
```

1 The volume statistics summarize all the permanent errors presented in the preceding parts of the report.

Chapter 13. Detail Edit and Summary Reports

The detail edit and summary reports provide environmental information, hexadecimal dumps and summaries of errors to determine their nature and causes.

Description of the Detail Edit and Summary Reports

The detail edit and summary reports allow you to look at the error records on the two levels shown in the following table:

REPORT TYPE	DESCRIPTION
Detail edits	Format every record you have selected on a separate page, including a hexadecimal dump of the record
Detail summaries	Summarize selected data from the record and total the number of records that meet your selection criteria; some detail summaries show only the total number of selected records. EREP produces one detail summary per processor (CPU) for each record type selected.

Note:
1. The format and content of the detail edits and summaries vary according to the type of record and the device or product involved.
2. These reports cover all products and devices and all record types except DASD CCH.
3. DASD does not use the combined outboard record/miscellaneous data record (OBR/MDR) detail summary (PRINT=PS|SD|SU,TYPE=OT) or the MDR detail edit and summary reports, because the DASD subsystem exception report summarizes the DASD devices.
4. VTAM OBRs do not appear on the print summary reports.

Examples of the Detail Edit and Summary Report

This section covers the following reports:

REPORT

It is unlikely that you would request all of these reports at once, but it is possible to do so. The output would include many detail edit reports for each record type.

Important: All possible PRINT report combinations for each record type are not shown in the following examples. Maintenance documentation for most devices includes sample detail edit reports for the relevant records.

External Timer Reference Maintenance Information Detail Edit (A1) Report

This detail edit report provides a printout of the information contained in the external timer reference maintenance information (A1) records (ETR). The report is used when detailed information must be gathered for a particular ETR-related event.

Figure 53 on page 215 contains an example of the external timer reference maintenance information detail edit (A1) report.

```
REPORT: ETR MAINTENANCE INFORMATION - DETAIL EDIT           DAY YEAR
SCP:    VS 2 REL.  3                                     DATE:  043  97
MODE IS: 370XA                                                 HH MM SS.TH

     1
NETWORK ID =  1
     2
REASON CODE =  0  NO PROBLEMS REPORTED BY 9037

ALTERNATE PORT INFORMATION
--------------------------
            1
       NETWORK ID =  1
            3
       BOX ID =      2
            4
       PORT ID =     7

CONSOLE ERROR MESSAGE
---------------------
IEA263I BOTH CPC PORTS ARE CONNECTED TO THE SAME SIDE OF ETR  2.   5

HEX DUMP OF RECORD   6
HEADER    A1831800  00000000  0097043F  10031436  A6110074  90210000
    0018  C8000000  000000F0  A3071F6B  00000180  00010207  A3071F6B  0011708F  C4C4C4C4
    0038  00000000  00000000  00000000  00000000  00010207  00000000  00000000  00000000
    0058  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0078  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0098  00000000  00000000  C9C5C1F2  F6F3C940  C2D6E3C8  40C3D7C3  40D7D6D9  E3E240C1
    00B8  D9C540C3  D6D5D5C5  C3E3C5C4  40E3D640  E3C8C540  E2C1D4C5  40E2C9C4  C540D6C6
    00D8  40C5E3D9  4040F24B  40404040  40404040  40404040  40404040  40404040  40404040
    00F8  40404040  40404040  00000000  00000000  00000000  00000000  00000000  00000000
```

Edit (A1) Report

Figure 53. External Timer Reference Maintenance Information Detail

1 The NETWORK ID (ETR-network ID) identifies the time source for all CPCs directly connected to the ETR.

2 The REASON CODE specifies the probable area of errors or contains information about exception conditions.

3 The BOX ID (ETR ID) of the ETR to which the alternate CPC port is connected.

4 The PORT ID (port number) of the ETR (output) port to which the alternate CPC port is immediately connected.

5 The text of a message issued to the console or to the system log (SYSLOG).

6 The contents of the record are displayed in hex format.

Link Maintenance Information Detail Edit (A2) Report

The link maintenance information detail edit report provides a printout of the information contained in a link maintenance information (A2) record. The report is used when detailed or model-dependent information must be gathered for a particular unit or link incident.

Figure 54 on page 216contains an example of the link maintenance information detail edit (A2) report.

```
REPORT: LINK MAINTENANCE INFORMATION - DETAIL EDIT          DAY YEAR
SCP:    VS 2 REL.  3                                  DATE:  043  97
MODE IS: 370XA                                              HH MM SS.TH
REPORTING PATH: N/A  1                               TIME: 00 12 34.08
      2                    3
INCIDENT CODE = 03  DEDICATED CONNECTION INTERFACE = N/A
LINK TYPE: LASER                 CHANNEL TYPE: ESCON
  4
  NODE     OFFSET         5      6    7           8             9
DESCRIPT  BYTES 0-3  TYPE-MODEL  MFG  PLANT  SEQUENCE NUMBER  INTERFACE
--------  ---------  ----------  ---  -----  ---------------  ---------

INCIDENT  1C1CFF08   003090-60J  IBM   00     000000070039      0073

ATTACHED  00000A00   009032-002  IBM   02     000000010148      00DF

HEX DUMP OF RECORD  10
HEADER (0000)  A2831800  00000000  0097043F  00123408  63330039  3090000 0
       (0018)  0A030000
INC ND (001C)  1C1CFF08  F0F0F3F0  F9F0F6F0  D1C9C2D4  F0F0F0F0  F0F0F0F 0  F0F7F0F0  F3F90073
ATT ND (003C)  00000A00  F0F0F9F0  F3F2F0F0  F2C9C2D4  F0F2F0F0  F0F0F0F 0  F0F1F0F1  F4F800DF
       (005C)  00000000  00000000  00000000  00000000  00000000  0000000 0  00000000  00000000
       (007C)  00000000
```

Figure 54. Link Maintenance Information Detail Edit (A2) Report

1 If a channel path ID (CHPID) is identified for the link incident described in the report, it is printed in the REPORTING PATH field. If CHPID is not specified, N/A (not applicable) is printed. (A CHPID is only specified when the incident node is a channel.)

2 The INCIDENT CODE is a hex byte that indicates the type of incident detected.

3 If the incident node is the director port in a dedicated connection, then the other port participating in the connection is indicated in the DEDICATED CONNECTION INTERFACE (DCI) field. For all other link connections, the DCI is N/A (not applicable).

4 The NODE field indicates whether the node specified is the incident node (the node that detected the link incident) or an attached node (the node attached to the incident node through a link). If the attached node is not known, the node is all zeros. The attached node in a dedicated connection in a director port is always all zeros.

5 TYPE-MODEL contains the type and model of the unit presenting both the incident and attached nodes.

6 MFG is the manufacturer as shown in both the incident and attached nodes.

7 PLANT is the plant of manufacture as shown in both the incident and attached nodes.

8 SEQUENCE NUMBER is the manufacturing sequence number as shown in both the incident and attached nodes for the TYPE-MODEL.

9 INTERFACE is the specific port as shown in both the incident and attached nodes.

10 The contents of the record are displayed in hex format. Model-dependent data is contained in the last 36 bytes of the record.

Asynchronous Notification Record Detail (A3) Report

The A3 report shows the details of the service information messages (SIMs).

Figure 55 contains an example of the asynchronous notification record detail (A3) report.

```
REPORTING DEVICE:       000350    REPORT: ASYNCHRONOUS                         DAY YEAR
REPORTING DEVICE TYPE:    3390    REPORTING SYSTEM: VS 2 REL.  3  370XA  DATE:  043  97
REPORTING PATH:        08-0350    SUBCHANNEL ID: 00010029                      HH MM SS.TH
                                                                         TIME: 15 39 44.04
RECORD TYPE:          DASD SIM

DEVICE DEPENDENT DATA

      DASD SERVICE INFORMATION MESSAGE
   * SERVICE ALERT       2107     S/N 0112-B7425 REFCODE 43C0-2400-0003  ID=C2
   * MEDIA EXCEPTION ON SSID 0041, VOLSER PACSM3 DEV 0350, 08
      PHYSICAL DEVICE 10, CYLINDER 003B HEAD 0C
   * REFERENCE MEDIA MAINTENANCE PROCEDURE 1

HEX DUMP OF RECORD
HEADER    A3831810  00000000  0097043F  15394404  61572320  30900000
    0018  00000000  00000000  00000000  00000000  00000000  00000000  20 080350  80062032
    0038  08000350  D7C1C3E2  D4F30000  00900600  10328FC2  11010124  00 000304  22204411
    0058  004143C0  05108202  FF003B0C
```

Figure 55. Asynchronous Notification Record Detail (A3) Report

A3 Report for Incorrect Record

This report is received when there is an incorrect A3 record.

```
.****************
REPORTING DEVICE: 00023F    REPORT: ASYNCHRONOUS                  DAY YEAR
REPORTING DEVICE TYPE:    3390    REPORTING SYSTEM: VS 2 REL.  3  370XA DATE:  068  97
REPORTING PATH:  19-023F                                                HH MM SS.TH
                                                                        TIME: 07 04 49.80
RECORD TYPE:    DASD SIM
DEVICE DEPENDENT DATA
      SERVICE INFORMATION MESSAGE   -----ØØØØØØØØØØØØØ
   * SERVICE ALERT  3390-02  S/N 0113-12931 REFCODE 62AC-0000-000F ID=02
  ** INVALID EXCEPTION CODE F FOR SENSE BYTE 28 = FE      1
 DEVICE DEPENDENT DATA NOT FORMATTED    2
SYSTEM INFORMATION DATA    3
BYTE 00 01 02 03 04 05 06 07
     D1 C5 E2 D7 D3 F2 00 00


SUBSYSTEM INFORMATION DATA    4
BYTE 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15
     00 00 06 20 20 27 8F 02 FC 00 00 00 00 00 0F 04
BYTE 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
     23 00 32 83 00 02 62 AC 05 10 46 00 FE 00 00 00


HEX DUMP OF RECORD
HEADER    A3831810  00000000  0097068F  07044980  A2221023  90210000
    0018  00000000  00000000  00000000  00000000  00000000  00000000  2019023F  80062027
    0038  0800023F  D1C5E2D7  D3F20000  00000620  20278F02  FC000000  00000F04  23003283
    0058  000262AC  05104600  FE000000

REPORTING DEVICE: 004400    REPORT: ASYNCHRONOUS
REPORTING DEVICE TYPE:    3390    REPORTING SYSTEM:   VS 2 REL.  3
REPORTING PATH:  66-4400

RECORD TYPE:    DASD SIM
DEVICE DEPENDENT DATA
      DASD SERVICE INFORMATION MESSAGE
   * REMOTE SESSION      2107     S/N 0175-ANLX1 REFCODE BE81-00
  ** INVALID EXCEPTION CODE 8 FOR SENSE BYTE 28 = FE      1
  ** REQUIRE MANUAL INTERVENTION FROM CE.
 DEVICE DEPENDENT DATA NOT FORMATTED    2
SYSTEM INFORMATION DATA    3
BYTE 00 01 02 03 04 05 06 07
     D4 E5 E2 C5 E2 C1 00 00


SUBSYSTEM INFORMATION DATA    4
BYTE 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15
     00 80 10 00 00 3C CF 01 8F 40 40 00 81 FF 09 04
BYTE 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
     E5 2C 03 5D 00 00 BE 81 04 10 02 00 F3 00 00 00


HEX DUMP OF RECORD
HEADER    A3831810  00000000  0005304F  10393729  00116D3A  20640000
    0018  00000000  00000000  00000000  00000000  00000000  0000
    0038  08004400  D4E5E2C5  E2C10000  00801000  003CCF01  8F40
    0058  0000BE81  04100200  F3000000  00000000  00000000  0000
```

Figure 56. A3 Report for Incorrect Record

1 The exception code is used to identify the TYPE and LOCATION of the error and the effect that the repair will have on the subsystem.

2 The TYPE, LOCATION, and REPAIR information normally provided by the EXCEPTION CODE will not be printed.

3 Device dependent data from the control program. May include the VOLID.

4 Device dependent information from the reporting subsystem.

Channel Check Handler (CCH) Detail Reports

The operating system writes a CCH record when a channel failure occurs but does not terminate the system control program. The errors recorded include channel control checks, channel data checks, and interface control checks.

Figures containing examples of these reports are on the pages shown in the following table:

REPORT	REFER TO
CCH Detail Report for 3090, Record Type 20	"CCH Detail Report for 3090, Record Type 20"
CCH Summary Report for 3090, Record Type 20	Figure 57 on page 220
CCH Detail Report for 3090, Record Type 21	Figure 58 on page 221
CCH Summary Report for 3090, Record Type 21	Figure 59 on page 222
CCH Detail Report for 4341	"CCH Detail Report for 4341" on page 222
CCH Summary Report for 4341	Figure 60 on page 223
CCH (Inboard) Detail Report for 9373	"CCH (Inboard) Detail Report for 9373" on page 223
CCH (Inboard) Summary Report for 9373	Figure 61 on page 225

CCH Detail Report for 3090, Record Type 20

```
CPU MODEL:         3090        REPORT:  CCH EDIT            DAY YEAR       JOB IDENTITY: C078938B
                                                      DATE: 042  97                      C3F0F78F9F3F8C2
CPU ID:      370150       SCP:  V370 REL.  6          HH MM SS.
                                                      TIME: 02 18 50.57
CHANNEL UNIT ADDR: 1481

CHANNEL TYPE:      INTEGRATED BLOCK MPX


                  CC DA     FL    CT
FAILING CCW       02 9D6ED0 04 90 7D00

                  K  CA     US CS CT
CSW               00 9D6ED0 00 02 7D80


          UNIT STATUS                      CHANNEL STATUS
ATTENTION                     0      PROGRAM CONTROLLED INTERRUPT     0
STATUS MODIFIER               0      INCORRECT LENGTH                 0
CONTROL UNIT END              0      PROGRAM CHECK                    0
BUSY                          0      PROTECTION CHECK                 0
CHANNEL END                   0      CHANNNEL DATA CHECK              0
DEVICE END                    0      CHANNNEL CONTROL CHECK           0
UNIT CHECK                    0      INTERFACE CONTROL CHECK          1
UNIT EXCEPTION                0      CHAINING CHECK                   0


    SOFTWARE RECOVERY STATUS

HARD FAIL                     1
DEGRADE FAIL                  0
SOFT FAIL                     0
PASSED                        0

I/O UNIT FOUND BUSY

 CHANNEL/UNIT ADDR:     1481

CHANNEL ERROR ANALYSIS
```

```
  CSW STORED BY --  UNKNOWN

  TERMINATION BY       --   SELECTIVE RESET  --  CODE 2
  TIME CHANNEL DETECTED ERROR - COMMAND ACCEPTED BUT NO DATA HAS BEEN TRANSFERED
                                  RETRY CODE   2

  VALIDITY OF RECORDED DATA
            FULL CHANNEL LOGOUT      =  VALID
            SEQUENCE CODE            =  VALID
            UNIT STATUS              =  INVALID
            CSW ADDRESS              =  VALID
            CHANNEL ADDRESS          =  VALID
            DEVICE ADDRESS           =  VALID
PROBABLE SOURCE OF ERROR -   CONTROL UNIT

*MODEL-DEPENDENT DATA*
HEX DUMP OF RECORD
HEADER    20660800  00010000  0097042F  02185057  40370150  30900000
    0018  C3F0F7F8  F9F3F8C2  14810000  00000000  00000000  00000000  029D6ED0  04907D00
    0038  009D6ED0  00027D80  44091782  01000810  03001481  00000010  400C1481  80020262
    0058  A0810081  40004088  42001782  4011017F


CPU MODEL:        3090             REPORT:  CCH SUMMARY           REPORT DATE: 073 97
                                                                  PERIOD FROM: 042 97
CPU ID NUMBER:    370150                                          TO:          042 97

CHANNEL NUMBER:   14


NUMBER OF RECORDS: 001


ERROR SOURCE:

         CPU         0000

         CHAN        0000

         SCU         0000

         SU          0000

         CU          0001

       UNIT STATUS                            CHANNEL STATUS

ATTENTION                    0000     PROGRAM CONTROLLED INTERRUPT  0000
STATUS MODIFIER              0000     INCORRECT LENGTH              0000
CONTROL UNIT END             0000     PROGRAM CHECK                 0000
BUSY                         0000     PROTECTION CHECK              0000
CHANNEL END                  0000     CHANNEL DATA CHECK            0000
DEVICE END                   0000     CHANNEL CONTROL CHECK         0000
UNIT CHECK                   0000     INTERFACE CONTROL CHECK       0001
UNIT EXCEPTION               0000     CHAINING CHECK                0000

    SOFTWARE RECOVERY STATUS
HARD FAIL                    0001
DEGRADE FAIL                 0000
SOFT FAIL                    0000
PASSED                       0000
```

Figure 57. CCH Summary Report for 3090, Record Type 20

```
CPU MODEL:        3090        REPORT:  CCH EDIT             DAY YEAR       JOB IDENTITY: *MASTER*
                                                      DATE: 042  97                      5CD4C1E2E3C5D95C
           CPU ID: 170044      SCP:  VS 2 REL.  3            HH MM SS.TH
                                                      TIME: 08 59 03.32

CHANNEL UNIT ADDR: 0063

CHANNEL TYPE:      INTEGRATED MULTIPLEXOR(MPX)

                  CC DA     FL    CT
FAILING CCW       03 DE3B89 30 00 0001
                  K  CA     US CS CT
CSW               01 000000 00 02 0080

          UNIT STATUS                          CHANNEL STATUS
ATTENTION                      0      PROGRAM CONTROLLED INTERRUPT     0
STATUS MODIFIER                0      INCORRECT LENGTH                 0
CONTROL UNIT END               0      PROGRAM CHECK                    0
BUSY                           0      PROTECTION CHECK                 0
CHANNEL END                    0      CHANNNEL DATA CHECK              0
DEVICE END                     0      CHANNNEL CONTROL CHECK           0
UNIT CHECK                     0      INTERFACE CONTROL CHECK          1
UNIT EXCEPTION                 0      CHAINING CHECK                   0

    SOFTWARE RECOVERY STATUS
HARD FAIL                      0
DEGRADE FAIL                   0
SOFT FAIL                      0
PASSED                         0
I/O UNIT FOUND BUSY
 CHANNEL/UNIT ADDR:     0063

CHANNEL ERROR ANALYSIS

  CSW STORED BY --  SIO
  TERMINATION BY       --   SELECTIVE RESET  --  CODE 2

  TIME CHANNEL DETECTED ERROR - COMMAND SENT OR SENT BUT NOT ACCEPTED

                                  RETRY CODE   4
  VALIDITY OF RECORDED DATA
            FULL CHANNEL LOGOUT      =  VALID
            SEQUENCE CODE            =  VALID
            UNIT STATUS              =  INVALID
            CSW ADDRESS              =  INVALID
            CHANNEL ADDRESS          =  VALID
            DEVICE ADDRESS           =  VALID
PROBABLE SOURCE OF ERROR -   CONTROL UNIT

CCH FOOTPRINTS:  8468

   IOS GPRS SAVED      1
   UCB ADDRESS ZERO    0
   ERPIB EXISTS        0
   IGFCCHSI ENTERED    0
   IGFCCHII ENTERED    0
   IGFCCHFE ENTERED    1
   IGFC60 ENTERED      0
   IGFC70 ENTERED      0
   IGDC80 ENTERED      0
   IGFCIC ENTERED      1
   IGFCCHRD ENTERED    1
   IGFCCHMP EDTERED    0
   IGFCCHUC ENTERED    1
   IGFCCHAS ENTERED    0
   IGFCCHIO ENTERED    0
   IGFCCHEX ENTERED    0

MULTIPROCESSING INFORMATION
                                                  0  1  2  3  4  5  6   7  8  9 10 11 12 13 14 15
   CPU/CHANNEL SET ID   0000   CHANNELS ON LINE     X  X  X  X  X  X  X   X  X  X  X  X  X  X  X  X
   CPU/CHANNEL SET ID   0001   CHANNELS ON LINE     X  X  X  X  X  X  X   X  X  X  X  X  X  X  X  X

*MODEL-DEPENDENT DATA*
HEX DUMP OF RECORD
HEADER    21830800  20000000  0097042F  08590332  00170044  30900000
    0018  5CD4C1E2  E3C5D95C  00630000  00000000  00000000  00000000  03 DE3B89  30000001
    0038  01000000  00020080  80091384  12501009  01000063  00630060  FF FFFFFF  FFFFFFFF
    0058  FFFFFFFF  FFFFFFFF  80001011  F0040063  06000C08  00001384  FF FFFFFF  FFFFFFFF
    0078  FFFFFFFF  FFFFFFFF  FFFFFFFF  FFFFFFFF  FFFFFFFF  FFFFFFFF  FF FFFFFF  FFFFFFFF
    0098  FFFFFFFF  FFFFFFFF  FFFFFFFF  FFFFFFFF  FFFFFFFF  FFFFFFFF  84 680000  00000002
    00B8  00000000  00010000  00000000  00000000  00000000  00000000  00 000000  00000000
    00D8  00000000  00000000  00000000  00000000  00000000  00000000  00 000000  00000000
```

Figure 58. CCH Detail Report for 3090, Record Type 21

```
CPU MODEL:        3090            REPORT:  CCH SUMMARY           REP ORT DATE: 073 97
                                                                 PER IOD FROM: 042 97
CPU ID NUMBER    : 170044                                        TO:           042 97

CHANNEL NUMBER:    00

NUMBER OF RECORDS: 001


ERROR SOURCE:

          CPU          0000

          CHAN         0000

          SCU          0000

          SU           0000

          CU           0001

        UNIT STATUS                              CHANNEL STATUS

ATTENTION                     0000      PROGRAM CONTROLLED INTERRUPT  00 00
STATUS MODIFIER               0000      INCORRECT LENGTH              00 00
CONTROL UNIT END              0000      PROGRAM CHECK                 00 00
BUSY                          0000      PROTECTION CHECK              00 00
CHANNEL END                   0000      CHANNEL DATA CHECK            00 00
DEVICE END                    0000      CHANNEL CONTROL CHECK         00 00
UNIT CHECK                    0000      INTERFACE CONTROL CHECK       00 01
UNIT EXCEPTION                0000      CHAINING CHECK                00 00


    SOFTWARE RECOVERY STATUS

HARD FAIL                     0000
DEGRADE FAIL                  0000
SOFT FAIL                     0000
PASSED                        0000
```

Figure 59. CCH Summary Report for 3090, Record Type 21

CCH Detail Report for 4341

```
MODEL  4341                       SERIAL NO.
015085   VS 2 REL.    03
--- RECORD SOURCE - CCH            TYPE - INBOARD
JOB NAME             IEEVMPCR
       DAY  YEAR                        HH MM SS.TH
DATE _ 045   97                 TIME _ 11 48 44 81
CHANNEL/UNIT ADDRESS  0001C1

ADDR.STORED IN HARDWARE LOC 186 - 187:       01C1
              CC   DA    FL     CT
FAILING CCW   31 63A847  40 80 0005

              K    CA    US CS  CT
CSW           10 619EC8  00 42 0000

 ---UNIT STATUS---                  ---CHANNEL STATUS---
  ATTENTION        0                PRGM-CTLD IRPT    0
  STATUS MODIFIER  0                INCORRECT LENGTH  0
  CONTROL UNIT END 0                PROGRAM CHECK     0
  BUSY             0                PROTECTION CHECK  0
  CHANNEL END      0                CHAN DATA CHECK   0
  DEVICE END       0                CHAN CTRL CHECK   1
  UNIT CHECK       0                I/F CTRL CHECK    0
  UNIT EXCEPTION   0                CHAINING CHECK    0

I/O UNIT FOUND BUSY
  CHANNEL/UNIT ADDR      0131 01C1

--- CHANNEL TYPE ---
  INTGTD BLK MPX

******************************************************************************
                           CHANNEL  ERROR ANALYSIS
 CSW STORED BY  INTERRUPT
 TERMINATION BY  -- SELECTIVE RESET- CODE 2
```

```
 TIME CHANNEL DETECTED ERROR -  COMMAND ACCEPTED-DATA TRANSFER UNDETERMINED
                                RETRY CODE 5
 VALIDITY OF RECORDED DATA
          COUNT              = NOT VALID
          SENSE DATA         = NOT STORED
          UNIT STATUS        = NOT VALID
          COMMAND ADDRESS    = VALID
          CHANNEL ADDRESS    = VALID
          DEVICE ADDRESS     = VALID
 PROBABLE SOURCE OF ERROR-   COULD NOT BE ASSESSED
********************************************************************************
NO CHANNEL LOGOUT RECORDED

CCH FOOTPRINTS: 8468
    IOS GPRS SAVED      1
    UCB ADDRESS ZERO    0
    ERPIB EXISTS        0
    IGFCCHSI ENTERED    0
    IGFCCHII ENTERED    0
    IGFCCHFE ENTERED    1
    IGFC60 ENTERED      0
    IGFC70 ENTERED      0
    IGDC80 ENTERED      0
    IGFCIC ENTERED      1
    IGFCCHRD ENTERED    1
    IGFCCHMP EDTERED    0
    IGFCCHUC ENTERED    1
    IGFCCHAS ENTERED    0
    IGFCCHIO ENTERED    0
    IGFCCHEX ENTERED    0
            MULTIPROCESSING INFORMATION
                                      0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
 CPU/CHAN SET ID   0000   CHANNELS ON LINE  X X X X X X
   HEX DUMP OF RECORD
   HEADER    21830800    20000000    0097045F    11484481    02015085    43410000

      0000  C9C5C5E5    D4D7C3D9    013101C1     00000000    00000000    00000000   3163A847    40800005
      0020  10619EC8    00420000    40481785     3030200E     030001C1    84680000   00000001    00000000
      0040  000003FF    00000000    00000000     00000000     00000000    00000000   00000000
      0060  00000000    00000000    00000000


            MODEL 4341 CHANNEL CHECK RECORDS     DAY YEAR     DAY YEAR

                            DATE RANGE -  FROM  045  97  TO  045  97

                                              SERIAL NO.         015085

                                              NO.OF RECORDS       00009

                       --- SUMMARY OF MODEL 4341 CHANNEL CHECK RECORDS ---

                                              ERROR SOURCE

                                                CPU    0000
                                                CHAN   0009
                                                SCU    0000
                                                SU     0000
                                                CU     0009

             --- UNIT STATUS ---                               --- CHANNEL STATUS ---

ATTENTION         0000    CHANNEL END       0000    PRGM-CTLD IRPT    0000    CHAN DATA CHECK   0000
STATUS MODIFIER   0000    DEVICE END        0000    INCORRECT LENGTH  0000    CHAN CTL CHECK    0000
CONTROL UNIT END  0000    UNIT CHECK        0000    PROGRAM CHECK     0000    I/F CTL CHECK     0009
BUSY              0000    UNIT EXCEPTION    0000    PROTECTION CHECK  0000    CHAINING CHECK    0000
```

Figure 60. CCH Summary Report for 4341

CCH (Inboard) Detail Report for 9373

```
MODEL   9373                       SERIAL NO.   237967

 V370 REL.    06

--- RECORD SOURCE - CCH            TYPE - INBOARD
```

```
JOB NAME             CP/370

       DAY  YEAR                               HH MM SS.TH
DATE _ 048   97                         TIME _ 04 36 54 15

CHANNEL/UNIT ADDRESS  000700

             CC   DA    FL     CT
FAILING CCW  00 000000  00 00 0000

             K    CA    US CS  CT
CSW          00 000000  00 04 0000

 ---UNIT STATUS---                      ---CHANNEL STATUS---
  ATTENTION         0                    PRGM-CTLD IRPT    0
  STATUS MODIFIER   0                    INCORRECT LENGTH  0
  CONTROL UNIT END  0                    PROGRAM CHECK     0
  BUSY              0                    PROTECTION CHECK  0
  CHANNEL END       0                    CHAN DATA CHECK   0
  DEVICE END        0                    CHAN CTRL CHECK   1
  UNIT CHECK        0                    I/F CTRL CHECK    0
  UNIT EXCEPTION    0                    CHAINING CHECK    0



 ******************************************************************************************************

---LIMITED CHANNEL LOGOUT DATA EDITING---

 ---FIELD VALIDITY FLAGS---             ---TERMINATION CODE---
  SEQUENCE CODE STORED IS VALID     0   INTERFACE DISCONNECT       0
  UNIT STATUS STORED IS VALID       0   STOP, STACK OR NORMAL      0
  CCW ADDR AND KEY IN CSW ARE VALID 0   SELECTIVE RESET            0
  CHANNEL ADDRESS STORED IS VALID   1   INTERFACE INOPERATIVE      0
  DEVICE ADDRESS STORED IS VALID    0   ERROR ALERT                0

 ---SEQUENCE CODE---
  ERROR DETECTED DURING TEST I/O OR CLEAR I/O  1
  COMMAND WENT OUT, DEVICE STATUS NOT IN       0
  COMMAND ACCEPTED, NO DATA TRANSFERRED        0
  AT LEAST ONE DATA BYTE TRANSFERRED           0
  COMMAND EITHER NOT SENT OR NOT ACCEPTED      0
  COMMAND ACCEPTED BUT DATA XFER UNPREDICTABLE 0

 ---MEASUREMENT BYTE---

  BYTE:  00000000             NUMBER OF PENDING OPERATIONS (NPO):    000
(CCH - Inboard - Detail Report)
      (Part 1 Continued)

 ---DELAY CODE---
  CHANNEL BUSY       0
  CONTROL UNIT BUSY  0
  DEVICE BUSY        0

I/O UNIT FOUND BUSY
 CHANNEL/UNIT ADDR     0740

--- CHANNEL TYPE ---
  INTGTD MPX


******************************************************************************
                           CHANNEL  ERROR  ANALYSIS
  CSW STORED BY  INTERRUPT
  TERMINATION BY  -- SYSTEM RESET- CODE 3
  TIME CHANNEL DETECTED ERROR -  COULD NOT BE ASSESSED
  VALIDITY OF RECORDED DATA
           COUNT             = NOT VALID
           SENSE DATA        = STORED
           UNIT STATUS       = NOT VALID
           COMMAND ADDRESS   = NOT VALID
           CHANNEL ADDRESS   = VALID
           DEVICE ADDRESS    = NOT VALID
  PROBABLE SOURCE OF ERROR-  CHANNEL
******************************************************************************


   HEX DUMP OF RECORD
```

```
   HEADER    20660800    00000000    0097048F    5204552         00234567    93730000

       0000  4040C3D7    61F3F7F0    07400000    00000000        00000000    00000000    00000000    00000000
       0020  00000000    00040000    444002C0    00000000        01000700    00000000    00000700    00000000


             MODEL 9373 CHANNEL CHECK RECORDS     DAY YEAR     DAY YEAR

                              DATE RANGE -  FROM  044  97  TO  048  97

                                                  SERIAL NO.         234567

                                                  NO.OF RECORDS        00002

                         --- SUMMARY OF MODEL 9373 CHANNEL CHECK RECORDS ---

                                                  ERROR SOURCE

                                                    CPU    0000
                                                    CHAN   0002
                                                    SCU    0000
                                                    SU     0000
                                                    CU     0000

              --- UNIT STATUS ---                                --- CHANNEL STATUS ---

ATTENTION         0000    CHANNEL END       0000    PRGM-CTLD IRPT    0000    CHAN DATA CHECK   0000
STATUS MODIFIER   0000    DEVICE END        0000    INCORRECT LENGTH  0000    CHAN CTL CHECK    0002
CONTROL UNIT END  0000    UNIT CHECK        0000    PROGRAM CHECK     0000    I/F CTL CHECK     0000
BUSY              0000    UNIT EXCEPTION    0000    PROTECTION CHECK  0000    CHAINING CHECK    0000
```

Figure 61. CCH (Inboard) Summary Report for 9373

Channel Report Word (CRW) Detail Report

In a 370/XA environment, the CRW describes channel incidents reported through machine checks. The CRW specifies the error environment and the severity of the error.

Figure 62 on page 226 and Figure 63 on page 227 contain examples of the channel report word (CRW) detail report.

```
DEVICE NUMBER:    00000      REPORT: CRW EDIT                  DAY  YEAR       RECORDING MODULE: IOSREIPH
                                                         DATE: 260   04                          C9D6E2D9C5C9D7C8
DEVICE TYPE:      N/A        SCP: VS 2       V2 R3
                             CPU MODEL: 2084                   HH MM SS.TH
CHANNEL PATH ID:  **         CPU ID       : 340105       TIME: 17 08 15.64

CHANNEL REPORT WORD INFORMATION

  CRW VALIDITY:    VALID     1
  CRW:             0903 001E
  RECORDING CODE:  01        2
  ORIGIN:          CRW PENDING MACHINE CHECK
  STORED BY:       HARDWARE
  CREATED BY:      HARDWARE
  PROCESSOR ADDR:  0000

CRW SEQUENCE NUMBER:                  00000000
ASSOCIATED CRW SEQUENCE NUMBER:       00000000
INTERRUPT SUBCLASS DEFINITION TABLE:  00081018 20283038

PATH MANAGEMENT CONTROL WORD    3

  SUBCHANNEL ENABLED           0
  PROG CHECK ADDR >= LIMIT     0
  PROG CHECK ADDR <= LIMIT     0
  STORE MEASUREMENTS IN CMB    0
  STORE DCTI IN EXT STAT WORD  0
  DYNAM PATH MULTI-PATH STATE  0
  TIMING FACILITY AVAILABLE    0
  VALID DEVICE NUMBER ASSIGNED 0

UCB INFORMATION                                             CHANNEL PATH INFORMATION

  UCB LEVEL VALUE:              00                            CHANNEL PATH RECOVERY COUNT:   **
  UCB LEVEL BIT MASK:           00000000
  SUBCHANNEL RECOVERY ANCHOR:   00000000
                                                                       4
-------------------UCB DEVICE STATUS FLAGS---------------     ----CHPID ICHPT FLAGS-----

UCB TEMPORARILY UNUSABLE 0     INTRCEPT CNDITION EXISTS 0     CHP VALID FOR INSTLATION *
DEVICE NOT READY         0     DVICE HAS NO USABLE PATH 0     CHP OWNED BY THIS SYSTEM *
DEVICE SUBCHAN UNUSABLE  0     DEVICE HAS NO SUBCHANNEL 0     CHP IS ONLINE            *
PENDING SENSE OPERATION  0     ABNORMAL UCBLEVEL VALUE  0     CHP UNDRGOING CHP RCOVRY *
START SUBCHANNEL ISSUED  0     RESERVED                 0     VARY OFF IN PROG FOR CHP *
HALT SUBCHANNEL ISSUED   0     RESERVED                 0     FORCE CHP OFFLINE FAILED *
CLEAR SUBCHANNEL ISSUED  0     RESERVED                 0     RECOVRY IN LAST UCB SCAN *
DVICE OFFLN DUE TO ERROR 0     RESERVED                 0     RESERVED                 *

HEX DUMP OF RECORD
HEADER    25361000  00001100  0097043F  17081564  40340105  91210000
    0018  C9D3E5D9  C1E2F0F4  01800001  00000000  0903001E  00000000  00000000  00000000
    0038  00000000  00000000  00000000  00000000  00E00008  10182028  30380000  00000000
```

Figure 62. CRW Detail Report with Recording Code of X'01'

1 If the words OVERFLOW INDICATED appear here, it means that CRW records have been lost because they are being produced on the hardware queue faster than the recording service can retrieve them.

2 The product dependent part of this report is affected by the recording code. Valid codes are X'01' and X'02'.

3 All zeros indicates that the UCB is not available.

4 The channel path table flags appear only if the CRW indicates a channel path ID (CHPID).

```
DEVICE NUMBER:    0000       REPORT: CRW EDIT                   DAY  YEAR       RECORDING MODULE: ILVRAS04
                                                          DATE: 043   97                          C9D3E5D9C1E2F0F4
DEVICE TYPE:      N/A        SCP: VSE/ESA    V5 R2
                             CPU MODEL: 9121                    HH MM SS.TH
CHANNEL PATH ID:  **         CPU ID        : 340105       TIME: 17 08 15.64

CHANNEL REPORT WORD INFORMATION

  CRW VALIDITY:    VALID
  CRW:             0903 001E
  RECORDING CODE:  02
  ORIGIN:          CRW PENDING MACHINE CHECK
  STORED BY:       HARDWARE
  CREATED BY:      HARDWARE
  PROCESSOR ADDR:  0000

MACHINE CHECK INTERRUPT CODE:  00000000 00000000

RDEV STATUS INFORMATION

  REAL DEVICE IS BUSY          0
  IORBK QUEUED FOR LATER START 0
  DEVICE IS OCCUPIED           0
  ERROR RECOVERY PROC ACTIVE   0
  DEVICE TEMPORARILY DOWN      0
  RDEV IS INITIALIZED AT IPL   0

DEVICE ALLOC CONTROL FLAGS                ERROR RECOVERY CONTROL FLAGS

  DEVICE IS OFFLINE          0              MSG HNDLR WAIT FOR DEV END 0
  DEVICE ATTACHED TO SYSTEM  0              INTENSIV RECRDING MODE ACT 0
  DEVICE IS NOT IN USE       0              INTRVNTION REQUIRED ON DEV 0
  CP VOLUME IS ATTACHED      0              DEVICE IS BEING RESET      0
  DEVICE IS ATTACHED TO USER 0              SENSE CONTINGENT CONNECTN  0
  DEVICE IS FOR SPOOLING     0              DEVICE HAS BEEN RESERVED   0
  DEV MOUNTED, NOT ATTACHED  0              UNSOLICITED DEV END IN ERP 0
  XVOLID SPECD FOR DASD/TAPE 0              MISSING INTERRUPT MSG SENT 0

SCHIB INFORMATION

  CONTROL FLAGS                           CHANNEL PATH IDS             00 E0 00 08 10 18 20 28
    SUBCHANNEL ENABLED          0           INTERRUPT REQUEST CODE      0  0  0  0  0  0  0  0
    PROG CHECK ADDR >= LIMIT    0           LOGICAL PATH MASK           0  0  0  0  0  0  0  0
    PROG CHECK ADDR <= LIMIT    0           PATH NOT OPERATIONAL MASK   0  0  0  0  0  0  0  0
    MEASUREMENTS ARE PERMITTED  0           LAST PATH USED MASK         0  0  0  0  0  0  0  0
    TIMING IS PERMITTED         0           PATH INSTALLED MASK         0  0  0  0  0  0  0  0
    DYNAMIC PATHING AVAILABLE   0           PATH OPERATIONAL MASK       0  0  0  0  0  0  0  0
    TIMING FACILITY AVAILABLE   0           PATH AVAILABLE MASK         0  0  0  0  0  0  0  0
    VALID DEVICE NUM ASSIGNED   0

HEX DUMP OF RECORD
HEADER    25361000  00001100  0097043F  17081564  40340105  91210000
    0018  C9D3E5D9  C1E2F0F4  02800001  00000000  0903001E  00000000  00000000  00000000
    0038  00000000  00000000  00000000  00000000  00E00008  10182028  30380000  00000000
```

Figure 63. CRW Detail Report with Recording Code of X'02'

Dynamic Device Reconfiguration (DDR) Detail Report

A dynamic device reconfiguration (DDR) record is created for each operator-initiated or system-initiated swap between direct-access devices having buffered logs and demountable disk packs (such as the IBM 3330, 3330 MOD 11, and 3340 devices) and between magnetic tape devices.

The DDR record identifies the physical devices involved in the swap.

Figure 64 on page 228 and Figure 65 on page 228 contain examples of the dynamic device reconfiguration (DDR) detail report.

```
--- RECORD ENTRY TYPE - DDR   SOURCE - DDR   MODEL -  3090   SERIAL NO. 170802

MVS/370    V2 R1

                              DAY YEAR   HH.MM.SS.TH   JOB IDENTITY CPSB46

                              042  97    20 32 10 71               C3D7E2C2F4F64040

FROM UCB DEVICE TYPE        32108003                       TO UCB DEVICE TYPE        32108003
FROM CHANNEL UNIT ADDRESS     000580                       TO CHANNEL UNIT ADDRESS     000581  1
FROM VOLUME SERIAL NUMBER     F22011                       TO VOLUME SERIAL NUMBER
FROM PHYSICAL ID                  00                       TO PHYSICAL ID                  00

RECORD DEPENDENT SWITCH           50

SECONDARY STORAGE RECONFIGURATION

RECONFIGURATION PERFORMED AS A RESULT OF A PERMANENT ERROR

   HEX DUMP OF RECORD
   HEADER    60890A50    00000000    0097042F    20321071        61170802    30900000

       0000  C3D7E2C2    F4F64040    C6F2F2F0    F1F10000        00000000    00000580    32108003    00000581
       0020  32108003
```

Figure 64. Dynamic Device Reconfiguration (DDR) Detail Report

```
SUMMARY OF DDR RECORDS              DEV 000580

                      DAY YEAR   DAY YEAR
RECORD DATE RANGE     042  97    042  97

MODEL - 3090     SERIAL NO - 170802

TOTAL NUMBER OF RECORDS=0001
```

Figure 65. Dynamic Device Reconfiguration (DDR) Summary Report

1 For records created in 370XA mode, the device number (DEV) replaces control unit address (CUA).

Data Reduction Report

This report is device specific because it formats and summarizes environmental data gathered by the device. The report is used by IBM service representatives to solve problems that are causing random/intermittent errors.

Figure 66 on page 229 contains an example of the data reduction report.

```
******************************************************************************

           MAINTENANCE DEVICE CODE FOR DEVICE TYPE = 3370
       DEVICE ADDRESS = 0701  SHARED      SERIAL =  700006
        1
     MD CODE TYPE =  DC1  MDC=0008 SAMPLES=   1
     MD CODE TYPE =  FC1  MDC=0200 SAMPLES=   1   2
     MD CODE TYPE =  SV   MDC=0130 SAMPLES=   2
MODIFERS:  3
  EXPECTED       ACTUAL         ACCESS     EVEN   OVER/  DIFFERENCE CT
  DESTINATION    DESTINATION    DIRECTION  TRACK  UNDER  REMAINDER
  CCC-HH-M/F-SM  CCC-HH-M/F-SM     F/R      E/O   OS/US  DIFF
    7  0  M   0    0 15  F   3      R        0    OS-  7    0
    7  0  M   0    0 15  F   3      R        0    OS-  7    0
       4
     MD CODE TYPE =  SVE  MDC=8130 SAMPLES=   1
MODIFERS:
  EXPECTED       ACTUAL         ACCESS     EVEN   OVER/  DIFFERENCE CT
  DESTINATION    DESTINATION    DIRECTION  TRACK  UNDER  REMAINDER
  CCC-HH-M/F-SM  CCC-HH-M/F-SM     F/R      E/O   OS/US  DIFF
    7  0  M   0    0 15  F   3      R        0    OS-  7    0
     MD CODE TYPE =  SC   MDC=0001 SAMPLES=   2
     MD CODE TYPE =  SCE  MDC=8001 SAMPLES=   1
     MD CODE TYPE =  RW   MDC=0132 SAMPLES=   6
     MD CODE TYPE =  DC   MDC=0300 SAMPLES=   1

 ECC CORRECTABLE            UNCORRECTABLE              NO SYNC BYTE FOUND
ALTERNATE DATA BLOCK            N/A                         N/A
CCC = 999 HH =  2 BB =  2

IFC1691      6 RECORDS NOT USED BY IFCNFPDR FOR THIS CUX 070X   5
```

Figure 66. Data Reduction Report

1 There are six different types of maintenance device codes (MDC), each using a particular subset of fault symptom codes.

2 The number of records used to build this MDC.

3 Two of the MDCs have additional information printed.

4 An additional MDC is printed for records with only the environmental data bit on.

5 To build the MDC, only selected OBR (by fault code) records from a 3370 are used.

Recovery/Termination (EOD) Detail Reports

The recovery/termination record contains information relating to the cause of termination and system environmental information. If the record is documenting normal termination, it consists only of the 24-byte header. In a record written for abnormal termination, the header is followed by fields of variable length containing data relevant to the system termination or wait state codes.

Record type X'80' indicates that the system terminated normally under program control, at the request of the operator. With MVS Only:

- Record type X'81' is written when the system is put in a nonrestartable wait by the operating system following a machine check.
- Record type X'84' indicates a restartable wait state requiring operator intervention.

Figures containing examples of these reports are on the pages shown in the following table:

Detail Edit and Summary Reports

REPORT	REFER TO
End of Day (EOD) Detail Report	Figure 67
End of Day (EOD) Summary Report	Figure 68
System Termination Detail Report	Figure 69 on page 231
System Termination Summary Report	Figure 70 on page 231

```
EOD RECORD EDIT AND PRINTING SECTION
      DAY  YEAR                            HH MM SS TH
DATE -193   08                       TIME -16 27 45 97
  MODEL - 2097      CPU SERIAL NO. -  0706C0
MVS/ESA    V7 R0


   HEX DUMP OF RECORD
   HEADER    809C1800    00000000    0108193F    16274597        000706C0    20978000

       0000
```

Figure 67. End of Day (EOD) Detail Report

```
SUMMARY OF EOD RECORDS                                                          MODEL 2097
                                        DAY YEAR     DAY YEAR              CPU SERIAL  0706C0
                     DATE RANGE  FROM   193  08   TO 193  08

                     NO. OF RECORDS  001

                     XXXXXXX END OF EOD SUMMARY XXXXXX
```

Figure 68. End of Day (EOD) Summary Report

```
EOD RECORD EDIT AND PRINTING SECTION


SYSTEM TERMINATION RECORD EDIT AND PRINT SECTION


      DAY  YEAR                              HH MM SS TH
DATE -046   08                         TIME -04 00 00 25

  MODEL - 2097      CPU SERIAL NO. -  0706C0

    VS 2   REL. 3



   HEX DUMP OF RECORD
   HEADER    81000800    00000000    0008046F    04000025       230706C0    20970000

       0000  00000088    00000014    00FD3E04    80FD3DD8       00000042    00FD3E04    00000C00    00000000
       0020  0004C1D1    00FFBB40    00FDF890    7004B1D2       00031358    00029DE0    00FFBB40    00000000
       0040  0004B1D0    000487A2    DD84EE40    0FC98C00       00040011    00000000    070C0000    000487A2
       0060  00000000    00000000    00FDF890    00FDF890
EOD RECORD EDIT AND PRINTING SECTION


SYSTEM TERMINATION RECORD EDIT AND PRINT SECTION


      DAY  YEAR                              HH MM SS TH
DATE -056   08                         TIME -04 00 00 25

  MODEL - 2097      CPU SERIAL NO. -  0706C0

    VS 2   REL. 3



   HEX DUMP OF RECORD
   HEADER    81000800    00000000    0008056F    04000025       230706C0    20970000

       0000  00000088    00000014    00FD3E04    80FD3DD8       00000042    00FD3E04    00000C00    00000000
       0020  0004C1D1    00FFBB40    00FDF890    7004B1D2       00031358    00029DE0    00FFBB40    00000000
       0040  0004B1D0    000487A2    DD84EE40    0FC98C00       00040011    00000000    070C0000    000487A2
       0060  00000000    00000000    00FDF890    00FDF890
```

Figure 69. System Termination Detail Report

```
SUMMARY OF SYSTEM TERMINATION RECORDS                                         MODEL
                                        DAY YEAR     DAY YEAR             CPU SERIAL  220344
                     DATE RANGE  FROM   046  97   TO 056  97

                     NO. OF RECORDS  002



                     XXXXXXX END OF SYSTEM TERMINATION SUMMARY XXXXXXX
```

Figure 70. System Termination Summary Report

System Initialization (IPL) Detail Reports

IPL records are written to document operating system initialization.

Figures containing examples of these reports are on the pages shown in the following table:

REPORT	REFER TO
Initial Program Load (System Initialization) Detail Report (IPL) for 2084	Figure 71 on page 232
Initial Program Load (System Initialization) Summary Report (IPL) for 2084	Figure 72 on page 232

```
IPL RECORD EDIT AND PRINTING SECTION
      DAY  YEAR                             HH MM SS TH
DATE -159   07                        TIME -11 12 48 89
  MODEL - 2084      CPU SERIAL NO. -  159BBE
MVS/ESA    V7 R0

          IPL REASON CODE - DF   DEFAULT -U-
          SUBSYSTEM ID - 00                      SUBSYSTEM NAME - NULL
          HIGHEST STORAGE ADDRESS  7FFFFFFF

      LAST ACTIVITY INFORMATION :
      DAY  YEAR                             HH MM SS TH
DATE -159   07                        TIME -11 09 45 48
END OF IPL RECORD

   HEX DUMP OF RECORD
   HEADER    509C1880    00000000    0107159F    11124889        FF159BBE    20840000

       0000  00000000    C4C60000    00000000    00000000        7FFFFFFF    00000000    0107159F    11094548
```

Figure 71. Initial Program Load (System Initialization) Detail Report (IPL) for 2084

```
SUMMARY OF IPL RECORDS                                                      MODEL 2084
                                        DAY YEAR     DAY YEAR               CPU SERIAL  159BBE
                     DATE RANGE  FROM   158  07    TO 159  07
                     NO. OF RECORDS  002


  XXXX  SUBSYSTEM NAME AND NUMBER OF OCCURRENCES XXXX
  NULL             002         PROCESSOR                    000
  TAPE             000         TELEPROCESSING               000
  MICR/OCR         000         GRAPHIX/DISPLAY/AUDIO        000
  CARD/PRINT       000         IBM SYSTEM CONTROL PROGRAM   000
  DIRECT ACCESS    000         IBM PROGRAMMING PRODUCT      000
  OTHER            000
  XXXX IPL REASON CODE AND NUMBER OF OCCURRENCES XXX
  NORMAL           000         MEDIA                        000
  UNKNOWN          000         OPERATIONAL                  000
  USER PROGRAM     000         ENVIRONMENTAL                000
  IBM HARDWARE PROGRAMMING PROBLEM-CE/SE NOT REQUIRED  000
  IBM HARDWARE PROGRAMMING PROBLEM-CE/SE REQUIRED      000
  CE/SE HAS THE SYSTEM     000
  DEFAULT -U-              002
  INVALID IPL REASON CODE  000
```

Figure 72. Initial Program Load (System Initialization) Summary Report (IPL) for 2084

Machine Check Handler (MCH) Detail Reports

MCH records document the occurrence of processor, storage, storage key or timing facility (external damage) failures under the following conditions:

- The problem is recovered by the hardware or the software.
- The problem is not corrected by hardware. A hard machine check is one that cannot be corrected or circumvented, so the software recovery routines are given control for the task.
- The problem resulted in the loss of a processor.

Figures containing examples of these reports are on the pages shown in the following table:

REPORT	REFER TO
Machine Check handler (MCH) Detail Report for 2084-XA (MVS)	"Machine Check Handler (MCH) Detail Report for 2084-XA (MVS)" on page 233
Machine Check Handler (MCH) Summary Report for 2084-XA (MVS)	"Machine Check Handler (MCH) Summary Report for 2084-XA (MVS)" on page 235
Machine Check handler (MCH) Detail Report for 2084-XA (VM)	"Machine Check Handler (MCH) Detail Report for 2084-XA (VM)" on page 236

REPORT	REFER TO
Machine Check Handler (MCH) Summary Report for 2084-XA (VM)	“Machine Check Handler (MCH) Summary Report for 2084-XA (VM)” on page 238
Machine Check Handler (MCH) Detail Report for 9373	“Machine Check Handler (MCH) Detail Report for 9373” on page 238
Machine Check Handler (MCH) Summary Report for 9373	“Machine Check Handler (MCH) Summary Report for 9373” on page 240

1 In a processor resource/system manager (PR/SM) environment, the logical CPU ID and physical CPU address are shown. In non-PR/SM environments, only physical CPU ID is shown.

Machine Check Handler (MCH) Detail Report for 2084-XA (MVS)

```
MODEL:   2084-XA            REPORT:   MACHINE CHECK EDIT                 DAY   YEAR                      DAY   YEAR
                                                                   DATE:  215   04        REPORT DATE:  289   04
        CPU ID: 270044       SCP:      VS2     REL.  3
        ADDRESS: 00
1                                                                            HH MM SS.TH
MACHINE VERSION CODE:  20                                          TIME:  00 20 32.34
                           SM  KS  CM  UA  IA
MACHINE CHECK OLD PSW:     07  0E  00  00  00000000

                           SEQ    CPU   ASID  TIME
ERROR ID:                  15759  0000  0000  0  0  00.0

FAILING STORAGE ADDRESS:   NOT APPLICABLE

REGION CODE:               NOT APPLICABLE

EXTERNAL DAMAGE CODE:      NOT APPLICABLE

SOFTWARE RECOVERY STATUS

     HARD FAIL                     0
     DEGRADE FAIL                  0
     SOFT FAIL                     0
     PASSED                        0
**** NOTE:  THE PRODUCT FUNCTIONAL CHARACTERISTICS PUBLICATION DESCRIBES THE MACHINE CHECK INTERRUPT CODE SUPPORT. ****

MACHINE CHECK INTERRUPT CODE (MCIC)
  SUBCLASS

     SYSTEM DAMAGE              (SD)    0       RESERVED
     INSTR-PROCESSING DAMAGE    (PD)    0       DEGRADATION                (DG)    0
     SYSTEM RECOVERY            (SR)    0       WARNING                    (W )    0
     RESERVED                                   CHANNEL REPORT PENDING     (CP)    0
     TIMING-FACILITY            (CD)    1       SERVICE-PROCESSOR DAMAGE   (SP)    0
     EXTERNAL DAMAGE            (ED)    0       CHANNEL-SUBSYSTEM DAMAGE   (CK)    0
  INTERRUPT TENSE CODES

     BACKED UP                  (B )    0

  STORAGE AND PROTECTION ERROR CODES

     STORAGE ERROR UNCORRECTED  (SE)    0       STOR-KEY ERROR UNCORRECTED (KE)    0
     STORAGE ERROR CORRECTED    (SC)    0       STORAGE DEGRADATION        (DS)    0

  M.C. OLD PSW VALIDITY CODES

     EMWP BITS ARE VALID        (WP)    1       PROGRAM MASK IS VALID      (PM)    1
     SYSTEM MASK IS VALID       (MS)    1       INSTR ADDRESS IS VALID     (IA)    1

  MISCELLANEOUS VALIDITY CODES
     FAILING STOR ADDR IS VALID (FA)    0       CNTRL REGS STORED VALID    (CR)    1
     RESERVED                                   EXTENDED LOGOUT AREA VALID (LG)    0
     EXTERNAL DAMAGE CODE VALID (EC)    0       INSTR MODIFIED STOR VALID  (ST)    1
     FP REGS STORED ARE VALID   (FP)    1       CPU-TIMER IS VALID         (CT)    1
     GEN REGS STORED ARE VALID  (GR)    1       CLOCK-COMPARATOR IS VALID  (CC)    1
     IPD MODIFIER                       0

EXTENDED LOGOUT LENGTH        0000
```

```
FLOATING POINT REGISTERS

     FP REGS 0,2   00 00 00 00      00 00 00 00      00 00 00 00      00 00 00 00
     FP REGS 4,6   00 00 00 00      00 00 00 00      00 00 00 00      00 00 00 00

GENERAL PURPOSE REGISTERS

     GP REGS 0-3   00 00 00 00      00 00 00 00      00 00 00 00      00 00 00 00
     GP REGS 4-7   00 00 00 00      00 00 00 00      00 00 00 00      00 00 00 00
     GP REGS 8-B   00 00 00 00      00 00 00 00      00 00 00 00      00 00 00 00
     GP REGS C-F   00 00 00 00      00 00 00 00      00 00 00 00      00 00 00 00

CONTROL REGISTERS

     CT REGS 0-3   7E B0 EE 40      03 F7 E0 7F      00 00 00 00      00 00 00 01
     CT REGS 4-7   00 01 00 01      82 60 20 00      FE 00 00 00      03 F7 E0 7F
     CT REGS 8-B   00 00 00 00      00 00 00 00      00 00 00 00      00 00 00 00
     CT REGS C-F   01 40 A4 B0      00 00 00 00      DF 88 3D 8F      00 00 00 00


*MODEL-DEPENDENT DATA*

MAINTENANCE LOG CORRELATOR:

         DAY YEAR
   DATE: 220 04

         HH MM SS.TH
   TIME: 00 22 31.95
ADDITIONAL MCIC FLAGS
   VECTOR FACILITY FAILURE (VF)    0
   VECTOR FACILITY SOURCE (VS)     0

*SCP-DEPENDENT DATA*

   RECORD LENGTH:  0000014C

   WAIT STATE:     00000A28
   MCH ERROR INDICATION AREA

     TERMINAL ERROR INDICATORS

        RESERVED                                 CHECK STOP                          0
        RESERVED                                 POWER WARNING                       0
        THRESHOLD REACHED               0        SYSTEM DAMAGE                       0
        SECONDARY ERROR                 0        INVALID LOGOUT                      0

     HARD MACHINE ERROR SWITCHES

        HARD ERROR ASSUMED              0        REGISTER OR PSW INVALID             0
        RESERVED                                 HARD STORAGE ERROR                  0
        RESERVED                                 HARD STORAGE PROTECTION KEY ERROR   0
        SYSTEM DAMAGE                   0        INSTRUCTION PROCESSING DAMAGE       0

     INTERMEDIATE ERROR SWITCHES

        RESERVED                                 TOD CLOCK ERROR                     0
        RESERVED                                 CLOCK COMPARATOR ERROR              0
        RESERVED                                 CPU TIMER ERROR                     0
        RESERVED                                 INTERVAL TIMER ERROR                0

     SOFT MACHINE ERROR SWITCHES

        SOFT ERROR ASSUMED              0        EXTERNAL DAMAGE                     0
        RESERVED                                 ECC-CORRECTED STORAGE ERROR         0
        RESERVED                                 HIR-CORRECTED PROCESSOR(CPU) ERROR  0
        RESERVED                                 BUFFER ERROR                        0

   PROGRAM DAMAGE ASSESSMENT AND REPAIR(PDAR)

     RECOVERY TERMINATION MANAGER SOFTWARE STATES

        RESERVED                                 RECONFIG STATUS AT OFFSET 37        0
        RESERVED                                 RECONFIGURATION NOT ATTEMPTED       0
        RESERVED                                 RESERVED
        STORAGE RECONFIGED,PAGE INVALID 0        RESERVED

     STORAGE RECONFIGURATION STATUS
```

```
       RESERVED                                     FRAME OFFLINE OR SCHEDULE OFFLINE      0
       RESERVED                                     INTERCEPT                              0
       RESERVED                                     PERMANENT ERROR OCCURED IN FRAME       0
       RESERVED                                     FRAME HAS RESIDENT SYSTEM STORAGE      0
       RESERVED                                     FRAME IS IN USE FOR SQA                0
       RESERVED                                     FRAME IS IN USE FOR LSQA               0
       STORAGE ERROR SET IN FRAME            0      FRAME CONTAINS PAGE-FIXED DATA         0
       FRAME HAD CHANGE INDICATOR ON         0      FRAME IS V=R OR SCHEDULED V=R          0

  CHECKING BLOCK LENGTH:  80

*NO MACHINE CHECK EXTENDED LOGOUT HAS BEEN STORED*

HEX DUMP OF RECORD
HEADER    13831818  FF000000  0097042F  00203234  20270044  30900000

    0018  0000014C  00000A28  00000000  00000080  070E0000  00000000  08000F1D  00030000
    0038  00000000  00000000  00000000  00000000  98F62D02  39AC0000  00000000  00000000
    0058  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0078  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0098  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    00B8  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    00D8  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    00F8  00000000  00000000  00000000  00000000  7EB0EE40  03F7E07F  00000000  00000001
    0118  00010001  82602000  FE000000  03F7E07F  00000000  00000000  00000000  00000000
    0138  0140A4B0  00000000  DF883D8F  00000000  00000000
```

Machine Check Handler (MCH) Summary Report for 2084-XA (MVS)

```
MODEL:   2084                REPORT:   MACHINE CHECK SUMMARY                  DAY   YEAR                            DAY   YEAR
                                                                 DATE RANGE:  215   04         REPORT DATE:  289   04
CPU ID:  270044

MACHINE VERSION CODE:  20

NO. OF RECORDS:            1

NO. OF 370 RECORDS:        0

NO. OF XA RECORDS:         1

SOFTWARE RECOVERY STATUS

     HARD FAIL                              0
     DEGRADE FAIL                           0
     SOFT FAIL                              0
     PASSED                                 0

**** NOTE:  THE PRODUCT FUNCTIONAL CHARACTERISTICS PUBLICATION DESCRIBES THE MACHINE CHECK INTERRUPT CODE SUPPORT. ****

MACHINE CHECK INTERRUPT CODE (MCIC)

  SUBCLASS

     SYSTEM DAMAGE             (SD)        0       RESERVED
     INSTR-PROCESSING DAMAGE   (PD)        0       DEGRADATION               (DG)        0
     INSTR-PROCESSING BACKUP   (PD)        0       WARNING                   (W )        0
     SYSTEM RECOVERY           (SR)        0       PENDING CRW REPORT        (CP)        0
     INTERVAL-TIMER DAMAGE     (TD)        0       SERVICE PROCESSOR DAMAGE  (SP)        0
     TIMING-FACILITY DAMAGE    (CD)        1       CHANNEL SUBSYSTEM DAMAGE  (CK)        0
     EXTERNAL DAMAGE           (ED)        0

  INTERRUPT TENSE CODES

     BACKED-UP                 (B )        0       DELAYED                   (D )        0

  STORAGE AND PROTECTION ERROR CODES

     UNCORRECTED STOR ERRORS   (SE)        0       STOR-KEY ERROR UNCORRECTED (KE)       0
     CORRECTED STORAGE ERRORS  (SC)        0       STORAGE DEGRADATION       (DS)        0

  M.C. OLD PSW VALIDITY CODES

     EMWP BITS ARE VALID       (WP)        1       PROGRAM MASK IS VALID     (PM)        1
     SYSTEM MASK IS VALID      (MS)        1       INSTR ADDRESS IS VALID    (IA)        1
```

```
  MISCELLANEOUS VALIDITY CODES
     FAILING STOR ADDR IS VALID (FA)       0       CNTRL REGS STORED VALID    (CR)        1
     REGION CODE IS VALID       (RC)       0       EXTENDED LOGOUT AREA VALID (LG)        0
     EXTERNAL DAMAGE CODE VALID (EC)       0       INSTR MODIFIED STOR VALID  (ST)        1
     FP REGS STORED ARE VALID   (FP)       1       CPU TIMER IS VALID         (CT)        1
     GEN REGS STORED ARE VALID  (GR)       1       CLOCK COMPARATOR IS VALID  (CC)        1
```

Machine Check Handler (MCH) Detail Report for 2084-XA (VM)

```
MODEL:   2084-XA            REPORT:   MACHINE CHECK EDIT                   DAY   YEAR                         DAY   YEAR
                                                                     DATE:  215   04        REPORT DATE:  289   04
        CPU ID: 511353        SCP:       VM/ESA    V1 R2
        ADDRESS: 00                                                         HH MM SS.TH
MACHINE VERSION CODE:  00                                            TIME:  12 07 30.59
                           SM  KS  CM  UA  IA
MACHINE CHECK OLD PSW:     07  0E  00  00  00000000

                           SEQ    CPU   ASID  TIME
ERROR ID:                  00000  8000  4100  0  0  00.0

FAILING STORAGE ADDRESS:   NOT APPLICABLE

REGION CODE:               NOT APPLICABLE

EXTERNAL DAMAGE CODE:      NOT APPLICABLE

SOFTWARE RECOVERY STATUS

     HARD FAIL                           0
     DEGRADE FAIL                        0
     SOFT FAIL                           0
     PASSED                              0

**** NOTE:  THE PRODUCT FUNCTIONAL CHARACTERISTICS PUBLICATION DESCRIBES THE MACHINE CHECK INTERRUPT CODE SUPPORT. ****

MACHINE CHECK INTERRUPT CODE (MCIC)
  SUBCLASS

     SYSTEM DAMAGE              (SD)    1       RESERVED
     INSTR-PROCESSING DAMAGE    (PD)    0       DEGRADATION                (DG)    0
     SYSTEM RECOVERY            (SR)    0       WARNING                    (W )    0
     RESERVED                                   CHANNEL REPORT PENDING     (CP)    0
     TIMING-FACILITY            (CD)    0       SERVICE-PROCESSOR DAMAGE   (SP)    0
     EXTERNAL DAMAGE            (ED)    0       CHANNEL-SUBSYSTEM DAMAGE   (CK)    0

  INTERRUPT TENSE CODES

     BACKED UP                  (B )    0

  STORAGE AND PROTECTION ERROR CODES

     STORAGE ERROR UNCORRECTED  (SE)    0       STOR-KEY ERROR UNCORRECTED (KE)    0
     STORAGE ERROR CORRECTED    (SC)    0       STORAGE DEGRADATION        (DS)    0

  M.C. OLD PSW VALIDITY CODES
     EMWP BITS ARE VALID        (WP)    1       PROGRAM MASK IS VALID      (PM)    0
     SYSTEM MASK IS VALID       (MS)    1       INSTR ADDRESS IS VALID     (IA)    0

  MISCELLANEOUS VALIDITY CODES

     FAILING STOR ADDR IS VALID (FA)    0       CNTRL REGS STORED VALID    (CR)    1
     RESERVED                                   EXTENDED LOGOUT AREA VALID (LG)    1
     EXTERNAL DAMAGE CODE VALID (EC)    0       INSTR MODIFIED STOR VALID  (ST)    0
     FP REGS STORED ARE VALID   (FP)    1       CPU-TIMER IS VALID         (CT)    1
     GEN REGS STORED ARE VALID  (GR)    1       CLOCK-COMPARATOR IS VALID  (CC)    1
     IPD MODIFIER                       0

EXTENDED LOGOUT LENGTH         0588

FLOATING POINT REGISTERS

     FP REGS 0,2   00 00 00 00      00 00 00 00      00 00 00 00      00 00 00 00
     FP REGS 4,6   00 00 00 00      00 00 00 00      00 00 00 00      00 00 00 00

GENERAL PURPOSE REGISTERS

     GP REGS 0-3   00 00 00 00      00 00 00 00      00 00 00 00      00 00 00 00
     GP REGS 4-7   00 00 00 00      00 00 00 00      00 00 00 00      00 00 00 00
```

```
     GP REGS 8-B   00 00 00 00      00 00 00 00      00 00 00 00      20 64 00 00
     GP REGS C-F   00 00 00 00      00 00 00 00      98 EB 99 BB      04 CF 71 01

CONTROL REGISTERS

     CT REGS 0-3   80 02 00 01      00 00 00 41      01 0A C3 32      00 F8 0A A4
     CT REGS 4-7   00 00 00 00      04 88 00 00      00 00 00 00      00 00 00 00
     CT REGS 8-B   00 00 00 00      00 00 00 00      00 00 00 00      00 00 00 00
     CT REGS C-F   00 00 00 00      00 00 00 00      00 01 00 19      C9 C5 C1 E5
*MODEL-DEPENDENT DATA*

MAINTENANCE LOG CORRELATOR:

         DAY YEAR
   DATE: 220 04

         HH MM SS.TH
   TIME: 16 47 41.98

ADDITIONAL MCIC FLAGS
   VECTOR FACILITY FAILURE (VF)    0
   VECTOR FACILITY SOURCE (VS)     0

MACHINE CHECK EXTENDED LOGOUT BYTES

    0000  C5C4E2F0  C9C5C1E5  C5C4E2F0  C9C5C1E5  C5C4E2D9  00F80A50  00000000  00000000
    0020  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0040  00000000  FFFF0003  00F80C70  00000000  00000000  00000000  00000000  00000000
    0060  00000000  0007F7EE  00FFA0D2  1106C9C8  C1D7E2C1  15020224  120400FB  30801502
    0080  021C1204  00000000  150202EC  12040000  00001502  049C1204  00000008  1107C9C8
    00A0  C1C1E2C3  C2150200  80120400  00000015  0200E812  04000000  00150200  EC120400
    00C0  00000015  0200B412  04000000  00150201  3C120400  00000015  02014812  04000000
    00E0  001107C9  C8C1D3C3  C3C11502  036C1204  00000000  1502021C  12020000  1502053C
    0100  120C0000  00000000  00000000  00001106  C9C8C1E2  E5E31502  001C1204  00000000
    0120  00000000  1018E2C3  D9C100FF  B1E800F8  04E08000  000000F8  08480400  0000E2C3
    0140  F1C3F5C9  C5C1E5C5  C4E2F000  00000000  00000000  00000000  0000F0F1  61F2F961
    0160  F8F540D1  C2C2F2F1  F3F30000  0000C9C5  C1E5C5C4  E2D90000  00000000  00000000
    0180  00000400  00000000  0000810B  09D00000  00000000  00000000  00000000  00000000
    01A0  00000000  00000000  00000000  00000000  00000000  00000000  0000D203  824095FE
    01C0  D20303A4  038000FB  308003F7  E07F900F  30000000  00000000  00000000  00004000
    01E0  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0200  00000000  00000019  00410001  0007F7EE  00000000  00000000  00000000  00000000
    0220  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0240  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0260  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0280  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    02A0  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    02C0  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    02E0  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0300  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0320  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0340  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0360  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0380  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    03A0  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    03C0  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    03E0  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0400  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0420  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0440  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0460  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0480  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    04A0  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    04C0  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    04E0  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0500  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0520  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0540  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0560  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0580  00000000  00000000


HEX DUMP OF RECORD
HEADER    10661010  FF000000  0097042F  12073059  00511353  30900000
    0018  000006D0  00000000  00180000  00000008  070E0000  00000000  80000C1E  00030588
    0038  00000000  00000000  00000000  00000000  80004100  00000000
```

Machine Check Handler (MCH) Summary Report for 2084-XA (VM)

```
MODEL:   2084              REPORT:   MACHINE CHECK SUMMARY                      DAY   YEAR                         DAY   YEAR
                                                                   DATE RANGE:  214   04         REPORT DATE:  289   04
CPU ID:  511353

MACHINE VERSION CODE:  00

NO. OF RECORDS:            1

NO. OF 370 RECORDS:        0

NO. OF XA RECORDS:         1

SOFTWARE RECOVERY STATUS

     HARD FAIL                              0
     DEGRADE FAIL                           0
     SOFT FAIL                              0
     PASSED                                 0

**** NOTE:  THE PRODUCT FUNCTIONAL CHARACTERISTICS PUBLICATION DESCRIBES THE MACHINE CHECK INTERRUPT CODE SUPPORT. ****

MACHINE CHECK INTERRUPT CODE (MCIC)

  SUBCLASS

     SYSTEM DAMAGE              (SD)        1        RESERVED
     INSTR-PROCESSING DAMAGE    (PD)        0        DEGRADATION                (DG)        0
     INSTR-PROCESSING BACKUP    (PD)        0        WARNING                    (W )        0
     SYSTEM RECOVERY            (SR)        0        PENDING CRW REPORT         (CP)        0
     INTERVAL-TIMER DAMAGE      (TD)        0        SERVICE PROCESSOR DAMAGE   (SP)        0
     TIMING-FACILITY DAMAGE     (CD)        0        CHANNEL SUBSYSTEM DAMAGE   (CK)        0
     EXTERNAL DAMAGE            (ED)        0

  INTERRUPT TENSE CODES

     BACKED-UP                  (B )        0        DELAYED                    (D )        0

  STORAGE AND PROTECTION ERROR CODES

     UNCORRECTED STOR ERRORS    (SE)        0        STOR-KEY ERROR UNCORRECTED (KE)        0
     CORRECTED STORAGE ERRORS   (SC)        0        STORAGE DEGRADATION        (DS)        0

  M.C. OLD PSW VALIDITY CODES

     EMWP BITS ARE VALID        (WP)        1        PROGRAM MASK IS VALID      (PM)        0
     SYSTEM MASK IS VALID       (MS)        1        INSTR ADDRESS IS VALID     (IA)        0

  MISCELLANEOUS VALIDITY CODES

     FAILING STOR ADDR IS VALID (FA)        0        CNTRL REGS STORED VALID    (CR)        1
     REGION CODE IS VALID       (RC)        0        EXTENDED LOGOUT AREA VALID (LG)        1
     EXTERNAL DAMAGE CODE VALID (EC)        0        INSTR MODIFIED STOR VALID  (ST)        0
     FP REGS STORED ARE VALID   (FP)        1        CPU TIMER IS VALID         (CT)        1
     GEN REGS STORED ARE VALID  (GR)        1        CLOCK COMPARATOR IS VALID  (CC)        1
```

Machine Check Handler (MCH) Detail Report for 9373

```
                                                  --- MACHINE CHECK DATA EDITING ---

************************************************************************************************************************

MODEL=9373                         SERIAL NO=       234567

 V370 REL.    06
                                                                              DAY  YEAR           HH MM SS
                                                                   DATE - 044   97     TIME - 07 19 52
                                SM KS CM UA       IA
OLD MACHINE CHECK PSW           00 0C 30 0000     01AADC

JOB NAME=

PROGRAM NAME=         CP/370

                       ************************************************************************
```

```
NOTE: THE PRODUCT FUNCTIONAL CHARACTERISTICS PUBLICATION DESCRIBES THE MACHINE CHECK INTERRUPT CODE SUPPORT.

                         --- MACHINE CHECK INTERRUPT CODE ---

         --- SUB CLASS ---

SYSTEM DAMAGE (SD)     0                              CLOCK DAMAGE (CD)      0
PROC. DAMAGE (PD)      0                              WARNING (W)            0
SYSTEM RECOVERY (SR)   0                              DEGRADATION (DG)       0
                           --- INTERRUPT TENSE CODES ---

                       --- STORAGE AND PROTECTION ERROR CODES ---

UNCORRECTED STORAGE ERRORS (SE)    0                  KEY IN STOR ERR(KE)                  0
CORRECTED STORAGE ERRORS (SC)      0                  STOR DEGRADATION (DS)                0

                                   --- PSW VALIDITY CODES ---

EMWP BITS OF M.C. OLD ARE VALID (WP)    1             SYSTEM MASK OF M.C. OLD IS VALID (MS)   1
PROGRAM MASK OF M.C. OLD IS VALID (PM)  1             INSTR ADDR OF M.C. OLD IS VALID (IA)    1

                                 --- MISC VALIDITY CODES ---

FAILING STORAGE ADDR IS VALID (FA)      0             INSTR MODIFIED STORAGE IS VALID (ST)    1
FP REGS STORED ARE VALID (FP)           1             GP REGS STORED ARE VALID (GP)           1
CONTROL REGS STORED ARE VALID (CR)      1             CLOCK COMPARATOR STORED IS VALID(CC)    1
REGION CODE IS VALID (RC)               0
EXTERNAL LOGOUT AREA IS VALID(CC)       0             EXTERNAL DAMAGE CODE IS VALID (EC)      1

EXTENDED LOGOUT LENGTH           0000                     FAILING STORAGE ADDRESS     00000000

                                 --- EXTERNAL DAMAGE CODE ---

EXTERNAL SECONDARY REPORT               1             CHANNEL NOT OPERATIONAL                 0
I/O INTERRUPT TIMEOUT                   0             I/O INSTRUCTION TIMEOUT                 1

                                    --- REGION CODE ---

DAMAGE DURING I/O INSTRUCTION           DEVICE        0000

                       ************************************************************************

--- FLOATING POINT REGISTERS ---

FP REGS 0,2   00 00 00 00   00 00 00 00   00 00 00 00   00 00 00 00
FP REGS 4,6   00 00 00 00   00 00 00 00   00 00 00 00   00 00 00 00

--- GENERAL PURPOSE REGISTERS ---

GP REGS 0-3   00 00 00 00   00 00 00 00   00 00 00 00   00 00 00 00
GP REGS 4-7   00 00 00 00   00 00 00 00   00 00 00 00   00 00 00 00
GP REGS 8-B   00 00 00 00   00 00 00 00   00 00 00 00   20 09 00 02
GP REGS C-F   00 00 00 00   00 00 00 00   98 F6 2F 1D   00 01 DF 01
--- CONTROL REGISTERS ---

CT REGS 0-3   80 02 00 01   00 00 00 42   01 0A C3 32   00 F9 EA A4
CT REGS 4-7   00 00 00 00   04 88 00 00   00 00 00 00   00 00 00 00
CT REGS 8-B   00 00 00 00   00 00 00 00   00 00 00 00   00 00 00 00
CT REGS C-F   00 00 00 00   00 00 00 00   00 01 00 11   C9 C5 C1 E5

--- MACHINE CHECK LOGOUT BYTES ---

0000  0400043D 00030000 00000000 24000000   00000000 00000000 00000000 00000000   00000000 00000000 00000000 00000000
0030  00000000 00000000 00000000 00000000   00000000 00000000 00000000 00000000   00000000 00000000 070E0000 00000000
0060  00000000 00042000 040C0000 810B09D0   00000000 00042000 00000000 00000000   00000000 00000000 00000000 00000000
0090  00000000 00000000 00000000 00000000   00000000 00000000 00000000 00000000   00000000 00000000 00000000 00000000
00C0  00000000 00000000 00000000 00000000   98F62F1D 0001DF01 80020001 00000042   010AC332 00F9EAA4 00000000 04880000
00F0  00000000 00000000 00000000 00000000   00000000 00000000 00000000 00000000   00010011 C9C5C1E5


   HEX DUMP OF RECORD
   HEADER    10660800    00000000    0097044F    07195268       00234567    93730000

       0018  4040C3D7    61F3F7F0    00000000    00000000       000C3000    0001AADC    04000F3D    00030000
       0038  00000000    24000000    00000000    00000000       00000000    00000000    00000000    00000000
       0058  00000000    00000000    00000000    00000000       00000000    00000000    00000000    00000000
       0078  00000000    00000000    00000000
```

Machine Check Handler (MCH) Summary Report for 9373

```
           MODEL 9373 MACHINE CHECK RECORDS     DAY YEAR     DAY YEAR

                            DATE RANGE -  FROM  044  97  TO  044  97

                                                SERIAL NO.         234567

                                                NO.OF RECORDS       00001

                       --- SUMMARY OF MODEL 9373 MACHINE CHECK RECORDS ---


                       --- MACHINE CHECK INTERRUPT CODE ---

                                 --- SUB CLASS ---

SYSTEM DAMAGE (SD)     0000                             CLOCK DAMAGE (CD)      0000
PROC. DAMAGE (PD)      0000                             EXTERNAL DAMAGE (ED)   0001
SYSTEM RECOVERY (SR)   0000                             AUTO-CONFIG (AC)       0000
TIMER DAMAGE (TD)      0000                             WARNING (W)            0000

                         --- INTERRUPT TENSE CODES ---

BACK-UP (B)            0000                             DELAYED (D)            0000

                       --- STORAGE AND PROTECTION ERROR CODES ---

UNCORRECTED STORAGE ERRORS (SE)    0000                 UNCORRECTED PROTECTION ERRORS (PE)    0000
CORRECTED STORAGE ERRORS (SC)      0000                 STORAGE DEGRADATION (DS)              0000
```

Miscellaneous Data Record (MDR) Detail Reports

MDR records contain error and usage data from buffered control units or communications controllers, or they document device failures on teleprocessing (TP) devices connected to a communications controller.

The following are some of the events that can cause MDR recording:
- Overflow of the statistical counters in a buffered control unit
- Overflow of the network control program (NCP) counter in a communications controller
- TP device failure
- DASD volume demounts
- Operator-initiated end of day (EOD), record on demand (ROD), or VARY OFFLINE commands
- Invocations of EREP that force the writing of statistical data

Figures containing examples of these reports are on the pages shown in the following table:

REPORT	REFER TO
MDR Detail Edit Report for 3800-3-8	Figure 73 on page 241
MDR Detail Summary Report for 3800-3-8	Figure 74 on page 242
MDR Detail Edit Report (Outboard)	Figure 75 on page 243
MDR Detail Summary Report	Figure 76 on page 244
MDR Detail Edit Report, BSC/SS Permanent Line Error	Figure 77 on page 245
MDR Summary Report, BSC/SS Permanent Line Error	Figure 78 on page 245
MDR Detail Edit Report, SDLC Link Errors	Figure 79 on page 246
MDR Detail Summary Report, SDLC Link Errors	Figure 80 on page 246

```
---RECORD ENTRY TYPE - MDR       SOURCE - MISC        CPU MODEL 3084XA    SERIAL NO. 121128
    VS 2 REL.    03

                    DAY    YEAR              HH.MM.SS.TH            BTS COUNT   (DECIMAL)    00116000
             DATE - 048     97       TIME - 07 31 10 71             CFS COUNT   (DECIMAL)    00000000
                                                                    PAPER COUNT (DECIMAL)    00000000


DEVICE TYPE          3800-3,8
DEVICE SERIAL NO.    0000
DEVICE NUMBER        0B03

NUMBER OF ENTRIES IN THIS RECORD (DECIMAL) - 00
INTERNAL LOG ENTRY BYTES 0-15 ARE SAME AS SENSE BYTES 4-19

ENTRY    STATUS     STATUS              ------------------------------ SENSE BYTES ------------------------------
NO.      CODE       NAME                 5    6    7    8    9   10   11   12   13   14   15   16   17   18   19


   HEX DUMP OF RECORD
   HEADER    90831800    20000000    0097048F    07311071       66121128    30840000

       0018  0B030000    00000000    00000000    00000000       00000000    00000000    00000000    00000000
       0038  00000000    00000000    00000000    00000000       00000000    00000000    00000000    00000000
       0058  00000000    00000000    00000000    00000000       00000000    00000000    00000000    00000000
       0078  00000000    00000000    00000000    00000000       00000000    00000000    00000000    00000000
```

Figure 73. MDR Detail Edit Report for 3800-3-8

```
SUMMARY OF I/O RECORDS  TYPE-OBR/SDR/MDR  SOURCE-OUTBOARD/MISC  DEVICE 3800 MOD 3,8  CPU MODEL- 3084XA SERIAL NO. 121128

            DAY YEAR    DAY YEAR
DATE RANGE  048  97 TO  048  97
                                                 NO. OBR SHORT RECORDS    0000
                                                 NO. OBR LONG RECORDS     0000
                                                 NO. MDR RECORDS          0001
                                                                        ------
CHANNEL UNIT ADDRESS/DEVICE NUMBER 0B03          TOTAL NUMBER OF RECORDS  0001

--SUMMARY BY ERROR TYPE (COUNTS IN DECIMAL) --
                       1                                         2                                       3
                 SDR COUNTERS                               LONG OBR DATA                            MDR RECORDS

TEMP CHL DATA CK  0000  CFS MISFOLD (32)  0000  PERM CHL DATA CK  0000  INTVN RQD CK      0000  NO. INT LOG ENTRY 0000
TEMP CHL CTL CK   0000  BUR/TRIM JAM(40)  0000  PERM CHL CTL CK   0000  EQUIP CK          0000
TEMP INTF CTL CK  0000  NO BURST CK (41)  0000  PERM INTF CTL CK  0000  TEMP BOPAR        0000
                        BUR/STKR JAM(42)  0000                          PERM BOPAR        0000
--SUMMARY OF PERMANENT ERRORS FROM OBR RECORDS BY STATUS CODE (SENSE BYTE 4) - COUNTS IN DECIMAL

11 XFR UNDETENTED 0000  33 DATA WIDTH CK  0000  73 RPG SHIFTER CK 0000  95 POST XFR CRNA  0000  B3 PLTN OVTEMP    0000
14 XFR ST/SP CK   0000  34 FSR OUTPUT CK  0000  74 STRIP BUFFR CK 0000  96 LSR PWR SUPPLY 0000  B4 PLN THRM OPEN  0000
15 XFR MISREG/JAM 0000  3B X/F PG CT CK   0000  75 CG XEQ CS CK   0000  97 MIRROR DR CK   0000  B5 HR THRMSTR OPN 0000
16 XFR ENCODER CK 0000  43 EARLY BURST CK 0000  76 LASER POWER CK 0000  98 DVM CHECK      0000  B6 FSR CURRENT CK 0000
17 XFR MTR OVRLD  0000  4B BTS LOOP CK    0000  77 MIRROR SPD CK  0000                          B7 THERMAL- NO CK 0000
18 XFR PRT POS CK 0000                          78 SERIALIZER CK  0000  A0 PRNT PWR NRDY  0000  B8 NVS CHECK      0000
1C XFR TRACTOR CK 0000  51 MISSING FO FLH 0000  79 SRLZR INTRF CK 0000                          B9 PROC PAPER CK  0000
1E X/F LOOP CK    0000  52 EXTRA FO FLASH 0000  7A MIRR ROTATE CK 0000  A2 PROC VOLT CP   0000  BA SYS CHNL CK    0000

                        62 PRINT CONTRAST 0000  7C SER SYNCH CK   0000  A3 LOGIC VOLT CP  0000  BB DISK FILE CK   0000
21 FSR TEMP CK    0000  63 VACUUM SYS CK  0000  7D S/B OVER-RUN   0000  A4 MIRROR MTR TH  0000  BC FILE READ CK   0000
22 PLATN TEMP CK  0000  64 OPT STP LMT CK 0000  7E CG CS START CK 0000  A5 DR COOLR CHECK 0000  BD FILE WRITE CK  0000
23 FSR BUR NCLOSD 0000  65 CLNR BRUSH CK  0000  7F CG CS CMPLT CK 0000  A6 CYC BLWR MT TH 0000  BF DISK DAMAGED   0000
24 FSR BUR NOPEN  0000  66 ERASE LAMP CK  0000  80 RETRY G LOG FL 0000  A7 DEV MOTOR THRM 0000  D0 EXGRF-CGEN CK  0000
25 FSR PRT ALGNMT 0000  67 MARK SENSOR CK 0000  89 PERM IEU PE    0000  A8 CLNR BR MTR TH 0000  D1 X/G CPS CHECK  0000
26 FSR WIDTH CK   0000  68 DRUM SLOW      0000  8B SUBSYS CLK CK  0000  A9 CTL ASM GT TH  0000  D2 X/G RD WR CK   0000
27 FSR MTR OVRLD  0000  69 DRUM FAST      0000  8D SUC PRT RSTART 0000                          D3 EXGRF-DECOMP CK0000
28 FSR PAPER SKEW 0000  6A DRUM MTR OVLD  0000  8E SUBSYS RUN RST 0000  AB FSR SCFF MT TH 0000  D4 CPS ER-DECOMP  0000
2A X/F SHORT LOOP 0000  6C TONER OVRFEED  0000  8F CHAN SEL RESET 0000  AC CFS ELEV MT TH 0000  D8 ACCUMULATOR CK 0000
2B X/F LONG LOOP  0000  6D TONER LOOP OPN 0000  90 PROC CLOCK CK  0000  AD CFS MOTOR THRM 0000  D9 ACCUM STRG CK  0000
2E FSR ROLL WRAP  0000                          91 CHARGE CRNA CK 0000  AE MUL THRM SW CK 0000  DA ACCUM/SB CK    0000
                        70 CGEN INTRF CK  0000  92 XFR CORONA CK  0000  AF FSR THERM CHK  0000  DB NO RSP TIMEOUT 0000
30 OUTPT LNGTH CK 0000  71 CGEN CNTRL CK  0000  93 PRCLN CRNA CK  0000  B1 BTS CAM MT TH  0000  DD CPS RD/WR CK   0000
31 DRDY LNGTH CK  0000  72 RPG CHECK      0000  94 MAG BR BIAS CK 0000  B2 FSR ROLL OVR T 0000  DF EXGRF DEC CK   0000


--SUMMARY OF RECOVERED ERRORS FROM MDR RECORDS BY STATUS CODE (INTERNAL LOG ENTRY BYTE 0) - COUNTS IN DECIMAL--

51 MISSING FO FLH 0000  72 RPG CHECK      0000  79 SRLZR INTRF CK 0000  93 PRCLN CRNA CK  0000  D1 X/G CPS CHECK  0000
52 EXTRA FO FLASH 0000  73 RPG SHIFTER CK 0000  7C SER SYNCH CK   0000  94 MAG BR BIAS CK 0000  D2 X/G RD WR CK   0000
63 VACUUM SYS CK  0000  74 STRIP BUFFR CK 0000  7D S/B OVER-RUN   0000  95 POST XFR CORONA0000  D8 ACCUMULATOR CK 0000
65 CLNR BRUSH CK  0000  75 CG XEQ CS CK   0000  7E CG CS START CK 0000  96 LSR PWR SUPPLY 0000  D9 ACCUM STRG CK  0000
66 ERASE LAMP CK  0000  76 LASER POWER CK 0000  7F CG CS CMPLT CK 0000  97 MORROR DR CK   0000  DA ACCUM/SB CK    0000
6A DRUM MTR OVLD  0000  77 MIRROR SPD CK  0000                          BA SYS CHNL CK    0000
70 CGEN INTRF CK  0000  78 SERIALIZER CK  0000  91 CHSRGE CRNA CK 0000  BC FILE READ CK   0000

71 CGEN CNTRL CK  0000                                                  BD FILE WRITE CK  0000

--SUMMARY OF STATISTICAL USAGE DATA FROM INTERNAL LOG FOR DATE RANGE INDICATED ABOVE - COUNTS IN DECIMAL--
 BTS COUNT                 000000116000  4
 CFS FEET COUNT            000000000000
 PAPER COUNT               000000000000
```

Figure 74. MDR Detail Summary Report for 3800-3-8

1 The statistical data counters keep track of the number of temporary data and equipment checks experienced by the device.

2 OBR records reflect permanent (uncorrectable) data and equipment checks. In this report, the data is from long OBR records only.

3 Error information kept on the device's internal log becomes MDR records. This column shows the number of entries in the log; the data is summarized below as recovered errors.

4 These counts do *not* represent total paper usage. They are used as a diagnostic tool by IBM service representatives.

```
---RECORD ENTRY SOURCE -MDR-           TYPE- OUTBOARD            DEVICE TYPE 2305-2
    VS 2 REL.    03
                          DAY  YEAR                   HH MM SS.TH            MODEL- 3033       SERIAL NO. 021929
                    DATE- 048   97            TIME-   01 44 34 44

CHANNEL/UNIT ADDR--01CX
(INCLUDES ALT PATH RECORDS)

                                        ---------BUFFERED LOG DATA------------

    NAME         --BYTE 0--   --BYTE 1--   --BYTE 2--   --BYTE 3--   --BYTE 4--   --BYTE 5--   --BYTE 6--   -BYTE 7--
CU SEL RESET                   ERROR PATT    TC REG X     TG REG X    HIGH ADD     LOW ADD     CK 1   0-7   CK 1  8-15
                               00000000     11010001     00000000     00010000     00000000     10000111     00000000

           X REGISTERS WILL BE ZERO IF SELECTIVE RESET CAUSED BY TYPE 1 ERROR.
   HEX DUMP OF RECORD
   HEADER    90830800    020000E3    0097048F    01443444        00021929    303304C8    01C8

       0000  00000000    00000000    00000000    00000000        00000000    00000000    00000000    00000000
       0020  00000000    00000000    00000000
```

Figure 75. MDR Detail Edit Report (Outboard)

```
SUMMARY OF I/O OUTBOARD ENVIRONMENT RECORDS      DAY YEAR     DAY YEAR               CHANNEL UNIT ADDR  0001CX
                              DATE RANGE - FROM  048  97  TO  048  97                DEVICE TYPE-MODEL  2305-2
                                                                                     SERIAL NO.         021929

----------   SUMMARY BY ERROR TYPE FOR MODULES 0 AND 1 ----- TOTAL NO. OF RECORDS 001

                         MODULE 0    MODULE 1
             DATA CHECKS       000         000          OVERRUN CHANNEL A     00000
             EQUIPMENT CHECKS  000         000          OVERRUN CHANNEL B     00000
             BUS OUT PARITY    000         000          OVERRUN CHANNEL C     00000

             MISSING ADDR MK   00000       00000        OVERRUN CHANNEL D     00000

                                                        CTL UNIT SEL RESET         00001
                                                        MPL FILE READ CHK          00000
                                                        MPL FILE SEEK CHK          00000


---------- DATA CHECK ERROR RATE FOR MODULES 0 AND 1 ----------

            TOTAL GIGABYTES      TOTAL      GIGABYTES           --------ERROR DESCRIPTION---------
                 READ        DATA CHECKS   READ/ERROR          CORRECTABLE   CU RETRY   RETRY INHIB   PERMANENT

    MODULE 0     00000.00          000         N/A                  000         002         000         000
    MODULE 1     00000.00          000         N/A                  000         000         000         000


----------  SUMMARY OF EQUIPMENT CHECKS FOR MODULE 0 ---------

BYTE ----ERROR NAME---- QTY    BYTE ----ERROR NAME---- QTY    BYTE ----ERROR NAME---- QTY    BYTE ----ERROR NAME---- QTY
 16   MODEL 1/MODEL 2           17   MODEL 1/MODEL 2           18   MODEL 1/MODEL 2           19   MODEL 1/MODEL 2

 0  XOVERSKEW/SD PAR    000     0   SD PAR 0/IW PAR    000     0   DR+BR P0/DRV SEL   000     0   DRV SEL /          000
 1  XOVERRUN /OVERRUNX  000     1   SD PAR 1/DR+BR CHK 000     1   DR+BR P1/INV TAG   000     1   INV TAG /          000
 2   MARK OUT/IR PAR    000     2   IW REG 0/CUE A+B X 000     2VFO CK P0+1/DEV CK    000     2   DEV CK  /          000
 3   FETCH CT/CBO PAR   000     3   IW REG 1/MISS PLO  000     3PLO CK P0+1/TA REG    000     3   TA REG  /          000
 4   ECC CK 1/ECC CK A  000     4   IR REG 0/VFO PHSE  000     4   ECC DEC /CUDI REG  000     4   CUDI REG/          000
 5   ECC CK 2/ECC CK B  000     5   IR REG 1/CHAN CK   000     5   CHAN CK /TD REG    000     5   TD REG  /          000
 6   ECC INPT/ECC INPT  000     6   SKBO 0  /DATA ERRX 000     6  XDATA ERR/SRCH COM  000     6   SRCH COM/          000
 7   BYTE CTR/BYTE CTR  000     7   SKBO 1  /CUDI CK   000     7   CUDI CK /ECC CHK   000     7                      000
----------  SUMMARY OF EQUIPMENT CHECKS FOR MODULE 1 ---------

BYTE ----ERROR NAME---- QTY    BYTE ----ERROR NAME---- QTY    BYTE ----ERROR NAME---- QTY    BYTE ----ERROR NAME---- QTY
 20                             21                             22                             23

 0      INOPERATIVE     000     0      BUS OUT PAR     000     0      CLIP ERROR      000     0      WRT XITION      000
 1      DISK SPEED      000     1                      000     1      ADDRESS REG     000     1                      000
 2      APC FAILURE     000     2                      000     2      WRT IX(MOD 1)   000     2      WRT DRIVER      000
 3      APC SYNC        000     3      BUS IN PAR      000     3      RD SEQ FAIL     000     3      I SOURCE        000
 4      378 JUMP        000     4   BOTH PATHS(MOD 1)  000     4                      000     4      HI I SOURCE     000
 5      378 SEQUENCE    000     5                      000     5      WRT SEQ FAIL    000     5      SLIDER SEL      000
 6      378 ILLEGAL     000     6                      000     6      SIMULT R/W      000     6      READ BIAS       000
 7      PLO SYNC        000     7      PATH 1(MOD 1)   000     7      I SINK ON       000     7                      000

 NOTE -- AN X BEFORE OR AFTER AN EQUIPMENT CHECK INDICATES THAT IT WILL NOT CAUSE AN EQUIPMENT
         CHECK BUT MAY BE ON IF AN EQUIPMENT CHECK WAS CAUSED BY OTHER ERRORS


----------  LISTING OF DATA CHECKS FOR MODULE 0 ---------

SYSTEM       ---------- DRIVE ADDRESS ----------            ----- ERROR DESCRIPTION -----
ADDRESS                                          DISK HALF CORRECTABLE    CU RETRY    RETRY INHIB     PERMANENT
CYL HEAD     SPARE SIDE COL CARD X SLDR DISK ELE  (MOD 1)                (RETRY NO)
213  195       1    A    1    1     0    5    3                             22
000  000       1    A    0    0     0    0    0                             20


    X ON MODEL 1 THIS IS THE FAILING PATH - A U INDICATES
      THE FAILING PATH CANNOT BE DETERMINED,A 2 INDICATES
      BOTH PATHS FAILED


----------  LISTING OF DATA CHECKS FOR MODULE 1 ---------

SYSTEM       ---------- DRIVE ADDRESS ----------            ----- ERROR DESCRIPTION -----
ADDRESS                                          DISK HALF CORRECTABLE    CU RETRY    RETRY INHIB     PERMANENT
CYL HEAD     SPARE SIDE COL CARD X SLDR DISK ELE  (MOD 1)                (RETRY NO)

    X ON MODEL 1 THIS IS THE FAILING PATH - A U INDICATES
      THE FAILING PATH CANNOT BE DETERMINED,A 2 INDICATES
      BOTH PATHS FAILED
```

Figure 76. MDR Detail Summary Report (Outboard)

```
DEVICE NUMBER:  06FF       REPORT:   MISCELLANEOUS DATA EDIT                DAY   YEAR                   DAY   YEAR
                           SCP:       VS 2   REL. 3                  DATE:  070   97        REPORT DATE:  071
 97
DEVICE TYPE:    3705

                           MODEL :   3033                                     HH MM SS.TH
                           CPU ID:   021929                            TIME:  16 11 42.31
CHANNEL PATH ID:  00


RESOURCE ID:            D877

RECORD TYPE:            BSC/SS PERMANENT LINE ERROR

LIA:                    00A2

TERMINAL NAME:          NTVLN0A2

SIO COUNTER:            00002

TEMPORARY ERROR COUNTER: 00000

  BASIC TRANSMISSION UNIT
   BTU COMMAND  02           IOB COMMAND                  10       IOB INITIAL ERROR STATUS          0000
   BTU MODIFIER 0B           IOB MODIFIERS                2000     IOB INITIAL ERROR EXTENDED STATUS 00
   BTU FLAGS    0080         IOB IMMEDIATE CONTROL COMMAND 00      IOB STATUS                        069C
                                                                   IOB EXTENDED STATUS               00


HEX DUMP OF RECORD
HEADER    91830800  158A0000  0097070F  16114231  00021929  303304C8
    0018  06FFD5E3  E5D3D5F0  C1F2D877  00A28005  01000000  020B0080  10200000  069C0000
    0038  00000002  00000000  0001248A  1E00FC02  C1C3F9D5  C3D7C640  00000000  00000000
    0058  00000000  00000000
```

Figure 77. MDR Detail Edit Report, BSC/SS Permanent Line Error

```
DEVICE NUMBER:  06FF                REPORT:  MISCELLANEOUS DATA SUMMARY

                                                         DAY   YEAR  -  DAY   YEAR                          DAY   YEAR
DEVICE TYPE:  3705                         DATE RANGE:  070   97   TO  071   97               REPORT DATE:  080  97

TOTAL NUMBER OF RECORDS:  00001
                                                          - - - - - - - - - - PERMANENT ERROR TYPES - - - - - - - - -
                                    TEMP     PERM                                                               MODEM/
TERM NAME   RID    LIA   # I/O OPS   ERRORS   ERRORS      HDWR  T     M OUT   DATA CK    R CV    ITV RQD   MISC   INTFC

NTVLN0A2   D877   00A2   00000000    00000    00001   %%  00000  0     0001     00000    00 000   00000    00000   00000
```

Figure 78. MDR Detail Summary Report, BSC/SS Permanent Line Error

```
DEVICE NUMBER:  06FF        REPORT:   MISCELLANEOUS DATA EDIT                DAY   YEAR                        DAY   YEAR
                            SCP:       VS 2   REL. 3              DATE:  070   97        REPORT DATE:  071
 97
DEVICE TYPE:    3705

                            MODEL :   3033                                 HH MM SS.TH
                            CPU ID:   021929                        TIME:  15 58 21.66

RESOURCE ID:            D8A2

RECORD TYPE:            STATISTICAL DATA ON SDLC LINK ERRORS

LIA:                    00A2

TERMINAL NAME:          PUAC9L27

STATION TYPE:           02

TOTAL TRANSMISSION COUNT           032770
I FORMAT RECEIVE COUNT             001718
S FORMAT RECEIVE COUNT             028214
I FORMAT RECEIVE ERRORS            000000
I FORMAT FRAMES ACKNOWLEDGED       002963
I FORMAT TOTAL RETRANSMISSIONS     000000
TOTAL RETRY COUNT                  000000

HEX DUMP OF RECORD
HEADER    91830800  158A00C8  0097070F  15582166  00021929  303304C8
    0018  06FFD7E4  C1C3F9D3  F2F7D8A2  00278605  02000000  00000000  00000000  00000000
    0038  00000B93  00000000  02000000  00000000  00000000  00008002  06B66E36  0B930000
    0058  00001E00  FC03D3C1  C3F9D3F2  F740C1C3  F9D5C3D7  C6400000  00000000  0000
```

Figure 79. MDR Detail Report, SDLC Link Errors

```
DEVICE NUMBER:  06FF                 REPORT:  MISCELLANEOUS DATA SUMMARY

                                                    DAY   YEAR  -  DAY   YEAR                              DAY   YEAR
DEVICE TYPE:  3705                          DATE RANGE:  048   97   TO  049   97                 REPORT DATE:  071  97

TOTAL NUMBER OF RECORDS:  00001
                                                        - - - - - - - - - - PERMANENT ERROR TYPES - - - - - - - - -
                                      TEMP     PERM                                                          MODEM/
TERM NAME   RID    LIA    # I/O OPS   ERRORS   ERRORS      HDWR  TM OUT   DATA CK    RCV    ITV RQD   MISC   INTFC

NTVLN0A2   D877   00A2   00000002    00000    00001   %%  00000  00000     00000    00000  00000    00001   00000
PUAC9L26   D890   0026   00000000    00000    00000   %%  00000  00000     00000    00000  00000    00000   00000
PUAC9L27   D8A2   0027   00002963    00000    00000   %%  00000  00000     00000    00000  00000    00000   00000
```

Figure 80. MDR Summary Report, SDLC Link Errors

Missing Interrupt Handler (MIH) Detail Reports

MIH records are created whenever an expected interrupt fails to occur in a preset time interval. They are produced for missing channel-end (primary status) and device-end (secondary status) interrupts on non-TP devices. The records use fields from the unit control block (UCB) to define the origin and status of the missing interrupt.

In VSE, only the Advanced Function system produces MIH reports.

Figures containing examples of these reports are on the pages shown in the following table:

REPORT	Refer To
MIH (370) Detail Edit Report	Figure 81 on page 247
MIH (370) Detail Summary Report	Figure 82 on page 247
MIH (370XA) Detail Edit Report	Figure 83 on page 248
MIH (370XA) Detail Summary Report	Figure 84 on page 248
MIH (370XA) Detail Edit Report for zHPF	Figure 85 on page 249

```
--- RECORD ENTRY TYPE - MIH   SOURCE - MIH   MODEL -  9375   SERIAL NO. 234567

    V370 REL.    06

                              DAY YEAR   HH.MM.SS.TH   JOB IDENTITY SYSTEM

                              043  97    18 57 22 12                E2E8E2E3C5D44040

 UCB DEVICE TYPE                  00002107
 PRIMARY   CHANNEL UNIT ADDRESS     000C41
 ALTERNATE CHANNEL UNIT ADDRESS     000C41
 CHANNEL SET ID                         00
 MISSING INTERRUPT                      C0

                               HH MM SS.TH
 TIME INTERVAL                 00 00 15.00

 VOLUME SERIAL NUMBER               VMRESA


   HEX DUMP OF RECORD
   HEADER    70660800   C0000000   0097043F   01081232        10234567   93750000

       0000  E2E8E2E3   C5D44040   000C4000   0C40E5D4        D9C5E2C1   00002107   F0F0F0F0   F1F5F0F0
       0020  00000000
```

Figure 81. MIH (370) Detail Edit Report

```
SUMMARY OF MIH RECORDS               CUA 000C40

                      DAY YEAR   DAY YEAR
RECORD DATE RANGE     043  97    043  97

MODEL - 9375     SERIAL NO - 234567

TOTAL NUMBER OF RECORDS=0001
```

Figure 82. MIH (370) Detail Summary Report

```
DEVICE NUMBER:    02300      REPORT:  MIH EDIT              DAY YEAR       JOB IDENTITY:  *MASTER*
                              SCP:     VS 2 REL.  3     DATE: 260  04                      5CD4C1E2E3C5D95C
DEVICE NED:       002105.000.IBM.075.000000012252.0615
DEVICE TYPE:      3390
                              CPU MODEL:  2084               HH MM SS.TH
CHANNEL PATH ID: N/A            CPU ID:  0190CC        TIME: 05 34 30.13

MISSING INTERRUPT:  10 - START PENDING IN SUBCHANNEL     SUBCHANNEL ID NUMBER:  000100EF
                                                         VOLUME SERIAL:         D83RL7
                    HH MM SS.TH                          UCB LEVEL BYTE:        01
TIME INTERVAL:      00 00 15.00

RECOVERY ACTIONS PERFORMED BYTE:  AC    1

   HALT OR CLEAR SUBCHANNEL  1
   SIMULATED INTERRUPT       0
   REDRIVE DEVICE            1
   REQUEUE I/O REQUEST       0
   ISSUE MESSAGE             1
   LOG THE CONDITION         1
   BIT 6                     0
   BIT 7                     0

HEX DUMP OF SUBCHANNEL INFORMATION BLOCK
OFFSET        02106BC8  289F237A  C00040C0  10C3FFC0
        0010  40440000  00000000  00000001  00804400
        0020  5BD52000  10000004  00000000  00000000
        0030  00000000

HEX DUMP OF RECORD
HEADER    71831800  00000000  0004260F  05343013  000190CC  20848000
    0018  5CD4C1E2  E3C5D95C  02106BC8  289F237A  C00040C0  10C3FFC0  40440000  00000000
    0038  00000001  00804400  5BD52000  10000004  00000000  00000000  00000000  F0F0F0F0
    0058  F1F5F0F0  10BCBCAC  000110EF  289CC040  C0404400  00000000  00010800  00000100
    0078  00002300  0800801B  2024C4F8  F3D9D3F7  0010C000  01230000  00000100  00001001
    0098  00806600  00120100  00000146  00020001  00A2F0F0  F2F1F0F5  F1F2F3C9  C2D4F1F3
    00B8  F7F6F5F4  F3F2F1F1  F9F8F3F1  C1C2C3C4  40E2E8E2  E3C5D440  40404040  40404040
    00D8  40404040  4040D0D0  D0D0E0E0  E0E0F0F0  F0F0A0A0  A0A0F0F0  FFFF
```

Figure 83. MIH (370XA) Detail Edit Report

1 The hexadecimal value in the byte is shown in Figure 83; the bit settings are shown in Figure 84.

```
DEVICE NUMBER:    02300       REPORT:  MIH SUMMARY              REPORT DATE:  289  04
                                                                PERIOD FROM:  260  04
DEVICE TYPE:      3390        CPU MODEL:  2084                         TO:    260  04
                                 CPU ID:  0190CC

MISSING INTERRUPT

  MISSING CSCH                  00000000
  MISSING HSCH                  00000000
  IDLE DEVICE WITH WORK QUEUED  00000000
  START PENDING IN SUBCHANNEL   00000001
  I/O TIMEOUT CONDITION FOR
     ACTIVE I/O REQUEST         00000000
  I/O TIMEOUT CONDITION FOR
     QUEUED I/O REQUEST         00000000
  MOUNT PENDING                 00000000
  MISSING PRIMARY STATUS        00000000
  MISSING SECONDARY STATUS      00000000
```

Figure 84. MIH (370XA) Detail Summary Report

```
DEVICE NUMBER:    02300      REPORT:  MIH EDIT              DAY YEAR       JOB IDENTITY:  *MASTER*
                              SCP:     VS 2 REL.  3     DATE: 260  04                     5CD4C1E2E3C5D95C
DEVICE TYPE:      3390
                              CPU MODEL:  2084               HH MM SS.TH
CHANNEL PATH ID: N/A             CPU ID:  0190CC        TIME: 05 34 30.13

MISSING INTERRUPT:  10 - START PENDING IN SUBCHANNEL     SUBCHANNEL ID NUMBER:  000110EF
                                                        VOLUME SERIAL:         D83RL7
                    HH MM SS.TH                         UCB LEVEL BYTE:        01
TIME INTERVAL:      00 00 15.00

RECOVERY ACTIONS PERFORMED BYTE:  AC

   HALT OR CLEAR SUBCHANNEL  1
   SIMULATED INTERRUPT       0
   REDRIVE DEVICE            1
   REQUEUE I/O REQUEST       0
   ISSUE MESSAGE             1
   LOG THE CONDITION         1
   BIT 6                     0
   BIT 7                     0

HEX DUMP OF SUBCHANNEL INFORMATION BLOCK
OFFSET        02106BC8  289F237A  C00040C0  10C3FFC0
        0010  40440000  00000000  00000001  00804400
        0020  5BD52000  10000004  00000000  00000000
        0030  00000000

COMMAND CODE: 00   I/O DRIVER ID: 12

STATUS:  DEVICE RESERVED BY ANOTHER SYSTEM

INTERROGATE INFORMATION:

  FORMAT: F0  FLAGS: F0  CU STATE: A0  DEVICE STATE: A0  I/O STATE: A0

  STATE DEPENDENT DATA:  FFFF2794 2D4D2794 2D4D2794
  DEVICE LEVEL ID:       2D4D2861
  DEVICE DEPENDENT DATA: 2D4D2895 00000000 01000000 2D4D25C6
                         00000000 00000000 F1FDF0F0
INTERROGATE INFORMATION:
OFFSET        C0000004  F1F1F1F1  F2F2F2F2  F3F3F3F3
        0010  F4F4F4F4  F5F5F5F5  F6F6F6F6  F7F7F7F7
        0020  F8F8F8F8  10203040  A0A0A0A0  B0B0B0B0
        0030  C0C0C0C0  D0D0D0D0  E0E0E0E0  F0F0F0F0
        0040  A0A0A0A0  F0F0FFFF  27942D4D  27942D4D
        0050  27942D4D  28612D4D  28950000  00000100
        0060  00002D4D  25C60000  00000000  0000F1FD
        0070  F0F0F0F9  00000000  00000096  00000101
        0080  000F0000  00000000  00000000  00000000
        0090  00000000  00000000  00000000

HEX DUMP OF RECORD
HEADER    71831800  00000000  0004260F  05343013  000190CC  20848000
    0018  5CD4C1E2  E3C5D95C  02106BC8  289F237A  C00040C0  10C3FFC0 40440000  00000000
    0038  00000001  00804400  5BD52000  10000004  00000000  00000000 00000000  F0F0F0F0
    0058  F1F5F0F0  10BCBCAC  000110EF  289CC040  C0404400  00000000 00010800  00000100
    0078  00002300  0800801B  2024C4F8  F3D9D3F7  0010C000  01230000 00000100  00001001
    0098  00806600  00120100  00000146  00010001  00A2C000  0004F1F1 F1F1F2F2  F2F2F3F3
    00B8  F3F3F4F4  F4F4F5F5  F5F5F6F6  F6F6F7F7  F7F7F8F8  F8F81020 3040A0A0  A0A0B0B0
    00D8  B0B0C0C0  C0C0D0D0  D0D0E0E0  E0E0F0F0  F0F0A0A0  A0A0F0F0 FFFF
```

Figure 85. MIH (370XA) Detail Edit Report for zHPF

Outboard Record (OBR) Detail Edit Reports

OBR records document a variety of I/O errors and statistical data. They can take one of two forms (short or long), depending on why they are written. See Table 14 on page 250 for a description of each form.

Table 14. OBR Record Form

FORM	DESCRIPTION
Short	The short form is: • Used to record statistical data for the devices (except tape drives) whose statistical data counters are in "memory" rather than in control-unit buffers. (Short OBRs are not created by the 33XX DASD family.) • Written in response to the same operator-initiated and program-initiated actions that can trigger an MDR record. Before EREP begins to retrieve records for a report, the statistical data is written to the ERDS in short OBR records or MDR records, depending on the devices involved. (For optical and tape devices, statistical data is in long OBR records.)
Long	The long form is: • Used to record the permanent unit checks, (I/O) errors that the system's error recovery program could not correct. • Used to record some temporary unit checks and statistical data for devices with in-core counters. • Used to record the errors encountered by the dynamic pathing availability facility while changing the state of a path group.

Figures containing examples of these reports are on the pages shown in the following table:

REPORT	REFER TO
OBR (Short) Detail Edit Report, Device Type 3277	Figure 86 on page 251
OBR (Short) Detail Edit Report, Device Type 3800	Figure 87 on page 251
OBR (Short) Detail Edit Report, Device Type 3791, VTAM	Figure 88 on page 252
OBR (Short) Unit Check	Figure 89 on page 253
OBR (Long) Detail Edit Report, Device Type AFP1	Figure 90 on page 254
OBR (Long) Summary Report, Device Type AFP1	Figure 91 on page 255
OBR (Long) Detail Edit Report, Device Type CTCA	Figure 92 on page 256
OBR (Long) Detail Edit Report, Device Type 3277	Figure 93 on page 257
OBR (Long) Detail Edit Report, Device Type 3380	Figure 95 on page 259
OBR (Long) Detail Edit Report, Device Type 3390	Figure 97 on page 261
OBR (Long) Detail Edit Report, Device Type 3480	Figure 98 on page 262
OBR (Long) Detail Edit Report, Device Type 3490	Figure 99 on page 263
OBR (Long) Detail Edit Report, Device Type 3590	Figure 100 on page 264
OBR (Long) Detail Edit Report, Device Type 3800	Figure 101 on page 265
OBR (Long) Detail Edit Report, Autochanger Device Type 3995	Figure 103 on page 267
OBR Record (Long) Detail Edit Report, Device Type 9347	Figure 103 on page 267
OBR (Long) Detail Edit Report, Device Type 3380, DPA	Figure 106 on page 270
OBR (Long) Detail Edit Report, Device Type 3590, DPA	Figure 107 on page 271

REPORT	REFER TO
OBR (Long) Dynamic Pathing Validation Analysis Detail Edit Report	Figure 108 on page 272
OBR (Long) Dynamic Pathing Validation Analysis Summary Report	Figure 109 on page 272
OBR (Long) Dynamic Pathing Validation Analysis Detail Edit Report, Device Type 3390	Figure 110 on page 273
OBR (Long) Detail Edit Report for zHPF	Figure 112 on page 274
OBR (Long) Detail Edit Report for Extended Address Volume (EAV)	Figure 113 on page 275
OBR (Long) Detail Edit Report for zHPF	Figure 112 on page 274

```
DEVICE NUMBER:  000B60               REPORT:  OUTBOARD (SHORT)         DAY YEAR
                                      SCP:    VS 2 REL.  3      DATE: 049  97

DEVICE TYPE:    3277
                                     MODEL:   3084                     HH MM SS.TH
                                    CPU ID:   321128           TIME:  04 57 57.41
RECORD IS:      END OF DAY
MODE IS:        370XA


STATISTICAL DATA

TEMPORARY READS  00 TEMPORARY WRITES 00
INTRVNTN REQ'D   01 BUS OUT PAR CHK  00
EQUIPMENT CHECK  00 NOT USED         00
CNTROLLER CHECK  00 NOT USED         00
NOT USED         00 NOT USED         00
NOT USED         00 DC, US           00
IR, US           00 IR, EC, US       00
EC, US           00 CHAN DATA CHECK  00
NOT USED         00 NOT USED         00
NOT USED         00 NOT USED         00


HEX DUMP OF RECORD

HEADER    308318A0  00000000  0097049F  04575741  26321128  30840000
    0018  12501009  0A000B60  00100000  00000000  0000
```

Figure 86. OBR (Short) Detail Edit Report, Device Type 3277

```
DEVICE NUMBER:      000B0F       REPORT:  OUTBOARD (SHORT)          DAY YEAR
                                 SCP:     VS 3 REL.  3       DATE: 049  97
DEVICE TYPE:        3800
                                 MODEL:   3084               TIME: HH MM SS.TH
                                CPU ID:   221128                   04 46 23.17

RECORD IS:      END OF DAY
MODE IS:        370XA


STATISTICAL DATA

CNTR 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

CNTR 17 18 19 20
     00 00 00 00


HEX DUMP OF RECORD

HEADER    308318A0  00000000  0097049F  04462317  26221128  30840000
    0018  1000080E  0A000B0F  00000100  00000000  0000
```

Figure 87. OBR (Short) Detail Edit Report, Device Type 3800

```
---RECORD ENTRY TYPE - UNIT CHECK     SOURCE   VTAM OUTBOARD         MODEL- 3084      SERIAL NO.   021220
 VS 2   REL. 3
                          DAY YEAR                     HH MM SS.TH                 JOB IDENTITY
                    DATE- 044   97                TIME 16 14 53 08                              0000000000000000


 DEVICE TYPE                    3791 LOCAL
 DEVICE NUMBER                  0902
 CHANNEL PATH ID                00

SDR COUNTER
   1 NOT USED                   000       9 DATA CHK, LENGTH CHK       000
   2 NOT USED                   000      10 DATA CHK, DATA REJECT      000
   3 BUS OUT, P-CHK #2          000      11 EQUIP CHK, MACH CHK        000
   4 BUS OUT, P-CHK #1,2        000      12 NOT USED                   000
   5 EQUIP CHK, P-CHK #1        000      13 NOT USED                   000
   6 EQUIP CHK, P-CHK #2        000      14 NOT USED                   000
   7 EQUIP CHK, P-ERR, P-CHK #1  000      15 NOT USED                   000
   8 DATA CHK                   000      16 CHANNEL DATA CHK           000

TERMINAL NAME JOB IDENTITY ZL902       TYPE OF RECORD  *OVERFLOW*

SIO CNTR  65535                        TEMPORARY ERR CNTR  00000



   HEX DUMP OF RECORD
   HEADER    36891840    10000000    0097044F    16145308        66021220    30840000

       0018  00000000    00000000    00000000    00000000        00000000    00000000    02000902    500040F1
       0038  0A000902    00000000    FFFF0000    00004000        E9D3F9F0    F2404040    00000000    00000000
       0058  00000000    00006000    40170095    C8D08D00        01730000    0000
```

Figure 88. OBR (Short) Detail Edit Report, Device Type 3791, VTAM

```
---RECORD ENTRY TYPE - UNIT CHECK   SOURCE - OUTBOARD            MODEL- 4381       SERIAL NO.   010024
 V370 REL.      06

                              DAY YEAR          HH MM SS.TH      JOB IDENTITY SYSTEM
                        DATE- 048  97     TIME- 15 59 31 29                  E2E8E2E3 C5D44040

                                           CORRELATION NO 03

DEVICE TYPE                     3262-5
PRIMARY   CHANNEL UNIT ADDRESS  0004E3
ALTERNATE CHANNEL UNIT ADDRESS  0004E3

                   CC   CA   US     CT                  K    CA   US CS  CT
    FAILING CCW     01 09D017 60 00 0001            CSW  00 09D008 06 00 0000

    UNIT STATUS               CHANNEL STATUS              STATISTICAL DATA             STATISTICAL DATA

  ATTENTION       0          PGM-CTLD IRPT    0          TEMPY READS     000          TEMPY READS      001
  STATUS MODIFIER  0          INCORRECT LENGTH 0          NOT USED        000          BUS OUT CHK      000
  CONTROL UNIT END 0          PROGRAM CHECK    0          EQUIP CHK       000          BUFF PTY CHK     000
  BUSY            0          PROTECTION CHECK 0          LOAD CHECK      000          NOT USED         000
  CHANNEL END     0          CHAN DATA CHECK  0          CMND RETRY      000          PRINT CHECK      001
  DEVICE END      1          CHAN CTL CHECK   0          NOT USED        000          LINE POS         000
  UNIT CHECK      1          I/F CTL CHECK    0          NOT USED        000          CMND SUPPRESS    000
  UNIT EXCEPTION  0          CHAINING CHECK   0          NOT USED        000          CHAN DATA CHK    000

SENSE BYTA DATA

BYTE 0    08        BYTE 1    40       BYTE 2    00       BYTE 3    00       BYTE 4     00       BYTE 5    00

CMND REJ  0         UNASSIGN  0        CAR F MOV 0        UNASSIGN  0        --------- 1        UNASSIGN  0
INTV REQ  0         PRINT CHK 1        CAR MO CK 0        UNASSIGN  0        HEX CODE  0        UNASSIGN  0
BUSOUT CK 0         UNASSIGN  0        UNASSIGN  0        UNASSIGN  0        84 EQUALS 0        UNASSIGN  0
EQUIP CHK 0         LINE POS  0        UNASSIGN  0        H COIL CK 0         A  3262  0        UNASSIGN  0
DATA CHK  1         FORMS CHK 0        UNASSIGN  0        H FIRE CK 0        PRINTER   0        UNASSIGN  0
BUFPAR CK 0         CMD SUPP  0        FORMS JAM 0        UNASSIGN  0                  1        UNASSIGN  0
LOAD CHK  0         CTRLR CK  0        UNASSIGN  0        SYNC CHK  0                  0        UNASSIGN  0
CHAN 9    0         UNASSIGN  0        BLT VELOC 0        RIBBON CK 0        --------- 0        UNASSIGN  0


     THE VALUES OF BYTES 6 TO 17 INCLUSIVE
     ARE NOT REPORTED ON IN THE EDIT REPORT


BYTE 18   0D        BYTE 19   00       BYTE 20   FF       BYTE 21   00       BYTE 22    00       BYTE 23   22

--------  0         UNASSIGN  0        --------- 1        UNASSIGN  0        UNASSIGN  0        --------- 0
  STATUS  0         UNASSIGN  0                  1        UNASSIGN  0        UNASSIGN  0          MODEL   0
    OR    0         UNASSIGN  0        00 = 3262 1        UNASSIGN  0        UNASSIGN  0           ID.    1
COMMUNI-  0         UNASSIGN  0         MODEL 1  1        UNASSIGN  0        UNASSIGN  0          HEX 22  0
CATION    1         UNASSIGN  0                  1        UNASSIGN  0        UNASSIGN  0           FOR    0
  CODES   1         UNASSIGN  0        55 = 3262 1        UNASSIGN  0        UNASSIGN  0          3262    0
          0         UNASSIGN  0         MODEL 5  1        UNASSIGN  0        UNASSIGN  0                  1
--------- 1         UNASSIGN  0        --------- 1        UNASSIGN  0        UNASSIGN  0        --------- 0

   HEX DUMP OF RECORD

   HEADER    30668800     00000000     0097048F     15593129     04010024     43810000
       0018  E2E8E2E3     C5D44040     0109D017     60000001     0009D008     06000000     01000E43    0000080D
       0038  0A0004E3     00000018     03000000     00000000     01000000     01000000     00000840    00008400
       0058  00000000     00000000     00000000     0D00FF00     00220000     00000000     00000000    00000000
       0078  00000000     00000000     00000000
```

Figure 89. OBR (Short) Unit Check

```
DEVICE NUMBER:  000493              REPORT:  OUTBOARD (LONG)          DAY YEAR      JOB IDENTITY: H3XA21
                                      SCP:   VS 2 REL.  3       DATE: 042  97                     C8F3F8E7C1E6F140
DEVICE TYPE:    AFP1
                                      MODEL:   4381                   HH MM SS.TH
ERROR PATH:     04-0493               CPU ID:  010142           TIME: 18 59 17.97

RECORD IS:      PERMANENT

MODE IS:        370XA

                  CC   CA   FL     CT
FAILING CCW:      01 D3D000 64 00 0007

                  K  FLAGS     CA    US SS  CT
CSW:              11 004417 10203008 02 00 0007

---UNIT STATUS----  SUB-CHANNEL STATUS  --------------------------SCSW FLAGS------------------------
                                                 FLAG 0           FLAG 1
ATTENTION        0  PGM-CTLD IRPT    0  CCW FORMAT       0  RESERVED         0  SUBCHANNEL ACTIV 0
STATUS MODIFIER  0  INCORRECT LENGTH 0  PRE-FETCH CCW    0  SSCH FUNCTION    1  DEVICE ACTIVE    0
CONTROL UNIT END 0  PROGRAM CHECK    0  INIT STATUS      0  HSCH FUNCTION    0  SUSPENDED        0
BUSY             0  PROTECTION CHECK 0  ADDR LIMIT       0  CSCH FUNCTION    0  ALERT STATUS     1
CHANNEL END      0  CHAN DATA CHECK  0  SUPP SUSPEND INT 0  RESUME PENDING   0  INTERMED STATUS  0
DEVICE END       0  CHAN CTL CHECK   0  ZERO COND CODE   0  START PENDING    1  PRIMARY STATUS   1
UNIT CHECK       1  I/F CTL CHECK    0  EXTENDED CONTROL 0  HALT PENDING     0  SECONDARY STATUS 1
UNIT EXCEPTION   0  CHAINING CHECK   0  PATH NOT OPER    0  CLEAR PENDING    0  STATUS PENDING   1


DEVICE DEPENDENT DATA
 TYPE/MODEL           3835-01

STATISTICAL DATA

TMP CHAN DATA CK 00                     PAPER JAMS       00
TMP CHAN CTL CHK 00                     TEMPORARY ERROR  00
TMP INTF CTL CHK 00

SENSE BYTE DATA

BYTE 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23
     40 E2 02 01 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00


HEX DUMP OF RECORD

HEADER    30831800  00001100  0097042F  18591797  00010142  42810000
    0018  C8F3F8E7  C1E6F140  01D3D000  64000007  00000000  00000000  01040493  0000080F
    0038  0A000493  00000018  00383501  00000000  00000000  00000000  000040E2  02010000
    0058  00000000  00000000  00000000  00000000  00001100  44171020  30080200  00070000
    0078  00008500
```

Figure 90. OBR (Long) Detail Edit Report, Device Type AFP1

```
PRIMARY CUA:        000493       REPORT:  OUTBOARD SUMMARY          REPORT DATE:  071 97
                                 MODEL:   4381                      PERIOD FROM:  042 97
DEVICE TYPE:        AFP1         CPU ID:  010142                            TO:  042 97

TOTAL NUMBER OF RECORDS     001   TOTAL OF OVERFLOW RECORDS 000

CCW COMMAND CODES ENCOUNTERED(MAXIMUM OF 24)

CMND  TOTAL
01     001

                                           USAGE
 TYPE/MODEL            3835-01             START              0
                                           LAST               0

STATISTICAL DATA SUMMARY

TMP CHAN DATA CK 000                       PAPER JAMS       000
TMP CHAN CTL CHK 000                       TEMPORARY ERROR  000
TMP INTF CTL CHK 000


SENSE DATA SUMMARY

 SRC   PERM  TEMP

 0000  0001  0000
```

Figure 91. OBR (Long) Summary Report, Device Type AFP1

OBR (Long) Detail Edit Report for CTCA (Channel to Channel Adapter)

```
DEVICE NUMBER:  000CEB             REPORT:  OUTBOARD (LONG)           DAY YEAR       JOB IDENTITY:
                                     SCP:   VS 2 REL.  3       DATE: 068  97                       0000000000000000
DEVICE TYPE:    CACA
                                     MODEL:   3084                  HH MM SS.TH
ERROR PATH:     55-0CEB              CPU ID:  121128           TIME: 04 41 57.73

RECORD IS:      PERMANENT

MODE IS:        370XA

                  CC   CA   FL     CT
FAILING CCW:      04 000000 20 00 0007

                  K  FLAGS     CA    US SS  CT
SCSW:             61 004417 10A99108 02 00 0001

---UNIT STATUS----  SUB-CHANNEL STATUS  --------------------------SCSW FLAGS------------------------
                                                 FLAG 0            FLAG 1
ATTENTION        0  PGM-CTLD IRPT    0  CCW FORMAT       0  RESERVED         0  SUBCHANNEL ACTIV 0
STATUS MODIFIER  0  INCORRECT LENGTH 0  PRE-FETCH CCW    0  SSCH FUNCTION    1  DEVICE ACTIVE    0
CONTROL UNIT END 0  PROGRAM CHECK    0  INIT STATUS      0  HSCH FUNCTION    0  SUSPENDED        0
BUSY             0  PROTECTION CHECK 0  ADDR LIMIT       0  CSCH FUNCTION    0  ALERT STATUS     1
CHANNEL END      0  CHAN DATA CHECK  0  SUPP SUSPEND INT 0  RESUME PENDING   0  INTERMED STATUS  0
DEVICE END       0  CHAN CTL CHECK   0  ZERO COND CODE   0  START PENDING    1  PRIMARY STATUS   1
UNIT CHECK       1  I/F CTL CHECK    0  EXTENDED CONTROL 0  HALT PENDING     0  SECONDARY STATUS 1
UNIT EXCEPTION   0  CHAINING CHECK   0  PATH NOT OPER    0  CLEAR PENDING    0  STATUS PENDING   1


STATISTICAL DATA

CNTR 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

CNTR 17 18 19 20
     00 00 00 00


SENSE BYTE DATA

BYTE 00
     40


HEX DUMP OF RECORD

HEADER    30831800  00000000  0097068F  04415773  66121128  30840000
    0018  00000000  00000000  43000000  20000001  00000000  00000000  00550CEB  10014100
    0038  0A000CEB  00000001  00000000  00000000  00004061  00441710  A9910802  00000100
    0058  00000000
```

Figure 92. OBR (Long) Detail Edit Report, Device Type CTCA

Note: The device type field in the report's header prints out as “CACA” instead of CTCA.

```
DEVICE NUMBER:  000B4A            REPORT:  OUTBOARD (LONG)          DAY YEAR       JOB IDENTITY:
                                    SCP:   VS 2 REL.  3       DATE: 064  97                        0000000000000000
DEVICE TYPE:    3277
                                    MODEL:   3084                   HH MM SS.TH
ERROR PATH:     05-0B4A             CPU ID:  121128           TIME: 07 36 14.73

RECORD IS:      PERMANENT

MODE IS:        370XA

                  CC   CA   FL     CT
FAILING CCW:      05 258F5D 20 00 0009

                  K  FLAGS     CA    US SS  CT
SCSW:             60 000013 00000000 06 00 0000

---UNIT STATUS----  SUB-CHANNEL STATUS  --------------------------SCSW FLAGS------------------------
                                                 FLAG 0           FLAG 1
ATTENTION        0  PGM-CTLD IRPT    0  CCW FORMAT       0  RESERVED         0  SUBCHANNEL ACTIV 0
STATUS MODIFIER  0  INCORRECT LENGTH 0  PRE-FETCH CCW    0  SSCH FUNCTION    1  DEVICE ACTIVE    0
CONTROL UNIT END 0  PROGRAM CHECK    0  INIT STATUS      0  HSCH FUNCTION    0  SUSPENDED        0
BUSY             0  PROTECTION CHECK 0  ADDR LIMIT       0  CSCH FUNCTION    0  ALERT STATUS     1
CHANNEL END      0  CHAN DATA CHECK  0  SUPP SUSPEND INT 0  RESUME PENDING   0  INTERMED STATUS  0
DEVICE END       1  CHAN CTL CHECK   0  ZERO COND CODE   0  START PENDING    0  PRIMARY STATUS   0
UNIT CHECK       1  I/F CTL CHECK    0  EXTENDED CONTROL 0  HALT PENDING     0  SECONDARY STATUS 1
UNIT EXCEPTION   0  CHAINING CHECK   0  PATH NOT OPER    0  CLEAR PENDING    0  STATUS PENDING   1


DEVICE DEPENDENT DATA

 TYPE OF RECORD:  PERMANENT    (X'00')

 TERMINAL NAME:   M01LB4A

      INITIAL FAILURE                FINAL RETRY
    ----------------------       ----------------------
    COMMAND CODE: X'05'            COMMAND CODE: X'05'
    SENSE BYTE 0: 01000000       SENSE BYTE 0:00001100

    FIRST FAILURE   CMND REJ 0    INTV RQD 1   BUS O CK 0   EQUIP CK 0   DATA CHK 0   UNIT SPC 0   CNTRL CK 0   OPER CHK 0
    FINAL RETRY     CMND REJ 0    INTV RQD 0   BUS O CK 0   EQUIP CK 0   DATA CHK 1   UNIT SPC 1   CNTRL CK 0   OPER CHK 0

    STATS:          READ DC  00   WRITE DC 00  INTV RQD 00  BUS O CK 00  EQUIP CK 00  NOT USED 00  CNTRL CK 00  NOT USED 00
                    NOT USED 00   NOT USED 00  NOT USED 00  DC US    01  NOT USED 00  IR,EC,US 00  EC,US    00  CHANL DC 00


STATISTICAL DATA

CNTR 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16
     00 00 00 00 00 00 00 00 00 00 00 01 00 00 00 00

CNTR 17 18 19 20
     00 00 00 00


SENSE BYTE DATA

BYTE 00 01 02 03
     40 0C 0C 40

HEX DUMP OF RECORD

HEADER    36831800  00000000  0097064F  07361473  66121128  30840000
    0018  00000000  00000000  05258F5D  20000009  00000000  00000000  02050B4A  12501009
    0038  0A000B4A  00000004  00050000  05050000  D4F0F1D3  C2F4C140  00000000  00010000
    0058  0000400C  0C406000  00130000  00000600  00000000  0000
```

Figure 93. OBR (Long) Detail Edit Report, Device Type 3277 Part 1

```
DEVICE NUMBER:  000361             REPORT:  OUTBOARD (LONG)           DAY YEAR      JOB IDENTITY:
                                     SCP:   VS 2 REL.  3       DATE: 068  97                      0000000000000000
DEVICE TYPE:    3277
                                     MODEL:   3084                  HH MM SS.TH
ERROR PATH:     03-0361              CPU ID:  121128           TIME: 23 52 49.53

RECORD IS:      PERMANENT

MODE IS:        370XA

                  CC   CA   FL     CT
FAILING CCW:      4B 000000 40 00 0001

                  K  FLAGS     CA    US SS  CT
SCSW:             00 000013 00000000 06 00 0000

---UNIT STATUS----  SUB-CHANNEL STATUS  --------------------------SCSW FLAGS------------------------
                                                 FLAG 0            FLAG 1
ATTENTION        0  PGM-CTLD IRPT    0  CCW FORMAT       0  RESERVED         0  SUBCHANNEL ACTIV 0
STATUS MODIFIER  0  INCORRECT LENGTH 0  PRE-FETCH CCW    0  SSCH FUNCTION    0  DEVICE ACTIVE    0
CONTROL UNIT END 0  PROGRAM CHECK    0  INIT STATUS      0  HSCH FUNCTION    0  SUSPENDED        0
BUSY             0  PROTECTION CHECK 0  ADDR LIMIT       0  CSCH FUNCTION    0  ALERT STATUS     1
CHANNEL END      0  CHAN DATA CHECK  0  SUPP SUSPEND INT 0  RESUME PENDING   0  INTERMED STATUS  0
DEVICE END       1  CHAN CTL CHECK   0  ZERO COND CODE   0  START PENDING    0  PRIMARY STATUS   0
UNIT CHECK       1  I/F CTL CHECK    0  EXTENDED CONTROL 0  HALT PENDING     0  SECONDARY STATUS 1
UNIT EXCEPTION   0  CHAINING CHECK   0  PATH NOT OPER    0  CLEAR PENDING    0  STATUS PENDING   1



STATISTICAL DATA

TEMPORARY READS  00 TEMPORARY WRITES 00
INTRVNTN REQ'D   00 BUS OUT PAR CHK  00
EQUIPMENT CHECK  00 NOT USED         00
CNTROLLER CHECK  00 NOT USED         00
NOT USED         00 NOT USED         00
IR, US           00 DC, US           00
EC, US           00 IR, EC, US       00
NOT USED         00 NOT USED         00
NOT USED         00 NOT USED         00

SENSE BYTE DATA

------BYTE00----01  ------BYTE01----00  ------BYTE02----00  ------BYTE03----00  ------BYTE04----00  ------BYTE05----00
COMMAND REJECT   0  BIT 0            0  BIT 0            0  BIT 0            0  BIT 0            0  BIT 0            0
INTRVNTN REQ'D   0  BIT 1            0  BIT 1            0  BIT 1            0  BIT 1            0  BIT 1            0
BUS OUT PAR CHK  0  BIT 2            0  BIT 2            0  BIT 2            0  BIT 2            0  BIT 2            0
EQUIPMENT CHECK  0  BIT 3            0  BIT 3            0  BIT 3            0  BIT 3            0  BIT 3            0
DATA CHECK       0  BIT 4            0  BIT 4            0  BIT 4            0  BIT 4            0  BIT 4            0
UNIT SPECIFY     0  BIT 5            0  BIT 5            0  BIT 5            0  BIT 5            0  BIT 5            0
CNTROLLER CHECK  0  BIT 6            0  BIT 6            0  BIT 6            0  BIT 6            0  BIT 6            0
OPERATION CHECK  1  BIT 7            0  BIT 7            0  BIT 7            0  BIT 7            0  BIT 7            0

HEX DUMP OF RECORD

HEADER    30831800  00000000  0097068F  23524953  26121128  30840000
    0018  00000000  00000000  04B00000  40000001  00000000  00000000  00030361  12501009
    0038  0A000361  00000006  00000000  00000000  00000100  00000000  00000013  00000000
    0058  06000000  00000000
```

Figure 94. OBR (Long) Detail Edit Report, Device Type 3277 Part 2

```
DEVICE NUMBER:  000E70            REPORT:  OUTBOARD (LONG)           DAY YEAR      JOB IDENTITY:
                                    SCP:   VS 2 REL.  3       DATE: 071  97                      0000000000000000
DEVICE TYPE:    3380
                                    MODEL:   3090                  HH MM SS.TH
ERROR PATH:     2D-0E70             CPU ID:  170028           TIME: 16 21 43.36

RECORD IS:      PERMANENT

MODE IS:        370XA

                  CC   CA   FL     CT
FAILING CCW:      00 000000 00 00 0000

                  K  FLAGS     CA    US SS  CT
SCSW:             04 824017 000122C8 00 02 0000

---UNIT STATUS----  SUB-CHANNEL STATUS  --------------------------SCSW FLAGS------------------------
                                                 FLAG 0            FLAG 1
ATTENTION        0  PGM-CTLD IRPT    0  CCW FORMAT       1  RESERVED         0  SUBCHANNEL ACTIV 0
STATUS MODIFIER  0  INCORRECT LENGTH 0  PRE-FETCH CCW    0  SSCH FUNCTION    1  DEVICE ACTIVE    0
CONTROL UNIT END 0  PROGRAM CHECK    0  INIT STATUS      0  HSCH FUNCTION    0  SUSPENDED        0
BUSY             0  PROTECTION CHECK 0  ADDR LIMIT       0  CSCH FUNCTION    0  ALERT STATUS     1
CHANNEL END      0  CHAN DATA CHECK  0  SUPP SUSPEND INT 0  RESUME PENDING   0  INTERMED STATUS  0
DEVICE END       0  CHAN CTL CHECK   0  ZERO COND CODE   0  START PENDING    0  PRIMARY STATUS   1
UNIT CHECK       0  I/F CTL CHECK    1  EXTENDED CONTROL 1  HALT PENDING     0  SECONDARY STATUS 1
UNIT EXCEPTION   0  CHAINING CHECK   0  PATH NOT OPER    0  CLEAR PENDING    0  STATUS PENDING   1


DEVICE DEPENDENT DATA

 DEVICE MODEL          3380
                       SD      CTLR   DVC
 PHYSICAL ID           00       XX     XX

 VOLUME LABEL          SPOOLA         FINAL RETRY


SENSE BYTE DATA

BYTE 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15
     00 00 00 00 00 00 00 00 00 00 00 01 00 00 00

BYTE 17 18 19 20 21 22 23
     00 00 00 00 00 00 00


HEX DUMP OF RECORD

HEADER    30831800  00000000  0097071F  16214336  00170028  30900000
    0018  00000000  00000000  00000000  00000000  00000000  00000000  032D0E70  3030200E
    0038  00000E70  00000018  E2D7D6D6  D3C10000  00000000  00000000  2D000000  00000000
    0058  00000000  00000000  00000000  00000000  00000000  00000000  04824017  000122C8
    0078  00020000  00000000
```

Figure 95. OBR (Long) Detail Edit Report, Device Type 3380 Part 1

```
DEVICE NUMBER:  000A82              REPORT:  OUTBOARD (LONG)         DAY YEAR       JOB IDENTITY: VARY
                                    SCP:     VS 2 REL.  3      DATE: 042  97                      E5C1D9E840404040
DEVICE TYPE:    3380
                                    MODEL:   3084                    HH MM SS.TH
ERROR PATH:     40-0000            CPU ID:   021128            TIME: 04 12 59.12

RECORD IS:      PERM PATH

MODE IS:        370XA

                  CC   CA   FL     CT
FAILING CCW:      AF 00000C 03 03 A1D0

                  K  FLAGS     CA    US SS  CT
SCSW:             00 030000 01050404 22 10 1842

---UNIT STATUS----  SUB-CHANNEL STATUS  --------------------------SCSW FLAGS------------------------
                                                   FLAG 0              FLAG 1              FLAG 2
ATTENTION        0  PGM-CTLD IRPT    0  CCW FORMAT       0  RESERVED         0  SUBCHANNEL ACTIV 0
STATUS MODIFIER  0  INCORRECT LENGTH 0  PRE-FETCH CCW    0  SSCH FUNCTION    0  DEVICE ACTIVE    0
CONTROL UNIT END 1  PROGRAM CHECK    0  INIT STATUS      0  HSCH FUNCTION    0  SUSPENDED        0
BUSY             0  PROTECTION CHECK 1  ADDR LIMIT       0  CSCH FUNCTION    0  ALERT STATUS     0
CHANNEL END      0  CHAN DATA CHECK  0  SUPP SUSPEND INT 0  RESUME PENDING   0  INTERMED STATUS  0
DEVICE END       0  CHAN CTL CHECK   0  ZERO COND CODE   0  START PENDING    0  PRIMARY STATUS   0
UNIT CHECK       1  I/F CTL CHECK    0  EXTENDED CONTROL 1  HALT PENDING     0  SECONDARY STATUS 0
UNIT EXCEPTION   0  CHAINING CHECK   0  PATH NOT OPER    1  CLEAR PENDING    0  STATUS PENDING   0


   SPID:  000002112830849718CEF0      FUNCTION CONTROL BYTE:  80
   SNID:  0000000000000000000000      PATH STATE BYTE:        00


HEX DUMP OF RECORD

HEADER    3A831810  40000000  0097042F  04125912  26021128  30840000
    0018  E5C1D9E8  40404040  AF00000C  0303A1D0  00000000  00000000  04400000  3030200E
    0038  00000A82  00000000  80000002  11283084  9718CEF0  00000000
```

Figure 96. OBR (Long) Detail Edit Report, Device Type 3380 Part 12

```
PRIMARY CUA:    0239               REPORT:  OUTBOARD (LONG)           DAY YEAR      JOB IDENTITY: PACAH210
                                     SCP:     V370 REL.  6      DATE: 042  97                   D7C1C3C1C8F2F1F0
DEVICE TYPE:    3390
                                     MODEL:   3084                    HH MM SS.TH
ERROR PATH:     0239                CPU ID:   020060            TIME: 02 31 48.38

RECORD IS:      TEMPORARY

MODE IS:        370

                CC   CA   FL     CT
FAILING CCW:    07 DFA1E8 40 00 0006

                K    CA   US CS  CT
CSW:            01 DFA1C8 02 00 0006

---UNIT STATUS----  CHANNEL STATUS
ATTENTION        0  PGM-CTLD IRPT    0
STATUS MODIFIER  0  INCORRECT LENGTH 0
CONTROL UNIT END 0  PROGRAM CHECK    0
BUSY             0  PROTECTION CHECK 0
CHANNEL END      0  CHAN DATA CHECK  0
DEVICE END       0  CHAN CTL CHECK   0
UNIT CHECK       1  I/F CTL CHECK    0
UNIT EXCEPTION   0  CHAINING CHECK   0


DEVICE DEPENDENT DATA

     STORAGE CONTROL UNIT:   TYPE: 2107     SEQUENCE NUMBER:  N/A       PATH: 0

                   DEVICE:   TYPE: 2107     SEQUENCE NUMBER: AH210  DEVICE ID: 19  STRING: 1 SUBCHANNEL ID: 00123456

                             SSID: 1144             VOLUME: PACV01

SENSE BYTE DATA

BYTE 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15
     10 00 06 00 39 32 C1 43 00 03 00 00 01 05 04 04

BYTE 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
     22 10 18 42 11 44 0C 01 00 00 0F 01 0C 00 00 00

HEX DUMP OF RECORD

HEADER    30660840  00000000  0097042F  02314838  00020060  30840000
    0018  D7C1C3C1  C8F2F1F0  07DFA1E8  40000006  01DFA1C8  02000006  03000239  80062032
    0038  00000239  00010020  D7C1C3E5  F0F10000  00000001  D8000000  00000000  00000000
    0058  10000600  3932C143  00030000  01050404  22101842  11440C01  00000F01  0C000000
```

Figure 97. OBR (Long) Detail Edit Report, Device Type 3390

```
PRIMARY CUA:    018B               REPORT:  OUTBOARD (LONG)           DAY YEAR       JOB IDENTITY: RELIAB2
                                     SCP:     VS 2 REL.  3      DATE: 048  97                      D9C5D3C9C1C2F240
DEVICE TYPE:    3480
                                     MODEL:   4341                    HH MM SS.TH
ERROR PATH:     018B                CPU ID:   015760           TIME: 11 03 20.32
RECORD IS:      PERMANENT
MODE IS:        370
                CC   CA   FL     CT
FAILING CCW:    02 3EDD50 04 00 775B
                K    CA   US CS  CT
CSW:            50 01A4D8 02 00 0001
---UNIT STATUS----  CHANNEL STATUS
ATTENTION        0  PGM-CTLD IRPT    0
STATUS MODIFIER  0  INCORRECT LENGTH 0
CONTROL UNIT END 0  PROGRAM CHECK    0
BUSY             0  PROTECTION CHECK 0
CHANNEL END      0  CHAN DATA CHECK  0
DEVICE END       0  CHAN CTL CHECK   0
UNIT CHECK       1  I/F CTL CHECK    0
UNIT EXCEPTION   0  CHAINING CHECK   0
Ê
|
DEVICE DEPENDENT DATA
Ê
CU ERR #1    8202 08          DEV ERR #1   0000 00
CU ERR #2    0000             DEV ERR #2   0000
CU ERR LAST  0000             VOLUME LABEL SSAG03
CU ERR HDW   0000             BLOCK LENGTH 00000
BLOCK ID     000004
Ê
|
SENSE BYTE DATA
BYTE 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15
     42 40 78 3B 00 00 04 20 00 08 82 02 00 00 00 00
BYTE 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
     00 00 00 00 00 00 00 00 F6 04 E7 80 00 00 00 00
|
HEX DUMP OF RECORD
»
HEADER    30830800  00001100  0097048F  11032032  03015760  43410000
    0018  D9C5D3C9  C1C2F240  023EDD50  0400775B  5001A4D8  02000001  02 00018B  78008080
    0038  0000018B  00000020  E2E2C1C7  F0F30000  00001171  00000000  42 40783B  00000420
    0058  00088202  00000000  00000000  00000000  F604E780
```

Figure 98. OBR (Long) Detail Edit Report, Device Type 3480

```
DEVICE NUMBER:  0004B2            REPORT:  OUTBOARD (LONG)           DAY YEAR       JOB IDENTITY:
                                    SCP:   VS 2 REL.  3       DATE: 053  97                     E3F2E2E4D7C5D9F1
DEVICE TYPE:    3490
                                    MODEL:   4381                    HH MM SS.TH
ERROR PATH:     04-04B2             CPU ID:  017260           TIME: 17 00 49.72

RECORD IS:      PERMANENT

MODE IS:        370XA

                  CC   CA   FL     CT
FAILING CCW:      4B 000000 40 00 0001

                  K  FLAGS     CA    US SS  CT
SCSW:             00 000013 00000000 06 00 0000

---UNIT STATUS----  SUB-CHANNEL STATUS  -------------------------SCSW FLAGS------------------------
                                                 FLAG 0            FLAG 1
ATTENTION        0  PGM-CTLD IRPT    0  CCW FORMAT       0  RESERVED         0  SUBCHANNEL ACTIV 0
STATUS MODIFIER  0  INCORRECT LENGTH 0  PRE-FETCH CCW    0  SSCH FUNCTION    1  DEVICE ACTIVE    0
CONTROL UNIT END 0  PROGRAM CHECK    0  INIT STATUS      0  HSCH FUNCTION    0  SUSPENDED        0
BUSY             0  PROTECTION CHECK 0  ADDR LIMIT       0  CSCH FUNCTION    0  ALERT STATUS     1
CHANNEL END      0  CHAN DATA CHECK  0  SUPP SUSPEND INT 0  RESUME PENDING   0  INTERMED STATUS  0
DEVICE END       1  CHAN CTL CHECK   0  ZERO COND CODE   0  START PENDING    0  PRIMARY STATUS   1
UNIT CHECK       1  I/F CTL CHECK    0  EXTENDED CONTROL 0  HALT PENDING     0  SECONDARY STATUS 1
UNIT EXCEPTION   0  CHAINING CHECK   0  PATH NOT OPER    0  CLEAR PENDING    0  STATUS PENDING   1



DEVICE DEPENDENT DATA

CU ERR #2    70CE 00          DEV ERR #1   0000 00
CU ERR #2    0000             DEV ERR #2   0000
CU ERR LAST  0000             VOLUME LABEL
CU ERR HDW   0000             BLOCK LENGTH 08704

SENSE BYTE DATA

BYTE 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15
     00 49 20 2E 00 00 00 20 00 00 70 CE 00 00 00 00

BYTE 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
     00 00 00 F8 00 00 00 00 F6 8F 6D A0 02 39 22 00

HEX DUMP OF RECORD

HEADER    30831800  00001100  0097053F  17004972  0C017260  43810000
    0018  E3F2E2E4  D7C5D9F1  37000000  20000050  00000000  00000000  020404B2  78048081
    0038  000004B2  00000020  00000000  00000000  00000100  00000000  00000013  00000000
    0058  000070CE  00000000  000000F8  00000000  F68F6DA0  02392200  50004017  00F39140
    0078  06000050  00000000 A520
```

Figure 99. OBR (Long) Detail Edit Report, Device Type 3490

```
DEVICE NUMBER:  0006C6              REPORT:  OUTBOARD (LONG)          DAY YEAR       JOB IDENTITY: TRINHNG1
                                      SCP:   VS 2 REL.  3       DATE: 141  06                        E3D9C9D5C8D5C7F1
DEVICE NED:     002105.000.IBM.075.000000012252.0615
DEVICE TYPE:    3590
                                      MODEL:   2066                   HH MM SS.TH
ERROR PATH:     50-06C6               CPU ID:  0A644A           TIME: 12 34 56.78

RECORD IS:      PERMANENT

MODE IS:        370XA

                  CC FL RS CD DATA CNT
FAILING DCW:      01 A4 F8 00 00FFA108    RESIDUAL COUNT: 11111111

                  K  FLAGS     TA    US SS FX ES
SCSW:             80 C04017 00FBBD48 06 00 F8 00

---UNIT STATUS----  SUB-CHANNEL STATUS  --------------------------SCSW FLAGS------------------------
                                                 FLAG 0            FLAG 1            FLAG 2
ATTENTION        0  PGM-CTLD IRPT    0  IRB FORMAT       6  RESERVED         0  SUBCHANNEL ACTIV 0
STATUS MODIFIER  0  INCORRECT LENGTH 0  ---                 SSCH FUNCTION    1  DEVICE ACTIVE    0
CONTROL UNIT END 0  PROGRAM CHECK    0  ---                 HSCH FUNCTION    0  RESERVED         0
BUSY             0  PROTECTION CHECK 0  FORMAT CONTROL   0  CSCH FUNCTION    0  ALERT STATUS     1
CHANNEL END      0  CHAN DATA CHECK  0  INTERROGATE COMP 0  RESERVED         0  INTERMED STATUS  0
DEVICE END       1  CHAN CTL CHECK   0  RESERVED         0  START PENDING    0  PRIMARY STATUS   1
UNIT CHECK       1  I/F CTL CHECK    0  EXTENDED CONTROL 0  HALT PENDING     0  SECONDARY STATUS 1
UNIT EXCEPTION   0  RESERVED         0  PATH NOT OPER    0  CLEAR PENDING    0  STATUS PENDING   1



SENSE BYTE DATA

BYTE 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15
     0A 44 10 D0 50 40 50 50 00 01 FF 00 00 00 00 00

BYTE 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
     03 0C 00 35 29 33 54 90 4B 04 E8 01 60 A4 13 11


HEX DUMP OF RECORD

HEADER    30831800  00001100  0006141F  12345678  000A644A  20660000
    0018  E3D9C9D5  C8D5C7F1  01A4F800  00FFA108  80000000  00000000  025006C6  78048083
    0038  000006C6  00000020  F0F3F2F0  F6F40000  0160A400  00038000  0A4410D0  50405050
    0058  0001FF00  00000000  030C0035  29335490  4B04E801  60A41311  80C04017  00FBBD48
    0078  0600F800  00000000  06C0FFFF  11111111  F0F0F2F1  F0F5F1F1  F1F3F3F3  F4F5F1F2
    0098  F3F4F5F6  F7F1F9F8  F3F1F4F3  F2F1F2F2  F2F2F2F2  F2F2F2F2
```

Figure 100. OBR (Long) Detail Edit Report, Device Type 3590

```
DEVICE NUMBER:  000B0F              REPORT:  OUTBOARD (LONG)          DAY YEAR      JOB IDENTITY:
                                      SCP:   VS 2 REL.  3      DATE: 065  97                    0000000000000000
DEVICE TYPE:    3800
                                      MODEL:   3084                   HH MM SS.TH
ERROR PATH:     20-0B0F               CPU ID:  121128          TIME: 03 11 19.35

RECORD IS:      PERMANENT

MODE IS:        370XA

                  CC   CA   FL     CT
FAILING CCW:      4B 000000 40 00 0001

                  K  FLAGS     CA    US SS  CT
SCSW:             00 000013 00000000 06 00 0000

---UNIT STATUS----  SUB-CHANNEL STATUS  -------------------------SCSW FLAGS------------------------
                                                 FLAG 0            FLAG 1
ATTENTION        0  PGM-CTLD IRPT    0  CCW FORMAT       0  RESERVED         0  SUBCHANNEL ACTIV 0
STATUS MODIFIER  0  INCORRECT LENGTH 0  PRE-FETCH CCW    0  SSCH FUNCTION    1  DEVICE ACTIVE    0
CONTROL UNIT END 0  PROGRAM CHECK    0  INIT STATUS      0  HSCH FUNCTION    0  SUSPENDED        0
BUSY             0  PROTECTION CHECK 0  ADDR LIMIT       0  CSCH FUNCTION    0  ALERT STATUS     0
CHANNEL END      0  CHAN DATA CHECK  0  SUPP SUSPEND INT 0  RESUME PENDING   0  INTERMED STATUS  0
DEVICE END       0  CHAN CTL CHECK   0  ZERO COND CODE   0  START PENDING    0  PRIMARY STATUS   1
UNIT CHECK       1  I/F CTL CHECK    0  EXTENDED CONTROL 0  HALT PENDING     0  SECONDARY STATUS 1
UNIT EXCEPTION   0  CHAINING CHECK   0  PATH NOT OPER    0  CLEAR PENDING    0  STATUS PENDING   1


DEVICE DEPENDENT DATA


STATISTICAL DATA

NOT USED         00 NOT USED         00
TMP CHAN DATA CK 00 TMP CHAN CTL CHK 00
TMP INTF CTL CHK 00 CFS MISFOLD(32)  00
BUR/TRIM JAM(40) 00 NO BURST CHK(41) 00
BUR/STKR JAM(42) 00 NOT USED         00
NOT USED         00 NOT USED         00
NOT USED         00 NOT USED         00
NOT USED         00 NOT USED         00
NOT USED         00 NOT USED         00


SENSE BYTE DATA

------BYTE00----40  ------BYTE01----40  ------BYTE02----00  ------BYTE03----6C  ------BYTE04----8E  ------BYTE05----00
COMMAND REJECT   0  NOT READY        0  FORM HOLD INTRLK 0  PRINTER READY    0  ---------------- 1  ---------------- 0
INTRVNTN REQ'D   0  OPERATION CHECK  1  TRANSFER CHECK   0  PAGE BUFFR EMPTY 1                   0                   0
BUS OUT PAR CHK  0  TONER COLL FULL  0  FUSER CHECK      0  BACK DATA CHECK  1    DIAGNOSTIC     0    DIAGNOSTIC     0
EQUIPMENT CHECK  0  TONER READY      0  CPS CHECK        0  PAPR THREAD STCK 0    STATUS         0    ERROR DEPEN-   0
DATA CHECK       0  DEV REPLACE REQ  0  PROCESS CHECK    0  SYS RESTRT REQD  1    CODES          1    DENT DATA      0
BIT 6 NOT USED   0  END OF FORMS     0  BURST/TRIM CHECK 0  PHOTO CON ADV EN 1                   1                   0
LOAD CHECK       0  OUTPUT FULL      0  BIT 6 NOT USED   0  BIT 6 NOT USED   0                   1    BYTE 1 OF 7    0
                    BIT 7 NOT USED   0  LINE OVERRUN     0  BIT 7 NOT USED   0  ---------------- 0  ---------------- 0
```

Figure 101. OBR (Long) Detail Edit Report, Device Type 3800 Part 1

```
------BYTE06----00  ------BYTE07----F9  ------BYTE08----00  ------BYTE09----02  ------BYTE10----00  ------BYTE11----0C
---------------- 1  ---------------- 0  ---------------- 0  ---------------- 0  ---------------- 0  ---------------- 0
                 0                   0                   0                   0                   0                   0
  DIAGNOSTIC     0    DIAGNOSTIC     0    DIAGNOSTIC     0    DIAGNOSTIC     0    DIAGNOSTIC     0    DIAGNOSTIC     0
  ERROR DEPEN-   0    ERROR DEPEN-   0    ERROR DEPEN-   0    ERROR DEPEN-   0    ERROR DEPEN-   0    ERRPR DEPEN-   0
  DENT DATA      1    DENT DATA      0    DENT DATA      0    DENT DATA      0    DENT DATA      0    DENT DATA      1
                 1                   0                   0                   0                   0                   1
  BYTE 2 OF 7    1    BYTE 3 OF 7    0    BYTE 4 OF 7    0    BYTE 5 OF 7    1    BYTE 6 OF 7    0    BYTE 7 OF 7    0
---------------- 0  ---------------- 0  ---------------- 0  ---------------- 0  ---------------- 0  ---------------- 0

------BYTE12----0B  ------BYTE13----0B  ------BYTE14----0F  ------BYTE15----4C  ------BYTE16----01  ------BYTE17----58
---------------- 1  ---------------- 0  ---------------- 0  ---------------- 0  ---------------- 0  ---------------- 0
                 0                   0                   0                   0                   0                   0
  MODULO 256     0    MODULO 256     0                   0                   0                   0                   0
  XFER 2 PPI     0    FUSER 8-16     0    FUSER PAGE     0    FUSER PAGE     0    PAPER COUNT    0    PAPER COUNT    0
  COUNT          1    PPI COUNT      0    COUNT          0    COUNT          0                   0                   1
                 1                   0                   0                   0                   0                   1
                 1                   0    BYTE 1 OF 2    0    BYTE 2 OF 2    1    BYTE 1 OF 2    0    BYTE 2 OF 2    0
---------------- 0  ---------------- 0  ---------------- 0  ---------------- 0  ---------------- 0  ---------------- 0

------BYTE18----06  ------BYTE19----CF  ------BYTE20----00  ------BYTE21----1F  ------BYTE22----FE  ------BYTE23----DF
---------------- 0  ---------------- 1  ---------------- 0  ---------------- 0  ---------------- 1  ---------------- 1
                 0                   1                   0                   0    PHOTO CONDUC   1    PHOTO CONDUC   1
                 0                   0                   0                   0    GAP LOC OR     1    GAP LOC OR     0
  SERIAL         0    SERIAL         0    PAGE BACKUP    0    PAGE BACKUP    0    LOAD CHECK     1    LOAD CHECK     1
  NUMBER         0    NUMBER         1    COUNT          0    COUNT          0    OFFSET         1    OFFSET         1
                 1                   1                   0                   0                   1                   1
  BYTE 1 OF 2    1    BYTE 2 OF 2    1    BYTE 1 OF 2    0    BYTE 2 OF 2    1    BYTE 1 OF 2    1    BYTE 2 OF 2    1
---------------- 0  ---------------- 1  ---------------- 0  ---------------- 0  ---------------- 0  ---------------- 1


HEX DUMP OF RECORD

HEADER    30831800  00000000  0097065F  03111935  26121128  30840000
    0018  00000000  00000000  0981341D  60000070  00000000  00000000  00200B0F  1000080E
    0038  0A000B0F  00000018  00000000  00000000  00004040  006C8300  00000013  000C0B0B
    0058  0F4C0158  06CF001F  FEDF1100  4007102C  40A80200  00700000  0000
```

Figure 102. OBR (Long) Detail Edit Report, Device Type 3800 Part 12

```
1
DEVICE NUMBER:  000280              REPORT:  OUTBOARD (LONG)         DAY YEAR       JOB IDENTITY: OAM
                                    SCP:     VS 2 REL.  3      DATE: 117  97                      D6C1D44040404040
DEVICE TYPE:    3995
                                    MODEL:   9021                    HH MM SS.TH
ERROR PATH:     INVALID            CPU ID:   110947            TIME: 10 47 27.57
RECORD IS:      PERMANENT
MODE IS:        370XA
                  CC   CA   FL     CT
FAILING CCW:      00 000000 00 00 0000
                  K  FLAGS     CA    US SS  CT
SCSW:             00 000000 00000000 00 00 0000
---UNIT STATUS----  SUB-CHANNEL STATUS  -------------------------SCSW FLAGS------------------------
                                               FLAG 0              FLAG 1              FLAG 2
ATTENTION        0  PGM-CTLD IRPT    0  CCW FORMAT       0  RESERVED         0  SUBCHANNEL ACTIV 0
STATUS MODIFIER  0  INCORRECT LENGTH 0  PRE-FETCH CCW    0  SSCH FUNCTION    0  DEVICE ACTIVE    0
CONTROL UNIT END 0  PROGRAM CHECK    0  INIT STATUS      0  HSCH FUNCTION    0  SUSPENDED        0
BUSY             0  PROTECTION CHECK 0  ADDR LIMIT       0  CSCH FUNCTION    0  ALERT STATUS     0
CHANNEL END      0  CHAN DATA CHECK  0  SUPP SUSPEND INT 0  RESUME PENDING   0  INTERMED STATUS  0
DEVICE END       0  CHAN CTL CHECK   0  ZERO COND CODE   0  START PENDING    0  PRIMARY STATUS   0
UNIT CHECK       0  I/F CTL CHECK    0  EXTENDED CONTROL 0  HALT PENDING     0  SECONDARY STATUS 0
UNIT EXCEPTION   0  CHAINING CHECK   0  PATH NOT OPER    0  CLEAR PENDING    0  STATUS PENDING   0

2
DEVICE DEPENDENT DATA

LIBRARY NAME:                  LIB2      SCSI ADDITIONAL SENSE CODE:          15    1ST DEST ELEMENT BIT MAP(2ND MOVE CMD):80
SERIAL NUMBER:                 00031014  SCSI ADDITIONAL SENSE CODE QUALIFIER:01    1ST DEST ELEMENT NUMBER (2ND MOVE CMD):3D00
FAILING COMMAND:               02        AUTOCHANGER MOVE ERROR CODE:         00    1ST DEST ELEMENT BIT MAP(1ST MOVE CMD):00
TASK REQUEST BLOCK RETURN CODE:00111     AUTOCHANGER HARDWARE ERROR CODE:     20    1ST DEST ELEMENT NUMBER (1ST MOVE CMD):0000
FAULT SYMPTOM CODE:            02FF      SOURCE ELEMENT BIT MAP:              91    SECOND DEST ELEMENT BIT MAP:           00
SCSI SENSE KEY:                04        SOURCE ELEMENT NUMBER:               0300  SECOND DEST ELEMENT NUMBER:            0000

3
SENSE BYTE DATA
BYTE 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15
     00 6F 02 FF 04 15 01 00 20 91 03 00 80 3D 00 00
BYTE 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
4
HEX DUMP OF RECORD
HEADER    30831800  80000000  0097117F  10472757  A3110947  90210000
    0018  D6C1D440  40404040  00000000  00000000  00000000  00000000  23000280  08002182
    0038  00000280  00000020  D3C9C2F2  40404040  F0F0F0F3  F1F0F1F4  02000000  D6F0F0F6
    0058  F7F70000  00000000  00000000  02000100  AA010300  0000A000  00000000  00000000
    0078  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0098  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    00B8  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    00D8  00000000  00000000  00000000  00000000  00000000  00000000  006F02FF  04150100
    00F8  20910300  803D0000  00000000  00000000  00000000  00000000  00000000  00000000
    0118  00000000  00000000  00000000  00000000  00F30578  00000000  00000000  00000000
    0138  00000000  00000004  AAAAAAAA  55555555  00000000  00000000  00000000  00000000
    0158  006F02FF  04150100  20910300  80D00000  00000000  00000000  00000000  00000000
```

Figure 103. OBR (Long) Detail Edit Report, Autochanger Device Type 3995

1 This is an OBR header, that is, general information describing the record.

2 DEVICE DEPENDENT DATA is information from the OBR specific to the optical device.

3 SENSE BYTE DATA is bytes from the sense byte section of the OBR record.

4 HEX DUMP OF RECORD is the hex dump of the entire OBR record.

```
DEVICE NUMBER:  0C70               REPORT:  OUTBOARD (LONG)           DAY YEAR       JOB IDENTITY:
                                     SCP:   VS 2 REL.  3       DATE: 054  97                     D4C1C9D5E3404040
DEVICE TYPE:    9347
                                     MODEL:   9375                    HH MM SS.TH
ERROR PATH:     0C70                 CPU ID:  234567           TIME: 10 14 52.90

RECORD IS:      PERMANENT

MODE IS:        370XA

                  CC   CA   FL     CT
FAILING CCW:      01 3838E3 20 80 0055

                  K    CA   US SS  CT
CSW:              00 6A7348 0E 00 0055

---UNIT STATUS----  CHANNEL STATUS

ATTENTION        0  PGM-CTLD IRPT    0
STATUS MODIFIER  0  INCORRECT LENGTH 0
CONTROL UNIT END 0  PROGRAM CHECK    0
BUSY             0  PROTECTION CHECK 0
CHANNEL END      1  CHAN DATA CHECK  0
DEVICE END       1  CHAN CTL CHECK   0
UNIT CHECK       1  I/F CTL CHECK    0
UNIT EXCEPTION   0  CHAINING CHECK   0


DEVICE DEPENDENT DATA

SYMPTOM CODE   2003
VOLUME SERIAL


SENSE BYTE DATA

------BYTE00----08  ------BYTE01----44  ------BYTE02----00  ------BYTE03----0F  ------BYTE04----10  ------BYTE05----10
COMMAND REJECT   0  NOISE            0  ---------------- 0  ---------------- 0  NOT USED         0  NOT USED         0
INTRVNTN REQ'D   0  DEVICE STATUS A  1                   0                   0  NOT USED         0  NOT USED         0
NOT USED         0  DEVICE STATUS B  0                   0     ERROR         0  TAPE INDICATE    0  NOT USED         0
EQUIPMENT CHECK  0  NOT USED         0     TRACK IN      0     RECOVERY      0  PERMANENT ERROR  1  PE-ID CHECK      1
DATA CHECK       0  AT LOAD POINT    0     ERR (0-7)     0     PROCUDURE     1  HOST DETECT ERR  0  NOT USED         0
OVERRUN          0  WRITE STATUS     1                   0     (0-7)         1  LOOP WRITE-READ  0  NOT USED         0
NOT USED         0  FILE PROTECT     0                   0                   1  NOT USED         0  NOT USED         0
NOT USED            NOT CAPABLE      0  ---------------- 0  ---------------- 1  NOT USED         0  NOT USED         0

------BYTE06----00  ------BYTE07----10  ------BYTE08----38  ------BYTE09----30  ------BYTE10----00  ------BYTE11----00
NOT USED         0  FORMAT CODE 8    0  BUFFER FULL LOW  0  BOT              0  DFCI SEQ CHECK   0  DOOR OPENED      0
NOT USED         0  FORMAT CODE 4    0  BUFFER FULL HIGH 0  EOT              0  DFCI PARITY CHK  0  REEL MISSING     0
NOT USED         0  FORMAT CODE 2    0  DRIVE ONLINE     1  TAPE-IN PATH SNR 1  SYNCH INS/OUTS   0  REEL INVERTED    0
NOT USED         0  FORMAT CODE 1    1  DRIVE READY      1  WRITE ENABLED    1  XFER FAILURE     0  NO BOT           0
NOT USED         0  DATA SECUR ERASE 0  POS. TO MOVE FWD 1  PE 1600 ID BURST 0  NOT USED         0  LOAD FAILURE     0
NOT USED         0  NOT USED         0  NOT USED         0  PE 3200 ID BURST 0  NOT USED         0  REEL NOT CNTERED 0
NOT USED         0  NOT USED         0  NOT USED         0  NOT USED         0  NOT USED         0  NOT USED         0
NOT USED         0  NOT USED         0  NOT USED         0  NOT USED         0  NOT USED         0  P.O.S.T.         0
```

Figure 104. OBR Record (Long) Detail Edit Report, Device Type 9347 Part 1

```
------BYTE12----00  ------BYTE13----20  ------BYTE14----00  ------BYTE15----00  ------BYTE16----80  ------BYTE17----00
TENSION ARM      0  WRITE CHECK      0  READ SKEW        0  TIE PARITY       0  1600 CPI/25IPS   1  NOT USED         0
TAPE SPEED       0  WRITE IBG NOISE  0  READ UNCORRECT P 0  NOT USED         0  1600 CPI/100IPS  0  NOT USED         0
3700 FT OF TAPE  0  WRITE ID CHECK   1  READ MCHNL DROP  0  NOT USED         0  3200 CPI/50IPS   0  IBG 32           0
TENSION ARM VOL  0  WRT POSTAMBLE CK 0  READ ID PAGE     0  NOT USED         0  NOT USED         0  IBG 16           0
TACHOMETER       0  ERASE GAP SIZE   0  NOT USED         0  NOT USED         0  NOT USED         0  IBG  8           0
SUPPLY HUB LOCK  0  PIC ERROR        0  NOT USED         0  NOT USED         0  NOT USED         0  IBG  4           0
TAKE-UP HUB SLIP 0  NOT USED         0  NOT USED         0  NOT USED         0  NOT USED         0  IBG  2           0
SUPPLY HUB SLIP  0  NOT USED         0  NOT USED         0  NOT USED         0  NOT USED         0  IBG  1           0

------BYTE18----04  ------BYTE19----00  ------BYTE20----00  ------BYTE21----00  ------BYTE22----00  ------BYTE23----00
BLK LENGTH 32768 0  BLK LENGTH 128   0  1ST LVL IND BIT1 0  2ND LVL IND BIT1 0  3RD LVL IND BIT1 0  4TH LVL IND BIT1 0
BLK LENGTH 16384 0  BLK LENGTH 65    0  1ST LVL IND BIT2 0  2ND LVL IND BIT2 0  3RD LVL IND BIT2 0  4TH LVL IND BIT2 0
BLK LENGTH 8192  0  BLK LENGTH 32    0  1ST LVL IND BIT3 0  2ND LVL IND BIT3 0  3RD LVL IND BIT3 0  4TH LVL IND BIT3 0
BLK LENGTH 4096  0  BLK LENGTH 16    0  1ST LVL IND BIT4 0  2ND LVL IND BIT4 0  3RD LVL IND BIT4 0  4TH LVL IND BIT4 0
BLK LENGTH 2048  0  BLK LENGTH 8     0  1ST LVL IND BIT5 0  2ND LVL IND BIT5 0  3RD LVL IND BIT5 0  4TH LVL IND BIT5 0
BLK LENGTH 1024  1  BLK LENGTH 4     0  NOT USED         0  NOT USED         0  NOT USED         0  NOT USED         0
BLK LENGTH 512   0  BLK LENGTH 2     0  NOT USED         0  NOT USED         0  NOT USED         0  NOT USED         0
BLK LENGTH 256   0  BLK LENGTH 1     0  NOT USED         0  NOT USED         0  NOT USED         0  NOT USED         0

------BYTE24----00  ------BYTE25----00  ------BYTE26----00  ------BYTE27----00  ------BYTE28----00  ------BYTE29----00
5TH LVL IND BIT1 0  6TH LVL IND BIT1 0  NOT USED         0  ---------------- 0  ---------------- 0  NOT USED         0
5TH LVL IND BIT2 0  6TH LVL IND BIT2 0  NOT USED         0                   0                   0  NOT USED         0
5TH LVL IND BIT3 0  6TH LVL IND BIT3 0  NOT USED         0                   0                   0  NOT USED         0
5TH LVL IND BIT4 0  6TH LVL IND BIT4 0  NOT USED         0    CONDITION      0     DIAGNOSTIC    0  NOT USED         0
5TH LVL IND BIT5 0  6TH LVL IND BIT5 0  NOT USED         0      FLAG         0        LED        0  NOT USED         0
NOT USED         0  NOT USED         0  NOT USED         0                   0                   0  NOT USED         0
NOT USED         0  NOT USED         0  NOT USED         0                   0                   0  NOT USED         0
NOT USED         0  NOT USED         0  NOT USED         0  ---------------- 0  ---------------- 0  NOT USED         0

------BYTE30----20  ------BYTE31----03
---------------- 0  ---------------- 0
                 0                   0
   FAULT         1     FAULT         0
   SYMPTOM       0     SYMPTOM       0
   CODE          0     CODE          0
   (MSB)         0     (LSB)         0
                 0                   1
---------------- 0  ---------------- 1

HEX DUMP OF RECORD

HEADER    30550800  00000000  0097054F  10145290  10234567  93750000
    0018  D4C1C9D5  E3404040  013838E3  20800055  006A7348  0E000055  01000C70  00008009
    0038  00000C70  00000020  40404040  40400000  0844000F  10100010  38300000  00200000
    0058  80000400  00000000  00000000  00002003  00000000  00000000  00000000  00000000
    0078  00000000  00000000  00000000
```

Figure 105. OBR Record (Long) Detail Edit Report, Device Type 9347 Part 2

```
DEVICE NUMBER:  000A82               REPORT:  OUTBOARD (LONG)         DAY YEAR       JOB IDENTITY: VARY
                                     SCP:     VS 2      REL. 3  DATE: 046  97                      E5C1D9E840404040
DEVICE TYPE:    3380
                                     MODEL:   3084                    HH MM SS.TH
ERROR PATH:     56-0000              CPU ID:  321128           TIME: 04 11 55.73

RECORD IS:      PERM PATH

MODE IS:        370XA

                  CC    CA    FL CT
FAILING CCW:      AF 0303A058 00 000C

                  K  FLAGS     CA    US SS  CT
SCSW:             03 814407 01a16058 00 00 000C

---UNIT STATUS----  SUB-CHANNEL STATUS  --------------------------SCSW FLAGS------------------------
                                               FLAG 0              FLAG 1              FLAG 2
ATTENTION        0  PGM-CTLD IRPT    0  CCW FORMAT       1  RESERVED         0  SUBCHANNEL ACTIV 0
STATUS MODIFIER  0  INCORRECT LENGTH 0  PRE-FETCH CCW    0  SSCH FUNCTION    1  DEVICE ACTIVE    0
CONTROL UNIT END 0  PROGRAM CHECK    0  INIT STATUS      0  HSCH FUNCTION    0  SUSPENDED        0
BUSY             0  PROTECTION CHECK 0  ADDR LIMIT       0  CSCH FUNCTION    0  ALERT STATUS     0
CHANNEL END      0  CHAN DATA CHECK  0  SUPP SUSPEND INT 0  RESUME PENDING   0  INTERMED STATUS  0
DEVICE END       0  CHAN CTL CHECK   0  ZERO COND CODE   0  START PENDING    1  PRIMARY STATUS   1
UNIT CHECK       0  I/F CTL CHECK    0  EXTENDED CONTROL 0  HALT PENDING     0  SECONDARY STATUS 1
UNIT EXCEPTION   0  CHAINING CHECK   0  PATH NOT OPER    1  CLEAR PENDING    0  STATUS PENDING   1


   SPID:  000002112830849718CEF0      FUNCTION CONTROL BYTE:  80
   SNID:  0000000000000000000000      PATH STATE BYTE:        00


HEX DUMP OF RECORD

HEADER    3A891810  40000000  0097046F  04115573  26321128  30840000
    0018  E5C1D9E8  40404040  AF00000C  0303A058  00000000  00000000  04560000  3030200E
    0038  00000A82  00000000  80000002  11283084  9718CEF0  00000000  00000000  00000000
    0058  00000000  00000000  03814407  01A16058  0000000C  00000000  00000000  00000000
    0078  00000000  00000000  00000000
```

Figure 106. OBR (Long) Detail Edit Report, Device Type 3380, DPA

```
DEVICE NUMBER:  0006C6            REPORT:  OUTBOARD (LONG)           DAY YEAR      JOB IDENTITY: TRINHNG3
                                    SCP:   VS 2 REL.  3        DATE: 141  06                     E3D9C9D5C8D5C7F3
DEVICE NED:     002105.000.IBM.075.000000012252.0615
DEVICE TYPE:    3590
                                    MODEL:   2066                    HH MM SS.TH
ERROR PATH:     50-06C6             CPU ID:  0A644A            TIME: 12 34 56.78

RECORD IS:      PERMANENT

MODE IS:        370XA

                  CC FL RS CD DATA CNT
FAILING DCW:      01 A4 F8 00 00FFA108    RESIDUAL COUNT: 11111111

                  K  FLAGS     TA    US SS FX ES
SCSW:             80 C04017 00FBBD48 06 00 F8 00

---UNIT STATUS----  SUB-CHANNEL STATUS  --------------------------SCSW FLAGS------------------------
                                                 FLAG 0            FLAG 1            FLAG 2
ATTENTION        0  PGM-CTLD IRPT    0  IRB FORMAT       6  RESERVED         0  SUBCHANNEL ACTIV 0
STATUS MODIFIER  0  INCORRECT LENGTH 0  ---                 SSCH FUNCTION    1  DEVICE ACTIVE    0
CONTROL UNIT END 0  PROGRAM CHECK    0  ---                 HSCH FUNCTION    0  RESERVED         0
BUSY             0  PROTECTION CHECK 0  FORMAT CONTROL   0  CSCH FUNCTION    0  ALERT STATUS     1
CHANNEL END      0  CHAN DATA CHECK  0  INTERROGATE COMP 0  RESERVED         0  INTERMED STATUS  0
DEVICE END       1  CHAN CTL CHECK   0  RESERVED         0  START PENDING    0  PRIMARY STATUS   1
UNIT CHECK       1  I/F CTL CHECK    0  EXTENDED CONTROL 0  HALT PENDING     0  SECONDARY STATUS 1
UNIT EXCEPTION   0  RESERVED         0  PATH NOT OPER    0  CLEAR PENDING    0  STATUS PENDING   1


   SPID:  F3F2F0F6F400000160A400      FUNCTION CONTROL BYTE:  F0
   SNID:  0380000A4410D050405050      PATH STATE BYTE:        00


SENSE BYTE DATA

BYTE 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15
     0A 44 10 D0 50 40 50 50 00 01 FF 00 00 00 00 00

BYTE 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
     03 0C 00 35 29 33 54 90 4B 04 E8 01 60 A4 13 11


HEX DUMP OF RECORD

HEADER    3A831800  00001100  0006141F  12345678  000A644A  20660000
    0018  E3D9C9D5  C8D5C7F3  01A4F800  00FFA108  80000000  00000000  025006C6  78048083
    0038  000006C6  00000020  F0F3F2F0  F6F40000  0160A400  00038000  0A4410D0  50405050
    0058  0001FF00  00000000  030C0035  29335490  4B04E801  60A41311  80C04017  00FBBD48
    0078  0600F800  00000000  06C0FFFF  11111111  F0F0F2F1  F0F5F3F3  F3F3F3F3  F4F5F1F2
    0098  F3F4F5F6  F7F1F9F8  F3F1F4F3  F2F1F2F2  F2F2F2F2  F2F2F2F2
```

Figure 107. OBR (Long) Detail Edit Report, Device Type 3590, DPA

```
RECORD TYPE - 3C

MODEL-3084          SERIAL NO-  021103

--- RECORD ENTRY SOURCE - OBR

    VS 2 REL.    03

       DAY YEAR                              HH MM SS.TH
DATE-  044  97                        TIME-  17 40 12 99


JOB     IDENTITY- DYN PATH

FAILING CCW -     00 00 00 00 00 00 00 00

CSW               00 00 00 00 00 00 00 00

DEVICE TYPE CODE- 3030200E

PRIMARY CUA   0002C2  SECONDARY CUA 000000

   HEX DUMP OF RECORD
   HEADER    3C831840    00000000    0097044F    17401299        26021103    30840000

       0018  C4E8D540    D7C1E3C8    00000000    00000000        00000000    00000000    1D000000    3030200E
       0038  000002C2    00000000    01000000    E2D5C9C4        00FBC168    01A1C110    10000004    58000002
       0058  80800080    00000000    00000000    22800640        00000000    00000000    00000000    00000000
       0078  00000000    00000000    00000000    00000000        00000000    00000000    00000000    00000000
       0098  00000000    00000000    00000000    00000000        00000000    00000000    00000000    00000000
       00B8  00000000    00000000    00000000    00000000        00000000    00000000    00000000    00000000
       00D8  00000000    50040000    00000000    00000000        00000000    00000000    00000000    00000000
       00F8  00000000    00000000    00000000    00000000        00000000    00000000    00000000    00000000
       0118  00000000    00000000    00000000    01000015        00000000
```

Figure 108. OBR (Long) Dynamic Pathing Validation Analysis Detail Edit Report

```
SUMMARY OF 3C RECORDS

                      DAY YEAR   DAY YEAR
RECORD DATE RANGE     044  97    044  97

MODEL - 3084     SERIAL NO - 021103

TOTAL NUMBER OF RECORDS=0001

CLASSES ENCOUNTERED(MAXIMUM OF 10)

RECORD CLASS -3C   0001
```

Figure 109. OBR (Long) Dynamic Pathing Validation Analysis Summary Report

```
DPS VALIDATION REPORT
                                                                     DAY  YEAR      RECORD DESCRIPTION:  IOSVVARY
DEVICE NUMBER:   0018C           SCP:  VS 2 REL.   3       DATE: 213   07                                C9D6E2E5E5C1D9E8
                                 CPU MODEL:       2094           HH MM SS.TH
DEVICE TYPE:     3390            CPU SERIAL:      0F9950     TIME: 14 30 32.75
DEVICE NED:      002105.000.IBM.75.000000012252.0615

            -----------------------------------  RETURN CODES   -----------------------------------
DPTH CALLS FOR:              SNID   00         DEVICE   00         PATH   00                 DPSV:  00

          -----------------------------------LOGICAL STATUS OF DEVICE-----------------------------------
RESVD/ASSGND     0  RESERVE PEND     0  MULTI PTH ACT    1  RESVD/ASSGND VAL 0  UCB IN PERM ERR  0
RESVD/REL PEND   0  DP ACTIVE        1  ASSIGNABLE DEV   0  UCB NOT CONNECT  0  DEVICE BOXED     0

          -----------------------------------   CHANNEL PATH MASKS    -----------------------------------
LPU MASK         80  PHYS AVAIL PG    F0  NO SPID SINCE SR 00  PG RESERVED MASK 00  RESV OTHER PG    00
NO. VALID ICP    04  SNID SUCCESS MK  F0  VAL ID NOT GROUP 00  PG NOT RESERVED  F0  MODE PATH MASK   F0
LPM              F0  SNID FAILURE MK  00  VAL ID IN GROUP  F0

ACT FOR DEV   00   ACT FOR PATH  00   DEV MSG CODE  00

          ------------------------------------ DATA FOR CHANNEL PATH  22 ------------------------------------
PIM              80  SNID SUCCESS     1  REMOVE FROM LPM  0  ALTER PS ACT 2   0  RC ON ACTION 1   00
LOG AVAIL MASK   1   SNID FAILED      0  ALTER PS ACT 1   0  EST/RES REQ ACT1 0  RC ON ACTION 2   00
PHY AVAIL MASK   1   DCC3 CONDITION   0  EST/RES REQ ACT2 0
                     UNIT CHECK       0  LONG RECOVERY    0
SNID DATA            PATH STATE      C8                     PGID  880003069A2084C0F8A451

          ------------------------------------ DATA FOR CHANNEL PATH  21 ------------------------------------
PIM              40  SNID SUCCESS     1  REMOVE FROM LPM  0  ALTER PS ACT 2   0  RC ON ACTION 1   00
LOG AVAIL MASK   1   SNID FAILED      0  ALTER PS ACT 1   0  EST/RES REQ ACT1 0  RC ON ACTION 2   00
PHY AVAIL MASK   1   DCC3 CONDITION   0  EST/RES REQ ACT2 0
                     UNIT CHECK       0  LONG RECOVERY    0
SNID DATA            PATH STATE      C8                     PGID  880003069A2084C0F8A451

          ------------------------------------ DATA FOR CHANNEL PATH  2B ------------------------------------
PIM              20  SNID SUCCESS     1  REMOVE FROM LPM  0  ALTER PS ACT 2   0  RC ON ACTION 1   00
LOG AVAIL MASK   1   SNID FAILED      0  ALTER PS ACT 1   0  EST/RES REQ ACT1 0  RC ON ACTION 2   00
PHY AVAIL MASK   1   DCC3 CONDITION   0  EST/RES REQ ACT2 0
                     UNIT CHECK       0  LONG RECOVERY    0
SNID DATA            PATH STATE      C8                     PGID  880003069A2084C0F8A451

          ------------------------------------ DATA FOR CHANNEL PATH  2A ------------------------------------
PIM              10  SNID SUCCESS     1  REMOVE FROM LPM  0  ALTER PS ACT 2   0  RC ON ACTION 1   00
LOG AVAIL MASK   1   SNID FAILED      0  ALTER PS ACT 1   0  EST/RES REQ ACT1 0  RC ON ACTION 2   00
PHY AVAIL MASK   1   DCC3 CONDITION   0  EST/RES REQ ACT2 0
                     UNIT CHECK       0  LONG RECOVERY    0
SNID DATA            PATH STATE      C8                     PGID  880003069A2084C0F8A451
```

Figure 110. OBR (Long) DPS Validation Detail Edit Report, Device Type 3390 Part 1

```
HEX DUMP OF RECORD
HEADER    C2831840  00000000  0007213F  14303275  FF0F9950  20940000
    0018  C9D6E2E5  E5C1D9E8  0000018C  801B2024  00000000  00000000  01000100  E2D5C9C4
    0038  021D48F8  02387660  00000000  1A208004  F0F0F000  0000F000  F000F000  22800680
    0058  00000000  C8880003  069A2084  C0F8A451  00000000  21400680  00000000  C8880003
    0078  069A2084  C0F8A451  00000000  2B200680  00000000  C8880003  069A2084  C0F8A451
    0098  00000000  2A100680  00000000  C8880003  069A2084  C0F8A451  00000000  00000000
    00B8  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    00D8  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    00F8  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0118  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0138  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0158  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0178  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0198  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    01B8  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    01D8  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    01F8  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0218  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0238  00000000  00000000  DC010100  F0F0F2F1  F0F5F0F0  F0C9C2D4  F7F5F0F0  F0F0F0F0
    0258  F0F1F2F2  F5F20615
```

Figure 111. OBR (Long) DPS Validation Detail Edit Report, Device Type 3390 Part 2

```
DEVICE NUMBER:  0006C9             REPORT:  OUTBOARD (LONG)           DAY YEAR       JOB IDENTITY:BOX DEV
                                     SCP:   VS 2 REL.  3       DATE: 142  06                     C2D6E740C4C5E540
DEVICE TYPE:    3390
                                     MODEL:   2066                   HH MM SS.TH
ERROR PATH:     50-06C9              CPU ID:  0D644A           TIME: 02 21 17.75

RECORD IS:      TEMPORARY

MODE IS:        370XA

                  CC  FL  RS  CD  DATA CNT
FAILING CCW:      AF  00  00  0C  03BE46D8        RESIDUAL COUNT: 0000

                  K  FLAGS    TA     US SS FX ES
SCSW:             00 800000 00000000 00 00 00 00

---UNIT STATUS----  SUB-CHANNEL STATUS  --------------------------SCSW FLAGS------------------------
                                                 FLAG 0            FLAG 1
ATTENTION        0  PGM-CTLD IRPT    0  IRB FORMAT       4  RESERVED         0  SUBCHANNEL ACTIV 0
STATUS MODIFIER  0  INCORRECT LENGTH 0  ---                 SSCH FUNCTION    0  DEVICE ACTIVE    0
CONTROL UNIT END 0  PROGRAM CHECK    0  ---                 HSCH FUNCTION    0  RESERVED         0
BUSY             0  PROTECTION CHECK 0  FORMAT ESCAPE    0  CSCH FUNCTION    0  ALERT STATUS     0
CHANNEL END      0  CHAN DATA CHECK  0  RESERVED         0  RESERVED         0  INTERMED STATUS  0
DEVICE END       0  CHAN CTL CHECK   0  RESERVED         0  START PENDING    0  PRIMARY STATUS   0
UNIT CHECK       0  I/F CTL CHECK    0  EXTENDED CONTROL 0  HALT PENDING     0  SECONDARY STATUS 0
UNIT EXCEPTION   0  RESERVED         0  PATH NOT OPER    0  CLEAR PENDING    0  STATUS PENDING   0

   SPID:  00000D644A2066BED5C7F8      FUNCTION CONTROL BYTE:  20
   SNID:  0000000000000000000000      PATH STATE BYTE:        00

SENSE BYTE DATA
BYTE 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
BYTE 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
     00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

HEX DUMP OF RECORD
HEADER    3A831840  00000000  0006142F  02211775  000D644A  20660000
    0018  C2D6E740  C4C5E540  AF00000C  03BE46D8  00000000  00000000  045006C9  78042032
    0038  000006C9  00000020  2000000D  644A2066  BED5C7F8  00000000  00000000  00000000
    0058  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0078  00000000  00000000  00800000  00000000  00000000  00000000
```

Figure 112. OBR (Long) Detail Edit Report for zHPF

```
DEVICE NUMBER:  005708            REPORT:  OUTBOARD (LONG)           DAY YEAR       JOB  IDENTITY: EOS EXIT
                                    SCP:   VS 2 REL.  3       DATE: 273  05                       C5D6E240C5E7C9E3
DEVICE TYPE:    3390
                                    MODEL:   2084                    HH MM SS.TH
ERROR PATH:     14-5708             CPU ID:  132906           TIME: 13 38 42.32

RECORD IS:      TEMPORARY

MODE IS:        370XA

                  CC   CA   FL     CT
FAILING CCW:      1E E76072 60 00 0000

                  K  FLAGS     CA    US SS  CT
SCSW:             00 404017 00E68400 0E 00 0000

---UNIT STATUS----  SUB-CHANNEL STATUS  --------------------------SCSW FLAGS------------------------
                                                 FLAG 0            FLAG 1
ATTENTION        0  PGM-CTLD IRPT    0  CCW FORMAT       0  RESERVED         0  SUBCHANNEL ACTIV 0
STATUS MODIFIER  0  INCORRECT LENGTH 0  PRE-FETCH CCW    1  SSCH FUNCTION    1  DEVICE ACTIVE    0
CONTROL UNIT END 0  PROGRAM CHECK    0  INIT STATUS      0  HSCH FUNCTION    0  SUSPENDED        0
BUSY             0  PROTECTION CHECK 0  ADDR LIMIT       0  CSCH FUNCTION    0  ALERT STATUS     1
CHANNEL END      1  CHAN DATA CHECK  0  SUPP SUSPEND INT 0  RESUME PENDING   0  INTERMED STATUS  0
DEVICE END       1  CHAN CTL CHECK   0  ZERO COND CODE   0  START PENDING    0  PRIMARY STATUS   1
UNIT CHECK       1  I/F CTL CHECK    0  EXTENDED CONTROL 0  HALT PENDING     0  SECONDARY STATUS 1
UNIT EXCEPTION   0  CHAINING CHECK   0  PATH NOT OPER    0  CLEAR PENDING    0  STATUS PENDING   1


DEVICE DEPENDENT DATA

     STORAGE CONTROL UNIT:   TYPE: 2107     SEQUENCE NUMBER: 00000       PATH: 0

                   DEVICE:   TYPE: 2107+    SEQUENCE NUMBER:  N/A   DEVICE ID: 00  STRING: 0

                             SSID: N/A              VOLUME: 339S02  CYLINDER: 00101A0  HEAD: E

SENSE BYTE DATA
BYTE 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15
     10 00 00 00 00 3C 20 00 00 00 00 00 00 00 00 00
BYTE 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
     00 00 00 00 00 00 00 00 04 81 00 10 DE F1 AB C2

HEX DUMP OF RECORD
HEADER    30831840  00000000  0005273F  13384232  FF132906  20840000
    0018  C5D6E240  C5E7C9E3  1EE76072  60000000  00000000  00000000  03145708  801F2032
    0038  00005708  00000020  F3F3F9E2  F0F30000  00000000  00000000  00000000  00000000
    0058  10000000  003C2000  00000000  00000000  00000000  00000000  04810010  00101A0E
    0078  00404017  00E68400  0E000000  0080000D  F0F261F2  F461F0F5
```

Figure 113. OBR (Long) Detail Edit Report for Extended Address Volume (EAV)

Software (SFT) Detail Edit Reports

This report contains software records that are produced as part of the system error recovery process. It may include the following:

- Software-specific information such as:
  - The error ID
  - The system diagnostic work area (SDWA) control block and its extensions for the failing task or request block.
- Software records written at the request of the machine check handler (MCH) to provide program-damage assessment data 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 (ERDS) buffer is full.
- Under VS1, VTAM prepares software records to document program failures.

Figures containing examples of these reports are on the pages shown in the following table:

REPORT	REFER TO
Software (SVC 13) Detail Edit Report	“Software (SVC 13) Detail Edit Report” on page 276

REPORT	REFER TO
Software (SVC 13) Summary Report	“Software (SVC 13) Summary Report” on page 278
Software (Machine Check) Edit Report	“Software (Machine Check) Edit Report” on page 278
Software (Program Interrupt) Edit Report	“Software (Program Interrupt) Edit Report” on page 281
Software (ABEND) Detail Edit Report	“Software (ABEND) Detail Edit Report” on page 283
Software (ABEND) Summary Report	“Software (ABEND) Summary Report” on page 284
Software (MCH Called RTM) Detail Edit Report	“Software (MCH Called RTM) Detail Edit Report” on page 284
Software (MCH Called RTM) Summary Report	“Software (MCH Called RTM) Summary Report” on page 285
Software (Lost Record) Detail Edit Report	“Software (Lost Record) Detail Edit Report” on page 286
Software (Lost Record) Summary Report	“Software (Lost Record) Summary Report” on page 286

Software (SVC 13) Detail Edit Report

```
TYPE:  SOFTWARE RECORD      REPORT:  SOFTWARE EDIT REPORT           DAY YEAR
       (SVC 13)                                        REPORT DATE: 071.97
SCP:   VS 2 REL 3                                       ERROR DATE: 060.97
                                                                    HH: MM:SS.TH
                                                              TIME: 03:13:51.39


JOBNAME: JES2
ERRORID: SEQ=00020  CPU=0000  ASID=0007  TIME=03:13:51.2

SEARCH ARGUMENT ABSTRACT

  RIDS/IGC0008A AB/20351 REGS/0611C RIDS/IGCT1081#R

  SYMPTOM             DESCRIPTION
  -------             -----------
  RIDS/IGC008A        CSECT NAME: IGC0008A
  AB/S0351            SYSTEM ABEND CODE: 0351
  REGS/0611C          REGISTER/PSW DIFFERENCE FOR R06: 11C
  RIDS/IGCT1081#R     RECOVERY ROUTINE CSECT NAME: IGCT1081

SERVICEABILITY INFORMATION NOT PROVIDED BY THE RECOVERY ROUTINE

  PROGRAM ID
  LOAD MODULE NAME
  RECOVERY ROUTINE LABEL
  DATE ASSEMBLED
  MODULE LEVEL
  SUBFUNCTION

TIME OF ERROR INFORMATION

  PSW: 070C1000 0004DDE2   INSTRUCTION LENGTH: 02   INTERRUPT CODE: 000D

  REGISTERS 0-7
  GR: 80000000 80106000 A00E6170 00042320  00646840 0064C880 7004DCC6 00623518
  REGISTERS 8-15
  GR: 00642A88 FF9B2698 0000000E 0063A000  00646840 00000106 0064C8F1 0000000E

  HOME ASID: 0007    PRIMARY ASID: 0007    SECONDARY ASID: 0007
  PKM: 4000          AX: 0002

  RTM WAS ENTERED BECAUSE A TASK REQUESTED ABEND VIA SVC 13.
  THE ERROR OCCURRED WHILE AN ENABLED RB WAS IN CONTROL.
```

```
STATUS FROM ESTAE RB OR AT FRR ENTRY

  PSW: 075C1000 00CF4C10   INSTRUCTION LENGTH: 02   INTERRUPT CODE: 0008

REGISTERS FROM RB LEVEL OF ESTAE EXIT OR REGISTERS AT TIME OF ERROR FOR FRR

  REGISTERS 0-7
  GR: FF9C321C 00631DA8 00000008 60CF4938  00627EF0 00000000 0064C9F8 00631DE4
  REGISTERS 8-15
  GR: 00631DE0 00631DA8 00631DA8 00000000  00000001 00631F58 A0CF40D4 00000000

RECOVERY ENVIRONMENT

  RECOVERY ROUTINE TYPE: UNKNOWN
  AN SVC DUMP WAS SCHEDULED BY A PREVIOUS RECOVERY ROUTINE.
  THE RB ASSOCIATED WITH THIS EXIT WAS NOT IN CONTROL AT THE TIME OF ERROR.
  I/O OPERATIONS WERE HALTED.

RECOVERY ROUTINE ACTION

  THE RECOVERY ROUTINE REQUESTED THAT TERMINATION PROCESSING CONTINUE.
  NO LOCKS WERE REQUESTED TO BE FREED.

HEXADECIMAL DUMP

  HEADER
+000    40830820    000000B8    0097060F    03135139      C.....8.I. ....
+010    23020447    30810000                              .....A..

JOBNAME
+000    D1C5E2F2    40404040                             JES2

SDWA BASE
+000    0064C998    80351000    FF04000D    5004DDE2     ..IQ........ ..S
+010    FF140051    60146AA6    80000000    80106000     ....-. W......-.
+020    A00E6170    00042320    00646840    0064C880      ./........ ..H.
+030    7004DCC6    00623518    00642A88    FF9B2698     ...F-. W...H.}.Q
+040    0000000E    0063A000    0064D968    00000106     ...... ...R.....
+050    0064C8F1    0000000E    0064C880    00000000     ..H1......H.....
+060    00000000    00000000    070C1000    0004DD32     ...............S
+070    0002000D    00000000    075C1000    00CF4C10     .........*....<.
+080    00020008    00000000    FF9CE21C    00631DA8     ......... S....Y
+090    00000008    60CF4938    00627EF0    00000000     ....-.....=0....
+0A0    0064C9F8    00631DE4    00631DE0    00631DA8     ..I8...U...\...Y
+0B0    00631DA8    00000000    00000001    00631F58     ...Y............
+0C0    A0CF49D4    00000000    E6000418    00000000      ..M....W.......
+0D0    00000000    00000000    00000000    00000000     ................
+0E0    00000000    00000000    10040841    00004000     .............. .
+0F0    00000000    00625C28    00000000    00800000     ......*.........
+100    00000000    00000000    00000000    00000000     ................
+110    00000000    00000000    00000000    00000000     ................
+120    0007C998    00000000    00000000    C9C7C3F0     ............IGC0
+130    F0F0F8C1    C9C7C3E3    F1F0F8F1    00625BD8     008AIGCT1081..$Q
VARIABLE RECORDING AREA (SDWAVRA)
+000    106000                                           .-.

SDWA FIRST RECORDABLE EXTENSION (SDWARC1)
+000    00000000    00000000    00000000    00000000     ................
+010    00000000    00000000    00000000    00000000     ................
+020    00000000    00000000    00000000    00000000     ................
+030    00000000    00000000    00000000    00000000     ................

ERRORID
+000    00140000    00070001    C658                     ........F.


DUMP CHARACTERISTICS
                                                                                          DUMP RANGES AREA
DUMP FLAGS                    SDATA OPTIONS                 PDATA OPTIONS                         FROM      TO
SNAP DUMP REQUEST        0    DISPLAY NUCLEUS          0    DISPLAY SAVE AREAS        0   RANGE 1   00000000  00000000
PARM LIST SUPPLIED       0    DISPLAY SQA              0    DISPLAY SAVE AREA HEADER  0   RANGE 2   00000000  00000000
STORAGE LIST SUPPLIED    0    DISPLAY LSQA             0    DISPLAY REGISTERS         0   RANGE 3   00000000  00000000
                              DISPLAY SWA              0    DISPLAY TASK LPA MODULES  0   RANGE 4   00000000  00000000
                              DISPLAY GTF TRACE TABLE  0    DISPLAY TASK JPA MODULES  0
                              DISPLAY CONTROL BLOCKS   0    DISPLAY PSW               0
                              DISPLAY QCB/QELS         0    DISPLAY USER SUBPOOLS     0
```

```
HEX DUMP OF RECORD
HEADER    40830820    000000B8    0097060F    03135139       23020447    30810000    D1C5E2F2    40404040

    0000  00000D08    800F8000    00000000    00000000       00000000    00000000    00000001    00000C00
    0020  00029202    40125B24    00124F40    00125C7E       0065CFF8    FD000000    0067A950    80659260
    0040  00000000    0068C008    00000000    00124F40       00029200    400367AE    00000000    00000000
    0060  00000000    00000000    070C0000    00125C72       00020000    00000000    070C0000    00029202
    0080  00020000    00000000    00000001    00000C00       00029202    40125B24    00124F40    00125C7E
    00A0  0065CFF8    FD000000    0067A950    80659260       00000000    0068C008    00000000    00124F40
    00C0  00029200    400367AE    00000000    00000000       00000000    00000000    00000000    00000000
    00E0  0000000F    00000000    04040001    00000042       00000000    0098047C    00000000    00800000
    0100  00000000    00000000    00000000    00000000       00000000    00000000    00000000    00000000
    0120  00130099    00000000    00000000    00000000       00000000    00000000    00000000    00980428
    0140  00000000    00000000    00000000    00000000       00000000    00000000    00000000    00000000
    0160  00000000    00000000    00000000    FFFF0001       009805C0    00800013    00000013    00000000
    0180  00000000    00000000    00000000    00031A34       00FF0000    00000000    00000000    00000000
    01A0  00000000    00000000    00000000    00000000       00000000    00000000    00000000    00000000
    01C0  00000000    00000000    00000000    00000000       00000000    00990042    00130003    1A34
```

Software (SVC 13) Summary Report

```
                      DAY YEAR   DAY YEAR      MODEL-  3081             SERIAL NO.    220344

SOFTWARE DATE RANGE - 047  97 TO 057  97


                                       SUMMARY OF SOFTWARE ENVIRONMENT RECORDS
TOTAL NUMBER OF RECORDS     0001



  ROUTINE  CSECT  NUMBER   ROUTINE  CSECT  NUMBER   ROUTINE  CSECT  NUMBER   ROUTINE  CSECT  NUMBER
   NAME    NAME  ENTRIES    NAME    NAME  ENTRIES    NAME    NAME  ENTRIES    NAME    NAME  ENTRIES

                    001
```

Software (Machine Check) Edit Report

```
TYPE:  SOFTWARE RECORD      REPORT:  SOFTWARE EDIT REPORT           DAY YEAR
       (MACHINE CHECK)                                 REPORT DATE: 071.97
SCP:   VS 2 REL 3                                       ERROR DATE: 041.97
                                                                    HH: MM:SS.TH
                                                              TIME: 13:55:05.12


JOBNAME: *MASTER*
ERRORID: SEQ=00013  CPU=0041  ASID=0001  TIME=13:55:04.8

SEARCH ARGUMENT ABSTRACT

  PIDS/####SC1C5 RIDS/IEAVEDS0#L RIDS/IEAVEDS0 AB/S00F3 RIDS/IEAVEDSR#R

  SYMPTOM             DESCRIPTION
  -------             -----------
  PIDS/####SC1C5      PROGRAM ID: ####SC1C5
  RIDS/IEAVEDS0#L     LOAD MODULE NAME: IEAVEDS0
  RIDS/IEAVEDSO       CSECT NAME: IEAVEDS0
  AB/S00F3            SYSTEM ABEND CODE: 00F3NAME: IGCT1081
  RIDS/IEAVEDSR#R     RECOVERY ROUTINE CSECT NAME: IEAVEDSR

OTHER SERVICEABILITY INFORMATION

  RECOVERY ROUTINE LABEL:  IEAVEDSR
  DATE ASSEMBLED:          01/29/95
  MODULE LEVEL:             JBB2133
  SUBFUNCTION:             IEAVEDS0

TIME OF ERROR INFORMATION

  GENERAL PURPOSE REGISTERS AT TIME OF MACHINE CHECK ARE UNPREDICTABLE.

  PSW: 040C0000 8105E932   INSTRUCTION LENGTH: 00   INTERRUPT CODE: 0000
  FAILING INSTRUCTION TEXT: D2038240 95FED203 03A40380

  REGISTERS 0-7
  GR: 00000000 00000000 00000000 00000000  00000000 0000000  00000000 00000000
  REGISTERS 8-15
  GR: 00000000 00000000 00000000 00000000  00000000 0000000  00000000 00000000
```

```
  HOME ASID: 0001    PRIMARY ASID: 0000    SECONDARY ASID: 0000
  PKM: 0000          AX: 0000

  RTM WAS ENTERED BECAUSE OF A MACHINE CHECK INTERRUPT.
  THE ERROR OCCURRED WHILE A LOCKED OR DISABLED ROUTINE WAS IN CONTROL.
  NO LOCKS WERE HELD.
  SUPER BITS SET: PSADISP  - DISPATCHER

RECOVERY ENVIRONMENT

  RECOVERY ROUTINE TYPE: FUNCTIONAL RECOVERY ROUTINE (FRR)
  PSE AT ENTRY TO FRR: 040C0000 810B09D0S
  FRR PARAMETER AREA ON ENTRY TO FRR:
  +00  00000000 00000000 00000000 00000000 00000000 00000000
RECOVERY ROUTINE ACTION

  THE RECOVERY ROUTINE RETRIED TO ADDRESS 010AC332.
  AN SVC DUMP WAS NOT REQUESTED.
  NO LOCKS WERE REQUESTED TO BE FREED.

  THE REGISTER VALUES TO BE USED FOR RETRY:
  REGISTERS 0-7
  GR: 00000000 00000000 00000000 00000000  00000000 0000000  00000000 00000000
  REGISTERS 8-15
  GR: 00000000 00000000 00000000 00000000  00000000 0000000  00000000 00000000

HEXADECIMAL DUMP

  HEADER
+000    48831820    00000000    0097041F    13550512     C.......I......
+010    00170044    30900000                             ........

JOBNAME
+000    5CD4C1E2    30900000                            *MASTER*

SDWA BASE
+000    00F80608    900F3000    00000000    00000000    .8.............
+010    00000000    00000000    00000000    00000000    ................
+020    00000000    00000000    00000000    00000000    ................
+030    00000000    00000000    00000000    00000000    ................
+040    00000000    00000000    00000000    00000000    ................
+050    00000000    00000000    00000000    00000000    ................
+060    00000000    00000000    040C0000    8105E932    ............A.Z.
+070    00000000    01BB111E    040C0000    810B09D0    ..... .......A..
+080    00000000    01BB111E    00000000    00000000    ..... ..........
+090    00000000    00000000    00000000    00000000    ................
+0A0    00000000    00000000    00000000    00000000    ................
+0B0    00000000    00000000    00000000    00000000    ................
+0C0    00000000    00000000    00000000    00000000    ................
+0D0    00000000    20440000    00000000    00000000    ................
+0E0    98EB91D7    B8A6FE01    80020001    00000041    Q.JP8W..........
+0F0    010AC332    00F80AA4    00000000    04880000    ..C..8.U.....H..
+100    00000000    00000000    00000000    00000000    ................
+110    00000000    00000000    00000000    00000000    ................
+120    0001000D    C9C5C1E5    C5C4E2F0    C9C5C1E5    ....8EAVEDS0IEAV
+130    C5C4E2F0    C9C5C1E5    C5C4E2D9    00F80A50    EDS0IEAVEDSR.8.
+140    00000000    00000000    00000000    00000000    ................
+150    00000000    00000000    00000000    00000000    ................
+160    00000000    00000000    00000000    FFFF0003    ................
+170    00F80C70    00000000    00000000    00000000    .8.............
+180    00000000    00000000    00000000    0007A538    ..............V.
+190    00FF0003                                        ....

VARIABLE RECORDING AREA (SDWAVRA)
+000    KEY: 11     LENGTH: 06
+002    C9C8C1D7    E2C1                                IHAPSA

+008    KEY: 15     LENGTH: 02
+00A    0224                                            ..

+00C    KEY: 12     LENGTH: 04
+00E    00FB3080                                        ....

+012    KEY: 15     LENGTH: 02
+014    021C                                            ..

+016    KEY: 12     LENGTH: 04
+018    00000000                                        ....
```

```
+01C    KEY: 15     LENGTH: 02
+01E    02EC                                        .

+020    KEY: 12     LENGTH: 04
+022    00000000                                    ....

+026    KEY: 15     LENGTH: 02
+028    049C                                        .

+02A    KEY: 12     LENGTH: 04
+02C    00000008                                    ....

+030    KEY: 11     LENGTH: 07
+32C    C9C8C1C1    E2C3C2                          IHAASCB

+039    KEY: 15     LENGTH: 02
+03B    0080                                        ..

+03D    KEY: 12     LENGTH: 04
+03F    00000000                                    ....

+043    KEY: 15     LENGTH: 02
+045    00E8                                        .Y

+047    KEY: 12     LENGTH: 04
+049    00000000                                    ....

+04D    KEY: 15     LENGTH: 02
+04F    00EC                                        .

+051    KEY: 12     LENGTH: 04
+053    00000000                                    ....

+057    KEY: 15     LENGTH: 02
+059    00B4                                        .4

+05B    KEY: 12     LENGTH: 04
+05D    00000000                                    ....

+061    KEY: 15     LENGTH: 02
+063    013C                                        ..

+065    KEY: 12     LENGTH: 04
+067    00000000                                    ....

+06B    KEY: 15     LENGTH: 02
+06D    0148                                        ..

+06F    KEY: 12     LENGTH: 04
+071    00000000                                    ....
+075    KEY: 11     LENGTH: 07
+077    C9C8C1D3    C3C3C1                          IHALCCA

+07E    KEY: 15     LENGTH: 02
+080    036C                                        .%

+082    KEY: 12     LENGTH: 04
+084    00000000                                    ....

+088    KEY: 15     LENGTH: 02
+08A    021C                                        ..

+08C    KEY: 12     LENGTH: 02
+08E    0000                                        ..

+090    KEY: 15     LENGTH: 02
+092    053C                                        ..

+094    KEY: 12     LENGTH: 0C
+096    00000000    00000000    00000000            ............

+0A2    KEY: 11     LENGTH: 06
+0A4    C9C8C1E2    E5E3                            IHASVT

+0AA    KEY: 15     LENGTH: 02
+0AC    001C                                        ..
```

```
+0AE    KEY: 12     LENGTH: 04
+0B0    00000000                                        ....

+0B4    KEY: 00     LENGTH: 00

+0B6    KEY: 00     LENGTH: 00

+0B8    KEY: 10     LENGTH: 18
+0BA    E2C3D9C1    00FFB1E8    00F804E0    80000000    SCRA..1Y.8.\....
+0CA    00F80848    04000000                            8.......

SDWA FIRST RECORDABLE EXTENSION (SDWARC1)
+000    E2C3F1C3    F5C9C5C1    E5C5C4E2    F0000000    SC1C5IEAVEDS0...
+010    00000000    00000000    00000000    F0F161F2    ............01/2
+020    F961F9F5    40D1C2C2    F2F1F3F3    00000000    9/95 JBB2133....
+030    C9C5C1E5    C5C4E2D9    00000000    00000000    IEAVEDSR........
+040    00000000    04000000    00000000    810B09D0    .............A..
+050    00000000    00000000    00000000    00000000    ................
+060    00000000    00000000    00000000    00000000    ................
+070    00000000    00000000    00000000    D2038240    ............K.B
+080    95FED203    03A40380    00FB3080    03F7307F    N.K..U.......7\"
+090    900F3000    00000000                            .......

SDWA FIRST RECORDABLE EXTENSION (SDWARC1)
+000    E2C3F1C3    F5C9C5C1    E5C5C4E2    F0000000    SC1C5IEAVEDS0...

SDWA SECOND RECORDABLE EXTENSION (SDWARC2)
+000    00000000    00000000    40000F11    00030000    ........ .......

SDWA THIRD RECORDABLE EXTENSION (SDWARC2)
+000    00000000    00000000    00000000    00000000    ................
+010    00000000    00000000    00000000    00000000    ................

ERRORID
+000    000D0041    00010007    A538                    ........V.
```

Software (Program Interrupt) Edit Report

```
TYPE:  SOFTWARE RECORD      REPORT:  SOFTWARE EDIT REPORT          DAY YEAR
       (PROGRAM INTERRUPT)                             REPORT DATE: 071.97
SCP:   VS 2 REL 3                                       ERROR DATE: 047.97
                            MODEL:   3081                            HH:MM:SS.TH
                            SERIAL: 020447                        TIME: 01:05:08.53


JOBNAME: *MASTER*
ERRORID: SEQ=01249  CPU=0040  ASID=0001  TIME=01:05l07.5

SEARCH ARGUMENT ABSTRACT

  PIDS/####SC1CX RIDS/NUCLEUS#L AB/S00C5 REGS/097C6 RIDS/IRARMERR#R

  SYMPTOM             DESCRIPTION
  -------             -----------
  PIDS/####SC1CX      PROGRAM ID: ####SC1CX
  RIDS/NUCLEUS#L      LOAD MODULE NAME: NUCLEUS
  AB/S00C5            CSECT NAME: 00C5
  REGS/097C6          SYSTEM ABEND CODE: 00C5
  RIDS/IRARMERR#R     RECOVERY ROUTINE CSECT NAME: IRARMERR

OTHER SERVICEABILITY INFORMATION

  RECOVERY ROUTINE LABEL:  IRARMRR2
  SUBFUNCTION:             SRM

SERVICEABILITY INFORMATION NOT PROVIDED BY THE RECOVERY ROUTINE

  CSECT NAME
  DATE ASSEMBLED
  MODULE LEVEL

TIME OF ERROR INFORMATION

  PSW: 440C3000 0009A088   INSTRUCTION LENGTH: 04   INTERRUPT CODE: 0005

  REGISTERS 0-7
  GR: 00000780 000176D0 0001D030 000E8E00  000FFE10 00027A48 00017010 8004E858
  REGISTERS 8-15
  GR: 00028010 000998C2 00000000 01701000  000BC116 00057F28 400BC2F0 00000000
```

```
  HOME ASID: 0001    PRIMARY ASID: 0001    SECONDARY ASID: 0001
  PKM: 0000          AX: 0001

  RTM WAS ENTERED BECAUSE OF A PROGRAM CHECK INTERRUPT.
  THE ERROR OCCURRED WHILE A LOCKED OR DISABLED ROUTINE WAS IN CONTROL.
  NO LOCKS WERE HELD.

STATUS FROM ESTAE RB OR AT FRR ENTRY

  PSW:  440C0000  000B65CC  INSTRUCTION LENGTH: 04  INTERRUPT CODE: 0005

RECOVERY ENVIRONMENT

  RECOVERY ROUTINE TYPE: UNKNOWN
RECOVERY ROUTINE ACTION

  THE RECOVERY ROUTINE RETRIED TO ADDRESS 000BC11A.
  LOCKS WHICH RTM HAS REQUESTED TO FREE: SRM

  THE REGISTER VALUES TO BE USED FOR RETRY:
  REGISTERS 0-7
  GR: 00000000 000561E0 000558E0 00FF9FA8  000B65CC 00027A48 0005596C 800B4F44
  REGISTERS 8-15
  GR: 00000000 000562E0 01000000 01000000  500B4EB0 00057F28 500B51EA 00000000

HEXADECIMAL DUMP

  HEADER
+000    42830820    00000028    0097047F    01050853     .C.......I."....
+010    23020447    30810000                             .....A..

JOBNAME
+000    5CD4C1E2    30810000                             *MASTER*

SDWA BASE
+000    00FF9FA8    900C5000    00000000    00000000     ...Y............
+010    00000000    00000000    00000780    000A76D0     ................
+020    0001D030    000E8E00    000FFE10    00027A48     .. ... .......:.
+030    00017010    8004E858    00028010    000998C2     ......Y.......QB
+040    00000000    17010000    000BC116    00057F28     ..........A...".
+050    400BC2F0    00000000    00000000    00000000      .BO............
+060    00000000    00000000    440C3000    0009A088     ...............H
+070    00040005    80000003    440C0000    000B65CC     ................
+080    00040005    80000003    00000000    000561E0     ............./\
+090    000558E0    00FF9FA8    000B65CC    00027A48     ...\...Y......:.
+0A0    0005596C    800B4F44    00000000    000562E0     ...%..Ô........\
+0B0    01000000    01000000    500B4EB0    00057F28     ..........+0..".
+0C0    500B51EA    00000000    00000000    00000000      ...............
+0D0    00000000    00000000    00000000    00000000     ................
+0E0    00000000    00000000    40020001    00000040     ........ .......
+0F0    000BC11A    00FFA404    00000000    04880004     ..A...U......H..
+100    00000000    00000000    00000000    00000000     ................
+110    00000000    00000000    00000000    00000000     ................
+120    000104E1    D5E4C3D3    C5E4E240    00000000     ....NUCLEUS ....
+130    00000000    C9D9C1D9    D4C5D9D9    00FFA380     ....IRARMERR..T0
+140    00000000    00000000    00000000    00000000     ................
+150    00000000    00000000    00000000    00000000     ................
+160    00000000    00000000    00000000    FFFF0001     ................
+170    00FFA548    00000001    00010001    00000000     ..V.............
+180    00000000    00000000    00000000    000098A3     ..............QT
+190    00FFE06C                                         ..\%

VARIABLE RECORDING AREA (SDWAVRA)
+000    KEY: 39     LENGTH: 28
+002    C9D9C1D9    D4C3D5E2   40D6C6C6    E2C5E340      IRARMCNS OFFSET
+012    E3D640C3    E4D9D940   D9E3D5C5    40D7E3D9      TO CURR RTNE PTR
+022    40C9E240    F9F0F040                              IS 900

+02A    KEY: 10     LENGTH: 18
+02C    00010005    00000000    83080000    003125FF     ........C.......
+03C    00FF6790    000561E0                             ....../\

+044    KEY: 40     LENGTH: 02
+046    00C5                                             .E
+048    KEY: 3A     LENGTH: 02
+04A    0001                                             ..

+04C    KEY: 22     LENGTH: 04
```

```
+04E    D9D9D7C1                                    RRPA

+052    KEY: 23     LENGTH: 18
+054    00010005    00000000    83080000    00000000    ........c.......
+064    00000000    000561E0                            ....../\

SDWA FIRST RECORDABLE EXTENSION (SDWARC1)
+000    E2C3F1C3    E7E2D9D4    40404040    40404040    SC1CXSRM
+010    40404040    40404040    40404040    00000000                ....
+020    00000000    00000000    00000000    00000000    ................
+030    C9D9C1D9    D4D9D9F2    00000000    00000000    IRARMRR2........

ERRORID
+000    04E10040    00010000    98A3                    ... ....QT

SDWA SECOND RECORDABLE EXTENSION (SDWARC2)
+000    00000000    00000000    40000F11    00030000    ........ .......

SDWA THIRD RECORDABLE EXTENSION (SDWARC2)
+000    00000000    00000000    00000000    00000000    ................
+010    00000000    00000000    00000000    00000000    ................

ERRORID
+000    000D0041    00010007    A538                    ........V.

DUMP CHARACTERISTICS
                                                                                          DUMP RANGES AREA
DUMP FLAGS                    SDATA OPTIONS                 PDATA OPTIONS                            FROM      TO
SNAP DUMP REQUEST        0    DISPLAY NUCLEUS          0    DISPLAY SAVE AREAS        0    RANGE 1    00000000  00000000
PARM LIST SUPPLIED       0    DISPLAY SQA              0    DISPLAY SAVE AREA HEADER  0    RANGE 2    00000000  00000000
STORAGE LIST SUPPLIED    0    DISPLAY LSQA             0    DISPLAY REGISTERS         0    RANGE 3    00000000  00000000
                              DISPLAY SWA              0    DISPLAY TASK LPA MODULES  0    RANGE 4    00000000  00000000
                              DISPLAY GTF TRACE TABLE  0    DISPLAY TASK JPA MODULES  0
                              DISPLAY CONTROL BLOCKS   0    DISPLAY PSW               0
                              DISPLAY QCB/QELS         0    DISPLAY USER SUBPOOLS     0

   HEX DUMP OF RECORD
   HEADER    42830820    00000028    0097047F    01050853       23020447    30810000    5CD4C1E2    30810000

       0000  00000D08    800F8000    00000000    00000000       00000000    00000000    00000001    00000C00
       0020  00029202    40125B24    00124F40    00125C7E       0065CFF8    FD000000    0067A950    80659260
       0040  00000000    0068C008    00000000    00124F40       00029200    400367AE    00000000    00000000
       0060  00000000    00000000    070C0000    00125C72       00020000    00000000    070C0000    00029202
       0080  00020000    00000000    00000001    00000C00       00029202    40125B24    00124F40    00125C7E
       00A0  0065CFF8    FD000000    0067A950    80659260       00000000    0068C008    00000000    00124F40
       00C0  00029200    400367AE    00000000    00000000       00000000    00000000    00000000    00000000
       00E0  0000000F    00000000    04040001    00000042       00000000    0098047C    00000000    00800000
       0100  00000000    00000000    00000000    00000000       00000000    00000000    00000000    00000000
       0120  00130099    00000000    00000000    00000000       00000000    00000000    00000000    00980428
       0140  00000000    00000000    00000000    00000000       00000000    00000000    00000000    00000000
       0160  00000000    00000000    00000000    FFFF0001       009805C0    00800013    00000013    00000000
       0180  00000000    00000000    00000000    00031A34       00FF0000    00000000    00000000    00000000
       01A0  00000000    00000000    00000000    00000000       00000000    00000000    00000000    00000000
       01C0  00000000    00000000    00000000    00000000       00000000    00990042    00130003    1A34
```

Software (ABEND) Detail Edit Report

```
RECORD TYPE - 42

MODEL-3081         SERIAL NO-  020344

RECORD CONVERTED TO THE STANDARD FORMAT

--- RECORD ENTRY SOURCE - ABND

VS 2   REL. 3

       DAY YEAR                             HH MM SS.TH
DATE-  057  97                       TIME-  04 09 02 72


   HEX DUMP OF RECORD
   HEADER    42891827    28900000    0097057F    04090272       23020344    30810000

       0018  D5D6D5C5    60C6D9D9    00000D48    900C4000       00000000    00000000    00000000    00000000
       0038  0002C290    00000D11    0000ACB8    0002D290       0002E290    00F7F3E6    00FF3A90    0002C9CC
       0058  00F7F930    00F6B820    0006F090    0001F240       00FF7AF0    009436A8    00FFBB40    4780F0A4
       0078  00000000    00000000    00000000    00000000       040C3000    0080F0A4    00020011    0080F0A4
```

```
0098  040C0000    0002FC54    00020011    0080F0A4       2EA80047    00FFB770    00FF0F6C    00FFBB40
00B8  400301F0    0002C290    00000D48    000037D8       0002D290    0002E290    2EA70046    00000C00
00D8  00000D40    00FF7AF0    9002EF4A    00071B28       00000000    00000000    00000000    00000000
00F8  00000000    00000000    00000000    00000000       40030801    00000040    0002C5C4    00FFB904
0118  00000000    048800C0    00000000    000039D0       0001F0C8    00000000    00000000    00000000
0138  00000000    00000000    000101D1    C9C5C3C9       D6E2C1D4    C9C5C3C9    D6E2C3D5    C9C5C3C6
0158  D9D94040    00FFB8B0    00000000    00000000       00000000    00000000    00000000    00000000
0178  00000000    00000000    00000000    00000000       00000000    FFFF0001    00FFBA48    80000001
0198  00010001    00000000    00000000    00000000       00000000    000247A8    00FF0038    C0000000
01B8  FFFFFFFF    403CFF80    00FF0F6C    00000040       00FF3AA4    0000FF82    03D10000    70010500
01D8  00F3C4F1    12501009    00011C2C    40E4E9F6       F1F1F8F0    E2C3F1C3    F3000000    00000000
01F8  00000000    00000000    00000000    00000000       00000000    00000000    00000000    00000000
0218  00000000    00000000    00000000    00000000       00000000    01D10040    00010002    47A8
```

Software (ABEND) Summary Report

```
SUMMARY OF 40 RECORDS

                      DAY YEAR   DAY YEAR
RECORD DATE RANGE     057  97    057  97

MODEL - 3081     SERIAL NO - 020344

TOTAL NUMBER OF RECORDS=0002

CLASSES ENCOUNTERED(MAXIMUM OF 10)

RECORD CLASS -42   0002
```

Software (MCH Called RTM) Detail Edit Report

```
                                                                 DATE       TIME       CPU      CPU
                                                                DAY YR   HH MM SS.TH   SERIAL   ID
--- RECORD ENTRY SOURCE - SOFTWARE ---  TYPE   MCH CALLED RTM    047 97   10 39 39 87   270044   3090

VS 2   REL. 3

               ERRORID=SEQ00030 CPU0041 ASID0001 TIME10.39.38.9

JOBNAME                       *MASTER*
ABENDING PROGRAM NAME         N/A          BC MODE PSW AT TIME OF ERROR                BC MODE PSW OF LAST RB
NAME OF MODULE INVOLVED       IEAVEDS0
NAME OF CSECT INVOLVED        IEAVEDS0          00000000 00000000                        00000000 00000000
FUNCTIONAL RECOVERY ROUTINE   IEAVEDSR

REGS AT TIME OF ERROR

REGS 0-7      00000000   00000000   00000000   00000000   00000000   00000000   00000000   00000000
REGS 8-15     00000000   00000000   00000000   00000000   00000000   00000000   00000000   00000000

EC PSW AT TIME OF ABEND    00000000 00000000               EC PSW FROM ESTAE RB(0 FOR ESTAI)    040C0000 0005B5E0
ADDITIONAL INFO:                                           ADDITIONAL INFO:
INST LENGTH CODE           00                              INST LENGTH CODE           00
INTERRUPT CODE             0000                            INTERRUPT CODE             0000
VIRT ADDR OF TRANS EXCEP   00154FE0                        VIRT ADDR OF TRANS EXCEP   00154FE0

REGS OF RB LEVEL OF ESTAE EXIT OR ZERO FOR ESTAI

REGS 0-7      00000000   00000000   00000000   00000000   00000000   00000000   00000000   00000000
REGS 8-15     00000000   00000000   00000000   00000000   00000000   00000000   00000000   00000000

   MCH FLAG BYTE                MCK INPUT INFO              FRAME ERROR INDICATORS       STORAGE ERROR INDICATORS
STORAGE ADDRS ARE VALID   0   STORAGE KEY FAILURE       0   STORAGE ERROR ALREADY SET 0   FRAME OFFLINE(OR SCHED)   0
MCK RECORD NOT RECORDED   0   REGISTERS UNPREDICTABLE   1   CHANGE INDICATOR ON       0   INTERCEPT                 0
TIME STAMP IS VALID       1   PSW UNPREDICTABLE         1                                 STORAGE ERROR PERMANENT   0
STORAGE IS RECONFIGURED   0   STORAGE DATA CHECK        0                                 PERMANENT RES. STORAGE    0
RECONFIGURE STATUS AVAIL  0   ACR REQUEST               1                                 FRAME IN SQA              0
RECONFIGURE NOT ATTEMPTED 0   INSTRUCTION FAILURE       0                                 FRAME IN LSQA             0
                              SOFT ERROR                0                                 FRAME IS PAGE FIXED       0
                              TIMER ERROR               0                                 FRAME IS V=R              0
                                                            TIME STAMP OF ASSOCIATED MACHINE CHECK RECORD
BEGINNING VIRT ADDR OF STORAGE CHECK   00000000                          DATE      TIME
ENDING VIRT ADDR OF STORAGE CHECK      00000000                         DAY YR   HH MM SS.TH
REAL STORAGE FAILING ADDRESS           00000000                         057 97   10 39 39 00

MACHINE CHECK             1   TYPE 1 SVC IN CONTROL     0   PREV ESTA OR FRR FAILED   0   EXIT TO CLEANUP ONLY      0
PROGRAM CHECK             0   ENABLED RB IN CONTROL     0   (E)STAI PREV IN CONTROL   0   RB OF ESTA NOT IN CONTROL 0
RESTART KEY DEPRESSED     0   DISABLED RTN IN CONTROL   1   IRB PRECEDED RB           0   ESTA EXIT FOR PREV ABEND  0
```

```
TASK ISSUED SVC 13        0   SYSTEM IN SRB MODE        0   THIS RTN PERCOLATED TO    0   STEP ABEND REQUESTED      0
SYSTEM FORCED SVC 13      0                                 LOWER LEVEL EXIT INFO     0   TASK ANCESTOR ABENDED     0
SVC BY LOCKED OR SRB RTN  0                                                               REGS AND PSW UNAVAILABLE  0
TRANSLATION FAILURE       0                                                               MCK INFO UNAVAILABLE      0
PAGE I/O ERROR            0

                              CURRENT I/O STATUS
MEMORY ASID            0000   I/O IS RESTORABLE         0
RECOVERY RETURN CODE     04   I/O IS NOT RESTORABLE     0
                              NO I/O OUTSTANDING        0
                              NO I/O PROCESSING         0

ADDITIONAL PROCESSING         GLOBAL LOCKS TO BE FREED      LOCKWORDS
RECORDING REQUESTED       1   DISPATCHER LOCK           0
VALID SPIN                0   SRM LOCK                  0
UPDATED REGS FOR RETRY    1   IOSCAT LOCK               0   IOSCAT LOCKWORD           00000000
FREE RTCA BEFORE RETRY    0   IOSUCB LOCK               0   IOSUCB LOCKWORD           00000000
                              IOSLCH LOCK               0   IOSLCH LOCKWORD           00000000
                              IOSYNCH LOCK              0   IOSYNCH LOCKWORD          00000000
                              NCB LOCK                  0   NCB LOCKWORD              00000000
                              DNCB LOCK                 0   DNCB LOCKWORD             00000000
                              ACBDEBS LOCK              0   ACBDEBS LOCKWORD          00000000
                              ASMPAT LOCK               0   ASMPAT LOCKWORD           00000000
                              SALLOC LOCK               0   ASID CURRENT              0001
                              CMS LOCK                  0
                              LOCAL LOCK                0
DUMP CHARACTERISTICS
                                                                                          DUMP RANGES AREA
DUMP FLAGS                    SDATA OPTIONS                 PDATA OPTIONS                           FROM      TO
SNAP DUMP REQUEST         0   DISPLAY NUCLEUS           0   DISPLAY SAVE AREAS        0   RANGE 1   00000000  00000000
PARM LIST SUPPLIED        0   DISPLAY SQA               0   DISPLAY SAVE AREA HEADER  0   RANGE 2   00000000  00000000
STORAGE LIST SUPPLIED     0   DISPLAY LSQA              0   DISPLAY REGISTERS         0   RANGE 3   00000000  00000000
                              DISPLAY SWA               0   DISPLAY TASK LPA MODULES  0   RANGE 4   00000000  00000000
                              DISPLAY GTF TRACE TABLE   0   DISPLAY TASK JPA MODULES  0
                              DISPLAY CONTROL BLOCKS    0   DISPLAY PSW               0
                              DISPLAY QCB/QELS          0   DISPLAY USER SUBPOOLS     0
   HEX DUMP OF RECORD
   HEADER    48891820    00000000    0097047F    10393987       00270044    30900000    5CD4C1E2    E3C5D95C

       0000  00FF6648    900F3000    00000000    00000000       00000000    00000000    00000000    00000000
       0020  00000000    00000000    00000000    00000000       00000000    00000000    00000000    00000000
       0040  00000000    00000000    00000000    00000000       00000000    00000000    00000000    00000000
       0060  00000000    00000000    00000000    00000000       00000000    00154FE0    040C0000    0005B5E0
       0080  00000000    00154FE0    00000000    00000000       00000000    00000000    00000000    00000000
       00A0  00000000    00000000    00000000    00000000       00000000    00000000    00000000    00000000
       00C0  00000000    00000000    00000000    00000000       00000000    20680001    00000000    00000000
       00E0  9885057F    10393900    80020001    00000041       00096212    00FF6AE4    00000000    04880000
       0100  00000000    00000000    00000000    00000000       00000000    00000000    00000000    00000000
       0120  0001001E    C9C5C1E5    C5C4E2F0    C9C5C1E5       C5C4E2F0    C9C5C1E5    C5C4E2D9    00FF6A90
       0140  00000000    00000000    00000000    00000000       00000000    00000000    00000000    00000000
       0160  00000000    00000000    00000000    FFFF0001       00FF6C28    00000000    00000000    00000000
       0180  00000000    00000000    00000000    0005DB2D       00FFA0D2    1106C9C8    C1D7E2C1    15020224
       01A0  12040002    40B81502    021C1204    00000000       150202EC    12040000    00001502    049C1204
       01C0  00000008    1107C9C8    C1C1E2C3    C2150200       80120400    00000015    0200E812    04000000
       01E0  00150200    EC120400    00000015    0200B412       04000000    00150201    3C120400    00000015
       0200  02014812    04000000    001107C9    C8C1D3C3       C3C11502    036C1204    00000000    1502021C
       0220  12028000    1502053C    120C0000    00000000       00000000    00001106    C9C8C1E2    E5E31502
       0240  001C1204    00000000    00000000    1018E2C3       D9C1000E    9BB000FF    65408000    000000FF
       0260  68880400    0000E2C3    F1C3F5C9    C5C1E5C5       C4E2F000    00000000    00000000    00000000
       0280  0000F1F1    61F2F761    F8F440D1    C2C2F1F3       F5F60000    0000C9C5    C1E5C5C4    E2D90000
       02A0  00000000    0000001E    00410001    0005DB2D
```

Software (MCH Called RTM) Summary Report

```
                      DAY YEAR   DAY YEAR      MODEL-  3090              SERIAL NO.    270044
SOFTWARE DATE RANGE - 047  97 TO 047  97


                                       SUMMARY OF SOFTWARE ENVIRONMENT RECORDS
TOTAL NUMBER OF RECORDS     0001



  ROUTINE  CSECT  NUMBER    ROUTINE  CSECT  NUMBER    ROUTINE  CSECT  NUMBER    ROUTINE  CSECT  NUMBER
   NAME    NAME  ENTRIES     NAME    NAME  ENTRIES     NAME    NAME  ENTRIES     NAME    NAME  ENTRIES

  IEAVEDS0 IEAVEDS0 001
```

Software (Lost Record) Detail Edit Report

```
                                                         DATE       TIME      CPU      CPU
                                                        DAY YR   HH MM SS.TH   SERIAL   ID
--- RECORD ENTRY SOURCE - SOFTWARE ---  TYPE   LOST REC SUMMARY  070 97   09 38 28 74   015085   4341

    VS 2 REL.    03

               NO ERRORID ASSOCIATED WITH THIS RECORD

MISSING RECORD COUNT          006
   HEX DUMP OF RECORD
   HEADER    4F830880    00000000    0097070F    09382874        02015085    43410000

       0000  06
                                                         DATE       TIME      CPU      CPU
                                                        DAY YR   HH MM SS.TH   SERIAL   ID
--- RECORD ENTRY SOURCE - SOFTWARE ---  TYPE   LOST REC SUMMARY  071 97   10 57 34 69   015058   4341

    VS 2 REL.    03

               NO ERRORID ASSOCIATED WITH THIS RECORD

MISSING RECORD COUNT          038
   HEX DUMP OF RECORD
   HEADER    4F830880    00000000    0097071F    10573469        02015085    43410000

       0000  26
```

Software (Lost Record) Summary Report

```
                      DAY YEAR   DAY YEAR      MODEL-  4341             SERIAL NO.    015058
SOFTWARE DATE RANGE - 070  97 TO 071  97


                                       SUMMARY OF SOFTWARE ENVIRONMENT RECORDS

TOTAL NUMBER OF RECORDS     0006


  ROUTINE  CSECT  NUMBER   ROUTINE  CSECT  NUMBER   ROUTINE  CSECT  NUMBER   ROUTINE  CSECT  NUMBER
   NAME    NAME  ENTRIES    NAME    NAME  ENTRIES    NAME    NAME  ENTRIES    NAME    NAME  ENTRIES
```

Subchannel Logout Handler (SLH) Detail Edit Reports

The SLH records format subchannel detected errors that do not terminate system operation.

The SLH record and the CRW record combine to replace the CCH record written for S/370 ™ channel checks.

The record contains subchannel dependent error information from the extended status word (ESW) showing the type and location of the error.

Figures containing examples of these reports are on the pages shown in the following table:

REPORT	REFER TO
SLH Detail Edit Report, Device Type 3390	"Subchannel Logout Handler (SLH) Detail Edit Report, 3390" on page 287
SLH Detail Edit Report, Device Type FCTC	"Subchannel Logout Handler (SLH) Detail Edit Report, FCTC" on page 288
SLH Detail Summary Report	"Subchannel Logout Handler Summary Report" on page 290

REPORT	REFER TO
SLH Detail Edit Report for zHPF	“Subchannel Logout Handler (SLH) Detail Edit Report for zHPF” on page 290
SLH Detail Summary Report for zHPF	“Subchannel Logout Handler Summary Report for zHPF” on page 292

Subchannel Logout Handler (SLH) Detail Edit Report, 3390

```
DEVICE NUMBER:    01000     REPORT:  SLH EDIT              DAY YEAR      JOB IDENTITY: CHNDRV
                            SCP:     MVS/XA     V2 R1  DATE: 260  04                   C3C8D5C4D9E54040
DEVICE TYPE:      3390
                            CPU MODEL:    2084XA             HH MM SS.TH
CHANNEL PATH ID:  12   LOGICAL  CPU ID: 170044        TIME: 06 54 28.40

PHYSICAL CHAN ID: 0290  PHYSICAL CPU ADDRESS: 07   1

                  CC   CA   FL     CT
FAILING CCW       31 C3605A 40 00 0005                  VOLUME SERIAL                 1D01D0
                                                        SUBCHANNEL ID NUMBER          00010018
                  K  FLAGS    CA     US SS  CT          ERROR TYPE                    OTHER   2
SCSW              84 024017 0032F0F8 00 04 0000

---UNIT STATUS----  SUB-CHANNEL STATUS  --------------------------SCSW FLAGS------------------------
                                               FLAG 0  3           FLAG 1              FLAG 2
ATTENTION        0  PGM-CTLD IRPT    0  CCW FORMAT       0  RESERVED         0  SUBCHANNEL ACTIV 0
STATUS MODIFIER  0  INCORRECT LENGTH 0  PRE-FETCH CCW    0  SSCH FUNCTION    1  DEVICE ACTIVE    0
CONTROL UNIT END 0  PROGRAM CHECK    0  INIT STATUS      0  HSCH FUNCTION    0  SUSPENDED        0
BUSY             0  PROTECTION CHECK 0  ADDR LIMIT       0  CSCH FUNCTION    0  ALERT STATUS     1
CHANNEL END      0  CHAN DATA CHECK  0  SUPP SUSPEND INT 0  RESUME PENDING   0  INTERMED STATUS  0
DEVICE END       0  CHAN CTL CHECK   1  ZERO COND CODE   0  START PENDING    0  PRIMARY STATUS   1
UNIT CHECK       0  I/F CTL CHECK    0  EXTENDED CONTROL 1  HALT PENDING     0  SECONDARY STATUS 1
UNIT EXCEPTION   0  CHAINING CHECK   0  PATH NOT OPER    0  CLEAR PENDING    0  STATUS PENDING   1

----SOFTWARE RECOVERY STATUS-----

HARD FAIL                       0
DEGRADE FAIL                    0
SOFT FAIL                       0
PASSED                          0


CHANNEL ERROR ANALYSIS

  IRB STORED BY INTERRUPT

  TERMINATION  BY --  SELECTIVE RESET  --  CODE   2

  SEQ CODE 2 - COMMAND ACCEPTED BY DEVICE BUT NO DATA TRANSFERRED
  VALIDITY OF RECORDED DATA

    COUNT              INVALID
    TERMINATION CODE   VALID
    SEQUENCE CODE      VALID
    DEVICE STATUS      INVALID
    CCW ADDRESS        VALID
    DEVICE NUMBER      VALID
    SENSE DATA         NOT STORED


*MODEL-DEPENDENT DATA*

HARDWARE CHECKS-------(BYTE 0)  MICROPROGRAM ERROR ID-(BYTE 1)  LOG ID----------------(BYTE 2)  PRESENT STATUS BYTE---(BYTE 3)
                         00                         **                          01                              25
REFER TO INCIDENT LOG     1
IO INTERFACE TIME OUT     0
MICROPROGRAM DETECT ERR   0
INVAL IO INTERF TAG SEQ   0
IO ALERT (DISCONN IN)     0
MULT IO INTERF IN TAGS    0
IO INTERF BUS IN PAR ERR  0
INJECTED ERROR            0
SERV OR DAT TAG DUR SHORT 0
SERVICE/DATA ACTIVE       0
OPERATIONAL IN FELL EARLY 0

CHANNEL TAG CONTROL 1-(BYTE 4)  CHANNEL TAG CONTROL 2-(BYTE 5)  I/O BUS IN------------(BYTE 6)  UNIT ADDRESS----------(BYTE 7)
                         A0                         C1                          00                              D0
OPERATIONAL OUT           1     OPERATIONAL IN            1
ADDRESS OUT               0     STATUS IN                 1
SELECT OUT                1     SELECT IN                 0
* BUS OUT TAG             0     ADDRESS IN                0
```

```
* SERVICE OUT            0    REQUEST IN             0
* DATA OUT               0    SERVICE OR DATA IN     0
SUPPRESS OUT             0    FIRST DATA             0
COMMAND OUT              0    COMMAND SENT           1

USTATS/CONFIG---------(BYTE 8)  CUCW STATUS-----------(BYTE 9)  CONFIGURATION BYTE 0-(BYTE 10)  CONFIGURATION BYTE 1-(BYTE 11)
                         06                              00                              70                              88
                                                                ENABLE SIM IO            0     RESERVED                 0
                                                                ENABLE TIMEOUT CHECK     1     TYPE 1 CONTROL UNIT      0
                                                                ENABLE DEV TRACE         1     TYPE 2 CONTROL UNIT      1
                                                                INTERLOCK PROTOCOL 00    0     RESERVED                 0
                                                                INTERLOCK PROTOCOL 01    0     DYNAMIC PATHING          0
                                                                STREAMING PROTOCOL       1     RESERVED                 0
                                                                RESERVED                 0     IOCP CONFIGURED          1
                                                                BYTE MULTIPLEX           0     RESERVED                 0
                                                                RESERVED                 0     RESERVED                 0
                                                                RESERVED                 0     RESERVED                 0

PHYSICAL PATH--------(BYTE 12)  ZERO-----------------(BYTE 13)  ZERO-----------------(BYTE 14)  ZERO-----------------(BYTE 15)
                         12                              00                              34                              82
CHANNEL LOGOUT DATA

    0000  00000000  00000002  00000000  00000000  00000002  00000000  00000000  00000000
    0020  00000000  00000000  00000000  00000000  00000000  9000AB00  80000000  00000000
    0040  00000000  00693713  00006942  10000800  88A0745E  10000800  88A0745E  50050764
    0060  01006573  50050764  00C890CC  001A0047  00000000  00000000  0800009B  00000000
    0080  22000022  00000000  02000000  18100020  50050769  00C414E7  00000000  00000000
    00A0  00800100  30303231  30373030  3049424D  30303030  30303030  30303030  30300211
    00C0  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    00E0  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000

CONTROL UNIT LOGOUT DATA

    0000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0020  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0040  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0060  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0080  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    00A0  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    00C0  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    00E0  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
HEX DUMP OF RECORD

HEADER    23831800  00030000  0004260F  10483163  000190CC  20848000
    0018  C3C8C4C4  F3F14040  04200020  00FFF420  801F2024  00000000  00000000  04C24017
    0038  00861A38  00020000  00406480  20000000  40000000  00000000  00000000  00000000
    0058  00000000  00000000  00000000  00000000  00000000  00000001  00A000A8  02096808
    0078  1003D4D4  F1F0F0F2  01000000  01010091  00018EAE  00000000  00000000  00000000
    0098  800002A0  00000001  000000B8  02000100  00000000  00000000  00000000  00000000
    00B8  00000000  00000002  00000000  00000000  00000002  00000000  00000000  00000000
    00D8  00000000  00000000  00000000  00000000  0C000000  9000AB00  80000000  00000000
    00F8  00000000  00693713  00006942  10000800  88A0745E  10000800  88A0745E  50050764
    0118  01006573  50050764  00C890CC  001A0047  00000000  00000000  0800009B  00000000
    0138  22000022  00000000  02000000  18100020  50050769  00C414E7  00000000  00000000
    0158  00800100  30303231  30373030  3049424D  30303030  30303030  30303030  30300211
    0178  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0198  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    01B8  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    01D8  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    01F8  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0218  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0238  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0258  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0278  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0298  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
```

1 The SLH record is logged in 370XA mode only. It is identified by CPU complex, not individual CPU ID number. Only the last 5 digits are significant. In PR/SM environments, the logical and physical CPU IDs are identified.

2 The error type may be storage, key, or other. If the error type is storage or key, a line containing the absolute address of the error is printed.

3 CCW format is 0 in 24-bit addressing mode, 1 in 31-bit addressing mode.

Subchannel Logout Handler (SLH) Detail Edit Report, FCTC

```
DEVICE NUMBER:    00E26     REPORT:  SLH EDIT              DAY YEAR      JOB IDENTITY: XCFAR
                            SCP:     VS 2 REL.  3     DATE: 260  04                    E7C3C6C1D9404040
DEVICE NED:       002105.000.IBM.075.000000012252.0615
DEVICE TYPE:      FCTC
                            CPU MODEL:    2084XA             HH MM SS.TH
CHANNEL PATH ID:  A4   LOGICAL  CPU ID: 1084XA        TIME: 22 38 05.43

PHYSICAL CHAN ID: 0210  PHYSICAL CPU ADDRESS: 3A
```

```
                  CC   CA   FL     CT
FAILING CCW       E3 680000 00 00 0000                    VOLUME SERIAL                  N/A
                                                          SUBCHANNEL ID NUMBER           00010B50
                  K  FLAGS    CA     US SS  CT            ERROR TYPE                     OTHER
SCSW              0C 024017 5B791860 00 02 0000

---UNIT STATUS----  SUB-CHANNEL STATUS  --------------------------SCSW FLAGS------------------------
                                               FLAG 0 3             FLAG 1              FLAG 2
ATTENTION        0  PGM-CTLD IRPT    0  CCW FORMAT       0  RESERVED         0  SUBCHANNEL ACTIV 0
STATUS MODIFIER  0  INCORRECT LENGTH 0  PRE-FETCH CCW    0  SSCH FUNCTION    1  DEVICE ACTIVE    0
CONTROL UNIT END 0  PROGRAM CHECK    0  INIT STATUS      0  HSCH FUNCTION    0  SUSPENDED        0
BUSY             0  PROTECTION CHECK 0  ADDR LIMIT       0  CSCH FUNCTION    0  ALERT STATUS     1
CHANNEL END      0  CHAN DATA CHECK  0  SUPP SUSPEND INT 0  RESUME PENDING   0  INTERMED STATUS  0
DEVICE END       0  CHAN CTL CHECK   0  ZERO COND CODE   0  START PENDING    0  PRIMARY STATUS   1
UNIT CHECK       0  I/F CTL CHECK    1  EXTENDED CONTROL 1  HALT PENDING     0  SECONDARY STATUS 1
UNIT EXCEPTION   0  CHAINING CHECK   0  PATH NOT OPER    0  CLEAR PENDING    0  STATUS PENDING   1

----SOFTWARE RECOVERY STATUS-----

HARD FAIL                     0
DEGRADE FAIL                  0
SOFT FAIL                     1
PASSED                        0


CHANNEL ERROR ANALYSIS

  IRB STORED BY INTERRUPT

  TERMINATION  BY --  SELECTIVE RESET  --  CODE   2

  SEQ CODE    *** INVALID ***

  VALIDITY OF RECORDED DATA

    COUNT              INVALID
    TERMINATION CODE   VALID
    SEQUENCE CODE      INVALID
    DEVICE STATUS      INVALID
    CCW ADDRESS        VALID
    DEVICE NUMBER      VALID
    SENSE DATA         NOT STORED
EXTENDED SUBCHANNEL LOGOUT DATA

 CHANNEL LOGOUT DATA
   N-PORT LINK ERROR STATUS BLOCK
    LINK FAILURE COUNT:        00000000   LOSS OF SYNCHRONIZATION COUNT: 00000000                                                  34
    LOSS OF SIGNAL COUNT:      00049A8E   PRIMITIVE SEG PROTOCOL ERROR:  0000001F                                                  34
    INVALID TRANSMISSION WORD: 0C000000   INVALID CRC COUNT:             9000AB00                                                  34

   FABRIC ENTRY PORT LINK ERROR STATUS
    LINK FAILURE COUNT:        00000000   LOSS OF SYNCHRONIZATION COUNT: 0C200000                                                  34
    LOSS OF SIGNAL COUNT:      00049A8E   PRIMITIVE SEG PROTOCOL ERROR:  00617B13                                                  34
    INVALID TRANSMISSION WORD: 0C000000   INVALID CRC COUNT:             10000800                                                  34
   ERROR CODE: 88 - Reserved: No Meaning

   MODEL DEPENDENT DATA:
    0000  88A08EFB  10000800  88A08EFB  50050764  01000758  50050764  00C1AA0A  00000001
    0020  00000000  00000000  08000037  00004000  22000022  00000000  02000000  18100020
    0040  50050764  01400758  50050764  00C1AA0A  102001A5  30303230  38344433  3249424D
    0060  30323030  30303030  30314141  3041C0A5  00000000  00000000  00000000  00000000
    0080  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    00A0  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    00C0  00000000  00000000  00000000  00000000

CONTROL UNIT LOGOUT DATA
   N-PORT LINK ERROR STATUS BLOCK
    LINK FAILURE COUNT:        00000000   LOSS OF SYNCHRONIZATION COUNT: 00000000                                                  34
    LOSS OF SIGNAL COUNT:      00000000   PRIMITIVE SEG PROTOCOL ERROR:  00000000                                                  34
    INVALID TRANSMISSION WORD: 00000000   INVALID CRC COUNT:             00000000                                                  34

   FABRIC ENTRY PORT LINK ERROR STATUS
    LINK FAILURE COUNT:        00000000   LOSS OF SYNCHRONIZATION COUNT: 00000000                                                  34
    LOSS OF SIGNAL COUNT:      00000000   PRIMITIVE SEG PROTOCOL ERROR:  00000000                                                  34
    INVALID TRANSMISSION WORD: 00000000   INVALID CRC COUNT:             00000000                                                  34
   ERROR CODE: 00 - Error code transfer not supported

   MODEL DEPENDENT DATA:
    0000  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0020  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0040  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0060  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0080  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    00A0  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    00C0  00000000  00000000  00000000  00000000
HEX DUMP OF RECORD

HEADER    23831800  00030000  0006104F  22380543  0012AA0A  20848000
    0018  E7C3C6C1  D9404040  E3680000  00000000  00004120  00000000  40806780  0C024017
```

```
    0038  5B791860  00020000  00806480  20000000  80000000  00000000  00000000  00000000
    0058  00000000  00000000  00000000  00000000  00000000  00000012  003A00A1  021907A8
    0078  0E260000  00000000  01000000  010200A4  00010B50  00000000  00000000  00000000
    0098  80000210  00000001  000000D8  02000100  00000201  00050101  01020202  04050102
    00B8  F0F0F2F1  F0F5F1F1  F1F2F2F2  F4F5F1F2  F3F4F5F6  F7F1F9F8  F3F1F4F3  F2F10000
    00D8  00000000  00000000  00049A8E  0000001F  0C000000  9000AB00  08000000  0C200000
    00F8  00400000  00617B13  0000617A  10000800  88A08EFB  10000800  88A08EFB  50050764
    0118  01000758  50050764  00C1AA0A  00000001  00000000  00000000  08000037  00004000
    0138  22000022  00000000  02000000  18100020  50050764  01400758  50050764  00C1AA0A
    0158  102001A5  30303230  38344433  3249424D  30323030  30303030  30314141  3041C0A5
    0178  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0198  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    01B8  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    01D8  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    01F8  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0218  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0238  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0258  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0278  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
    0298  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000
```

Subchannel Logout Handler Summary Report

```
CHANNEL PATH ID:    12          REPORT:  SLH SUMMARY       REPORT DATE:   073  97
                                                           PERIOD FROM:   043  97
NUMBER OF RECORDS:  0001        CPU MODEL:   3090XA               TO:     043  97
                                CPU ID    :  170044

ERROR TYPE: STORAGE   0000
            KEY       0000
            OTHER     0001

  ----UNIT STATUS----         --SUB-CHANNEL STATUS--

ATTENTION         0000        PGM-CTLD IRPT     0000
STATUS MODIFIER   0000        INCORRECT LENGTH  0000
CONTROL UNIT END  0000        PROGRAM CHECK     0000
BUSY              0000        PROTECTION CHECK  0000
CHANNEL END       0000        CHAN DATA CHECK   0000
DEVICE END        0000        CHAN CTN CHECK    0001
UNIT CHECK        0000        I/F CTL CHECK     0000
UNIT EXCEPTION    0000        CHAINING CHECK    0000

-----SOFTWARE RECOVERY STATUS-----

HARD FAIL                   0000
DEGRADE FAIL                0000
SOFT FAIL                   0000
PASSED                      0000
```

Subchannel Logout Handler (SLH) Detail Edit Report for zHPF

```
DEVICE NUMBER:    00E26     REPORT:  SLH EDIT               DAY YEAR       JOB IDENTITY: XCFAS
                            SCP:     MVS/XA     V2 R3  DATE: 104  06                     E7C3C6C1E2404040
DEVICE TYPE:      FCTC
                            CPU MODEL:    2084XA            HH MM SS.TH
CHANNEL PATH ID:  A4   LOGICAL  CPU ID: 12AA0A        TIME: 22 38 05.43

PHYSICAL CHAN ID: 0210  PHYSICAL CPU ADDRESS: 3A


FAILING CCW       N/A                                    VOLUME SERIAL                   N/A
                                                         SUBCHANNEL ID NUMBER            00010B50
                  K  FLAGS    TA     US SS FX ES         ERROR TYPE                      OTHER
SCSW              0C 424017 5B791860 00 02 00 00

---UNIT STATUS----  SUB-CHANNEL STATUS  -------------------------SCSW FLAGS------------------------
                                               FLAG 0                     FLAG 1              FLAG 2
ATTENTION        0  PGM-CTLD IRPT    0  IRB FORMAT       2  RESERVED        0  SUBCHANNEL ACTIV 0
STATUS MODIFIER  0  INCORRECT LENGTH 0  ---                 SSCH FUNCTION   1  DEVICE ACTIVE    0
CONTROL UNIT END 0  PROGRAM CHECK    0  ---                 HSCH FUNCTION   0  SUSPENDED        0
BUSY             0  PROTECTION CHECK 0  FORMAT CONTROL   0  CSCH FUNCTION   0  ALERT STATUS     1
CHANNEL END      0  CHAN DATA CHECK  0  INTERROGATE COMP 0  RESUME PENDING  0  INTERMED STATUS  0
DEVICE END       0  CHAN CTL CHECK   0  RESERVED         0  START PENDING   0  PRIMARY STATUS   1
UNIT CHECK       0  I/F CTL CHECK    1  EXTENDED CONTROL 1  HALT PENDING    0  SECONDARY STATUS 1
UNIT EXCEPTION   0  CHAINING CHECK   0  PATH NOT OPER    0  CLEAR PENDING   0  STATUS PENDING   1

----SOFTWARE RECOVERY STATUS-----

HARD FAIL                      0
DEGRADE FAIL                   0
```

```
SOFT FAIL                     1
PASSED                        0


CHANNEL ERROR ANALYSIS

  IRB STORED BY INTERRUPT

  TERMINATION  BY --  SELECTIVE RESET  --  CODE   2

  SEQ CODE 2      *** INVALID ***
  VALIDITY OF RECORDED DATA

    COUNT              INVALID
    TERMINATION CODE   VALID
    SEQUENCE CODE      INVALID
    DEVICE STATUS      INVALID
    TCW ADDRESS        VALID
    DEVICE NUMBER      VALID
    SENSE DATA         NOT STORED


EXTENDED SUBCHANNEL LOGOUT DATA

 CHANNEL LOGOUT DATA
   N-PORT LINK ERROR STATUS BLOCK
    LINK FAILURE COUNT:        00000001   LOSS OF SYNCHRONIZATION COUNT: 00000002
    LOSS OF SIGNAL COUNT:      00000000   PRIMITIVE SEG PROTOCOL ERROR:  00000000
    INVALID TRANSMISSION WORD: 00000000   INVALID CRC COUNT:             00000000

   FABRIC ENTRY PORT LINK ERROR STATUS
    LINK FAILURE COUNT:        00000002   LOSS OF SYNCHRONIZATION COUNT:  00000000
    LOSS OF SIGNAL COUNT:      00000000   PRIMITIVE SEG PROTOCOL ERROR:   00000000
    INVALID TRANSMISSION WORD: 00049A8E   INVALID CRC COUNT:              0000001F
   ERROR CODE: 0C - Receive ABTS

   MODEL DEPENDENT DATA:
    0000  0C000000  9000AB00  08000000  0C200000  00400000  00617B13 000 0617A  10000800
    0020  88A08EFB  10000800  88A08EFB  50050764  01000758  50050764 00C 1AA0A  00000001
    0040  00000000  00000000  08000037  00004000  22000022  00000000 020 00000  18100020
    0060  50050764  01400758  50050764  00C1AA0A  102001A5  30303230 383 44433  3249424D
    0080  30323030  30303030  30314141  3041C0A5  00000000  00000000 000 00000  00000000
    00A0  00000000  00000000  00000000  00000000  00000000  00000000 000 00000  00000000
    00C0  00000000  00000000  00000000  00000000

 CONTROL UNIT LOGOUT DATA
  N-PORT LINK ERROR STATUS BLOCK
   LINK FAILURE COUNT:        00000000   LOSS OF SYNCHRONIZATION COUNT:   00000000
   LOSS OF SIGNAL COUNT:      00000000   PRIMITIVE SEG PROTOCOL ERROR:    00000000
   INVALID TRANSMISSION WORD: 00000000   INVALID CRC COUNT:               00000000

  FABRIC ENTRY PORT LINK ERROR STATUS
   LINK FAILURE COUNT:        00000000   LOSS OF SYNCHRONIZATION COUNT:   00000000
   LOSS OF SIGNAL COUNT:      00000000   PRIMITIVE SEG PROTOCOL ERROR:    00000000
   INVALID TRANSMISSION WORD: 00000000   INVALID CRC COUNT:               00000000
  ERROR CODE: 00 - Error code transfer not supported

  MODEL DEPENDENT DATA:
   0000  00000000  00000000  00000000  00000000  00000000  00000000 000  00000  00000000
   0020  00000000  00000000  00000000  00000000  00000000  00000000 000  00000  00000000
   0040  00000000  00000000  00000000  00000000  00000000  00000000 000  00000  00000000
   0060  00000000  00000000  00000000  00000000  00000000  00000000 000  00000  00000000
   0080  00000000  00000000  00000000  00000000  00000000  00000000 000  00000  00000000
   00A0  00000000  00000000  00000000  00000000  00000000  00000000 000  00000  00000000
   00C0  00000000  00000000  00000000  00000000
HEX DUMP OF RECORD

HEADER    23831800  00030000  0006104F  22380543  0012AA0A  20848000
    0018  E7C3C6C1  E2404040  E3680000  00000000  00004120  00000000 40806780  0CC24017
    0038  5B791860  00020000  00806480  20000000  80000000  00000000 00000000  00000000
    0058  00000000  00000000  00000000  00000000  00000000  00000012 003A00A1  021907A8
    0078  0E260000  00000000  01000000  010100A4  00010B50  00000000 000000000 00000000
    0098  80000210  00000001  000000B8  02000100  00000000  00000000 00000000  00000000
    00B8  00000001  00000002  00000000  00000000  00000000  00000000 00000002  00000000
    00D8  00000000  00000000  00049A8E  0000001F  0C000000  9000AB00 08000000  0C200000
    00F8  00400000  00617B13  0000617A  10000800  88A08EFB  10000800 88A08EFB  50050764
    0118  01000758  50050764  00C1AA0A  00000001  00000000  00000000 08000037  00004000

    0138  22000022  00000000  02000000  18100020  50050764  01400758 50050764  00C1AA0A
```

```
0158  102001A5  30303230  38344433  3249424D  30323030  30303030 30314141  3041C0A5
0178  00000000  00000000  00000000  00000000  00000000  00000000 00000000  00000000
0198  00000000  00000000  00000000  00000000  00000000  00000000 00000000  00000000
01B8  00000001  00000002  00000000  00000000  00000000  00000000 00000012  00000000
01D8  00000000  00000000  00000000  00000000  00000000  00000000 00000000  00000000
01F8  00000000  00000000  00000000  00000000  00000000  00000000 00000000  00000000
0218  00000000  00000000  00000000  00000000  00000000  00000000 00000000  00000000
0238  00000000  00000000  00000000  00000000  00000000  00000000 00000000  00000000
0258  00000000  00000000  00000000  00000000  00000000  00000000 00000000  00000000
0278  00000000  00000000  00000000  00000000  00000000  00000000 00000000  00000000
0298  00000000  00000000  00000000  00000000  00000000  00000000 00000000  00000000
```

Subchannel Logout Handler Summary Report for zHPF

```
CHANNEL PATH ID:    A4          REPORT:  SLH SUMMARY       REPORT DATE:   111  06
                                                           PERIOD FROM:   104  06
NUMBER OF RECORDS:  0001        CPU MODEL:   2084XA               TO:     104  06
                                CPU ID    :  12AA0A

ERROR TYPE: STORAGE   0000
            KEY       0000
            OTHER     0001

  ----UNIT STATUS----          --SUB-CHANNEL STATUS--

ATTENTION         0000         PGM-CTLD IRPT     0000
STATUS MODIFIER   0000         INCORRECT LENGTH  0000
CONTROL UNIT END  0000         PROGRAM CHECK     0000
BUSY              0000         PROTECTION CHECK  0000
CHANNEL END       0000         CHAN DATA CHECK   0000
DEVICE END        0000         CHAN CTN CHECK    0000
UNIT CHECK        0000         I/F CTL CHECK     0001
UNIT EXCEPTION    0000         CHAINING CHECK    0000

-----SOFTWARE RECOVERY STATUS-----

HARD FAIL                     0000
DEGRADE FAIL                  0000
SOFT FAIL                     0001
PASSED                        0000
```

Unknown Detail Edit Reports

These reports are used to provide a detail print of records whose formatting is unsupported or that come from devices whose type is unknown.

Figure 114 through Figure 117 on page 293 contain examples of the unknown detail edit reports.

```
RECORD TYPE - E1

MODEL-3084         SERIAL NO-  221128

--- RECORD ENTRY SOURCE - NONE

VS 2   REL. 3
      DAY YEAR                             HH MM SS.TH
DATE-  048  97                      TIME-  04 54 51 81

   HEX DUMP OF RECORD
   HEADER    E18A1800   00000000   0097048F   04545181       66221128   30840000

       0018  C9D7D340   E2E8E2E3   C5D440C6   D6D940E2       C5D9E5C9   C3C5E24B   4B4BC4D9   C9E5C5D9
       0038  40F8C6F1
```

Figure 114. Unknown or Unsupported Record Detail Edit Report, Record Type E1

```
SUMMARY OF E0 RECORDS
 1
                      DAY YEAR   DAY YEAR
RECORD DATE RANGE     048  97    048  97

MODEL - 3084     SERIAL NO - 221128

TOTAL NUMBER OF RECORDS=0001

CLASSES ENCOUNTERED(MAXIMUM OF 10)

RECORD CLASS -E1   0001
```

Figure 115. Unknown or Unsupported Record Detail Summary Report, Record Type E1

1 A three character description of the record type or the hex representation of the first byte in the record.

```
RECORD TYPE - 40

MODEL-3090          SERIAL NO-  142815

--- RECORD ENTRY SOURCE - ABND

    VS 2 REL.    03

       DAY YEAR                              HH MM SS.TH
DATE-  041  97                         TIME-  09 36 26 80

   HEX DUMP OF RECORD
   HEADER    40831820    00000000    0097041F    09362680       16142815    30900000

       0018  D5D6D5C5    60C6D9D9    00000C60    84202000       00000000    00000000    00000000    00000000
       0038  84000000    84202000    00000000    00000C00       00004780    00E4C500    0003AC6C    00FB7700
       0058  00FF0229    80000000    00FEE870    009FED38       00000C58    00000000    00FEACB8    00000000
       0078  00000000    00000000    00000000    00000000       070C1000    80FF06DE    0002000D    7D9E0000
       0098  070C0000    80FF111E    0002000D    7D9E0000       84000000    84202000    00000000    00000C00
       00B8  00004780    00E4C500    0003AC6C    00FB7700       00FF0229    80000000    00FEE870    009FED38
       00D8  00000C58    00000000    00FEACB8    00000000       00000000    00000000    00000000    00000000
       00F8  00000000    00000000    00000000    00000000       04030001    00000041    00FF117A    00FB273C
       0118  00000000    04880000    00000000    00000000       00000000    00000000    00000000    00000000
       0138  00000000    00000000    003E00C7    C9C5C1D5       E4C3F0F1    C9C5C1E5    C5D7E2E3    C9C5C1E5
       0158  C5D7E2E3    00FB26E8    00000000    00000000       00000000    00000000    00000000    00000000
       0178  00000000    00000000    00000000    00000000       00000000    FFFF0005    00FB2A20    8000003E
```

Figure 116. Unknown or Unsupported Record Detail Edit Report, Record Type 40

```
SUMMARY OF 40 RECORDS

                      DAY YEAR   DAY YEAR
RECORD DATE RANGE     041  97    041  97

MODEL - 3090     SERIAL NO - 142815

TOTAL NUMBER OF RECORDS=0001

CLASSES ENCOUNTERED(MAXIMUM OF 10)

RECORD CLASS -40   0001
```

Figure 117. Unknown or Unsupported Record Detail Summary Report, Record Type 40

Part 3. Product-Dependent Information

This part of the *EREP Reference* contains information about how EREP works with specific hardware and software products.

The following subjects are covered in this part of the *EREP Reference*:

Chapter 14. Supported Devices

This topic contains a list of the devices EREP supports.

Device Type	Subsection
AFP1	Printers
BA00	Other Devices
BCTC	Other Devices
CACA	Other Devices
CTCA	Other Devices
IDSK	Other Devices
NMVT	TP Devices
OSA	Other Devices
OSAD	Other Devices
SCTC	Other Devices
SWCH	Other Devices
0115	Processors
0125	Processors
0135	Processors
0138	Processors
0145	Processors
0148	Processors
0155	Processors
0158	Processors
0165	Processors
0168	Processors
0671	DASD
1012	Punched Tape Devices
1015	Consoles and Displays
1017	Punched Tape Devices
1018	Punched Tape Devices
1030	TP Devices
1050	TP Devices
1052	Consoles and Displays

1053	Printers
1060	TP Devices
1130	TP Devices
115A	TP Devices
1255	OCR/MICR
1270	OCR/MICR
1275	OCR/MICR
1285	OCR/MICR
1287	OCR/MICR
1288	OCR/MICR
1403	Printers
1419	OCR/MICR
1442	Card Readers and Punches
1443	Printers
2003	Processors
2020	Consoles and Displays
2150	Consoles and Displays
2245	Printers
2250	Consoles and Displays
2260	Consoles and Displays
2265	Consoles and Displays
2280	Other Devices
2282	Other Devices
2301	DASD
2303	DASD
2305	DASD
2311	DASD
2314	DASD
2321	DASD
2400	Magnetic Tape Devices
2495	Other Devices
2501	Card Readers and Punches
2520	Card Readers and Punches
2540	Card Readers and Punches
2560	Card Readers and Punches
2596	Card Readers and Punches
2671	Punched Tape Devices

2701 TP Devices

2702 TP Devices

2703 TP Devices

2715 TP Devices

2740 TP Devices

2741 TP Devices

2760 TP Devices

2770 TP Devices

2780 TP Devices

2790 TP Devices

2930 Other Devices

2947 TP Devices

2955 Other Devices

2956 Other Devices

2970 TP Devices

2972 TP Devices

3031 Processors

3032 Processors

3033 Processors

3036 Consoles and Displays

3052 Processors

3062 Processors

3066 Consoles and Displays

3138 Consoles and Displays

3148 Consoles and Displays

3158 Consoles and Displays

3168 Consoles and Displays

3203 Printers

3210 Consoles and Displays

3211 Printers

3213 Consoles and Displays

3215 Consoles and Displays

3262 Printers

3277 Consoles and Displays

3278 Consoles and Displays

3279 3279 terminals are processed as 3277 records

3284 Printers

3286 Printers

3287 Printers

3288 Printers

3289 Printers

3310 DASD

3330 DASD

3340 DASD

3344 DASD

3350 DASD

3370 DASD

3375 DASD

3380 DASD

3390 DASD

3400 Magnetic Tape Devices

3410 Magnetic Tape Devices

3420 Magnetic Tape Devices

3422 Magnetic Tape Devices

3430 Magnetic Tape Devices

3480 Magnetic Tape Devices

3490 Magnetic Tape Devices

3490E Magnetic Tape Devices

3494 Magnetic Tape Devices

3495 Magnetic Tape Devices

3504 Card Readers and Punches

3505 Card Readers and Punches

3525 Card Readers and Punches

3540 Diskette Units

3590 Magnetic Tape Devices

3591 Magnetic Tape Devices

3670 TP Devices

3700 TP Devices

3704 TP Devices

3705 TP Devices

3720 TP Devices

3725 TP Devices

3735 TP Devices

3745 TP Devices

3791 TP Devices

3800 Printers

3820 Printers

3825 Printers

3827 Printers

3835 Printers

3838 Other Devices

3848 Other Devices

3850 DASD

3851 DASD

3886 OCR/MICR

3890 OCR/MICR

3895 OCR/MICR

3900 Printers

3945 TP Devices

3968 TP Devices

3995 Optical Devices

4245 Printers

4248 Printers

4321 Processors

4331 Processors

4341 Processors

4361 Processors

4381 Processors

5080 Consoles and Displays, Printers

5203 Printers

5424 Card Readers and Punches

5425 Card Readers and Punches

6262 Printers

7340 Magnetic Tape Devices

7443 Other Devices

7770 Other Devices

7772 Other Devices

83B3 TP Devices

8809 Magnetic Tape Devices

9021 Processors

9034 Other Devices

9037 Other Devices

9081 Processors

9083 Processors

9121 Processors

9190 Processors

9221 Processors

9246 Optical Devices

9247 Optical Devices

9313 DASD

9332 DASD

9335 DASD

9336 DASD

9345 DASD

9347 Magnetic Tape Devices

9348 Magnetic Tape Devices

9371 TP Devices

9373 Processors

9375 Processors

9377 Processors

9392 DASD

9395 DASD

9696 (IDSK)
Other Devices

Chapter 15. Card Readers and Punches

This topic provides device specific information about how to use EREP controls to produce EREP reports for the devices listed below.

EREP Reports

Useful reports for these devices:

SYSUM
EVENT
TRENDS
PRINT=PT or PS with DEV=nnnn and TYPE=OH

Take care when requesting reports other than these as the results from other reports can be misleading.

Some devices may produce different record types. In that case, request that record type when requesting detail edit and summary (PRINT) reports.

Supported Devices

These devices are valid for DEV=

1442 card reader/punch

2501 card reader

2520 card reader/punch

2540 card reader/punch

2560 multifunction card machine

2596 card reader/punch

3504 card reader

3505 card reader

3525 card punch

5424 multifunction card machine

5425 multifunction card machine

Chapter 16. Consoles and Displays

This topic provides device specific information about how to use EREP controls to produce EREP reports for the devices listed below.

EREP Reports

Useful reports for these devices:
- SYSUM
- EVENT
- TRENDS
- PRINT=PT or PS with DEV=nnnn and TYPE=OTH

Take care when requesting reports other than these as the results from other reports can be misleading.

Some devices may produce different record types. In that case, request that record type when requesting detail edit and summary (PRINT) reports.

EREP Controls

No special considerations.

Supported Devices

These devices are valid for DEV=

1015 display unit

1052 console

2020 console

2150 console

2250 display unit

2260 display station

2265 display station

3036 console

3066 console

3138 console

3148 console

3158 console

3168 console

3210 console printer/keyboard

3213 console printer

3215 console printer/keyboard

3277 display station (terminal)

3278 display station (terminal)

5080 graphics systems workstation

Note: Although the 3279 display terminal is not valid for the DEV parameter, EREP does process its records as 3277 records.

Chapter 17. Direct-Access Storage Devices (DASD)

This topic provides device specific information about how to use EREP controls to produce EREP reports for the DASD listed under following headings:

Supported Devices

These devices are valid for DEV=

0671 direct access storage

2301 drum storage

2303 drum storage

2305 fixed head storage

2311 disk storage

2314 disk storage

2321 data cell drive

23XX families of direct-access storage devices

3310 disk storage

3330 disk storage

3340 disk storage facility

3344 disk storage

3350 disk storage

3370 direct access storage

3375 direct access storage

3380 direct access storage

3390 direct access storage

33XX families of direct-access storage devices

3850 mass storage system

3851 mass storage facility

9313 direct access storage

9332 direct access storage

9335 direct access storage

9336 direct access storage

9345 direct access storage

3390 DASD

This section covers special considerations for EREP reports that contain information about 3390 DASD.

3390 Model Identifiers

The subsystem exception report series and the device-dependent section of the detail edit (PRINT) report identify 3390 models as follows:

IDENTIFIER	3390 MODELS
3390-01	Models A14, A18, B14, B18, and B1C
3390-02	Models A24, A28, B24, B28, and B2C
3390-03	Models A34, A38, B34, B38, and B3C

Subsystem Exception Report

When service actions are required information is placed in the DASD subsystem exception series.

Important: The 3990 storage control and the 3390 family of devices use the service information messages (SIM) part of the DASD subsystem exception series as the primary indication that service is required. OBR records are logged but not placed in the system exception report part of the DASD subsystem exception series unless the 3990 cannot generate a SIM for the error condition.

OBR and MDR Codes

The *MDR codes* for the 3390 are shown in the following table:

MDR CODE	DESCRIPTION
X'24'	3390 Models A34, A38, B34, B38, and B3C
X'26'	3390 Models A14, A18, B14, B18, and B1C
X'27'	3390 Models A24, A28, B24, B28, and B2C
Note: See “MDR Codes” on page 99.	

The **OBR codes** for the 3390 are shown in the following table:

OBR CODE	DESCRIPTION
X'2024'	3390 Model 03
X'2026'	3390 Models A14, A18, B14, B18, and B1C
X'2027'	3390 Models A24, A28, B24, B28, and B2C
Note: See “OBR Codes” on page 97.	

9392 DASD

This section covers special considerations for EREP reports that contain information about 9392 DASD.

These devices are defined to the operating system as the type of DASD that is being emulated (for example, 3390-3). Addresses with these devices are selected with the same parameter as the emulated device (for example, DEV=(3390) or DEV=(33xx)).

9392 Model Identifiers

The subsystem exception report series and the device-dependent section of the detail edit (PRINT) report identify 9392 models as follows:

IDENTIFIER	9392 MODELS
9392	Model B13

Subsystem Exception Report

When service actions are required, information is placed in the DASD subsystem exception series.

Important: The 3990 storage control and the 9392 family of devices use the service information messages (SIM) part of the DASD subsystem exception series as the primary indication that service is required. OBR records are logged but not placed in the system exception report part of the DASD subsystem exception series unless the 3990 cannot generate a SIM for the error condition.

OBR and MDR Codes

Byte 4 of the MDR contains the *MDR code* of the device the 9392 is emulating (for example, X'24' for a 3390-03). The *MDR code* of the 9392 is in the ECKD ™ sense data later in the record. See "MDR Codes" on page 99.

Byte 54 and 55 of the OBR contain the *OBR code* of the device the 9392 is emulating (for example, X'2024' for a 3390-03). The *OBR code* of the 9392 is in the ECKD sense data later in the record. See "OBR Codes" on page 97.

9395 DASD

This section covers special considerations for EREP reports that contain information about 9395 DASD.

These subsystems are defined to the operating system as the type of control unit/DASD that is being emulated (for example, 3990/3390). Addresses with these devices are selected with the same parameter as the emulated device (for example, DEV=(3390) or DEV=(33xx)).

9395 Model Identifiers

The subsystem exception report series and the device-dependent section of the detail edit (PRINT) report identify 9395 models as follows:

IDENTIFIER	9395 MODELS
9395	Model B13

Subsystem Exception Report

When service actions are required, information is placed in the DASD subsystem exception series.

Important: The 9394 storage control and the 9395 family of devices use the service information messages (SIM) part of the DASD subsystem exception series as the primary indication that service is required. OBR records are logged but not placed in the system exception report part of the DASD subsystem exception series unless the 9394 cannot generate a SIM for the error condition.

MDR information is placed in the DASD string summary part 2 with its physical device type 9394/9395.

OBR and MDR Codes

Byte 4 of the MDR contains the *MDR code* of the device the 9395 is emulating (for example, X'24' for a 3390-03). The *MDR code* of the 9395 is in the ECKD sense data later in the record. See “MDR Codes” on page 99.

Byte 54 and 55 of the OBR contain the *OBR code* of the device the 9395 is emulating (for example, X'2024' for a 3390-03). The *OBR code* of the 9395 is in the ECKD sense data later in the record. See “OBR Codes” on page 97.

9345 DASD

This section covers special considerations for EREP reports that contain information about 9345 DASD.

9345 Model Identifiers

The subsystem exception report series and the device-dependent section of the detail edit (PRINT) report identify 9345 models as follows:

IDENTIFIER	9345 MODELS
9341	Models A02
9343	Models C02, C04, and D04
9343 Cache	Models CC2, CC4, and DC4
9345	Models B12 and B22

Subsystem Exception Report

The service information message (SIM) part of the DASD subsystem exception series reflects the activity of devices needed for diagnostic work.

Important: The 9343 and 9341 storage control and the 9345 family of devices use the service information message (SIM) part of the DASD subsystem exception series as the primary indication that service is required. Only SIMs (A3s) or LINK incident records (A2s) indicate maintenance actions.

OBR records are logged but not placed in the system exception report.

EREP Controls

9345 is one of the units defined in DEV=ESIO. See “ESIO I/O Connected to an ESCON Link” on page 344 for more information.

3380 DASD

This section covers special considerations for EREP reports that contain information about 3380 DASD.

3380 Model Identifiers

The subsystem exception report series and the device-dependent section of the detail edit (PRINT) report identify 3380 models as follows:

IDENTIFIER	3380 MODELS
3380-CJ	CJ2 (device addresses 02 and 03)
3380-DE	AD4, AE4, BD4, BE4
3380-JK	AJ4, AK4, BJ4, BK4, CJ2 (device addresses except 02 and 03)

Subsystem Exception Report

In the DASD subsystem exception reports that show FAILURE AFFECT or PROBABLE FAILING UNIT fields, the 3380 family of devices has an additional category called MULTIPLE. This category describes errors that may affect more than one device but are not controller failures.

The following reports use the MULTIPLE category:
- System error summary part 2
- Subsystem exception report
- Symptom code summary
- String summary

MDR and OBR Codes

The *MDR codes* for the 3380 are shown in the following table:

MDR CODE	DESCRIPTION
X'14'	3380 Models AA4, A04, B04, AD4, and BD4.
X'1B'	3380 Models AE4 and BE4.
X'1C'	3380 Models AD4 and BD4 with full command support provided by the system.
X'21'	3380 Models AJ4, BJ4 and CJ2 in single density mode.
X'23'	3380 Models AK4, BK4 and CJ2 with TCO (triple capacity option).
Note: See “MDR Codes” on page 99.	

The **OBR codes** for the 3380 are shown in the following table:

OBR CODE	DESCRIPTION
X'200E'	3380 Models AA4, A04, B04, AD4, and BD4.
X'201E'	3380 Models AD4 and BD4 with full command support provided by the system.
X'202E'	3380 Models AE4 and BE4.
X'2021'	3380 Models AJ4, BJ4 and CJ2 in single density mode.
X'2023'	3380 Models AK4, BK4 and CJ2 with TCO (triple capacity option).

OBR CODE	DESCRIPTION
Note: See "OBR Codes" on page 97.	

3370 DASD

A data reduction report is produced for the 3370 only. To separate the report for the 3370 and for dedicated DASD from the rest of the detail (PRINT) output for I/O devices, run the following step *before* running any detail (PRINT) reports for other I/O devices:

```
PRINT=SD
DEV=(3370)
TYPE=OT
```

33XX DASD

This section covers special considerations for EREP reports that contain information about 33XX DASD.

33XX Identifiers

Some 33XX DASD identify themselves to EREP via *physical IDs*, identifiers assigned to the *storage control unit* (SCU), the *controller*, and the *device*.

Other 33XX DASD are identified by the *physical* and *logical controller-unit addresses (CUAs)*.

The sources of these different identifiers are as follows:

IDENTIFIER	DESCRIPTION
physical ID	Is located in the sense records created for 3375, 3380, and 9345 devices and 3880, 3990, 9341, and 9343 storage controls.
manufacture serial number	Is located in the sense records for the 3390 and 9345 devices and the 3990, 9341, and 9343 storage controls.
secondary control unit address (SCUA)	Is located in the OBR or MDR record. It is the logical address from which the sense data is received.
primary control unit address (PCUA)	Is the address of the physical device via the base (primary) channel. This is the position of the drive in the string. The *PCUA* is also the physical address for *all* demountable DASD.

Some EREP reports show 33XX DASD by *physical ID*. In those that do not, the address shown is the *PCUA*. See "DASDID Control Statement" on page 47 for more information about the *physical ID*.

The only records used for 33XX DASD are OBR (long), MDR, and X'Ax' type records:

- OBR records indicate errors or single incidents.
- MDR records contain statistical data collected at the storage control unit for usage, errors, and overruns.

In the system summary and trends reports, 33XX devices providing *physical IDs* are only listed by those IDs; the CPU identifiers are omitted.

Devices having *physical IDs* do not require DASDID or SHARE statements.

The reports that require SHARE statements for nonphysical ID devices are:
- System summary
- Trends
- Data reduction (PRINT=DR or SD)

Subsystem Exception Report

The following DASD subsystems are included in the subsystem exception report series:
- 0671 devices
- 3310-3350, 3375, 3380 and 3390 DASD drives
- 9313, 9332, 9335, 9336, and 9345 DASD drives
- 3830 and 3880 DASD storage controls
- 3990 and 3380-CJ DASD storage controls

Important: The system exception series replaces detail summaries for these devices.

3375 and 3380 errors are reported differently from those of other DASD in the various summary reports of the system exception series, because:
- The 3375 and 3380 can have two or more controllers at the head of the string
- The PHYSICAL ID field contains failures associated with the *lowest* control ID for the string with the device or volume failure.

Detail Edit Report

The following parameters allow you to selectively print X'Ax' type records (SIMs) in a detail edit report.

```
PRINT=PT
DEV=(33XX)
TYPE=A
```

Important: The DASD summaries included in the system exception series replace the following reports:
- The combined OBR/MDR detail summary (PRINT=PS|SD|SU,TYPE=OT)
- The MDR detail edit and summary reports

DASDID Control Statement

Important:
- The DASDID control statement only applies to the system exception report series.
- The DASDID control statement is not valid for the 3375, 3380 and 3390 DASD devices.
- The description and explanation of the DASDID statement are in "DASDID Control Statement" on page 47.

The 3880 control unit supplies its own physical ID. Note those physical IDs before assigning any IDs to control units.

The control unit ID assigned by the DASDID control statement must coincide with the storage director physical ID. The physical ID for each control unit should have been set with hardware switches at installation.

LIMIT Control Statement

The LIMIT control statement works differently for each of the product groups.

Important: The LIMIT control statement only applies to the system exception report series.

The LIMIT control statement has the following format for 33XX DASD:

```
LIMIT dasd,keyword[,keyword...]
```

dasd
Represents the device type designation for DASD products. *dasd* can be one of the following generic product types:

33XX	3370
3310	3375
3330	3380
3340	3830
3350	3880

Note: 3340 includes 3344.

33XX is the general device type designation for all the listed direct access devices and control units. When you code 33XX on a LIMIT control statement, you are requesting that the limits apply to all devices of the general type.

Important: The LIMIT control statement is not valid for the following devices and storage controllers:

0671	9332	9341
3390	9335	9343
9313	9336	9345

keyword
Represents one or more DASD product-dependent keyword parameters with the associated numeric limits.

You can set minimum thresholds for different kinds of temporary errors or events using the keyword values listed here:

TO SET LIMITS FOR	USE KEYWORD
Seek errors	SKS=nnnn
Read errors	RD=nnnn
Bus out parity errors	B=nnnn
Equipment checks	EQUCHK=nnnn
Check data	C=nnnn
Invoked offsets	I=nnnn
Diskette checks	D=nnnn
Overruns	OVRN=nnnn
All not otherwise specified	ALL=nnnn
Note: *nnnn* can range from 1 to 9999; it requires no leading zeros.	

Not all the keywords are valid for every device type. The following table shows the valid error type keywords for each of the 33XX DASD device types:

DEVICE TYPE	SKS	RD	B	EQUCHK	C	I	D	OVRN	ALL
3310	X	X		X	X				X
3330	X	X		X					X
3340	X	X		X					X
3350	X	X		X					X
3370				X	X	X			X
3375				X		X			X
3380				X		X			X
3830			X	X			X	X	X
3880			X	X			X	X	X
33XX	X	X	X	X	X	X	X	X	X

Notes:

- If you do not specify a number for *nnnn*, EREP uses a default value of 01 applying no limits to temporary errors. So all errors of that type are included in the subsystem exception report.
- When you set limits on temporary errors EREP excludes those errors that do not equal or exceed the LIMIT control statement values. *For example*, if you code:

  ```
  LIMIT 3830,EQUCHK=5,OVRN=10
  ```

  the DASD subsystem exception report shows temporary equipment checks and overrun errors for a 3830 control unit only if there are 5 or more equipment checks or 10 or more overruns recorded against the device.
- When you specify 33XX or ALL on a LIMIT control statement, EREP only uses the valid keywords for each device type included.
- EREP ignores the ALL values on any LIMIT control statements that follow a 33XX statement on which ALL is specified. *For example*:

  ```
  LIMIT 3330,SKS=5,ALL=10
  LIMIT 33XX,ALL=15
  LIMIT 3340,RD=5,ALL=20
  ```

  EREP limits the 3330 using the values in the 3330 statement, and limits all other DASD using the value in the 33XX statement. It ignores the ALL value in the 3340 statement, because the 33XX statement takes precedence. If you need the ALL value for 3340s, put that LIMIT control statement before the one for 33XX. *For example*:

  ```
  LIMIT 3330,SKS=5,ALL=10
  LIMIT 3340,RD=5,ALL=20
  LIMIT 33XX,ALL=15
  ```

  Now EREP limits the 3330 using the values in the 3330 statement, the 3340 using the values in the 3340 statement, and all other DASD using the value in the 33XX statement.
- Only one LIMIT control statement is allowed for the general device class of 33XX.

Chapter 18. Diskette Unit

This topic provides device specific information about how to use EREP controls to produce EREP reports for the devices listed below.

EREP Reports

Useful reports for these devices:

SYSUM
EVENT
TRENDS
PRINT=PT or PS with DEV=nnnn and TYPE=OH

Take care when requesting reports other than these as the results from other reports can be misleading.

EREP Controls

No special considerations.

Supported Devices

This device is valid for DEV=

3540 diskette I/O unit

Chapter 19. Magnetic Tape Devices

This topic provides device specific information about how to use EREP controls to produce EREP reports for the magnetic tape devices listed under the following headings:

HEADING

Reports for Tape Devices

The following table identifies reports that can help analyze the performance of the tape devices:

DEVICE	34XX FAMILY	35XX FAMILY	SYSEXN	THRESH	FORCED LOG SUM	LIMIT CTL STMT
3400	YES	NO	YES	YES	NO	YES
3410	YES	NO	YES	YES	NO	YES
3420	YES	NO	YES	YES	NO	YES
3422	YES	NO	YES	NO	YES	YES
3424	NO	NO	YES	NO	NO	NO
3430	YES	NO	YES	NO	YES	YES
3480	YES	NO	YES	NO	YES	YES
3490	YES	NO	YES	NO	YES	YES
3590	NO	YES	YES	NO	NO	NO
8809	YES	NO	NO	YES	NO	NO
9347	NO	NO	YES	NO	NO	NO
9348	NO	NO	YES	NO	NO	NO

Note:

The 3494 and 3495 tape libraries are processed as 3490 devices, but are put on separate reports.

34XX Tape Devices

This section provides information about EREP reports and EREP controls specific to the 34XX tape devices.

Subsystem Exception Report

The SYSEXN (subsystem exception report series) report parameter produces different sets of reports for different 34XX tape devices. If you have all of the 34XX tape devices, you get one set of exception reports and summaries for each of the following sets of tape drives:

ORDER	TAPE DEVICE
1	3410/3420
2	3422
3	3430
4	3480
5	3490

Examples of the tape subsystem exception report and each of the tape subsystem summaries are shown in of the *EREP User's Guide*.

Threshold Summary Report Information

The fields in the volume statistics section of the threshold summary report in of the *EREP User's Guide* are used differently by different device types:

- 3410 and 3420 OBR records use the IO RDS field for total IOS.
- 8809 MDR and OBR records do not use the following fields at all:

MDR	OBR
TU SERIAL	
PERM RDS	PERM RDS
PERM WRTS	TEMP WRTS
PROGRAM ID	RETRY
MOD #	ERASE GAP
DENSITY	
HDR SER	
Note: Refer to "34XX/3803/8809 Subsystem Summary–Volume Statistics" on page 211 in the *EREP User's Guide* for a sample report.	

Use the DEV parameter to select records from one or two of the device types instead of all three.

Use the DEVSER or VOLID parameter to select records according to the device serial number or volume serial number.

The DEVSER selection parameter only applies to the threshold summary. The DEVSER parameter is only valid with TYPE=O, because only tape OBR records contain device serial numbers.

LIMIT Control Statement

The LIMIT control statement only applies to the system exception report series. The format of the LIMIT control statement for 34XX tape devices is:

```
LIMIT tape,keyword[,keyword...]
```

Important: 3480 and 3490 tape subsystem LIMIT control statements differ from the other 34XX devices shown here. See “LIMIT Control Statement” on page 323 for details.

tape
One of these device types: *34XX?410?420?422?430*

keyword
xxbpi=nnn(ct)

xx Pairs of initials indicating the types of temporary errors to be limited.

bpi
Density (bits per inch) at which the device is operating. The possible values for bpi are 1600 and 6250.

nnn
Three-digit decimal value representing the number of megabytes of data processed between errors (MB/ERROR).

ct Decimal value from 1 to 999 representing the number of errors encountered before the device or volume appears on the subsystem exception report.

Keywords and Values for LIMIT Control Statements

LIMIT keywords for 34XX tape drives are:

BPI	TO SET LIMITS FOR	USE KEYWORD
1600	Hardware read	HR1600=nnn(ct)
	Hardware write	HW1600=nnn(ct)
	Volume read	VR1600=nnn(ct)
	Volume write	VW1600=nnn(ct)
6250	Hardware read	HR6250=nnn(ct)
	Hardware write	HW6250=nnn(ct)
	Volume read	VR6250=nnn(ct)
	Volume write	VW6250=nnn(ct)

Temporary Error Limits

EREP uses both the *nnn* (MBYTES/ERROR) and *ct* (total errors) values to establish thresholds for temporary errors. The errors are reported on the subsystem exception report if *both* of the following criteria are met:

- The number of megabytes processed per error is less than the number of megabytes specified by the error frequency (*nnn*) value
- The number of times the error occurs is greater than or equal to the number specified by the count (*ct*) value

If you want the subsystem exception report for a 3420 tape subsystem to report 1600 bpi volume temporary read errors when:

- Less than 599MB are read per error
- The errors occur at least 5 times

Set the volume read limit control card as follows:

```
LIMIT 3420,VR1600=599(5)
```

With this setting:

WHEN	AND	THEN
Temporary read errors occur at a rate of 500MB per error	6 errors occur	The errors are reported on the subsystem exception report.
Temporary read errors occur at a rate of 600MB per error	6 errors occur	The errors are not reported on the subsystem exception report.
Temporary read errors occur at a rate of 500MB per error	4 errors occur	The errors are not reported on the subsystem exception report.

Note:

1. To cover all the possible sources of errors for a 34XX device, code LIMIT control statements for both hardware and volume read and write errors. Results are unpredictable if any values are omitted, or if a value is coded as zero.
2. If you do not code LIMIT control statements for a tape device or volume, the subsystem exception report includes only the permanent errors recorded against that device or volume.

   Important: All temporary errors appear in the temporary error summary.
3. To force EREP to show all the temporary errors on the subsystem exception report, use 999(1) for the nnn(ct) variables on the LIMIT statement, provided that the number of megabytes processed per error is less than 999.
4. The density of 6250 BPI applies only to 3420 and 3430 drives. A LIMIT control statement for 34XX is ignored for 3410 devices.
5. If a tape drive is operating at a density other than 1600 or 6250 BPI, EREP uses the LIMIT values you specify for 1600 BPI.
6. Only one LIMIT control statement is allowed for the general 34XX type.
7. You may not continue a LIMIT control statement from one line to the next.
8. You should use separate LIMIT control statements to establish hardware and volume limits for a device.
9. If the device operates at both 1600 and 6250 BPI, you *must* use separate statements.
10. If only one tape density is involved, you can combine all four keywords on the same LIMIT control statement. *For example*, you may want to see the temporary errors for your 3410 and 3420 drives, operating at 1600 BPI density, as follows:

Hardware	Read	1 or more errors, at 25MB per error
	Write	15 or more errors, at 10MB per error
Volume	Read	1 or more errors, at 25MB per error
	Write	15 or more errors, at 10MB per error

Note:

To set these limits, you can code the following LIMIT control statements:

```
LIMIT 3410,HR1600=025(1),HW1600=010(15),VR1600=025(1),VW1600=010(15)
LIMIT 3420,HR1600=025(1),HW1600=010(15),VR1600=025(1),VW1600=010(15)
```

Because the limiting values and density are the same, these two statements can be combined into a single 34XX LIMIT control statement:

```
LIMIT 34XX,HR1600=025(1),HW1600=010(15),VR1600=025(1),VW1600=010(15)
```

11. When your 34XX devices are operating at different densities, you cannot fit all four sets of keywords on the single 34XX LIMIT control statement.

    If you specify *only* the volume or hardware values for *both* densities on a single 34XX LIMIT control statement, EREP applies those values to whichever kinds of errors you have not specified. *For example*:

    ```
    LIMIT 34XX,VR1600=010(1),VW1600=010(1),VR6250=020(1),VW6250=020(1)
    ```

    EREP applies the values specified here for *volume* reads and writes to *hardware* reads and writes for all your 34XX devices.

    Important: When EREP checks the LIMIT control statement syntax, it fills in any blanks it finds with the corresponding values supplied elsewhere on the same statement. This is why results can be unpredictable when you do not code all the values on a LIMIT control statement or code a value as zero.

3480, 3490, and 3490E Tape Subsystems

This section provides information specific to EREP reports and controls specific to the 3480, 3490, and 3490E tape subsystems.

Subsystem Exception Report

EREP produces a separate set of subsystem exception reports for the 3480, 3490, and 3490E subsystem. Records for the following devices are included in the report series:

- 34XX tape drives (3410, 3420, and 3430)
- 3480 flexible media tape subsystem
- 3490 and 3490E magnetic tape subsystems
- 3494 tape library (included in the 3490/3490E series)
- 3495 tape library (included in the 3490/3490E series)

You must request *both OBR (type O) and MDR (type T)* records; EREP uses both for the 3480, 3490, and 3490E subsystem exception report.

Important: You cannot get detail edit reports of 3480, 3490, and 3490E MDR records.

When you code DEV=34XX, EREP selects records from 3410, 3420, 3422, 3430, 3480, 3490, 3490E, and 8809 tape drives, depending on the report requested. See "34XX Tape Devices" on page 319 for details.

LIMIT Control Statement

The format of the 3480, 3490, and 3490E LIMIT control statement is:

LIMIT *tape,keyword[,keyword...]*

tape
One of these device types: 3480 or 3490

keyword
xxtape=nnn(ct)

xx Pairs of initials indicating the types of temporary errors to limit. The possible values for *xx* are listed under the valid LIMIT keywords for 3490.

nnn
Three-digit decimal value representing the number of megabytes of data processed between errors (MB/ERROR).

ct Decimal value from 1 to 999 representing the number of errors encountered before the device or volume appears on the subsystem exception report.

Keywords and Values for the LIMIT Control Statement

The LIMIT control statement uses the following keywords for the 3480, 3490, and 3490E:

TO SET LIMITS FOR	USE KEYWORD
Hardware read	HR3480=nnn(ct)
	HR3490=nnn(ct)
Hardware write	HW3480=nnn(ct)
	HW3490=nnn(ct)
Volume read	VR3480=nnn(ct)
	VR3490=nnn(ct)
Volume write	VW3480=nnn(ct)
	VW3490=nnn(ct)

Temporary Error Limits

See "Temporary Error Limits" on page 321 to gain an understanding of how the temporary error limit works. To meet the conditions in "Temporary Error Limits" on page 321, set the 3480 volume read limit control card shown as follows:

```
LIMIT 3480,VR3480=599(5)
```

The LIMIT control statement does not control the printing of nonerror records in the DEVNO/CUA statistics summary or volume statistics summary sections of the subsystem exception report. All nonerror activity is reported for each 3480 device or volume appearing in the subsystem exception report.

See the notes following "Temporary Error Limits" on page 321 for more detailed information about LIMIT control statements.

9347 and 9348 Subsystem Exception Report

The LIMIT control statement is invalid for the 9347 and 9348. The current limits are not reported.

The count and frequency of permanent and temporary errors are not recorded, so the MB/ERR counts are not reported.

35XX Tape Devices

This section provides information about EREP reports and EREP controls specific to the 35XX tape devices.

Subsystem Exception Report

The SYSEXN (subsystem exception report series) report parameter produces different sets of reports for 35XX tape devices. If you have all of the 35XX tape devices, you get one set of exception reports and summaries that includes all the drives.

Examples of the TAPE subsystem exception report and the TAPE messages are shown in "TAPE Subsystem Exception" on page 203.

Chapter 20. OCR/MICR Devices

This topic provides device specific information about how to use EREP controls to produce EREP reports for the devices listed below.

EREP Reports

Useful reports for these devices:

SYSUM
EVENT
TRENDS
PRINT=PT or PS with DEV=nnnn and TYPE=OTH

Take care when requesting reports other than these as the results from other reports can be misleading.

Some devices may produce different record types. In that case, request those record types when requesting detail edit and summary (PRINT) reports.

EREP Controls

No special considerations.

Supported Devices

These devices are valid for DEV=

1255 MICR reader

1270 optical character reader

1275 optical reader/sorter

1285 optical reader

1287 optical reader/sorter

1288 optical page reader

1419 MICR reader/sorter

3886 optical character reader

3890 document processor

3895 document reader/sorter

Chapter 21. Optical Devices

This topic provides device specific information about how to use EREP controls to produce EREP reports for the optical devices listed below.

3995 Optical Disk Storage Dataserver

EREP supports the following reports for the 3995 optical disk library:

SYSEXN
EVENT
PRINT=PT or PS with DEV=nnnn and TYPE=OTH

3995 is valid for the DEV parameter.

This device generates A3, OBR and MDR records.

A3/OBR codes — X'2182', X'2183', and X'4122'
MDR code — X'17', X'20' and X'50'

9246 Optical Library

EREP supports the following reports for the 9246 optical disk library:

SYSEXN
EVENT
PRINT=PT or PS with DEV=nnnn and TYPE=OTH (does not include A3 records)

9246 is valid for the DEV parameter.

This device only generates OBR records. The OBR code is X'2180'.

9247 Optical Disk Drive

EREP supports the following reports for the 9247 optical storage device:

SYSEXN
EVENT
PRINT=PT or PS with DEV=nnnn and TYPE=OTH (does not include A3 records)

9247 is valid for the DEV parameter.

This device only generates OBR records. The OBR code is X'2181'.

Chapter 22. Printers

This topic provides device specific information about how to use EREP controls to produce EREP reports for the printers listed under the following headings:

Reports for Printers

Useful reports for these devices:

SYSUM
EVENT
TRENDS
PRINT=PT or PS with DEV=nnnn and TYPE=OTH

Take care when requesting reports other than these as the results from other reports can be misleading.

Some devices may produce different record types. In that case, request that record type when requesting detail edit and summary (PRINT) reports.

EREP produces a combined OBR/MDR summary for the 3800 printing subsystem when you request detail summaries for that product.

Devices Supported by EREP

These devices are valid for DEV=

AFP1 printers

1053 printer

1403 printer

1443 printer

2245 printer

3203 printer

3211 printer

3262 printer

3284 printer

3286 printer

3287 printer

3288 printer

3289 line printer

32XX includes families of IBM printers

3800 printing subsystem

3820 page printer

38XX includes families of IBM printers

4245 printer

4248 printer

5080 graphics systems workstation

5203 printer

6262 printer

AFP1 Printers

AFP1 is a family of system printers designed to operate under the Print Services Facility ™ (PSF) of the Advanced Function Printing (AFP) software application. The entire family of non-impact system printers use the common control unit (CCU) to drive various printer engines. AFP1 is the general device type designation that includes all of this family of printers.

The following printers are members of the AFP1 family:

TYPE/MODEL	DESCRIPTION
3825/01	Cut sheet printer
3827/01	Cut sheet printer
3835/01	Fan fold printer
3900/01	Fan fold printer

Detail Edit Report

The detail report provides detailed information for each OBR error record including the sense information in hexadecimal.

The unique TYPE/MODEL information is obtained from the long OBR error record and printed in the device dependent data area.

Detail Summary Report

This report provides summary information for the OBR error records, sorted by System Reference Code (SRC). It shows the total permanent and temporary occurrences of each SRC during the period of the report.

The unique TYPE/MODEL information is printed in the device dependent data area.

For a description of what the SRC number means for each unique printer, refer to the maintenance library for that specific machine type.

EREP Controls

DEV=(AFP1) is valid for this family and appears in the DEVICE TYPE field in the header of the reports.

When AFP1 is selected, a set of reports is produced for each printer address for all of the printers of this family that are attached to the system.

The OBR code is X'080F'.

OBRDEVDP (one double-word at offset X'40')in the OBR contains the following:

`00TTTTMM`

00 Not used

TTTT TYPE

MM MODEL

3820 Printer

EREP includes records from the 3820 printer with the other OBR records produced by the 3791 cluster controller.

3820 is valid for DEV=. However, that number does not appear in EREP reports. All 3820 records and incidents are identified by “3791”.

4248 Printer

If the device is running in 3211 mode, code DEV=(3211).

6262 Printer

The general information about EREP for IBM printers also applies to the 6262 line printer.

Useful reports for this device are:

PRINT=PT or SU or PS with DEV=6262 and TYPE=O (OBR records).

Take care when requesting reports other than these as the results from other reports can be misleading.

6262 is valid for DEV=

The OBR code is X'0813', the same as the 4248 printer.

Chapter 23. Processors (CPUs)

This topic provides device specific information about how to use EREP controls to produce EREP reports for the processors listed under the following headings:

HEADING
"Processor Information"
"LIMIT Control Statement"
"PR/SM Feature" on page 337

Processor Information

The following table identifies what types of records the processors generate, whether or not CPU= and MOD= are valid parameters, and whether or not the processor is included in the subsystem exception report series.

CPU	SYSEXN	CPU= MOD=	CCH	MCH	SLH CRW[1]	LIMIT CTL STMT
0158	YES	VALID	X	X		VALID
0168	YES	VALID	X	X		VALID
303X	YES	VALID	X	X		VALID
9021	NO	VALID	X	X	X	NO
9121	NO	VALID	X	X	X	NO
9221	NO	VALID	X	X	X	NO
9373	NO	VALID	X	X		NO
9375	NO	VALID	X	X		NO
9377	NO	VALID	X	X		NO

LIMIT Control Statement

The LIMIT control statement applies only to the system exception report series. The following is a description of how to use LIMIT control statements for the processor and channel subsystem exception reports.

The LIMIT control statement has the following format for processors:

LIMIT *cpu,keyword=nn[,keyword=nn...]*

cpu

Is one of the following S/370 processors and its associated channels:

0158
0168
3031
3032
3033

keyword
Is one of the keywords representing the various types of soft machine checks or channel checks covered by the system exception report series.

nn Is a two-digit decimal value ranging from 1–99. It indicates the minimum number of errors that must be recorded during a 60-minute *reference period* for the processor or channel to be included on the subsystem exception report. The reference period begins when an error of the type specified in the LIMIT control statement is recorded.

LIMIT keywords for processors and channels are:

DEVICE	TO SET LIMITS FOR	USE KEYWORD
Processor	External damage	EXTD=nn
	Hardware instruction retry	HIRS=nn
	Buffer error	BUFE=nn
Channel	Channel error	CHAN=nn
	Storage error	STOR=nn
	Director error	DRCT=nn
	Control unit error	CTRL=nn

Note:

1. If you do not supply a number for *nn*, EREP applies a default value of 01, meaning that all soft errors recorded on processors or channels are included in the printed report. In this case, the line in the report showing the CURRENT LIMITS contains 00 for that keyword.
2. The LIMIT keywords for processors and channels only apply to soft errors. They represent the types of errors listed:
   - Under SOFT MACHINE CHECK in the processor subsystem exception report
   - Under the three SERVICE LEVEL INDICATOR categories in the channel subsystem exception report.

   Refer to the subsystem exception report examples in "Processor (CPU) Subsystem Exception" on page 133 and "Channel Subsystem Exception" on page 135
3. The following STOR and DRCT keywords for channel errors are mutually exclusive:
   - STOR applies to the 0158 and 0168 processors
   - DRCT applies to the 303X processors
4. You can set limits for processor and channel errors on separate LIMIT control statements or on the same statement. For example:
   ```
   LIMIT 3033,EXTD=05,HIRS=05,BUFE=03
   LIMIT 3033,CHAN=01,DRCT=04,CTRL=08
   ```
   or
   ```
   LIMIT 3033,CHAN=01,DRCT=04,CTRL=08,EXTD=05,HIRS=05,BUFE=03
   ```
5. You may not continue a LIMIT control statement from one line to the next. You may code as many separate LIMIT control statements as you need.
6. The only valid values for the CHAN LIMIT control statement keyword for a 303X processor are CHAN=00 and CHAN=01. If you code any other value for CHAN, EREP processes it as if it were CHAN=01.

PR/SM Feature

When the processor resource/system manager (PR/SM) feature is used to create logical partitions on a central processor complex (CPC) a unique logical CPUID is created for each logical partition by creating a new and unique CPU identification number (all other fields are unchanged).

The CPU identification number is a six-digit number as follows:

asnnnn

a Logical processor address

s PR/SM logical partition identifier or second digit of the machine serial number

nnnn
Represents the last four digits of the machine serial number

The logical processor address is a function of the CPC model, whether the CPC is a single image or physically partitioned and how many logical processors are assigned to the partition.

The PR/SM logical partition identifier is the same hexadecimal digit used to identify the partition when it was initially defined (in the IOCDS).

The PR/SM logical partition identifier must be used in conjunction with the last four digits of the machine serial number, whenever using the CPU serial number in a parameter or control statement.

Chapter 24. Punched Tape Devices

This topic provides device specific information about how to use EREP controls to produce EREP reports for the devices listed below.

EREP Reports

Useful reports for these devices:

SYSUM
TRENDS
EVENT
PRINT=PT or PS with DEV=nnnn and TYPE=OH

Take care when requesting reports other than these as the results from other reports can be misleading.

EREP Controls

No special considerations.

Supported Devices

These devices are valid for DEV=

1012 paper tape punch

1017 paper tape reader

1018 paper tape punch

2671 paper tape reader

Chapter 25. Teleprocessing (TP) Devices

This topic provides device specific information about how to use EREP controls to produce EREP reports for the devices listed below.

EREP Reports

VTAM record type 36 will no longer be supported by the detail summary report.

In OBR records, EREP sees the 3720, 3725 and 3745 communications controllers as 3705s. Therefore, if you want to isolate an OBR record from a 3720, 3725 or 3745 controller, you must request the detail report using DEV=3705 and TYPE=O.

In MDR records, the 3720, 3725 and 3745 have their own device codes, so you can select records by coding DEV=(3720,3725, or 3745) and TYPE=T.

NMVT alert records have their own device code, so you can select records by coding DEV=(NMVT) and TYPE=T. NMVT alert records can only be printed as detail edit reports.

In the MDR detail summary report, the LIB ADDR field contains the line interface base address for 3705s. If the field is all zeros, it means the error is in the device rather than in the line.

Some devices may produce different record types. In that case, request that record type when requesting detail edit and summary (PRINT) reports.

EREP Controls

The LIA/LIBADR and TERMN parameters are for use with TP devices. LIA/LIBADR is for 3705, 3720, 3725 and 3745 communications controllers, and TERMN is for 2700 terminals and 3705 controllers.

EREP does not limit the device or record type in response to the TERMN parameter alone. You must also code TYPE=O and DEV=(27XX,3705) to limit a report to VTAM records from terminals with the specified names.

Notes

- The network control program (NCP) does not recognize XA-specific MDR record information for 3705 and 3725 communications controllers. It records 370-mode MDR records even when the device is generating XA-mode records.
- Selected NMVT records are logged by VTAM. These records originate within SNA network devices (for example, 3745).
- Selected NMVT records are logged in a 9370/VM environment. These records originate within the attached token-ring network.

Chapter 26. Other Devices

This topic provides device specific information about how to use EREP controls to produce EREP reports for the devices listed below.

EREP Reports

The channel-to-channel adapter, CTCA, appears as “CACA” on report output, because the characters must be translated to hexadecimal digits.

EREP Controls

No special considerations.

Supported Devices

These devices are valid for DEV=

2280 high speed microfilm output film recorder

2282 film recorder/scanner

2495 magnetic tape cartridge reader

2930 tape intersystem connection unit

2955 remote service terminal

2956 badge and badge/card reader

3838 array processor

3848 cryptographic unit

7443 service recording facility

7770 audio response unit

7772 audio response unit

BA00 serial OEM interface adapter

BCTC basic mode CTC

CTCA channel-to-channel adapter

ESIO I/O devices on ESCON link

OSA Open Systems Adapter

OSAD
Open Systems Adapter

SCTC serial CTC

SWCH
channel switch

These devices are recognized by EREP, but are *NOT* valid for DEV= parameter:

IDSK Internal Disk (internal to certain processors)

EREP recognizes the following device types as *unknown*:

2101

3703

3967

125D

BA00 Serial OEM Interface Adapter

Useful reports for this device:
- SYSUM
- EVENT
- TRENDS
- PRINT=PT or PS with DEV=(BA00) and TYPE=O

  Take care when requesting reports other than these as the results from other reports can be misleading.

BA00 is valid for DEV=

The SOEMI adapter generates OBR records. The OBR code for the device is X'1014'.

CTCA Channel to Channel Adapters

Devices included in this section are:

BCTC
CTCA
OSA
OSAD
SCTC

A trailing space is required in DEV= for three letter adapters. For example:

```
DEV=(OSA ) is valid
DEV=(OSA) is invalid
```

Useful reports for these devices:
- SYSUM
- EVENT
- PRINT=ALPTPS

  Take care when requesting reports other than these as the results from other reports can be misleading.

CTCA appears as CACA on the TRENDS and the PRINT reports. The basic mode CTC (BCTC), serial CTC (SCTC), and open systems adapters (OSA and OSAD) are *not* supported on the TRENDS report.

ESIO I/O Connected to an ESCON Link

ESIO in the DEV= parameter selects the following set of devices:

3380	3801

3390	3803
3420	9345
3480	AFP1
3490	SWCH

Useful reports for this device:

SYSUM

EVENT

PRINT=PT

Take care when requesting reports other than these as the results from other reports can be misleading.

The ESIO parameter is helpful for creating a file for the I/O devices defined when running PRINT=NO.

IDSK Internal Disk

This section contains special considerations for EREP reports that contain information about the IDSK.

This subsystem is internal to a processor and is defined to the operating system as the type of control unit/DASD that is being emulated (for example: 3990-06/3390-03). Addresses with these devices are selected with the same parameter as the emulated device (for example: DEV=(3390) or DEV=(33XX) - NOTE: DEV=(IDSK) is *NOT* valid).

The following report is useful for this mode of connection:

EVENT

Only the emulated device type will appear on this report.

Bytes 54 and 55 of the OBR contain the OBR code of the device the IDSK is emulating (for example: x'2024' for a 3390-03). The OBR code of the IDSK is in the ECKD sense data later in the record. See "OBR Codes" in Chapter 7.

Byte 4 of the MDR contains the MDR code of the device the IDSK is emulating (for example: x'24' for a 3390-03). The MDR code of the IDSK is in the ECKD sense data later in the record. See "MDR Codes" in Chapter 7.

Serial Link Connection

The following reports are useful for this mode of connection:

EVENT

PRINT=PT or PS with DEV=(N33XX) and TYPE=A

For each A2 record, the event report provides a time of occurrence indication that displays the following:

- Incident node type, model, interface
- Attached node type, model, interface
- Incident code
- Dedicated connection interface identifier (when applicable)

The PRINT report provides an interpretation of the node information from the A2 record.

The control parameters are the following:
- Time
- Type
- DEV

SWCH Channel Switch

Devices included in this section are:

SWCH
9032
9033
9034
9037

DEV= applies *only* to the SWCH and not the individual models.

Part 4. Appendixes

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Glossary

This glossary contains a list of terms used within the Environmental Record Editing and Printing Program library.

A

AFP Advanced Function Printing.

B

BPI Bits per inch.

BTAM Basic telecommunications access method.

BUFE Buffer error.

BYTES RD/SRCHD
Megabytes read/searched.

C

CAT Channel availability table.

CCF Channel-check frame.

CCH Channel-check handler.

CCHCRH
CCH channel reconfiguration hardware.

CCHINC
CCH incomplete record.

CCU Channel control unit.

CCW Channel control word.

CDDA
Command data.

CE IBM customer engineer (changed to IBM service representative).

central processor (CP)
One of the internal processors that is part of a central processing complex.

channel
The physical connector between a processor and an input/output device, usually via a control unit of some kind. In the case of the extended architecture (System 370/XA), the hardware channels are replaced by subchannels, which are capable of dynamic variation controlled by microcode in the processor complex.

While this book refers to "subchannels" when discussing fields in 370XA report output, it uses "channel" in the general sense to mean the connection between controller and device.

channel-check frame (CCF)
The record on the ERDS that EREP uses to format channel-check records from the 303X group of processors.

channel-check handler (CCH)
A S/370 hardware feature that, when a channel error occurs, records information about the error and issues a message to the operator. In VSE, machine check analysis and recording performs a similar function. The records created in both cases are called CCH records.

channel-report word (CRW)
In S/370XA, a part of the channel-subchannel recovery mechanism. It contains information about channel incidents reported through machine checks, specifying the error environment and the severity of the error. MVS/XA builds a CRW record that, in combination with the subchannel logout handler record, replaces the CCH record.

CHK Check.

CHNL Channel.

CHP Channel path ID.

CHPID
Channel path ID.

CHR Channel reporting (error).

CK Check.

CKD Count key data.

CLNACT
Cleaner action.

CMD Command.

CMND
Command.

CMS Conversational monitor system.

CNT Count.

CNTRL
Control.

CNTRLR
Controller.

code The programming-language instructions that make up a computer program. As a verb, “to code” is the same as “to write code”.

COMP
Component.

CONS+UR
Console plus unit record.

controller
A single unit that provides an interface between one or more storage control units and a group of devices. Controllers usually reside within the same unit as the lowest drive addresses.

CORR Correctable.

COR Corrected.

CP Central processor.

CPC Central processing complex.

CPU serial number
A 6-digit hexadecimal number. The first digit identifies the central processor within the central processing complex. The second digit identifies the plant where the CPU was manufactured. The remaining digits identify the sequence number. For example, 120003 is CP 1 of the third CPC manufactured at plant two.

CRH Channel reconfiguration hardware.

CRW Channel-report word.

CSCH Clear subchannel.

CSECTID
Control section (CSECT) identification.

CSID Channel set ID.

CSW Channel status word.

CT Controller; count.

CTCA Channel-to-channel adapter.

CTLID
Controller ID.

CTLR Controller.

CU Control unit.

CUA Channel-control unit-device address.

CUD Control unit detecting (error).

CUR Control unit reporting (error).

D

DATAXFR
Data transfer.

DATA CKS CORR/RTRY
Data checks correctable/retry.

DCB Data control block.

DCI Dedicated connection interface.

DDR Dynamic device reconfiguration.

DDROPR
DDR operator requested.

DDRSYS
DDR system requested.

DEV Device number.

DEVNO
Device number.

DEVNUM
Device number.

DEVT Device type.

DLBL DASD label.

DNO Device number.

DOS (VS)
Disk Operating System. An obsolete name, replaced by VSE, Virtual Storage Extended. In this book, “VSE” includes and implies all releases of this operating system, from DOS to VSE/ESA.

DPA Dynamic pathing availability.

DRCT Storage director.

DTE Date.

dynamic device reconfiguration
A facility that allows a demountable volume to be moved, and repositioned if necessary, without abnormally terminating the job or repeating the IPL procedure. The MVS operating systems create DDR records to provide information about operator-assisted recovery involving the relocation of tape and movable DASD volumes.

E

EBCDIC
Extended binary code decimal interchange code.

ECC Error correction code.

ECW Extended control word.

EOD End of day.

EQUCHK
Equipment check.

EQUIP
Equipment.

ERDS Error-recording dataset.

EREP Environmental record editing and printing program.

ERP Error-recovery program/processing.

ERROPS
Error operations.

error-recovery dataset
Input to the IFCEREP1 program. In MVS systems, the ERDS is SYS1.LOGREC; in VSE systems, it is SYSREC; in VM, it is the error-recording area or cylinders.

error-recovery program/processing
System routines that detect and process errors, writing records to the ERDS.

ERSGAP
Erase gap.

ESIO I/O devices on ESCON link.

ESW Extended status word.

EXCP Execute channel program.

EXTD External damage.

F

FBA Fixed block access.

FCF Function control flag.

FCG Floating channel group.

FLG Flag.

FMT Format.

FRF Function request flag.

FRR Function recovery routines.

FTA File tape adapter.

H

hard machine check or error
A hardware error that disables the processor or other unit.

HDR SER
Header (tape)/serial number of drive that created tape.

HIRS Hardware instruction retry (successful).

HSCH Halt subchannel.

I

IC Incident code.

ICHPT
Installation channel path table.

ID Identification.

initial program load (IPL)
The process by which an operating system is initialized at the beginning of the day or session. At IPL, the system operator enters the installation-specific information the operating system must have in order to manage the installation's computing system and handle the installation's application programs. This information includes system parameters, system dataset definitions, and other information needed so the operating system can begin operating.

installation
A data processing system location; for example, a computer center housing processors, I/O devices, other hardware devices, the software that controls the machines, and the people who control the computer center.

INV Invalid.

INVK Invoked.

IOB Input output block.

IPL Initial program load.

IRB Interrupt response block.

J

JCL Job control language.

JCS Job control statement.

K

KB Kilobyte.

L

LEN Length.

LMAT Load-module-address table.

LSQA Local system queue area.

M

machine-check frame (MCF)
The record, on the ERDS, that EREP uses to format machine-check records from the 303X group of processors.

machine-check handler (MCH)
A S/370 hardware feature that analyzes errors and attempts recovery by retrying the failing instruction. If unsuccessful, it causes an interrupt that triggers the creation of an error record. In VSE systems, machine check analysis and recording performs similar functions. The records created in either case are called MCH records.

MB Megabyte.

MCF Machine-check frame.

MCH Machine-check handler.

MCHTRM
MCH System terminated.

MCIC Machine check interrupt code.

MCK Machine check.

MDC Maintenance device code.

MDR Miscellaneous data record.

MDRDAS
DASD MDR record.

MI Maintenance information.

MICR Magnetic ink character recognition.

MIH Missing-interrupt handler.

miscellaneous data record (MDR)
A record type that records error and usage information from buffered control units or communications controllers, and device failures on TP devices connected to 3705/3725 communications controllers. The record is created when there is an overflow of statistical counters; its purpose is to provide more information about the accompanying failure.

missing-interrupt handler (MIH)
An MVS and MVS/XA facility that keeps track of I/O interrupts, informing the operator and creating a record whenever an expected interrupt fails to occur in a preset time interval.

MIX The XA version of the missing-interrupt handler.

MOD Module.

MSHP
Maintain system history program.

MVS, MVS/ESA, MVS/XA
Multiple Virtual Storage, Multiple Virtual Storage/Enterprise Systems Architecture, and Multiple Virtual Storage/Extended Architecture, two versions of the System/370 operating system that are extensions of OS/VS2.

This manual uses “MVS” to refer to a family of operating systems that controls System/370 computing systems. “MVS” includes MVS/370, MVS/XA and MVS/ESA.

N

NCP Network control program.

network management vector transport (NMVT)
An SNA management services request unit that flows over an active session between a device implementing an SNA physical unit and a device implementing an SNA control point.

NMVT
Network management vector transport.

O

OBR Outboard recorder.

OBRDMT
OBR demount record.

OBRDPA
OBR dynamic pathing availability.

OBRDPS
OBR dynamic pathing validation analysis.

OBREOD
OBR End-of-day.

OBRPRM
OBR Permanent error record.

OBRPTH
OBR Permanent path error record.

OBRSHT
OBR Short record.

OBRTMP
OBR Temporary error.

OCR Optical character recognition.

Operating System/Virtual Storage (OS/VS)
A family of operating systems that control IBM System/370 computing systems. OS/VS includes VS2, MVS/370, MVS/XA and MVS/ESA. This book refers to these operating systems by the general term “MVS”.

OS/VS
: Operating System/Virtual Storage.

OS/VS2
: Virtual Storage 2 (MVS, Version 1). MVS/370; one of the MVS operating systems.

outboard recorder (OBR)
: In VSE systems, the outboard recorder is a feature that records pertinent data about an unrecoverable I/O error. MVS systems create a similar record from information recorded when an I/O device is in *unit-check* status. The resulting record in both cases is called an OBR record.

OVERRN
: Overrun.

OVERRUN CDDA
: Overrun command data.

OVRN
: Overrun.

P

PCCA Physical configuration communications area.

PCT Product control table.

PCUA Primary channel-control unit-device address.

PDAR Program damage assessment and repair.

PERM Permanent.

PFU Probable failing unit.

PR/SM
: Program resource/system manager.

PRGM INT
: Program-initiated.

PRI Primary.

PRM Permanent.

product control table (PCT)
: The internal table that contains data EREP needs in order to identify and process records from a particular IBM device or product.

PROG-EC
: Program-extended control mode.

PSF Print Services Facility.

PSW Program status word.

PUB Physical unit block.

Q

QSAM
: Queued sequential access method.

R

RCT Record control table.

RCVRYXIT
: Recovery exit module.

RD Read error.

RDE Reliability data extractor.

REC-TYP
: Record type.

ROD Record on demand.

RPA Return point address.

RSM Real storage manager.

RTM Recovery termination manager.

RTN Routine.

RTRY Retry.

R/W Read/write.

S

S/370 and S/370XA
: Computing systems built around large IBM processors. XA stands for Extended Architecture, the architecture basis for the 3081 and later processors, characterized by 31-bit addresses. S/370 implies not only the processor but also the many other data processing devices that can be connected to it to make a 370 (or 370XA) data processing *system*.

SCD System control data.

SCP System control program.

SCSW Subchannel status word.

SCU Storage control unit.

SCUA Secondary channel-control unit-device address.

SCUID
: Storage control unit ID.

SD Storage director.

SDR Statistical data recorder.

SDWA
: System diagnostic work area.

SE Systems Engineer.

SEC Secondary.

SEEKS CNTR/HH
Seek errors cylinder track/head

SFT Software record. A record that is produced as part of the system error recovery process. It includes such software-specific information as the ERRORID and the system diagnostic work area control block and its extensions for the failing task or request block. MVS and AIX/ESA ® build software records.

SFTABN
SFT ABEND record.

SFTLST
SFT lost record.

SFTMCH
SFT machine error, recoverable.

SFTPI SFT program interrupt.

SFTRST
SFT restart.

SIM Service information messages.

SIO Start I/O.

SKS Seeks; data access errors.

SLH Subchannel-logout handler.

SNA Systems network architecture.

SNID Sense path group ID (DPA).

Soft machine check or error
A hardware error that is not disabling.

SPID Set path group ID (DPA).

SQA System queue area.

SRC System reference code.

SRCHD
Searched.

SRF Service record file.

SSYS ID
Subsystem identifier.

STOR Storage error.

storage control unit
A functional unit which resides between channels and controllers.

STSCH
Store subchannel.

SSCH Start subchannel.

subchannel
The extended architecture version of "channel". See also *channel.*

subchannel-logout handler
A S/370XA feature that provides detailed model-independent information relating to a subchannel; the subchannel logout describes equipment errors detected by the channel subsystem. MVS/XA and MVS/ESA build an SLH record that, in combination with the CRW record, replaces the CCH record.

subsystem
In hardware terms, a group of devices that function together to perform I/O operations. An I/O subsystem can consist of a control unit (controller) and its associated drives—either disk or tape; or it can consist of *all* the DASD or tape storage—including drives and controllers—in an installation. In the case of newer DASD, the I/O subsystem also includes storage control units and storage directors, within the controller.

SVC Supervisor call.

syntax The relationships among the elements and characters in a parameter or language statement. For our purposes, the way you have to code something in order for the program to understand and accept it.

SYSGEN
System generation.

system control program
The minimum software package that will make your operating system work.

system generation
The process of selecting optional parts of an operating system and of creating a particular operating system tailored to the requirements of a data processing installation. Can also include I/OGEN, which is the time when the system programmer defines the installation's computing system configuration to the operating system.

Systems Engineer
The person responsible for helping you maintain the IBM software in your installation.

T

TCO Triple capacity option.

TEMP Temporary.

TERM Terminal.

TLBL Tape label.

TMP Temporary.

TP Teleprocessing.

TPF Transaction processing facility.

transaction processing facility (TPF)
A high performance, real-time operating system designed for message-driven applications that require high availability and rapid response time at high message volumes.

TSCH Test subchannel.

U

UCB Unit control block.

V

virtual machine (VM)
A time-sharing system control program that manages the resources of an IBM System/370 computing system so that multiple remote terminal users have a functional simulation of the computing system (a virtual machine) at their disposal. This book uses "VM" to mean all versions of the Virtual Machine system control program, including VM/370, VM/System Pro duct, VM/SP/High Performance Option, VM/ESA, and VM/XA.

Virtual Storage Extended (VSE)
A family of disk operating systems that controls IBM System/360 and System/370 computing systems and includes VSE and VSE/Advanced Functions.

VM Virtual machine.

VOLID
Volume serial number.

VS2 Virtual Storage 2 (MVS, Version 1). MVS/370; one of the OS/VS operating systems.

VSAT Virtual storage address table.

VSE Virtual Storage Extended.

VSE/AF
Virtual Storage Extended/Advanced Functions.

W

WRT Write error.

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