```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

Copyright (c) 2017 CA. All rights reserved.

This documentation (the "Documentation") and related computer software program (the "Software") (hereinafter collectively referred to as the "Product") is for the end user's informational purposes only and is subject to change or withdrawal by CA at any time.

This Product may not be copied, transferred, reproduced, disclosed, modified or duplicated, in whole or in part, without the prior written consent of CA. This Product is proprietary information of CA and protected by the copyright laws of the United States and international treaties.

Notwithstanding the foregoing, licensed users may print a reasonable number of copies of the Documentation for their own internal use, and may make one copy of the Software as reasonably required for back-up and disaster recovery purposes, provided that all CA copyright notices and legends are affixed to each reproduced copy. Only authorized employees, consultants, or agents of the user who are bound by the provisions of the license for the Software are permitted to have access to such copies.

This right to print copies of the Documentation and to make a copy of the Software is limited to the period during which the license for the Product remains in full force and effect. Should the license terminate for any reason, it shall be the user's responsibility to certify in writing to CA that all copies and partial copies of the Product have been returned to CA or destroyed.

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

The use of any product referenced in the Documentation is governed by the end user's applicable license agreement.

The manufacturer of this Product is CA.

This Product is provided with "Restricted Rights." Use, duplication or disclosure by the United States Government is subject to the restrictions set forth in FAR Section 12.212, 52.227-14, and 52.227-19(c)(1) - (2) and DFARS Section 252.227-7013(c)(1)(ii), as applicable, or their successors.

All trademarks, trade names, service marks, and logos referenced herein belong to their respective companies.

G E N E R A L T A B L E O F C O N T E N T S PAGE

Chapter 1. OVERVIEW 1-001
1.1 Primary Areas of Application 1-002
1.2 Reporting and Inquiry Facilities 1-003
1.3 Product Considerations 1-004

Chapter 2. USAGE GUIDELINES 2-001
2.1 Data Source Concepts 2-001
2.2 Data Analysis. 2-002
2.3 Accounting and Chargeback Interface. 2-005
2.4 Capacity Management Interfaces 2-005

Chapter 3. REPORTS. 3-001
3.1 Standard Analysis Reports. 3-001
3.2 MICF Inquiries 3-002
3.3 Management Objective Reports 3-022
3.4 How to Produce Reports 3-031

Chapter 4. EXCEPTIONS 4-001
4.1 Exception Process Overview 4-002
4.2 Setting Exception Values 4-003
4.3 Detailed Exception Descriptions. 4-004

Chapter 5. FILES. 5-001
5.1 Data Element Naming Conventions. 5-003
5.2 VSE/POWER Information Area Files 5-003

Chapter 6. DATA SOURCES 6-001
6.1 Data Collector Considerations. 6-001
6.2 Record Descriptions. 6-002

Chapter 7. PARAMETERS 7-001
7.1 Environmental Considerations 7-001
7.2 Complex Level Parameters 7-002
7.3 Unit Level Parameters. 7-008

Chapter 8. INSTALLATION 8-001

Chapter 9. PROCESSING 9-001
9.1 Processing Overview. 9-001
9.2 Daily Update Processing Flow 9-002

Chapter 10. MODIFICATION. 10-001
10.1 Standard User Exits 10-002
10.2 File and Data Element Customization 10-010

Appendix A. MESSAGES. A-001

Appendix B. DATA DICTIONARY B-001
B.1 The Common Data Elements B-002

G E N E R A L T A B L E O F C O N T E N T S PAGE

B.2 The VSE/POWER Information Area B-027

DETAIL TABLE OF CONTENTS

	PAGE
Chapter 1. OVERVIEW	1-001
1.1 Primary Areas of Application	1-002
1.2 Reporting and Inquiry Facilities	1-003
1.3 Product Considerations	1-004
Chapter 2. USAGE GUIDELINES	2-001
2.1 Data Source Concepts	2-001
2.2 Data Analysis	2-002
2.2.1 Job Group Service Analysis	2-002
2.2.2 Input/Output Activity Analysis	2-003
2.2.3 Job Suspend Processing	2-003
2.2.4 Analyzing Long-Running Jobs	2-004
2.3 Accounting and Chargeback Interface	2-005
2.4 Capacity Management Interfaces	2-005
Chapter 3. REPORTS	3-001
3.1 Standard Analysis Reports	3-001
3.2 MICF Inquiries	3-002
3.2.1 VSE/POWER Top 20 Resource Consumers	3-004
3.2.2 VSE/POWER Jobs Terminated with PFLUSH	3-006
3.2.3 VSE/POWER Jobs Terminated by Exit Routines	3-008
3.2.4 VSE/POWER Step Term Code Analysis	3-010
3.2.5 VSE/POWER Job Initiation	3-012
3.2.6 VSE/POWER Job Turnaround Objective	3-014
3.2.7 VSE/POWER Job Group Turnaround Received	3-016
3.2.8 VSE/POWER Daily Job/Class Activity	3-018
3.2.9 VSE/POWER Special Forms Use by Shift	3-018
3.2.10 VSE/POWER Partition Activity Audit	3-020
3.3 Management Objective Reports	3-022
3.3.1 VSE/POWER Job Initiation Objective	3-024
3.3.2 VSE/POWER Job Turnaround Objective	3-027
3.3.3 VSE/POWER Job Group Turnaround Received	3-029
3.4 How to Produce Reports	3-031
3.4.1 Batch Operations	3-032
3.4.2 CA MICS Information Center Facility II	3-032
3.4.3 Interactive Reporting (MSAS)	3-033
Chapter 4. EXCEPTIONS	4-001
4.1 Exception Process Overview	4-002
4.2 Setting Exception Values	4-003
4.3 Detailed Exception Descriptions	4-004
14001: Job Turnaround Time Exceeded Objective	4-005
14002: Job Elapsed Time Exceeded Limit	4-005
14003: Job Input Queue Time Exceeded Limit	4-006
14053: Program SIO/CPU-Second Ratio Exceeds Limit	4-007
14056: Unauthorized Program User	4-008
14057: Program Resource Consumption Exceeded Limit	4-009
14101: Degraded Printer Performance	4-010
14102: Lines Printed Exceeded Limit	4-011
14151: RJE Excessive Errors	4-012
14152: RJE Excessive Timeouts	4-012
14153: RJE Excessive Invalid Transmissions	4-013
Chapter 5. FILES	5-001
5.1 Data Element Naming Conventions	5-003
5.2 VSE/POWER Information Area Files	5-003
5.2.1 VSE/POWER Job Activity (PWRPJB) File	5-004
5.2.1.1 File Organization	5-004
5.2.1.2 Data Elements List	5-005
5.2.1.3 Usage Considerations	5-006
5.2.1.4 Retrieval Examples	5-007
5.2.2 VSE/POWER Job Suspend (PWR_PJ) File	5-008
5.2.2.1 File Organization	5-008
5.2.2.2 Data Elements List	5-009
5.2.2.3 Usage Considerations	5-010
5.2.2.4 Retrieval Examples	5-011
5.2.3 VSE/POWER Program Activity (PWRPPG) File	5-011
5.2.3.1 File Organization	5-012
5.2.3.2 Data Elements List	5-012
5.2.3.3 Usage Considerations	5-014
5.2.3.4 Retrieval Examples	5-015
5.2.4 VSE/POWER Output Activity (PWRPOA) File	5-015
5.2.4.1 File Organization	5-016
5.2.4.2 Data Elements List	5-016
5.2.4.3 Usage Considerations	5-018
5.2.4.4 Retrieval Examples	5-019
5.2.5 VSE/POWER Remote Activity (PWRPRA) File	5-020
5.2.5.1 File Organization	5-020
5.2.5.2 Data Elements List	5-021
5.2.5.3 Usage Considerations	5-022
5.2.5.4 Retrieval Examples	5-022
5.2.6 VSE/POWER Device Activity (PWRPDA) File	5-023
5.2.6.1 File Organization	5-023

5.2.6.2 Data Elements List 5-024
5.2.6.3 Usage Considerations 5-025
5.2.6.4 Retrieval Examples 5-025

Chapter 6. DATA SOURCES 6-001

6.1 Data Collector Considerations. 6-001

6.2 Record Descriptions. 6-002

Chapter 7. PARAMETERS 7-001

7.1 Environmental Considerations 7-001

7.2 Complex Level Parameters 7-002
7.2.1 Account Code Specification (PWRACCT) 7-002
7.2.2 Account Code Exit Routine (PWRACRT). 7-006
7.2.3 Generation (PWRGENIN). 7-008

7.3 Unit Level Parameters. 7-008
7.3.1 VSE/POWER Options (PWROPS) 7-009
7.3.1.1 OPTIONS Statement. 7-010
7.3.1.2 SUSPENDLIMIT Statement 7-011
7.3.1.3 WORK, MULTWORK, and NOMULT Statements. . . . 7-011
7.3.1.3.1 Change the Number of Work Files. 7-016
7.3.1.4 Internal Step Restart Statements 7-017
7.3.1.4.1 Enable Internal Step Restart 7-021
7.3.1.5 Incremental Update Statements. 7-022
7.3.1.5.1 Implement Incremental Update 7-032
7.3.1.6 Sample PWROPS. 7-033
7.3.2 VSE/POWER Job Groups (PWRGROUP). 7-035
7.3.3 VSE/POWER Job Group Routine (PWRGPRTE) 7-039
7.3.4 VSE/POWER Job Turnaround Time Routine
(PWRTNRTE) 7-040
7.3.5 VSE/POWER Configuration (PWRCONFG) 7-040
7.3.6 Input Source Definition (INPUTPWR) 7-043
7.3.7 Generating PWR System Code (PWRPGEN) 7-043
7.3.8 Database Space Modeling (DBMODEL). 7-044
7.3.8.1 Data Retention Specifications (FILE. 7-044
7.3.8.2 DBMODEL Input Statements 7-046

Chapter 8. INSTALLATION 8-001

Chapter 9. PROCESSING 9-001

9.1 Processing Overview. 9-001

9.2 Daily Update Processing Flow 9-002
9.2.1 Input Raw Data Phase 9-003
9.2.2 VSE/POWER Information Area Processing Phase. . 9-006

D E T A I L T A B L E O F C O N T E N T S PAGE

9.2.3 Database Timespan Update Phase 9-009
9.2.4 File Aging Phase 9-012
9.2.5 Operational Reports. 9-013

Chapter 10. MODIFICATION. 10-001

10.1 Standard User Exits 10-002
10.1.1 General Exits 10-003
Input Record Selection Exit (_USRSEL) 10-003
10.1.2 Input Exits 10-004
PWRPDA Element Derivation Exit (USRDPDA). 10-005
PWR_PR Element Derivation Exit (USRD_PR). 10-005
PWRPOA Element Derivation Exit (USRDPOA). 10-006
PWRPPG Element Derivation Exit (USRDPPG). 10-006
10.1.3 Parameter-Related Exits 10-007
VSE/POWER Account Code Derivation (PWRACRT) 10-007
VSE/POWER Job Group Derivation (PWRGPRTE) 10-008
VSE/POWER Job Turnaround Time Derivation (PWRTNRTE) . 10-008
10.1.4 Output Exits. 10-009
POWER File Selection Exit (USRSfff) 10-009

10.2 File and Data Element Customization 10-010

Appendix A. MESSAGES. A-001

Appendix B. DATA DICTIONARY B-001

B.1 The Common Data Elements B-002
DAY Day of Month. B-002
DAYNAME Name Of Day Of Week B-002
DEVADDR Device Address. B-002
DEVCLASS Device Class. B-003
DEVTYPE Device Address. B-004
DURATION Recording Interval Time B-004
ENDTS End Time Stamp. B-008
FORMNUM Form Number B-011
HOUR Hour Of Day B-012
JOB Job Identification. B-012
JOBCLASS Job Input Class B-013
JOBGROUP Job Group B-013
MONTH Month of Year B-014
ORGSYSID Originating System Identification B-014
PROGRAM Program Name. B-015
PWRACTX POWER Account Codes B-016
PWRJOBNO POWER Job Number. B-016
PWRJUSER POWER Job User Information. B-017
PWRNETAC POWER Network Account Number. B-017
RDRTS Reader Time Stamp B-017
STARTTS Start Time Stamp. B-018
SYSID System Identifier B-021

DETAIL TABLE OF CONTENTS	PAGE
SYSOUT SYSOUT Class.	B-022
VSEDDNAM VSE DDname.	B-022
VSEJOB VSE Job Name.	B-022
VSEJUSER VSE Job User Information.	B-023
VSEPRTID VSE Partition Identifier.	B-023
VSESYSID VSE System Identifier	B-023
VSEVER VSE Version	B-024
WEEK Week of Year.	B-024
YEAR Year of Century	B-024
ZONE Time Zone	B-025
B.2 The VSE/POWER Information Area	B-027
B.2.1 VSE/POWER Device Activity (PWRPDA) File.	B-027
PDASIOCT Device SIO Count.	B-027
B.2.2 VSE/POWER Job Activity (PWRPJB) File	B-028
PJBALLTM All Bound Time.	B-028
PJBBADCT Jobs with Bad SIO Counts.	B-028
PJBCOST Job Cost.	B-028
PJBCOUNT POWER Jobs Executed	B-029
PJBCPUNI Program Instructions.	B-029
PJBCPUTM Program Processor Time.	B-030
PJBDRMT Destination Remote.	B-030
PJBDSIO DASD SIOs Issued.	B-030
PJBEPRTY Job Execution Priority.	B-030
PJBEXCNN Execution Node Name	B-031
PJBEXCTM Job Execution Time.	B-031
PJBEXITC Jobs Cancelled by RDREXIT	B-031
PJBFLUSH Jobs Flushed.	B-032
PJBGRPRC Job Group Received.	B-032
PJBINCLS Job Input Class	B-032
PJBINCPU Input Processor System ID	B-033
PJBINDEV Input Device Name	B-033
PJBINQTM Input Queue Time.	B-033
PJBINVID Input Processor VSE System ID	B-034
PJBIOERR Jobs Terminated with I/O Error.	B-034
PJBJPRTY Job Input Priority.	B-034
PJBMASK Record Construction Audit Mask.	B-034
PJBMXCTM Maximum Job Program Processor Time.	B-035
PJBMXDAS Maximum DASD Devices Used	B-035
PJBMXMUS Maximum Step Memory Used.	B-035
PJBMXSIO Maximum Job SIOs Issued	B-036
PJBMXTAP Maximum Tape Devices Used	B-036
PJBORGID Origin User Identification.	B-036
PJBORGJN Origin Job Number	B-037
PJBORGNN Origin Node Name.	B-037
PJBOSIO Other SIOs Issued	B-037
PJBOVHNI Overhead Instructions	B-037
PJBOVHTM Overhead Time	B-038
PJBPCSEX Pct Jobs Exceeding Target	B-038
PJBPCSMS Pct Jobs Missing Target	B-039
PJBPCSMT Pct Jobs Meeting Target	B-039
PJBPTERM POWER Termination Code.	B-039
PJBRDRTM Reader Time	B-040
PJBRENTS Job Reader End Time Stamp	B-040
PJBSIO Total SIOs Issued	B-040
PJBSPPG Pages Spooled	B-041
PJBSPPR Lines Spooled	B-041
PJBSPPU Cards Spooled	B-041
PJBSRMT Source Remote	B-041
PJBSRVEX Jobs Exceeding Target	B-042
PJBSRVMS Jobs Missing Target	B-042
PJBSRVMT Jobs Meeting Target	B-043
PJBSSIO Spool SIOs Issued	B-043
PJBSTEPS Phases Executed	B-043
PJBSUSPN Job Suspend Flag.	B-044
PJBSYSIN Input Cards Read.	B-044
PJBTARTM Job Turnaround Target Time.	B-044
PJBTKOBL Tracks or Blocks for Input Storage.	B-045
PJBTOHRS Tape Occupancy Hours.	B-045
PJBTSIO Tape SIOs Issued.	B-045
PJBTURTM Job Turnaround Time	B-046
PJBVJOBS VSE Jobs Executed	B-046
PJBVKHRS Virtual Kcore Hours	B-047
PJBVTERM VSE Termination Code.	B-047
B.2.3 VSE/POWER Output Activity (PWRPOA) File.	B-048
POAACTNN Action Node Name.	B-048
POAACTTM Active Time	B-048
POAADJNN Adjacent Node Name.	B-048
POACNLR Control Logical Records	B-049
POACOST Output Cost	B-049
POACOUNT Activity Count.	B-049
POACPSPR Copies Printed.	B-049
POACPYMD 3800 Copy Modification Module Name.	B-050
POADRMT Destination Remote.	B-050
POADSTID Destination User Identification	B-050
POADSTNN Destination Node Name	B-051
POAENLR Extra Logical Writer Records.	B-051
POAEPGE Extra Pages Printed	B-051
POAFLASH 3800 Forms Overlay Name	B-052
POALSTSG Last Segment Indicator.	B-052
POANLR Logical Writer Records.	B-052
POANXDEL Records Deleted by NETEXIT/XMTEXIT.	B-053
POANXINS Records Inserted by NETEXIT/XMTEXIT	B-053
POAOPRTY Output Priority	B-053
POAORGID Origin User Identification.	B-053
POAORGJN Original Job Number	B-054
POAORGNN Origin Node Name.	B-054
POAPGE Pages Printed	B-054
POAPTERM POWER Termination Code.	B-055
POAQTYPE Queue Type.	B-055

DETAIL TABLE OF CONTENTS	PAGE
POASEGCT Segment Count	B-055
POASRMT Source Remote	B-056
POATKOBL Tracks or Blocks for Input Storage	B-056
POAXRDEL Records Deleted by the OUTEXIT Routine	B-057
POAXRINS Records Inserted by the OUTEXIT Routine	B-057
B.2.4 VSE/POWER Program Activity (PWRPPG) File	B-058
PPGALLTM All Bound Time	B-058
PPGBADCT SIO Count May Be Wrong Flag	B-058
PPGCOST Program Cost	B-058
PPGCOUNT Program Executions	B-059
PPGCPUNI Program Instructions	B-059
PPGCPUTM Program Processor Time	B-059
PPGDRMT Destination Remote	B-060
PPGDSIO DASD SIOs Issued	B-060
PPGEPRTY Job Execution Priority	B-060
PPGEXCNN Execution Node Name	B-061
PPGEXCTM Program Execution Time	B-061
PPGFLUSH Programs Flushed	B-061
PPGIOERR Programs Terminated with I/O Error	B-062
PPGMEMUS Kilobytes Memory Used	B-062
PPGMXCTM Maximum Program Processor Time	B-062
PPGMXDAS Maximum DASD Devices Used	B-062
PPGMXMUS Maximum Memory Used	B-063
PPGMXSIO Maximum SIOs Issued	B-063
PPGMXTAP Maximum Tape Devices Used	B-063
PPGORGID Origin User	B-064
PPGORGJN Origin Job Number	B-064
PPGORGNN Origin Node Name	B-064
PPGOSIO Other SIOs Issued	B-064
PPGOVHNI Overhead Instructions	B-065
PPGOVHTM Overhead Time	B-065
PPGPTERM POWER Termination Code	B-066
PPGRTYPE Step Record Type	B-066
PPGSIO Total SIOs Issued	B-066
PPGSPPG Pages Spooled	B-067
PPGSPPR Lines Spooled	B-067
PPGSPPU Cards Spooled	B-067
PPGSRMT Source Remote	B-067
PPGSSIO Spool SIOs Issued	B-068
PPGTOHRS Tape Occupancy Hours	B-068
PPGTSIO Tape SIOs Issued	B-068
PPGUFLDL User Field Length	B-068
PPGUFLDX User Field X	B-069
PPGVKHRS Virtual Kcore Hours	B-069
PPGVTERM VSE Termination Code	B-069
B.2.5 VSE/POWER Remote Activity (PWRPRA) File	B-071
PRABUFRV Buffers Received	B-071
PRABUFTR Buffers Transmitted	B-071
PRAERROR Errors Count	B-071
PRAINRSP Invalid Responses	B-072

DETAIL TABLE OF CONTENTS	PAGE
PRALPSWD Line Password	B-072
PRANPSWD Node Password	B-072
PRAPTERM POWER Termination Reason	B-073
PRARMTID Remote Identifier	B-073
PRARMTNM Remote Name	B-074
PRASESSN Sessions	B-074
PRATIMOT Timeouts	B-074
PRATRMER Terminal Errors	B-075
PRATYPE Remote Type	B-075
PRAUSER SIGNON User Information	B-075

F I G U R E T A B L E O F C O N T E N T S

NUMBER	TITLE	PAGE
1-1	The CA MICS IS Management Support System .	1-001
3-1	MICF Distributed Inquiries, VSE/POWER Analyzer.	3-002
3-2	VSE/POWER Top 20 Resource Consumers Report	3-005
3-4	VSE/POWER Jobs Terminated with PFLUSH. . .	3-007
3-5	VSE/POWER Jobs Terminated by Exit Routines	3-009
3-6	VSE/POWER Step Term Code Analysis.	3-011
3-7	VSE/POWER Job Initiation Objective	3-013
3-8	VSE/POWER Job Turnaround Objective	3-015
3-9	VSE/POWER Job Group Turnaround Received. .	3-017
3-10	VSE/POWER Special Forms Use by Shift . . .	3-019
3-11	VSE/POWER Partition Activity Audit	3-021
3-13	Management Objective Reports, Analyzer Option for VSE/POWER.	3-022
3-14	VSE/POWER Job Initiation Objective	3-025
3-15	VSE/POWER Job Turnaround Objective	3-027
3-16	VSE/POWER Job Group Turnaround Received. .	3-029
4-1	VSE/POWER Analysis Product Exceptions. . .	4-001
5-1	Analyzer Option for VSE/POWER Data Flow. .	5-002
5-2	VSE/POWER File Timespan Granularity Chart.	5-003
5-3	PWRPJB Time-Span Granularity Chart	5-004
5-4	PWR_PJ Time-Span Granularity Chart	5-008
5-5	PWRPPG Time-Span Granularity Chart	5-012
5-6	PWRPOA Time-Span Granularity Chart	5-016
5-7	PWRPRA Time-Span Granularity Chart	5-020
5-8	PWRPDA Time-Span Granularity Chart	5-023
6-1	VSE/POWER Record Descriptions.	6-002
7-1	VSE/POWER Account Code Specification Worksheet	7-004
7-2	VSE/POWER Account Code Exit Routine Worksheet	7-007
7-3	VSE/POWER Options Definition Worksheet . .	7-034
7-4	VSE/POWER Job Group Worksheet, Turnaround.	7-037
7-5	VSE/POWER Job Group Worksheet, VSE/POWER .	7-038
7-6	VSE/POWER Configuration Sample and Worksheet	7-041
7-7	Data Retention Specifications Worksheet. .	7-045
9-1	Input Raw Data Phase (Part 1 of 2)	9-004
9-2	Input Raw Data Phase (Part 2 of 2)	9-005
9-3	VSE/POWER Information Area Processing Phase (Part 1 of 2)	9-007
9-4	VSE/POWER Information Area Processing Phase (Part 2 of 2)	9-008
9-5	Database Timespan Update Phase (Part 1 of 2).	9-010
9-6	Database Timespan Update Phase (Part 2 of 2).	9-011
9-7	File Aging Phase	9-012

F I G U R E T A B L E O F C O N T E N T S

NUMBER	TITLE	PAGE
9-8	Systems-up Report.	9-014

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

CHAPTER 1

OVERVIEW

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

CHAPTER 1

OVERVIEW

Chapter 1. OVERVIEW

The CA MICS Analyzer Option for VSE/POWER enables you to incorporate VSE/POWER data into the CA MICS Database to provide the necessary information for the management of your data center. This information supports operations, accounting and chargeback, capacity planning and management, and service level objectives.

The Analyzer Option for VSE/POWER is one of the data integration applications available from the CA MICS family of products. Data integration applications are special-purpose products that help you analyze and manage technology areas, such as VSE/POWER.

The Analyzer Option for VSE/POWER data integration application:

- o Processes raw VSE/POWER account data and incorporates it into the CA MICS database
- o Edits it to minimize error
- o Interprets the data into more usable data elements
- o Links the information to the organization via cost centers
- o Prepares it to be analyzed and presented so that less experienced people can use it to make business decisions

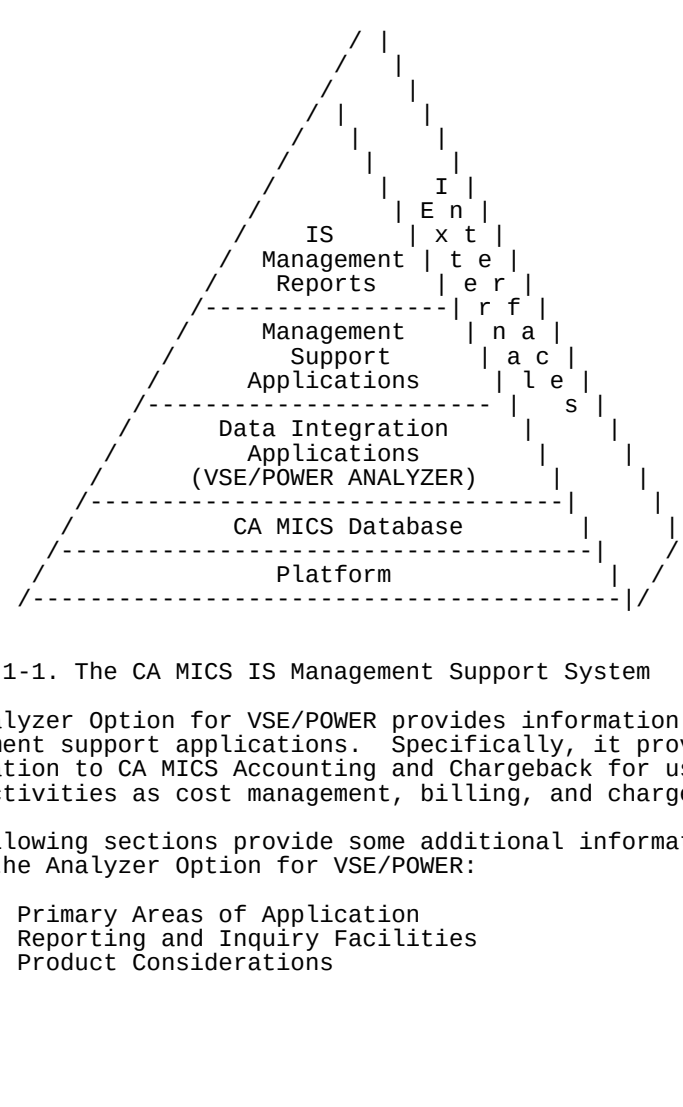

Figure 1-1. The CA MICS IS Management Support System

The Analyzer Option for VSE/POWER provides information for management support applications. Specifically, it provides information to CA MICS Accounting and Chargeback for use in such activities as cost management, billing, and chargeback.

The following sections provide some additional information about the Analyzer Option for VSE/POWER:

1 - Primary Areas of Application
2 - Reporting and Inquiry Facilities
3 - Product Considerations

1.1 - Primary Areas of Application

The CA MICS Analyzer Option for VSE/Power has valuable features that will help you do your job more efficiently and accurately. These features are described below:

- o Consolidates data from multiple data centers

  The CA MICS Analyzer Option for VSE/Power integrates data from multiple data centers into an information database and then provides a common access method for reporting on batch activity.

- o Provides graphic and tabular technical reports

  The reports provide information in a usable form for more effective and efficient analysis of specific system issues such as turnaround time and job tracking.

- o Supports resource and priority accounting

  The accounting interface for the CA MICS Analyzer Option for VSE/Power enables IS to produce one invoice for users that use any combination of systems, including VSE, z/OS, VM, and VAX.

- o Provides management indicators

  Managers can quickly identify VSE/POWER performance problems and trends that could lead to problems.

- o Supports job groups and turnaround-time definitions

  The ability to define job groups and turnaround times allows IS to establish expected service levels for job classes defined by a user-coded exit.

- o Provides a data dictionary

  Appendix B, Data Dictionary, describes the information found in the CA MICS Analyzer Option for VSE/Power information area files and how that information was derived.

- o Supports the operational exception process

  The operational exception process allows you to define exceptions, capture data, and report on exceptional conditions.

The CA MICS Analyzer Option for VSE/Power provides the following benefits to your organization:

IMPROVE DAY-TO-DAY IS MANAGEMENT AND PLANNING
- o Allows managers to track usage and plan corrective actions that ensure smooth operations.
- o Enables managers to anticipate problems before the system is affected.

REDUCE RISK TO THE ENTERPRISE
- o Enables managers to anticipate problems before the system is affected.
- o Allows IS to define exceptional conditions and to assess the impact of these conditions.

CONTROL AND/OR HELP REDUCE COSTS
- o Equitably charges users for the amount of resources used.

RAISE ENTERPRISE PRODUCTIVITY
- o Reduces the task of coordinating information from multiple sources, so you can report or analyze information at the enterprise level instead of at the system level.
- o Enables less knowledgeable VSE/POWER users to interpret the results of reports and to use information in the database.

1.2 - Reporting and Inquiry Facilities

The CA MICS Analyzer Option for VSE/POWER provides 10 CA MICS Information Center Facility (MICF) inquiries, 3 management objective reports, and 11 exceptions created by the CA MICS exception process. These are described in detail in Chapters 3 and 4 of this guide.

MICF INQUIRIES

MICF is a panel-oriented productivity tool that enables you to gain access to information in the CA MICS Database. When you define input, selection criteria, and report options, MICF dynamically builds an inquiry program to fulfill your request. The inquiry program is executed either in batch or interactively and the results of the request are displayed at the terminal, printed, or cataloged for later replay according to your specifications.

The Analyzer Option for VSE/POWER includes standard MICF inquiries that you will find immediately useful. You can either use these inquiries directly from the MICF shared inquiry catalog or copy inquiries to your private inquiry catalog and tailor them to your specific needs.

MANAGEMENT OBJECTIVE REPORTS

The management objective reports provide a concise, graphical or tabular representation of an installation's processing objectives and how well they have been met. You define the objectives for the reports through a series of parameters. The reports are produced during normal CA MICS processing on a daily, weekly, and monthly basis. These reports can be activated or deactivated for a timespan (DAILY, WEEKLY, or MONTHLY) by coding the applicable REPORT statement in prefix.MICS.PARMS(EXECDEF).

EXCEPTION ANALYSIS REPORTS

See Chapter 4, VSE/POWER Analyzer Exceptions, for further information about the exceptions defined by the Analyzer Option for VSE/POWER.

REPORT INFORMATION

The Analyzer Option for VSE/POWER reports provide you with information for managing your VSE system. These reports can be grouped as follows:

SERVICE REPORTS--these reports provide information about the service that users of your VSE system are receiving.

- Job Initiation Objective reports the number of jobs for which on-time initiation objectives are met, missed, and exceeded.
- Job Turnaround Objective reports the number of jobs for which the on-time turnaround objectives are met, missed, or exceeded.
- Job Group Turnaround Received reports the number of jobs within a job group for which the on-time turnaround objectives are met, missed, or exceeded.

WORKLOAD REPORTS--these reports provide information about the way that your VSE system is being used.

- Daily Job/Class Activity reports the number of jobs executed by class.
- Special Forms Use by Shift reports the special forms being used for printing and the percent of use each form type gets.
- Partition Activity Audit reports job activity by partition

EXCEPTION REPORT--this report provides information to alert you that service may be degrading because some limit or limits have been reached.

- Top 20 Resource Consumers reports the top 20 jobs in the system by CPU time consumed.

GENERAL REPORTS--these reports provide general reporting information that does not fall into the other categories.

- Jobs Terminated with PFLUSH provides information about the number of jobs cancelled due to operator command.
- Jobs Terminated by RDREXIT provides information about the number of jobs cancelled because standards that are enforced by the installation reader exit routine were not met.
- Step Term Code Analysis provides a summary of job completions by termination code.

1.3 - Product Considerations

Before installing the CA MICS Analyzer Option for VSE/Power, review the following items for applicability to your data center:

PRODUCT REQUIREMENTS

o Hardware Considerations

The DASD space requirements are as follows:

- Libraries: Approximately 16 MB of space is required in the CA MICS system libraries in addition to space already occupied.

- Database: Depends on installation specifications; DBMODEL facility is provided for database space planning.

o Supported Levels of VSE/Power

The CA MICS Analyzer Option for VSE/Power supports data from these levels of VSE/Power:

- Power 2.1.0	- Power 2.2.0	- Power 2.3.0
- Power 4.1	- Power 5.1	- Power 5.2
- Power 6.1	- Power 6.3	- Power 6.4
- Power 6.5	- Power 6.6	- Power 6.7
- Power 7.1	- Power 8.1	- Power 8.2
- Power 8.3	- Power 9.1	- Power 9.2
- Power 9.3	- Power 9.4	

o Transport of Data From VSE to CA MICS

The VSE/Power account data is written to a sequential file in your VSE system. This data must be made accessible to CA MICS before it can be added to the CA MICS database. This can be done in any of the following ways:

- Make the DASD on which the data resides physically accessible to z/OS, and directly allocate the account data file in the CA MICS DAILY job.

- Copy the data to tape, and use the tape as input to the CA MICS DAILY job.

- If your VSE DASD is physically accessible from a VM system, use the VM Data Transfer Program to move the data.

ORGANIZATIONAL CONSIDERATIONS

The CA MICS Analyzer Option for VSE/Power may present the first opportunity for your IS organization to work with personnel involved in departmental computing. To take advantage of this opportunity, we recommend that you investigate the following before installing the product:

o Reporting needs of the VSE/Power users
o Production standards (job statements, account codes, and so on)
o Perceived needs to expand the computing power of VSE

The CA MICS Analyzer Option for VSE/Power also provides input to the CA MICS Accounting and Chargeback Option. If you plan to activate this interface when you make the Analyzer Option for VSE/Power available to your users, consult the IMA administrator and the recipients of invoices produced by CA MICS Accounting and Chargeback to ensure that they are aware of the availability of the new information.

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

CHAPTER 2

USAGE GUIDELINES

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

CHAPTER 2

USAGE GUIDELINES

Chapter 2. USAGE GUIDELINES

The CA MICS Analyzer Option for VSE/POWER extends the power and flexibility of CA MICS to the VSE environment. Modeled after the Batch and Operations Analyzer product, VSE/POWER provides for consistent analysis of batch activity across all operating systems.

The following sections describe special issues associated with using the product and the interfaces provided to other CA MICS products:

1 - Data Source Concepts
2 - Data Analysis
3 - Accounting and Chargeback Interface
4 - Capacity Management Interface

2.1 - Data Source Concepts

The IBM VSE/POWER product provides spooling and job queue management for the DOS/VSE operating system. In order to do this, POWER assumes control over a number of VSE partitions. It schedules batch jobs into these partitions and manages their output.

POWER Job Accounting is an optional facility that tracks activity within POWER-controlled partitions, as well as spool management activity performed by POWER. Job Accounting is triggered to record statistics by the occurrence of specific events. For example, the Execution Account Record is created whenever a job step (program) completes executing within a POWER-controlled partition. For a complete list of record types and their associated events, please refer to Section 6.2 of this guide.

Data is collected to the POWER Accounting File. Normally there is one file for each copy of VSE/POWER. However, the shared spool facility allows multiple POWER systems to share a single set of Account, Queue, and Data Files. When this feature is used, POWER adds fields to the front of each accounting record so that you can identify the system which created it.

Periodically, the Accounting File must be dumped to a separate disk or tape file. CA MICS uses this form of the data to produce the six files in the VSE/POWER Information Area. When the Accounting File is dumped and transmitted to z/OS for input into CA MICS, ensure that it is defined as a VB (Variable Blocked) file with the LRECL parameter greater than or equal to the longest record in the file. See Chapter 6 of this guide for data collection considerations. CA MICS file descriptions and the VSE/POWER records used to build them are found in Chapter 5.

2.2 - Data Analysis

The CA MICS Analyzer Option for VSE/POWER includes facilities to help you better manage your batch environment. Where possible, they parallel those provided with the CA MICS Batch and Operations Analyzer. The sections below discuss these facilities in detail, paying particular attention to variations from this standard.

1 - Job Group Service Analysis
2 - Input/Output Activity Analysis
3 - Job Suspend Processing
4 - Analyzing Long-Running Jobs

2.2.1 - Job Group Service Analysis

The JOBGROUP variable is provided on the VSE/POWER Job Activity (PWRPJB) and Job Suspend (PWR_PJ) Files as a means of clustering jobs with similar resource or service requirements. User-defined parameters determine the type and quality of service that each group should receive. Since JOBGROUP is a summarization variable for these files at all timespans, it is always possible to perform meaningful analysis of service quality. The remainder of this section deals with differences in job group service analysis between the CA MICS Analyzer Option for VSE/POWER and the Batch and Operations Analyzer products.

The durations used to compute job turnaround time, and the event timestamps from which they are derived, are the result of the merging of records that represent different portions of a job's life. Limitations of VSE/POWER accounting data prevents the CA MICS product from tracking the same set of events provided in the Batch and Operation Analyzer files. Only the reader start, reader end, job start, and job end timestamps are available. As a result, when computing turnaround time, only reader time, input queue time, and job execution time are provided. No measures of the job output spool time are available. For more information on the merge processing, see Section 2.2.3 of this guide.

The accuracy of the event timestamps is a critical issue, particularly in a POWER shared spool environment. Since jobs can be read and executed on different machines, a synchronization error of just a few minutes in the system clocks can play havoc with service measurement. For example, ICCF is being used by programmers to submit compiler jobs to system VSE1. The jobs very quickly begin executing on system VSE2. These jobs constitute JOBGROUP 1 which has a turnaround requirement of five minutes (turnaround=input queue time). If the clock on VSE1 is ten minutes slow, then 100 percent of the jobs in JOBGROUP 1 will miss their service objective. If the clock is ten minutes fast, then 100 percent of the jobs will meet or exceed their service requirement; they will all show a turnaround time of zero minutes, since turnaround cannot be negative.

Another issue affecting timestamp accuracy occurs only for long-running jobs. Version 2.1.0 of VSE/POWER does not provide a means of accurately computing the start timestamp of a step that spans midnight. This can result in over stated values of the input reader time or job execution time. For more information, see Section 2.2.4 of this guide.

2.2.2 - Input/Output Activity Analysis

The execution account record provides the sole measure of input/output activity for VSE/POWER. A table of start I/O counts occupies the last portion of the record and lists SIO counts by address for each device allocated to the job. The process of manipulating this data to form the elements in the Job, Program, and Device Activity Files requires a means to determine the device class and type associated with each address.

The PWRCONFG member of the unit PARMS library maps this relationship. By system identifier, it lists device address (or range) and the associated device type (i.e., 3380) and device class (i.e., DASD). This table is processed by the PWRPGEN job to produce a SAS format used in the DAY035 step of the DAILY database update job.

As the SIO table is read from the execution account record, the counts are accumulated to variables based on device class. These device class counters are available in the Job and Program Activity Files:

```
fffDSIO - DASD SIOs Issued
fffOSIO - Other SIOs Issued
fffSIO  - Total SIOs Issued
fffSSIO - Spool SIOs Issued
fffTSIO - Tape SIOs Issued
```

where fff is PJB or PPG.

The accuracy of these counts depends on the information provided in the PWRCONFG member. SIO counts are also maintained in the Device Activity File by address, device class, and type.

The values of device type and class provided in PWRCONFG are compared to list of valid values shown in Section 7.3.5. Any unrecognized values are flagged with a warning message. A valid but unrecognized device type will have little impact except possibly on locally developed reporting code. However, an unrecognized value of device class may affect the accuracy of the SIO counters.

The only device classes accumulated to fffDSIO are DASD and DASD/FBA (Fixed Block Architecture). Similarly, TAPE is accumulated to ffffTSIO, and SPOOL to fffSSIO. Counts for other device classes are assigned to fffOSIO. Also added to fffOSIO are counts for devices not found in the configuration table. They are assigned device type and class values of *UNKNOWN.

2.2.3 - Job Suspend Processing

An observation in the DETAIL level of the VSE/POWER Job Activity File (PWRPJB) contains the accumulated statistics of all steps making up a single job. The observation is constructed by merging data from the VSE/POWER Execution and Reader Account records. Jobs which are not completed at the time the data was prepared are placed in the Job Suspend File (PWR_PJ) until the balance of the job is found in subsequent database updates or a specified amount of time has passed.

Please note that the list and punch account records are not added to the Job Activity File. VSE/POWER does not provide a record indicating the completion of all output activity for a job.

Also missing from the VSE/POWER data is a record indicating job completion. CA MICS therefore must suspend the last executed job in each partition. When activity is next detected in that partition, the job is released from suspend. Jobs built only from reader record data will be suspended if reader processing terminated normally.

Users of the CA MICS Accounting and Chargeback Product should note that jobs held in suspend will not be charged until they are released. However, the steps for these jobs will be immediately placed into the VSE/POWER Program Activity File (PWRPPG) and charged normally.

Two variables are provided in the Job Activity and Job Suspend Files to allow you to determine the status of each job in the suspend process:

```
PJBMASK  - Record Construction Audit Mask
PJBSUSPN - Job Suspend Flag
```

The mask indicates whether reader data, step data, or both have been used in constructing the observation. The variable is character, two bytes long. The first byte contains an R if reader data was used, otherwise a period (.). Likewise, the second byte contains an S for step data or a period (.).

PJBSUSPN is numeric and contains the age of the suspended job. When first suspended, the value is set to one. Each DAILY update processed without further activity in that partition causes the value to increase by one. If the value becomes greater than the suspend limit specified in the PWROPS unit PARMS member, the job is released to the Job Activity File. When released, the value of PJBSUSPN is set to minus one to indicate that the job had been previously suspended.

If additional activity is detected for a suspended job, but the job is still the last to process in the partition, it will be resuspended with an age of one. As a result, long-running multistep jobs may remain suspended for longer than the suspend limit.

2.2.4 - Analyzing Long-Running Jobs

Long-running jobs present an analysis challenge when the data source does not provide a means of checkpointing resource statistics. The situation exists for VSE/POWER Accounting data, since the finest data resolution available is the step end.

The lack of an interval measurement facility means that all of the resource statistics for a long-running job may be lost due to a system failure. This can seriously impact sites that perform chargeback. The only solution is to find some other means for charging these jobs. For example, CICS charges could be derived from internal measurement sources such as CMF.

The VSE/POWER Device Activity File (PWRPDA) provides a breakdown of device activity by hour. The first step in producing this file is to apportion the activity of a single job on a device across each hour that it spanned. This apportionment is based exclusively on the elapsed execution time. Clearly, a job such as CICS will have variations in load that will not be reflected in such an apportionment scheme. There is no easy or certain solution for this problem and it impacts any attempt to apportion the resources of long-running jobs.

Perhaps the most serious problem results from the lack of complete timestamp information in the VSE/POWER Account data records. The following fields are provided in the record to track the start and end of the measured event:

ACDATE - Date in the format defined for the system
ACSTRT - Start time
ACSTOP - Stop time

The ACDATE is the stop date. This means you can accurately build the ENDTS variable. If the job execution time is available, the STARTTS can be derived from the ENDTS.

However, this is not the case for VSE/POWER Version 2.1.0. For this data the start date must be estimated based on the relationship of the start time and end time. If start time is later than end time, then the start date must be at least one day earlier than the end date. This is a poor guess and can only detect some running jobs, but it is the only technique available.

2.3 - Accounting and Chargeback Interface

The CA MICS Analyzer Option for VSE/POWER provides data elements that the CA MICS Accounting and Chargeback product can use to bill data center resource consumers. The elements that can be charged for are:

CHARGING ELEMENT	CHARGING ELEMENT DESCRIPTION
PJBCPUNI	POWER JOB CPU Instructions Executed
PJBOVHNI	POWER JOB CPU Overhead Instructions
PJBCPUTM	POWER JOB CPU Processor Time
PJBOVHTM	POWER JOB CPU Overhead Time
PJBTOHRS	POWER JOB Tape Occupancy Time
PJBVKHRS	POWER JOB Virtual KCore Hours
PJBKDSIO	POWER JOB DASD SIOs Issued
PJBKOSIO	POWER JOB OTHER SIOs Issued
PJBKTSIO	POWER JOB TAPE SIOs Issued
PJBKSSIO	POWER JOB SPOOL SIOs Issued
PJBKSIO	POWER JOB TOTAL SIOs Issued
PJBKSPPR	POWER JOB Lines Spooled
PJBSPPU	POWER JOB Cards Spooled
PJBSPPG	POWER JOB Pages Spooled
PJBSYSIN	POWER JOB INPUT Cards Read
PPGCPUNI	POWER STEP CPU Instructions Executed
PPGOVHNI	POWER STEP CPU Overhead Instructions
PPGCPUTM	POWER STEP CPU Processor Time
PPGOVHTM	POWER STEP CPU Overhead Time
PPGTOHRS	POWER STEP Tape Occupancy Time
PPGVKHRS	POWER STEP Virtual KCore Hours
PPGKDSIO	POWER STEP DASD SIOs Issued
PPGKOSIO	POWER STEP OTHER SIOs Issued
PPGKTSIO	POWER STEP TAPE SIOs Issued
PPGKSSIO	POWER STEP SPOOL SIOs Issued
PPGKSIO	POWER STEP TOTAL SIOs Issued
PPGKSPPR	POWER STEP Lines Spooled
PPGSPPU	POWER STEP Cards Spooled
PPGSPPG	POWER STEP Pages Spooled
POACNLR	POWER SPOOL Control Logical Records
POAEPGE	POWER SPOOL Extra Pages Printed
POAPGE	POWER SPOOL Pages Printed
POATKOBL	POWER SPOOL Tracks or Blocks Storage
POAENLR	POWER SPOOL Extra Logical Writer Record
POANLR	POWER SPOOL Logical Writer Records

When the CA MICS Accounting and Chargeback product produces invoices for data center users, those that have used VSE resources will be charged for their resources according to an algorithm that uses the data available from these elements. Typically, installations charge for time used (machine and operator), output (lines printed, lines punched, etc.), and machine time used to produce results to output (SIOs, etc.).

2.4 - Capacity Management Interfaces

The CA MICS Analyzer Option for VSE/POWER does not have a formal interface to the CA MICS Capacity Planning or Performance Management components.

Elements that users of these products might find useful for ad hoc analyses include:

PDASIOCT - Device SIO Count
PJBCPUTM - Program Processor Time
PJBEXCTM - Job Execution Time
PJBGRPRC - Job Group Received
PJBINCLS - Job Input Class
PJBMXMUS - Maximum Step Memory Used
PJBMXTAP - Maximum Tape Devices Used
PJBOSIO - Other SIOs Issued
PJBOVHTM - Overhead Time
PJBPCSEX - Pct Jobs Exceeding Target
PJBPCSMS - Pct Jobs Missing Target
PJBPCSMT - Pct Jobs Meeting Target
PJBSSIO - Spool SIOs Issued
PJBTARTM - Job Turnaround Target Time
PJBTSIO - Tape SIOs Issued
PJBTURTM - Job Turnaround Time
POAENLR - Extra Logical Writer Records
POANLR - Logical Writer Records
PPGALLTM - All Bound Time
PPGCPUTM - Program Processor Time
PPGDSIO - DASD SIOs Issued
PPGEXCTM - Program Execution Time
PPGMEMUS - Kilobytes Memory Used
PPGOSIO - Other SIOs Issued
PPGOVHTM - Overhead Time
PPGSIO - Total SIOs Issued
PPGSPPG - Pages Spooled
PPGSSIO - Spool SIOs Issued
PPGTSIO - Tape SIOs Issued
PRABUFRV - Buffers Received
PRABUFTR - Buffers Transmitted
PRAERROR - Errors Count
PRAINRSP - Invalid Responses
PRASESSN - Sessions
PRATIMOT - Timeouts
PRATRMER - Terminal Errors

The following elements are available only if your site has activated them:

PJBTOHRS - Tape Occupancy Hours (OFF)
PJBVKHRS - Virtual Kcore Hours (OFF)
PPGTOHRS - Tape Occupancy Hours (OFF)
PPGVKHRS - Virtual Kcore Hours (OFF)

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

CHAPTER 3

REPORTS

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

CHAPTER 3

REPORTS

Chapter 3. REPORTS

The CA MICS Analyzer Option for VSE/POWER produces reports using the batch and interactive reporting facilities of CA MICS. The types of reports produced are categorized as standard analysis, MICF inquiry, management objective, and exception reports.

CA MICS standard analysis reports provide a concise representation of an installation's workload, resource use, and response to the workload when data is not in a form suitable for a management objective or exception report.

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

Management objective reports provide a concise, graphic or tabular representation of your installation's processing objectives and how well they have been met.

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

While almost all of the reports can be used as distributed, most should be modified to meet your exact requirements. Section 3.4. of the CA MICS Analyzer Option for VSE/POWER Guide contains a description of macros available to customize the management objective reports. If you require more extensive modification, review Chapter 10, Modification.

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

1 - Standard Analysis Reports
2 - MICF Inquiries
3 - Management Objective Reports
4 - How to Produce Reports

3.1 - Standard Analysis Reports

Instead of providing standard analysis reports, the CA MICS Analyzer Option for VSE/POWER provides MICF inquiries in the catalog group WORKLOAD. See Section 3.2 for information on MICF inquiries.

3.2 - MICF Inquiries

The MICF inquiries provided with the CA MICS Analyzer Option for VSE/Power are listed in Figure 3-1.

VSE/POWER ANALYSIS PRODUCT

MICF DISTRIBUTED INQUIRIES

REPORT CLASS	REPORT NAME	REPORT IDENTIFIER			DATABASE FILE
		Color Graphics	List	Printer Graphics	
Except	VSE/POWER Top 20 Resource Consumers		PWRLD4		PWRPJB
General	VSE/POWER Jobs Terminated with PFLUSH		PWRLD1		PWRPJB, PWR_PJ
	VSE/POWER Jobs Terminated by RDREXIT		PWRLD2		PWRPJB, PWR_PJ
	VSE/POWER Step Term Code Analysis		PWRLD3		PWRPPG
Service	VSE/POWER Job Initiation Objective			PWRPD1	PWRPJB
	VSE/POWER Job Turnaround Objective			PWRPD2	PWRPJB
	VSE/POWER Job Group Turnaround Received			PWRPD4	PWRPJB
Workload	VSE/POWER Daily Job/Class Activity	PWRCD1			PWRPJB, PWR_PJ
	VSE/POWER Special Forms Use by Shift		PWRLD5		PWRPOA
	VSE/POWER Partition Activity Audit			PWRPD3	PWRPJB, PWR_PJ
Management Objectives	VSE/POWER Job Initiation Objective	PWRMD0, PWRMW0, PWRMM0			PWRPJB
	VSE/POWER Job Turnaround Objective				
	VSE/POWER Job Group Turnaround Objective				
	see Section 3.3 of this guide for details about these reports				

Figure 3-1. MICF Distributed Inquiries, VSE/POWER Analyzer

```
MICF inquiry names follow the form cccptn, where:

 ccc is the three-character component identifier.

   p is the type of output produced.  Values are:

     A - Accounting and chargeback related
         processing (added specifically for TNG
         chargeback data extract inquiry)
     C - Color graphics (SAS/GRAPH)
     E - Export (CSV)
     G - Graphics with execution-time
         color/printer option
     L - Printed report (listing)
     M - MICS MBO report
     O - SAS ODS graphics
     P - Printer graphics (PROC CHART/PLOT)
     R - Printed ranking report (special case)
     T - TNG CSV Extracts

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

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

The inquiry named PWRLD4 is interpreted as:

                   ---|||= the fourth list inquiry
                    | ||   being produced for the PWR
                    | ||   product at the DAYS timespan
                    | ||= may be run daily
                    | |= a list inquiry
                    |= a VSE/POWER product inquiry

The reports shown in Figure 3-1 are described in the
following sections:

    1 -  VSE/POWER Top 20 Resource Consumers
    2 -  VSE/POWER Jobs Terminated with PFLUSH
    3 -  VSE/POWER Jobs Terminated by RDREXIT
    4 -  VSE/POWER Step Term Code Analysis
    5 -  VSE/POWER Job Initiation Objective
    6 -  VSE/POWER Job Turnaround Objective
    7 -  VSE/POWER Job Group Turnaround Received
    8 -  VSE/POWER Daily Job/Class Activity
    9 -  VSE/POWER Special Forms Use by Shift
   10 -  VSE/POWER Partition Activity Audit
```

3.2.1 - VSE/POWER Top 20 Resource Consumers

The VSE/POWER Top 20 Resource Consumers inquiry ranks the top 20 POWER jobs with the highest resource utilization on each VSE system by elapsed execution time, CPU time, and start I/O counts.

INTENDED USE:

The report can be used to identify POWER jobs that are utilizing the greatest amount of computer resources inefficiently and/or inappropriately. Operations managers can compare any previous days Top 20 Resource Consumers reports to see if the same jobs are listed on a daily basis. This can be an indication that some performance improvement may be needed to the jobs identified. Jobs listed on this report can also be the reason for bottlenecks, which prevent other jobs from getting the resources required to execute.

REPORT FORMAT:

This inquiry produces three tabular reports for each VSE system with rankings as follows: job duration (sum of the elapsed step execution times), CPU time (the amount of processor time used by the job), and SIO count (the number of start I/O requests issued by the job). Each report is grouped by system identifier and grouped by the columns described below:

Execution Time	The sum of the elapsed execution times for each step of the job
CPU Time	The amount of processor time consumed by the job
Total SIOs	The total number of start I/O requests issued by the job

Additional columns listed are:

Job Name	The job name identified on the job card
POWER Job	The job number assigned by IBMs VSE/POWER product
Start Time	The date and the time the job started executing
POWER Term Code	The job termination code. The values are based on the codes established by IBMs VSE/POWER product.

A sample of this report is shown in Figure 3-2.

INQUIRY ID:

PWRLD4

DATA SOURCE:

DETAIL.PWRPJB

DATA ELEMENTS USED:

```
JOB      - Job Identification
PWRJOBNO - POWER Job Number
STARTTS  - Start Time Stamp
PJBPTERM - POWER Termination Code
PJBCPUTM - Program Processor Time
PJBEXCTM - Job Execution Time
PJBSIO   - Total SIOs Issued
```

VSE/POWER Top 20 Resource Consumers - Job Duration
ABC Company

INQUIRY: PWRLD4 RUN DATE: DDMONYY

System Identifier=VSE1

Execution Time	Job Name	POWER Job Number	Start Time	POWER Term Code	CPU Time	Total SIOs
1:20:33	SK1016B4	7481	DDMONYY:23:43:22	10	0:19:52.48	42024
0:42:42	SK101662	7658	DDMONYY:01:38:13	10	0:00:49.02	17771
0:40:07	SK1016D3	7147	DDMONYY:20:40:18	10	0:00:00.90	533

System Identifier=VSE2

Execution Time	Job Name	POWER Job Number	Start Time	POWER Term Code	CPU Time	Total SIOs
20:14:23	SK101697	35	DDMONYY:06:21:21	10	0:26:09.35	271226
5:29:28	POWER/VS	0	DDMONYY:00:22:26	10	1:47:39.88	1760414
5:19:21	SK101650	1956	DDMONYY:00:32:12	10	0:00:04.45	907

Figure 3-2. VSE/POWER Top 20 Resource Consumers Report

3.2.2 - VSE/POWER Jobs Terminated with PFLUSH

The VSE/POWER Jobs Terminated with PFLUSH inquiry produces a tabular report of jobs that have been cancelled with the PFLUSH console command on each VSE system.

INTENDED USE:

The report can be used to audit operator activity and to see how many system resources were expended on jobs that were subsequently cancelled using the PFLUSH command. Jobs that are executing in a loop are usually cancelled if executing too long. Jobs cancelled due to a loop can be identified by noting the time the job started and observing a very high CPU time and system I/O request count.

REPORT FORMAT:

This inquiry produces a tabular report for each VSE system. The report is grouped by system identifier with the following columns:

JOB	The job name identified on the job card
PWRJOBNO	The job number assigned by IBM's VSE/POWER product
STARTTS	The date and start time when the job started executing
PJBCPUTM	The amount of processor time consumed by the job
PJBSIO	The total number of I/O requests issued by the job

A sample of this report is shown in Figure 3-4.

INQUIRY ID:

PWRLD1

DATA SOURCE:

DETAIL.PWRPJB

DATA ELEMENTS USED:

JOB - Job Identification
PWRJOBNO - POWER Job Number
STARTTS - Start Time Stamp
PJBCPUTM - Program Processor Time
PJBSIO - Total SIOs Issued

VSE/POWER Jobs Terminated with PFLUSH Command
ABC Company

INQUIRY: PWRLD1 RUN DATE: DDMONYY

System Identifier=VSE2

JOB	PWRJOBNO	STARTTS	PJBCPUTM	PJBSIO
SK2751H1	6698	DDMONYY:10:30:53.00	0:00:05.82	1675
SK102068	6742	DDMONYY:11:50:12.00	0:00:12.21	22819
SKB4R268	6850	DDMONYY:14:10:20.00	.	.

System Identifier=VSE3

JOB	PWRJOBNO	STARTTS	PJBCPUTM	PJBSIO
SK0419H1	7124	DDMONYY:20:04:53.00	0:00:00.91	673
SK2121H1	7164	DDMONYY:21:41:01.00	0:00:10.71	3354
SK2121H1	7193	DDMONYY:22:23:07.00	0:00:11.33	3841

Figure 3-4. VSE/POWER Jobs Terminated with PFLUSH

The Jobs Terminated by Exit Routines inquiry produces a list, by system identifier, of jobs that were not processed because data center JCL coding standards were not met.

INTENDED USE:

The report can be used to investigate jobs that are failing frequently because they are not following JCL coding standards. These jobs usually represent wasted resources because they will need to be rerun. Operations manager can notify users submitting the jobs that the JCL in their jobs must be corrected to follow standards to prevent future JCL problems.

REPORT FORMAT:

This inquiry produces a tabular report for each VSE system. The report is grouped by system identifier with the following columns:

JOB	The job name identified on the job card
PWRJOBNO	The job number assigned by IBM's VSE/POWER product
RDRTS:	The date and the time when the job was submitted.
PWRJUSER	User information obtained from the user-assigned User Info programmer name field in the job card.

A sample report is shown in Figure 3-5.

INQUIRY ID:

PWRLD2

DATA SOURCE:

DETAIL.PWRPJB
DETAIL.PWR_PJ

DATA ELEMENTS USED:

JOB - Job Identification
PWRJOBNO - POWER Job Number
RDRTS - Reader Time Stamp

```
+-----------------------------------------------------------------------------------------------------------------------------------+
|                                                Daily POWER Jobs Terminated by RDREXIT                                             |
|                                                            ABC Company                                                            |
|                                                                                                                                   |
|INQUIRY:  PWRLD2                                                                                                RUN DATE:  DDMONYY|
|                                                                                                                                   |
|------------------------------------------------------ System Identifier=VSE1 -------------------------------------------------------|
|                                                                                                                                   |
|                                JOB             PWRJOBNO                   RDRTS    PWRJUSER                                       |
|                                                                                                                                   |
|                                SK101678            3294    DDMONYY:03:11:55.00    16078KVTSTUPAL                                    |
|                                                                                                                                   |
|                                                                                                                                   |
|------------------------------------------------------ System Identifier=VSE2 -------------------------------------------------------|
|                                                                                                                                   |
|                                JOB             PWRJOBNO                   RDRTS    PWRJUSER                                       |
|                                                                                                                                   |
|                                SK7204H2             675    DDMONYY:00:21:57.00    01SALZ7204UTRL                                    |
|                                SK101650               4    DDMONYY:03:32:53.00    16SALKICSSTATL                                    |
|                                                                                                                                   |
|                                                                                                                                   |
|------------------------------------------------------ System Identifier=VSE3 -------------------------------------------------------|
|                                                                                                                                   |
|                                JOB             PWRJOBNO                   RDRTS    PWRJUSER                                       |
|                                                                                                                                   |
|                                SK7204H2             257    DDMONYY:11:10:35.00    01SALZ720414KL                                    |
|                                AUTONAME             391    DDMONYY:14:35:50.00                                                      |
|                                AUTONAME             418    DDMONYY:15:52:08.00                                                      |
|                                SK7204H2             602    DDMONYY:21:21:03.00    01SALZ7204UTRL                                    |
|                                SK2121H1             716    DDMONYY:02:08:37.00    01SALG212103K                                     |
|                                SK2121H1             717    DDMONYY:02:08:37.00    01SALG212103K                                     |
|                                                                                                                                   |
|                                       Figure 3-5.  VSE/POWER Jobs Terminated by Exit Routines                                     |
|                                                                                                                                   |
|                                                                                                                                   |
|                                                                                                                                   
```

3.2.4 - VSE/POWER Step Term Code Analysis

The VSE/POWER Step Term Code Analysis inquiry is a tabular report of the frequency of VSE termination codes by system identifier.

INTENDED USE:

The report can be used to analyze the frequency of VSE termination codes for all jobs that executed on a VSE system. For example if the percentage of VSE termination code 10 is 94% for all termination codes represented, this indicates a high percentage of the jobs ran to normal completion. However, if the percentage of VSE termination code 24 (operator cancel) is above a pre-determined threshold for cancellations, the reason for the cancellations should be investigated.

REPORT FORMAT:

This inquiry produces a tabular report by system identifier (SYSID) and date:

PPGVTERM	The VSE step termination code
FREQUENCY	The number of occurrences of this termination code for the SYSID and date
PERCENT	The percent of total step terminations that this termination code represents
CUMULATIVE FREQUENCY	The sum of the frequency counts this termination code represents plus the frequency counts of other reported termination codes
CUMULATIVE PERCENT	The sum of the percent count this termination code represents plus the percent counts of other reported termination codes

A sample of this report is shown in Figure 3-6.

INQUIRY ID:

PWRLD3

DATA SOURCE:

DETAIL.PWRPPG

DATA ELEMENTS USED:

PPGVTERM - VSE Termination Code

VSE/POWER Step Term Code Analysis
ABC Company

INQUIRY: PWRLD3 RUN DATE: DDMONYY

System Identifier=VSE1 DATE=DDMONYY

VSE Termination Code

PPGVTERM	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
FF	5	1.1	5	1.1
00	3	0.7	8	1.8
10	414	94.7	422	96.6
23	11	2.5	433	99.1
24	4	0.9	437	100.0

System Identifier=VSE2 DATE=DDMONYY

VSE Termination Code

PPGVTERM	FREQUENCY	PERCENT	CUMULATIVE FREQUENCY	CUMULATIVE PERCENT
FF	18	4.8	18	4.8
00	2	0.5	20	5.4
10	318	85.5	338	90.9
23	27	7.3	365	98.1
24	6	1.6	371	99.7
25	1	0.3	372	100.0

Figure 3-6. VSE/POWER Step Term Code Analysis

3.2.5 - VSE/POWER Job Initiation

The VSE/POWER Job Initiation Report quantifies the total POWER job activity on an hourly basis for the day and VSE system. The total activity is broken down by whether jobs met, exceeded, or missed their service objectives.

INTENDED USE:

This report can be used for evaluating the throughput and turnaround service for all POWER job activity and its relationship to the system load.

REPORT FORMAT:

This inquiry produces a chart with a vertical and horizontal axis. The horizontal axis represents the hour of the day and the vertical axis charts the number of batch jobs initiated that received the service as indicated: E for exceeded, H for hit, and M for missed. The management objective is shown by the dashed horizontal reference line printed across the chart. A chart is generated for each VSE system.

FREQUENCY	The number of jobs started during the hour
EXCEED	The proportion of jobs exceeding their service objectives
HIT	The proportion of jobs meeting their service objectives
MISS	The proportion of jobs missing their service objectives
HOUR	The hour of the day
REPTDATE	The date being reported on

A sample of this report is shown in Figure 3-7.

INQUIRY ID:

PWRPD1

DATA SOURCE:

DETAIL.PWRPJB

DATA ELEMENTS USED:

HOUR - Hour of Day
JOBGROUP - Job Group
PJBSRVMS - Jobs Missing Target
PJBSRVEX - Jobs Exceeding Target
PJBSRVMT - Jobs Meeting Target

```
                                        Daily POWER Job Initiation
                                                ABC Company

INQUIRY:  PWRPD1                                                                                                  RUN DATE:  DDMONYY

                                            System Identifier=VSE3

                                             FREQUENCY BAR CHART
      FREQUENCY

           70 +
              |
              |                                          MM
           60 +                                          MM
              |                                          MM  MM
              |                                          HH  MM
           50 +                                          HH  MM
              |                                       MM  HH  MM
              |                                       MM  EE  HH
           40 +                                       HH  EE  EE  MM
              |                                       HH  EE  EE  MM
              |                                       HH  EE  EE  MM
           30 +                                       EE  EE  EE  MM
              |                                    HH  EE  EE  EE  MM
              |                                    HH  EE  EE  EE  HH
           20 +                                    EE  EE  EE  EE  HH
              |                                    EE  EE  EE  EE  EE
              |                                    EE  EE  EE  EE  EE  MM                  HH
           10 +                                    EE  EE  EE  EE  EE  MM              HH  HH  HH
              |  EE                                 EE  EE  EE  EE  EE  HH  MM  MM      HH  HH  EE  MM  EE
              |  EE          EE      EE          EE  EE  EE  EE  EE  EE  EE  HH  HH  EE  HH  HH  EE  HH  EE  MM
              ----------------------------------------------------------------------------------------------------------------
                  0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23   HOUR

                 |---------------------------------------- DDMONYY  ----------------------------------------|  REPTDATE

                                      SYMBOL SERVICE     SYMBOL SERVICE     SYMBOL SERVICE

                                        E    EXCEED        H    HIT           M    MISS
```

Figure 3-7. VSE/POWER Job Initiation Objective

3.2.6 - VSE/POWER Job Turnaround Objective

The VSE/POWER Job Turnaround Objective Report shows the turnaround service received for all VSE/POWER jobs that started on an hourly basis for the identified day and computing system.

INTENDED USE

This report can be used for evaluating the turnaround service for all POWER job activity and its relationship to the system load. This report is useful to operation managers, capacity planners, and performance analysts; it helps them evaluate the quality of batch service provided. While similar to the Job Initiation Report, it provides a clearer assessment of quality of service.

REPORT FORMAT

This inquiry produces a chart with a vertical and horizontal axis. The horizontal axis represents the hours of the day, and the vertical axis charts the percentage of batch jobs initiated in the hour that received the requested turnaround time. The management objective for jobs that received the requested turnaround is indicated by the dashed horizontal reference line printed across the chart.

PERCENT	The percent of jobs which began executing during the hour which met or exceeded their service objectives
HOUR	The hour of the day that observations are recorded for
REPTDATE	The date being reported on

A sample report is presented in Figure 3-8.

INQUIRY ID:

PWRPD2

DATA SOURCE:

DETAIL.PWRPJB

DATA ELEMENTS USED:

HOUR - Hour of Day
JOBGROUP - Job Group

Daily POWER Job Turnaround Objective by 90 Pct of All Jobs
ABC Company

INQUIRY: PWRPD2 RUN DATE: DDMONYY

System Identifier=VSE3

BAR CHART OF PERCENT

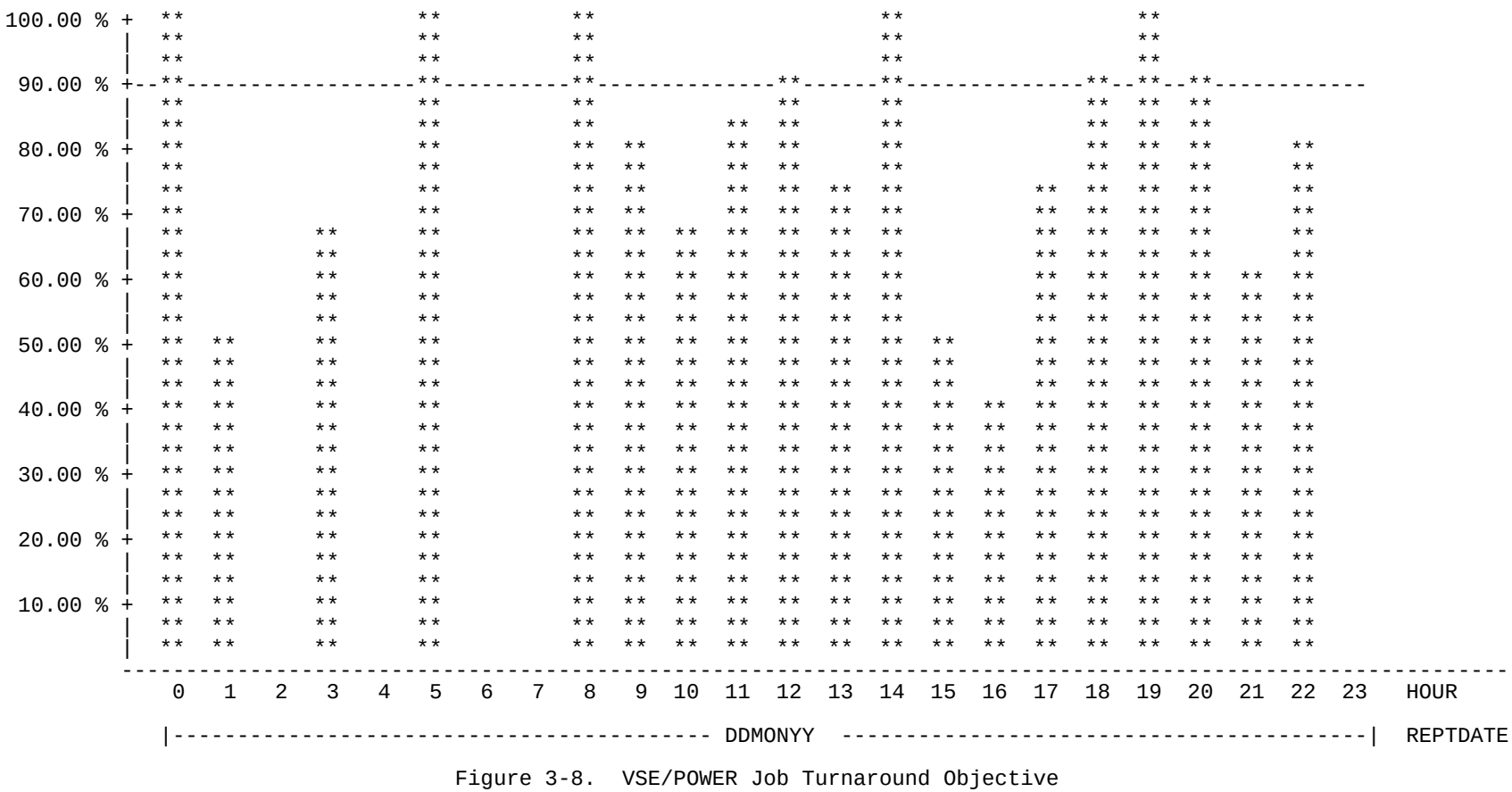

Figure 3-8. VSE/POWER Job Turnaround Objective

3.2.7 - VSE/POWER Job Group Turnaround Received

The VSE/POWER Job Group Turnaround Received Report displays the batch service received for the specified job group on an hourly basis for the identified day and computing system.

INTENDED USE

This report can be used for evaluating the turnaround service for all POWER job activity within specified groups and its relationship to the system load. This report is useful to operation managers, capacity planners, and performance analysts; it helps them evaluate the quality of batch service provided. While similar to the Job Initiation Report, it provides a clearer assessment of quality of service.

REPORT FORMAT

This inquiry produces a chart with a vertical and horizontal axis. The horizontal axis represents the hours of the day, and the vertical axis charts the percentage of batch jobs for the reported job group that were initiated during the hour and received the requested turnaround time. The management objective to be tracked is, for each hour, the percentage of batch jobs within this job group for which the requested turnaround was met or exceeded.

The reference line represents the turnaround objective. Its value is set within the inquiry, but may be changed by the user.

The sample report presents information by SYSID, job group, and date. The fields reported are:

PERCENT:	The percent of jobs which began executing during that hour which met or exceeded their service objective
HOUR:	The hour of the day that observations are recorded
REPTDATE	The date being reported

A sample report is shown in Figure 3-9.

INQUIRY ID:

PWRPD4

DATA SOURCE:

DETAIL.PWRPJB

DATA ELEMENTS USED:

SYSID - System Identifier
HOUR - Hour of Day
JOBGROUP - Job Group

Daily POWER Job Group Turnaround Received
ABC Company

INQUIRY: PWRPD4 RUN DATE: DDMONYY

System Identifier=VSE3 Job Group=11

BAR CHART OF PERCENT

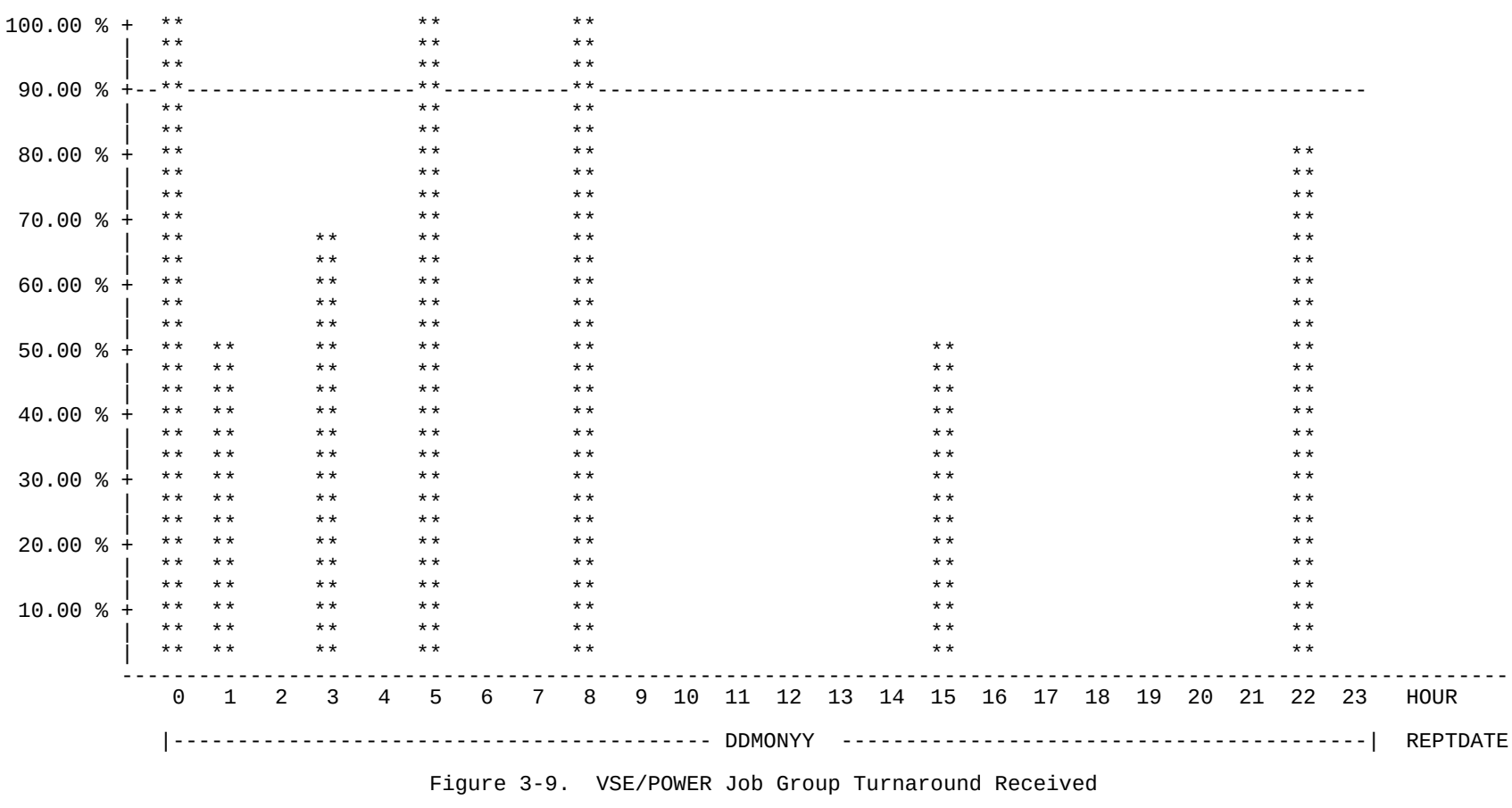

Figure 3-9. VSE/POWER Job Group Turnaround Received

3.2.8 - VSE/POWER Daily Job/Class Activity

The VSE/POWER Daily Job/Class Activity Report quantifies the total job activity on an hourly basis in each job class for the identified day and computing system.

INTENDED USE

This report can be used for evaluating how the job class structure is being used. It can tell you which jobs are being run in the job class that allows the longest time to run and whether most jobs in the same job class are being run at a particular time. Answers to these questions can help the operations and performance staff evaluate overall job activity.

REPORT FORMAT

The report's output is a stacked vertical bar chart.

The sample report presents information by SYSID, job class, hour, and date. The fields reported are:

HOUR	The hour of the day that observations are recorded
JOBCLASS	Job class in which the job ran

This is a color graphic report, so it cannot be shown in this guide.

INQUIRY ID:

PWRCD1

DATA SOURCE:

DETAIL.PWRPJB

DATA ELEMENTS USED:

SYSID - System Identifier
HOUR - Hour of Day
JOBCLASS - Job Input Class

3.2.9 - VSE/POWER Special Forms Use by Shift

The VSE/POWER Special Forms Use by Shift inquiry produces a frequency distribution, by form number, of the number of times each form number was used during a user-defined period of time (shift) for the preceding day.

INTENDED USE:

The report provides an analysis of the amount of usage of the different available forms. Examination of this report can lead to the elimination of unused forms or to an increase in the availability of additional forms. This report can also be used to identify high usage forms that might, for example, be converted to "form flash" applications in order to save on printing costs and operator interventions.

REPORT FORMAT:

This inquiry produces a tabular report by system identifier (SYSID) and date: The fields reported are:

ZONE	The zone during which the form was used
FREQUENCY	The number of times the form was used during the zone, weighted by the number of logical lines printed
ROW/COL PERCENT	The percent of total forms for this zone the form represents

A sample report is shown in Figure 3-10.

INQUIRY ID:

PWRLD5

DATA SOURCE:

DETAIL.PWRPOA

DATA ELEMENTS USED:

SYSID - System Identifier
ZONE - Time Zone
POANLR - Logical Writer Records
FORMNUM - Form Number

VSE/POWER Special Forms Use by Shift
ABC Company

INQUIRY: PWRLD5 RUN DATE: DDMONYY

System Identifier=VSE3

TABLE OF FORMNUM BY ZONE

FORMNUM(Form Number)
ZONE(Time Zone)

FREQUENCY PERCENT ROW PCT COL PCT	1	2	TOTAL
RB11	24863 4.42 100.00 11.58	0 0.00 0.00 	24863 4.42
ST11	95602 17.00 37.01 44.53	162720 28.94 62.99 46.81	258322 45.94
ST12	7900 1.40 15.65 3.68	42583 7.57 84.35 12.25	50483 8.98
ST13	5301 0.94 19.09 2.47	22469 4.00 80.91 6.46	27770 4.94
7X2	79671 14.17 44.18 37.11	100666 17.90 55.82 28.96	180337 32.07
TOTAL	214712 38.18	347651 61.82	562363 100.00

FREQUENCY WEIGHTED BY POANLR (NUMBER OF LOGICAL RECORDS)

Figure 3-10. VSE/POWER Special Forms Use by Shift

3.2.10 - VSE/POWER Partition Activity Audit

The VSE/POWER Partition Activity Audit Report provides a graphical view of batch activity by partition.

INTENDED USE:

The report can be used by the systems programming staff to review the effectiveness of the class structure and class-partition assignments. The operations manager might use it to track production activity for each partition.

REPORT FORMAT:

The report provides a tabular and graphical view of jobs for each VSE system. The report is grouped by system identifier, partition and date with the following columns and notations:

JOB NAME	The job name identified on the job card.
JOB NUM	The job number assigned by IBM's VSE/POWER product.
CLASS	The job input class.
STARTTM	The time when the job began executing.
ENDTM	The time when the job completed.
S	The job start time.
E	The job end time.
*	The start time and end time are the same.
+	The end time of the last available step of an incomplete (suspended) job.
< or >	A job's execution spans midnight and is continued from (if <) or on (if >) another plot.

A sample report is shown in Figure 3-11.

INQUIRY ID:

PWRPD3

DATA SOURCE:

DETAIL.PWRPJB
DETAIL.PWR_PJ

DATA ELEMENTS USED:

JOB	- Job Identification
PWRJOBNO	- POWER Job Number
STARTTS	- Start Time Stamp
VSEPRTID	- VSE Partition Identifier
ENDTS	- End Time Stamp
SYSID	- System Identifier
JOBCLASS	- Job Input Class

VSE/POWER PARTITION ACTIVITY AUDIT
ABC Company

INQUIRY: PWRPD3 RUN DATE: 05JANYY

SYSTEM =VSE2 PARTITION =BG DATE=04JANYY

JOB NAME	JOB NUM	CLASS	STARTTM	ENDTM	MIN 0:00 — MAX 24:00
SK1016B4	6629	R	3:50	4:31	SE
SK24B226	6658	X	5:59	8:30	S---E
SK071222	6661	X	8:34	8:35	*
SK104558	6664	X	8:40	8:40	*
SK071322	6666	X	8:50	8:58	*
SK101650	6669	X	9:06	9:18	SE
SK071222	6670	X	9:19	9:20	*
SK245122	6672	X	9:25	9:37	*
SK798053	6680	X	9:46	9:46	*
SK071222	6684	X	9:48	9:49	*
SK101697	6686	X	9:56	9:57	*
SK1016B4	6693	X	10:28	10:28	*
SK209028	6696	X	10:30	10:30	*
SK1016B4	6697	R	10:30	10:30	*
SK2751H1	6698	R	10:30	10:34	*
SK798053	6702	X	10:42	10:44	*
SK681103	6714	X	10:56	10:57	*
SK101697	6715	X	11:06	11:07	*
SK101697	6717	X	11:09	11:10	*
SK101697	6718	X	11:15	11:15	*
SK2467H2	6722	R	11:25	12:12	SE
SK101697	6761	X	12:13	12:13	*
SK102068	6767	X	12:28	12:28	*
SK101697	6796	X	13:13	13:20	SE
SK1023C0	6804	X	13:20	13:21	*
SK257143	6822	X	13:49	13:50	*
SK071226	6860	X	14:14	14:17	SE
SK071322	6861	X	14:17	14:25	*
SK071226	6864	X	14:25	14:36	*
SK2090H2	6880	X	14:36	14:43	*
SK2124H1	6882	R	14:43	15:05	SE
SK2124H1	6882	R	15:15	15:38	*
SK2751GH	6940	R	15:41	15:51	SE
SK2460H2	6956	R	15:53	16:37	SE
SK245126	7018	X	16:41	16:44	*

LEGEND: S=START, E=END, *=BOTH, +=JOB INCOMPLETE, < OR > =JOB CONTINUED

Figure 3-11. VSE/POWER Partition Activity Audit

3.3 - Management Objective Reports

Management objective reports are produced daily, weekly, and monthly as a standard output of the CA MICS operational jobs. The reports available from the CA MICS Analyzer Option for VSE/POWER are listed in Figure 3-13.

ANALYZER OPTION FOR VSE/POWER

MANAGEMENT OBJECTIVE REPORTS

Report Name	Time Produced			Macros Used *
	Daily	Weekly	Monthly	
VSE/POWER Job Initiation Objective	YES			PWRDLHR PWRDHHR PWRPTR PWRJSAX
		YES		PWRWLHR PWRWHHR PWRPTR PWRJSAX
			YES	PWRLOZN PWRHIZN PWRMPTR PWRMJSX
VSE/POWER Job Turnaround Objective	YES			PWRDLHR PWRDHHR PWRMREF PWRJMAX
		YES		PWRWLHR PWRWHHR PWRMREF PWRJMAX
			YES	PWRLOZN PWRHIZN PWRMREF PWRJMAX
VSE/POWER Job Group Turnaround Received	OPT			PWRDLHR PWRDHHR PWRMREF PWRJMAX
		OPT		PWRWLHR PWRWHHR PWRMREF PWRJMAX
			OPT	PWRLOZN PWRHIZN PWRMREF PWRJMAX

* - Macro descriptions are provided in Section 3.4 of this guide.
OPT - This report must be must be user tailored and activated as described in Section 3.4.

Figure 3-13. Management Objective Reports, Analyzer Option for VSE/POWER

The daily report tracks activity by hour within the day. The weekly report tracks activity by hour within day for a full week. The monthly report tracks activity by zone within month.

The following fields are used, depending on the report version:

HOUR: The hour of the day.

REPTDATE: The date reported.

ZONE: The time zone (shift).

YRMONTH: The year and month reported.

In each case, the report is produced as a vertical bar chart, with response on the vertical axis. Depending on the hour range you select, the report may be produced as a horizontal bar chart instead (see Section 3.4 for more information).

The following sections describe the management objective reports:

1 - VSE/POWER Job Initiation Objective
2 - VSE/POWER Job Turnaround Objective
3 - VSE/POWER Job Group Turnaround Received

3.3.1 - VSE/POWER Job Initiation Objective

The VSE/POWER Job Initiation Objective Report shows the number of jobs started by time interval. The total number of jobs is broken down by whether each job met, missed, or exceeded its service objective.

Figure 3-14 provides a sample of the report produced by the CA MICS DAILY operational job.

```
                                        ABC COMPANY
                                 CA MICS ANALYZER OPTION FOR VSE/POWER
                                 DAILY VSE/POWER MANAGEMENT OBJECTIVES

                          VSE/POWER JOB INITIATION OBJECTIVE OF 50 PER HOUR

                                       System Identifier=VSE2

                                        FREQUENCY BAR CHART
      FREQUENCY

          100 +
              |
              |
           90 +
              |
              |
           80 +                                                   MM
              |                                               MM   MM
              |                                               MM   MM   MM
           70 +                                               MM   EE   MM
              |                                               MM   EE   EE
              |                                               MM   EE   EE
           60 +                                         MM    EE   EE   EE
              |                                         MM    EE   EE   EE
              |                                         MM    EE   EE   EE
           50 +-----------------------------------------MM----EE---EE---EE-----------------------------------
              |                                         MM    EE   EE   EE
              |                                         EE    EE   EE   EE
           40 +                                         EE    EE   EE   EE
              |                                         EE    EE   EE   EE
              |                                      EE EE    EE   EE   EE
           30 +                                      EE EE    EE   EE   EE
              |                                      EE EE    EE   EE   EE
              |                                      EE EE    EE   EE   EE
           20 +                                      EE EE    EE   EE   EE
              |                                      EE EE    EE   EE   EE  EE
              |                                      EE EE    EE   EE   EE  EE              EE
           10 +                                EE EE EE EE    EE   EE   EE  EE              EE
              |                                EE EE EE EE    EE   EE   EE  EE              EE          MM
              |              EE                 EE EE EE EE    EE   EE   EE  EE              EE          MM
              ---------------------------------------------------------------------------------------------
                  0   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15  16  17  18  19  20  21  22  23   HOUR

                 |---------------------------------------- 05JAN88  ----------------------------------------|  REPTDATE

                                          SYMBOL SERVICE     SYMBOL SERVICE

                                            E    EXCEED        M    MISS
```

Figure 3-14. VSE/POWER Job Initiation Objective

The report is produced by system identifier with the following variables reported:

FREQUENCY: The number of jobs started during the hour.

EXCEED: The proportion of jobs exceeding their service objectives.

HIT: The proportion of jobs meeting their service objectives.

MISS: The proportion of jobs missing their service objectives.

HOUR: The hour of the day.

REPTDATE: The date being reported on.

The report objective is indicated by the reference line and is also shown in the report title. Section 3.4 provides the macro names that allow you to change the objective value.

The weekly report shows seven days worth of information and the monthly report shows the information by time zones for each of the last 12 months.

This report is useful for operations managers and capacity planners who need to evaluate the quality of service provided and its relationship to the system load.

3.3.2 - VSE/POWER Job Turnaround Objective

The VSE/POWER Job Turnaround Objective Report presents a chart of jobs that were initiated and completed within the established target. A sample report is presented in Figure 3-15.

ABC COMPANY
CA MICS ANALYZER OPTION FOR VSE/POWER
DAILY VSE/POWER MANAGEMENT OBJECTIVES

VSE/POWER JOB TURNAROUND OBJECTIVE RECEIVED BY 90 % OF ALL JOBS

System Identifier=VSE2

BAR CHART OF PERCENT

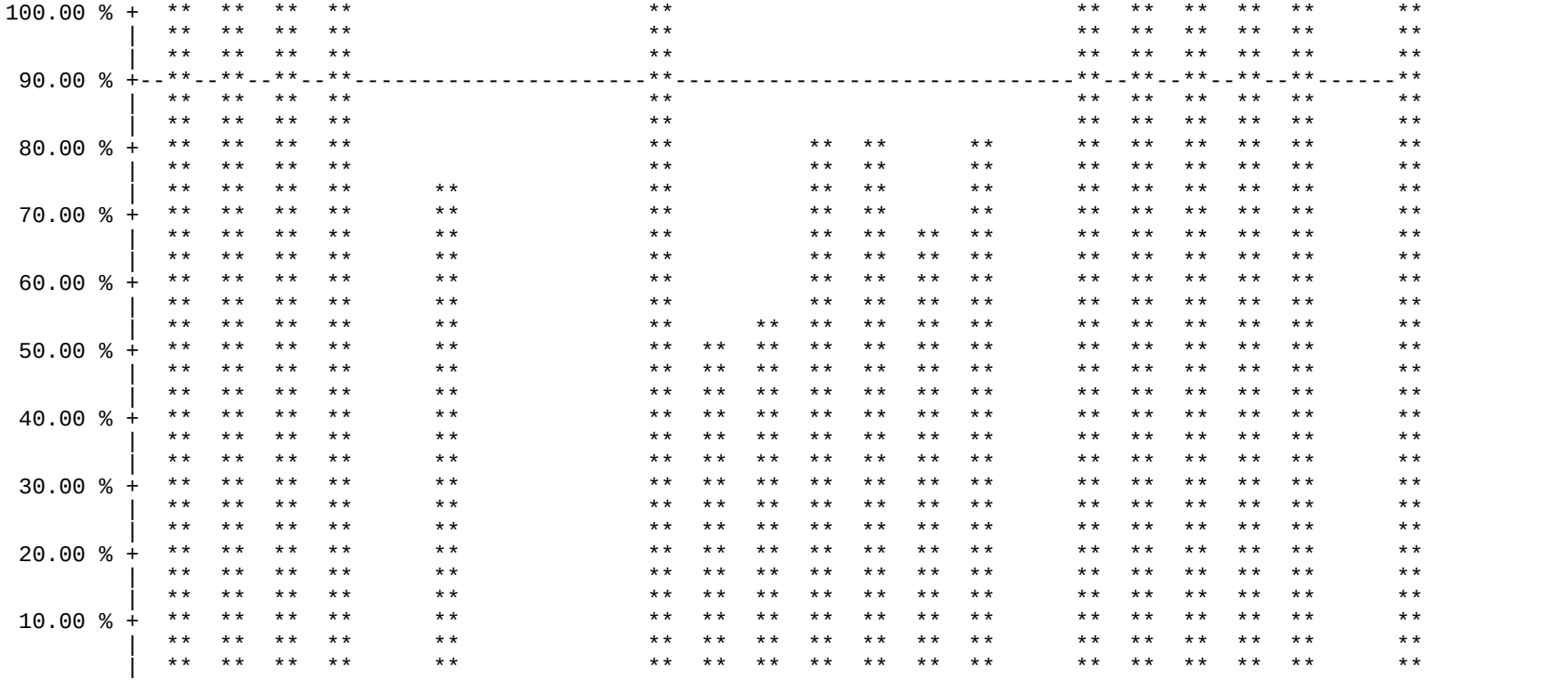

Figure 3-15. VSE/POWER Job Turnaround Objective

The report is produced by system identifier with the following variable reported:

PERCENT: The percent of jobs which began executing during that time period which met or exceeded their service objectives.

The report objective is indicated by the reference line and is also shown in the report title. Section 3.4 provides the macro names that allow you to change the objective value.

The weekly report shows seven days worth of information and the monthly report shows the information by time zones for each of the last 12 months.

Useful to operation managers, capacity planners, and performance analysts, this report helps evaluate the quality of batch service provided. While similar to the Job Initiation Objective Report, it provides a clearer assessment of service quality.

3.3.3 - VSE/POWER Job Group Turnaround Received

The VSE/POWER Job Group Turnaround Received Report presents a chart of jobs that were initiated and completed within the established target for a selected job group or job groups. A sample daily report is presented in Figure 3-16.

ABC COMPANY
CA MICS ANALYZER OPTION FOR VSE/POWER
DAILY VSE/POWER MANAGEMENT OBJECTIVES

VSE/POWER TURNAROUND RECEIVED BY 90 % THIS JOBGROUP'S JOBS

System Identifier=VSE2 Job Group=11

BAR CHART OF PERCENT

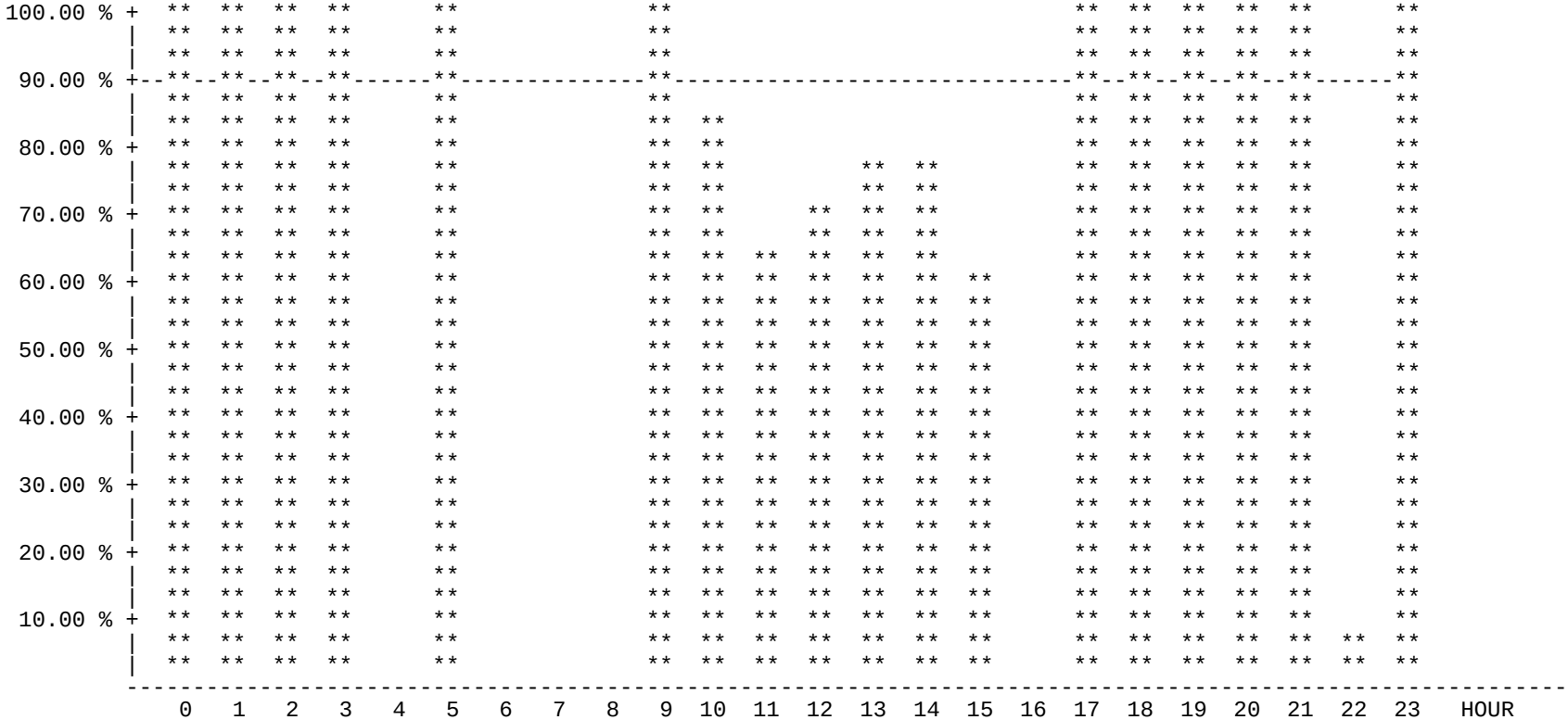

Figure 3-16. VSE/POWER Job Group Turnaround Received

The report is produced by system identifier with the following variables reported:

PERCENT: The percent of jobs which began executing during that time period which met or exceeded their service objectives.

The report objective is indicated by the reference line and is also shown in the report title. Section 3.4 provides the macro names that allow you to change the objective value.

The weekly report shows seven days worth of information and the monthly report shows the information by time zones for each of the last 12 months.

Since this report references user-defined job groups, it must be modified to select job groups of interest. The report is not produced by any of the operational jobs prior to selecting job groups. For information on how to select job groups, see Chapter 10 of this guide.

Useful to operations managers, capacity planners, and performance analysts, this report helps evaluate the quality of batch service provided. Similar to the Job Turnaround Objective Report, this report allows analysts to focus their attention on job groups of particular interest.

3.4 - How to Produce Reports

The CA MICS Analyzer Option for VSE/POWER provides standard reporting capabilities. The content of the reports can be tailored to match your requirements. See Chapter 4 of this guide for information on tailoring exception reports.

SAS macros control the appearance of management objective reports. To adjust the objectives for management objective reports, use the macros contained in either the complex or unit level #PWRMOBJ member of the SOURCE data set.

Changes made to macros at the complex level affect all units. To limit changes to a particular unit, add the macro to the unit level member following the %INCLUDE SOURCE(#PWRMOBJ) statement. The complex level member, as distributed, contains default objectives.

The macros provided with the Analyzer Option for VSE/POWER are in the form of SAS macro language symbolic variable assignments. The following macros are available:

PWRPTR: The objective (reference line) for the daily and weekly Job Initiation Reports.

PWRJSAX: The axis limit for the daily and weekly Job Initiation Reports.

PWRMPTR: The objective (reference line) for the monthly Job Initiation Report.

PWRMJSX: The axis limit for the monthly Job Initiation Report.

PWRMREF: The objective (reference line) for all Job Turnaround Reports.

PWRJMAX: The axis limit for all Job Turnaround Reports.

PWRDLHR: The low hour limit for all daily reports.

PWRDHHR: The high hour limit for all daily reports.

PWRWLHR: The low hour limit for all weekly reports.

PWRWHHR: The high hour limit for all weekly reports.

PWRLOZN: The low zone limit for all monthly reports.

PWRHIZN: The high hour limit for all monthly reports.

More extensive changes to management objective reports require modifications to the report source code. These changes are discussed in Chapter 10 of this guide.

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

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

3.4.1 - Batch Operations

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

Control over which report sets are produced is provided through the dynamic execution options (EXECDEF) member in the unit level PARMS library. Section 2.3.5 of the PIOM describes the EXECDEF member.

3.4.2 - CA MICS Information Center Facility II

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

- Structured inquiry composition
- Logical inquiry modification
- Direct inquiry composition
- Execution-time specifications
- Output replay
- Facilities for expert users
- Distributed inquiries (refer to Figure 3-1)
- User-written reports

For more information on using MICF to run the distributed inquiries or to create your own inquiries, the CA MICS MICF User Guide.

3.4.3 - Interactive Reporting (MSAS)

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

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

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

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

To use MSAS, see Chapter 3 of this guide.

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

CHAPTER 4

EXCEPTIONS

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

CHAPTER 4

EXCEPTIONS

Chapter 4. EXCEPTIONS

The CA MICS Analyzer Option for VSE/POWER supports the standard CA MICS exception process.

CA MICS exception processing enables you to focus on problems impacting its effectiveness in terms of availability, service, workload, standards, security, and performance for the different areas of responsibility (e.g., TSO, IMS, VSE/POWER). A more detailed description of the exception process is presented in Chapter 2 of the CA MICS Standard Reports Guide.

The standard exceptions for this product are shown in Figure 4-1. Each standard exception test is shipped with default values. However, to make effective use of the exception process, you must evaluate your needs and modify these sample values accordingly (setting values is discussed briefly in Section 4.2 of this guide and in more detail in Section 2.4 of the CA MICS Standard Reports Guide).

Number	Severity	Management Area	Exception Description
14001	Critical	Service	Job Turnaround Time Exceeded Objective
14002	Impacting	Performance	Job Elapsed Time Exceeded Limit
14003	Impacting	Performance	Job Input Queue Time Exceeded Limit
14053	Warning	Workload	Program SIO/CPU-Second Ratio Exceeds Limit
14056	Warning	Standards	Unauthorized Program User
14057	Warning	Workload	Program Resource Consumption Exceeded Limit
14101	Warning	Performance	Degraded Printer Performance
14102	Warning	Standards	Lines Printed Exceeded Limit
14151	Impacting	Performance	RJE Excessive Errors
14152	Impacting	Performance	RJE Excessive Timeouts
14153	Impacting	Performance	RJE Excessive Invalid Transmissions

Figure 4-1. VSE/POWER Analysis Product Exceptions

This chapter contains information on the following topics:

1 - Exception Process Overview
2 - Setting Exception Values
3 - Detailed Exception Descriptions

4.1 - Exception Process Overview

The CA MICS exception process consists of the exceptions themselves, a set of standard reports, CA MICS Information Center Facility (MICF) inquiries, an exception test routine, and an exception value analysis routine. Each of these is described below. A more detailed description of the process is presented in Chapter 2 of the Standard Reports Guide.

EXCEPTIONS

An exception is the occurrence of an event that merits visibility and attention. It may be an occurrence that is a distinct problem (for example, CICS ABENDED at 2:00 p.m.), one that may be a problem and requires further research (for example, a TSO user overloaded the system from 1:00 to 1:30 p.m.), or one that represents a standard, security, or audit violation (for example, user XYZ is not authorized to use PDZAP and was detected using it seven times yesterday).

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

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

STANDARD REPORTS

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

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

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

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

- Full Exception Detail Report
- Short Exception Detail Report

MICF INQUIRIES

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

- BASxM1 - Monthly Exception Summary Report
- BASxM2 - Monthly Management Area Exception Summary Report
- BASxM3 - Monthly Information Area Exception Summary Report
- BASxM4 - Monthly Exception Management Overview Report
- BASxM5 - Monthly Information Area Exception Overview Report
- BASxW1 - Weekly Exception Summary Report
- BASxW2 - Weekly Management Area Exception Summary Report
- BASxW3 - Weekly Information Area Exception Summary Report

The following inquiries that produce printed reports are also available:

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

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

EXCEPTION TEST ROUTINE

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

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

EXCEPTION VALUE ANALYSIS ROUTINE

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

4.2 - Setting Exception Values

Exception test routines contain exception tests which completely define the tests made to determine the exception condition and the definitions which define and classify the exception for reporting and analysis. The following is a sample exception test:

```
*
**  14002
**  POWER JOB ELAPSED TIME EXCEEDED LIMIT
*;
  IF JOBGROUP=1 AND PJBEXCTM > '00:01:00'T
  OR JOBGROUP=2 AND PJBEXCTM > '00:30:00'T
  OR JOBGROUP=3 AND PJBEXCTM > '00:59:99'T
    THEN DO;
    EXCCODE='14002';
    SEVERITY='I';
    MGMTAREA='PERFORMANCE';
    EXCDESC1='JOB ELAPSED TIME EXCEEDED LIMIT';
    EXCDESC2='JOBGROUP=' || PUT(JOBGROUP,3.)
           || ' ELAPSED TIME(H:M:S)='
           || PUT(PJBEXCTM,TIME.);
    LINK HIT;
  END;
```

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

When the test is positive, the exception is categorized by providing the appropriate values for EXCCODE, SEVERITY, and MGMTAREA. EXCDESC1 provides a constant title for the exception. EXCDESC2 provides variable information for the conditions that caused the test to be positive. The LINK HIT statement invokes a routine that causes the exception condition eventually to be written to the Exception Activity File (ADMEXC) for later processing by the standard reports or MICF inquiries.

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

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

The CA MICS Database provides a most useful information base for analyzing historical performance. The exception value analysis routine uses the CA MICS Database to produce a report that provides a statistical analysis of the values of the variables used in the standard exception tests distributed with the products. Using the results of this analysis, along with your installation's internal political, security, or standards policies; industry publications such as CA TSO Performance Statistics; and possibly your own analysis of data element behavior, you can determine the modifications that should be made to each exception test to provide meaningful exceptions in your environments.

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

To modify the exception test routine, follow the steps outlined in Section 2.4 of the CA MICS Standard Reports Guide.

4.3 - Detailed Exception Descriptions

This section provides an in-depth description of each standard exception available in the exception report process for the CA MICS Analyzer Option for VSE/POWER. The exceptions are organized by number and appear sequentially starting with exception 14001.

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

14001: Job Turnaround Time Exceeded Objective

| E X C 1 4 0 0 1 | Job Turnaround Time Exceeded Objective

FILE VSE/POWER Job Activity File (PWRPJB)

PURPOSE Identifies jobs that missed the turnaround target.

RATIONALE Identifying jobs that miss the turnaround objectives is important when determining the effectiveness of data center operations and for determining which jobs failed to meet performance objectives.

DEFINITION This exception is detected when a VSE/POWER job's turnaround time exceeds the installation-defined time limit.

EXCEPTION STATEMENTS The SAS statements identifying the exception situation and describing the condition are shown below:

```
*
**  14001
**  POWER JOB TURNAROUND TIME EXCEEDED OBJECTIVE
*;
  IF PJBSRVMS = ONE THEN DO;
    EXCCODE='14001';
    SEVERITY='C';
    MGMTAREA='SERVICE';
    EXCDESC1='POWER JOB TURNAROUND TIME EXCEEDED OBJECTIVE';
    EXCDESC2='JOBGROUP=' || PUT(JOBGROUP,3.)
           || ' TURN TIME(H:M:S)='
           || PUT(PJBTURTM,TIME.)
           || ' TARGET='
           || PUT(PJBTARTM,TIME.);
    LINK HIT;
  END;
```

THRESHOLD MODIFICATION Not applicable.

14002: Job Elapsed Time Exceeded Limit

| E X C 1 4 0 0 2 | Job Elapsed Time Exceeded Limit

FILE VSE/POWER Job Activity File (PWRPJB)

PURPOSE Identifies long running VSE/POWER jobs.

RATIONALE Identifying long running VSE/POWER jobs is important when determining the effectiveness of data center operations and for determining which jobs failed to meet performance objectives.

DEFINITION This exception is detected when a VSE/POWER job's elapsed time (i.e., execution time) exceeds the installation-defined time limit for a specified job group.

EXCEPTION STATEMENTS The SAS statements identifying the exception situation and describing the condition are shown below:

```
*
**  14002
**  POWER JOB ELAPSED TIME EXCEEDED LIMIT
*;
  IF JOBGROUP=1 AND PJBEXCTM > '00:01:00'T
  OR JOBGROUP=2 AND PJBEXCTM > '00:30:00'T
  OR JOBGROUP=3 AND PJBEXCTM > '00:59:99'T
    THEN DO;
    EXCCODE='14002';
    SEVERITY='I';
    MGMTAREA='PERFORMANCE';
    EXCDESC1='JOB ELAPSED TIME EXCEEDED LIMIT';
    EXCDESC2='JOBGROUP=' || PUT(JOBGROUP,3.)
           || ' ELAPSED TIME(H:M:S)='
           || PUT(PJBEXCTM,TIME.);
    LINK HIT;
  END;
```

THRESHOLD MODIFICATION Modify the job groups and their corresponding execution times as appropriate for your site.

jobgroup The numeric value identifying the selected job category. For group 3, it appears as:

JOBGROUP = 3

execution-time The amount of execution

time is described as hours, minutes, and seconds. A threshold of 30 minutes appears as:

PJBEXCTM > '00:30:00'T

14003: Job Input Queue Time Exceeded Limit

| E X C 1 4 0 0 3 | Job Input Queue Time Exceeded Limit

FILE — VSE/POWER Job Activity File (PWRPJB)

PURPOSE — Identifies jobs waiting a long time in the input queue for initiation.

RATIONALE — The amount of time that a job waits in the input queue may be key to the analysis of poor job turnaround. Reasons for input queue delays include heavy workload, poor partition settings, or ineffective job classes and priorities.

DEFINITION — This exception is detected when a VSE/POWER job's input queue time exceeds the installation defined time limit for a specified job group.

EXCEPTION STATEMENTS — The SAS statements identifying the exception situation and describing the condition are shown below:

```
*
**  14003
**  POWER JOB INPUT QUEUE TIME EXCEEDED LIMIT
*;
  IF JOBGROUP=1 AND PJBINQTM > '00:00:15'T
  OR JOBGROUP=2 AND PJBINQTM > '00:05:00'T
  OR JOBGROUP=3 AND PJBINQTM > '00:15:00'T
    THEN DO;
    EXCCODE='14003';
    SEVERITY='I';
    MGMTAREA='PERFORMANCE';
    EXCDESC1='JOB INPUT QUEUE TIME EXCEEDED LIMIT';
    EXCDESC2='JOBGROUP=' || PUT(JOBGROUP,3.)
           || ' INPUT QUEUE TIME(H:M:S)='
           || PUT(PJBINQTM,TIME.);
    LINK HIT;
  END;
```

THRESHOLD MODIFICATION — Modify the values used for job group and input queue time as appropriate for your site.

jobgroup — The numeric value identifying the selected job category. For group 3, it appears as:

	JOBGROUP=3	14053: Program SIO/CPU-Second Ratio Exceeds Limit
input-queue-time	The amount of input queue time is described as hours, minutes, and seconds. A threshold of 30 minutes appears as: PJBINQTM > '00:30:00'T	+----------+ | E X C 1 4 0 5 3 | Program SIO/CPU-Second Ratio Exceeds +----------+ Limit FILE VSE/POWER Program Activity File (PWRPPG) PURPOSE Identifies programs which incurred a high ratio of SIO/CPU-Second. RATIONALE Programs which have a high SIO to CPU-Second ratio are I/O bound and are good candidates for improvement through data set reblocking. DEFINITION This exception is detected when a program's SIO per CPU-Second ratio exceeds the installation defined values. In addition, the step's CPU time and total SIOs must exceed the installation defined values. EXCEPTION STATEMENTS The SAS statements identifying the exception situation and describing the condition are shown below:

```
*
** 14053
** PROGRAM SIO/CPU-SECOND RATIO EXCEEDS LIMIT
*;
  RATIO=ZERO;
  IF PPGCPUTM > ZERO THEN RATIO=PPGSIO/PPGCPUTM;
  IF RATIO > 10 AND PPGCPUTM > '00:09:00'T  AND PPGSIO > 1000
    THEN DO;
    MGMTAREA='WORKLOAD';
    EXCCODE='14053';
    SEVERITY='W';
    EXCDESC1='PROGRAM SIO/CPU-SECOND RATIO EXCEEDS LIMIT';
    EXCDESC2='SIO/CPU-SEC=' || PUT(RATIO,5.)
           || ' SIO=' || PUT(PPGSIO,6.)
           || ' CPU TIME=' || PUT(PPGCPUTM,TIME.);
    LINK HIT;
  END;
```

THRESHOLD MODIFICATION: Modify the values used for sio/cpu-sec, cputime, and sios according to the following conventions:

sio/cpu-sec: the value for a ratio of sio/cpu-sec of 10 appears as:

RATIO > 10

cputime	the amount of CPU time is described as hours, minutes, and seconds. A threshold of 5 minutes appears as: PPGCPUTM > '00:05:00'T
sios	the number of SIOs is specified. A threshold of 1000 SIOs appears as: PPGSIO > 1000

14056: Unauthorized Program User

```
+-----------------+
| E X C 1 4 0 5 6 |  Unauthorized Program User
+-----------------+
```

FILE — VSE/POWER Program Activity File (PWRPPG)

PURPOSE — Identifies unauthorized users who have executed sensitive programs.

RATIONALE — The use of these programs can result in loss of system integrity or security. By identifying unauthorized users you can limit your exposure. The exception as distributed is only an example and must be tailored for your site.

DEFINITION — This exception is detected when an unauthorized user executes the PDZAP, OBJMAINT, or CORGZ programs.

EXCEPTION STATEMENTS — The SAS statements identifying the exception situation and describing the condition are shown below:

```
*
**  14056
**  UNAUTHORIZED PROGRAM USE (VSE/POWER)
*;
  IF (
      PROGRAM='PDZAP' OR PROGRAM='OBJMAINT'
      OR PROGRAM='CORGZ'
     ) AND
     NOT(JOB=:'SYS')
     THEN DO;
     EXCCODE='14056';
     SEVERITY='W';
     MGMTAREA='STANDARDS';
     EXCDESC1='UNAUTHORIZED PROGRAM USE (VSE/POWER)';
     EXCDESC2='PROGRAM USED: ' || PROGRAM;
     LINK HIT;
  END;
```

THRESHOLD MODIFICATION — Tailor the list of PDZAP, OBJMAINT, or CORGZ program names contained in the definition string and specify those jobs which should be excluded from causing an exception according to the following conventions:

program-name — The name of the program, specified as a one to eight character alphanumeric field,

must be enclosed in quotes as a standard SAS character literal. Additional program names must be connected to the list with an OR.

job-name — The name of the job to be used for selection, specified as a one to eight character alphanumeric field, must be enclosed in quotes as a standard SAS character literal. Additional job names must be enclosed in the parentheses and be connected to the list with an OR. For all job names that do not begin with SYS or MAINT, the specification is:

```
AND NOT(JOB=:'SYS' OR JOB=:'MAINT')
```

By placing a colon prior to the literal, the job selection is satisfied by all job names having their first n digits match the string. For example, the test JOB=:'SYS' selects are job names starting with SYS.

14057: Program Resource Consumption Exceeded Limit

| E X C 1 4 0 5 7 | Program Resource Consumption Exceeded Limit

FILE — VSE/POWER Program Activity File (PWRPPG)

PURPOSE — Identifies programs which utilized a large quantity of resources.

RATIONALE — Heavy resource consuming programs may have a degrading effect on overall system performance. Identifying and controlling these jobs may be crucial to maintaining consistent performance.

DEFINITION — This exception is detected when a program's resource consumption exceeds the installation defined values.

EXCEPTION STATEMENTS — The SAS statements identifying the exception situation and describing the condition are shown below:

```
*
** 14057
** PROGRAM RESOURCE CONSUMPTION EXCEEDED LIMIT (VSE/POWER)
*;

  IF PPGCPUTM > '00:09:00'T
    OR PPGSIO > 50000
    THEN DO;
    EXCCODE='14057';
    SEVERITY='W';
    MGMTAREA='WORKLOAD';
    EXCDESC1= 'PROGRAM RESOURCE CONSUMPTION EXCEEDED LIMIT
    (VSE/POWER)';
    EXCDESC2=' SIO=' || PUT(PPGSIO,6.)
           || ' CPU TIME=' || PUT(PPGCPUTM,TIME.);
    LINK HIT;
  END;
```

THRESHOLD MODIFICATION — Modify the values used for cpu-time and sios according to the following conventions:

cpu-time — The amount of CPU time is described as hours, minutes, and seconds. A threshold of 10 minutes and 30 seconds appears as:

```
PPGCPUTM > '00:10:30'T
```

sios	The number of SIOs is specified. A threshold of 50000 SIOs appears as: PGMSIOS > 50000

14101: Degraded Printer Performance

```
+-----------------+
| E X C 1 4 1 0 1 |  Degraded Printer Performance
+-----------------+
```

FILE — VSE/POWER Output Activity File (PWRPOA)

PURPOSE — Identifies printer activity at a rate lower than the expected performance level.

RATIONALE — Printer rates may fall considerably below the expected performance level due to the printing of special or invalid characters, printer problems such as out of paper, and the use of special print trains. Applications with a printing rate below expected performance should be examined for possible procedural improvements.

DEFINITION — This exception is detected when an output file is printed at a rate below the installation defined expected performance level.

EXCEPTION STATEMENTS — The SAS statements identifying the exception situation and describing the condition are shown below:

```
*
** 14101
** DEGRADED PRINTER PERFORMANCE (VSE/POWER)
*;
  RATE=ZERO;
  IF POAACTTM > ZERO THEN RATE=(POANLR / (POAACTTM/60));
  IF RATE AND POAACTTM > ONE AND RATE < 9
    THEN DO;
    MGMTAREA='PERFORMANCE';
    EXCCODE='14101';
    SEVERITY='W';
    MGMTAREA='PERFORMANCE';
    EXCDESC1='DEGRADED PRINTER PERFORMANCE (VSE/POWER)';
    EXCDESC2='LINES=' || PUT(POANLR,6.)
           || ' PRINTER TIME='   || PUT(POAACTTM,TIME.)
           || ' LINES/MINUTE=' || PUT(RATE,6.);
    LINK HIT;
  END;
```

THRESHOLD MODIFICATION — Modify the values used for printer-time and print-rate according to the following conventions:

printer-time — The amount of printer active

time for a value of 5 minutes appears as:

POAACTTM > '00:05:00'T

print-rate

The print rate for a value of 400 lines per minute appears as:

RATE < 400

14102: Lines Printed Exceeded Limit

| E X C 1 4 1 0 2 | Lines Printed Exceeded Limit

FILE VSE/POWER Output Activity File (PWRPOA)

PURPOSE Identifies print volumes exceeding installation standards.

RATIONALE Occurrences of large print volumes should be investigated to determine whether the output is actually needed and useful. Consideration should be given to eliminating printing which is not needed, using microfiche where feasible, or increasing the number of lines per inch to reduce paper usage.

DEFINITION This exception is detected when a print volume exceeds the installation defined standard.

EXCEPTION STATEMENTS The SAS statements identifying the exception situation and describing the condition are shown below:

```
*
** 14102
** LINES PRINTED EXCEEDED LIMIT (VSE/POWER)
*;
 IF POANLR > 190000
   THEN DO;
   EXCCODE='14102';
   SEVERITY='W';
   MGMTAREA='STANDARDS';
   EXCDESC1='LINES PRINTED EXCEEDED LIMIT';
   EXCDESC2='LINES PRINTED=' || PUT(POANLR,7.);
   LINK HIT;
 END;
```

THRESHOLD MODIFICATION Modify the value used for lines-printed according to the following conventions:

lines-printed The numeric value for a lines-printed value of 50000 appears as:

POANLR > 50000

14151: RJE Excessive Errors

| E X C 1 4 1 5 1 | RJE Excessive Errors

FILE VSE/POWER RJE Activity File (PWRPRA)

PURPOSE Identifies RJE error counts exceeding installation standards.

RATIONALE Excessive RJE errors are an indication of poor line quality. It is advisable to have the quality of the line service evaluated with a line monitor.

DEFINITION This exception is detected when the RJE transmission error count exceeds the defined standard.

EXCEPTION STATEMENTS The SAS statements identifying the exception situation and describing the condition are described below:

```
*
** 14151
** RJE EXCESSIVE ERRORS
*;

  IF PRAERROR > 5
    THEN DO;
    MGMTAREA='PERFORMANCE';
    EXCCODE='14151';
    SEVERITY='I';
    EXCDESC1='RJE EXCESSIVE ERRORS';
    EXCDESC2='NUMBER OF RJE ERRORS = '   || PUT(PRAERROR,5.);
    LINK HIT;
  END;
```

THRESHOLD MODIFICATION Modify the value for RJE errors detected according to the following conventions:

rje-errors — The numeric value for a error count of 5000 appears as:

PRAERROR > 5000

14152: RJE Excessive Timeouts

| E X C 1 4 1 5 2 | RJE Excessive Timeouts

FILE VSE/POWER RJE Activity File (PWRPRA)

PURPOSE Identifies RJE timeout counts exceeding installation standards.

RATIONALE Excessive RJE timeouts are an indication of low line utilization. The lines may not be required, or possibly can be consolidated.

DEFINITION This exception is detected when the RJE timeout count exceeds the defined standard.

EXCEPTION STATEMENTS The SAS statements identifying the exception situation and describing the condition are described below:

```
*
** 14152
** RJE EXCESSIVE TIMEOUTS
*;
  IF PRATIMOT > 1000
    THEN DO;
    MGMTAREA='PERFORMANCE';
    EXCCODE='14152';
    SEVERITY='I';
    EXCDESC1='RJE EXCESSIVE TIMEOUTS';
    EXCDESC2='NUMBER OF TIMEOUTS = ' || PUT(PRATIMOT,5.);
    LINK HIT;
  END;
```

THRESHOLD MODIFICATION Modify the value for RJE timeouts detected according to the following conventions:

rje-timeouts — The numeric value for a timeout count of 100 appears as:

PRATIMOT > 100

14153: RJE Excessive Invalid Transmissions

| E X C 1 4 1 5 3 | RJE Excessive Invalid Transmissions

FILE VSE/POWER RJE Activity File (PWRPRA)

PURPOSE Identifies RJE invalid transmission counts exceeding installation standards.

RATIONALE Excessive RJE invalid transmissions are an indication of poor line quality. It is advisable to have the quality of the line service evaluated with a line monitor.

DEFINITION This exception is detected when the RJE invalid transmission count exceeds the defined standard.

EXCEPTION STATEMENTS The SAS statements identifying the exception situation and describing the condition are described below:

```
*
** 14153
** RJE EXCESSIVE INVALID TRANSMISSIONS
*;
  IF PRAINRSP > 1
    THEN DO;
    MGMTAREA='PERFORMANCE';
    EXCCODE='14153';
    SEVERITY='I';
    EXCDESC1='RJE EXCESSIVE INVALID TRANSMISSIONS';
    EXCDESC2='NUMBER OF INVALID TRANSMISSIONS = '
             || PUT(PRAINRSP,5.);
    LINK HIT;
  END;
```

THRESHOLD MODIFICATION Modify the value for RJE invalid transmissions detected according to the following conventions:

invalid-trans The numeric value for an error count of 3 appears as:

PRAINRSP > 3

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

CHAPTER 5

FILES

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

CHAPTER 5

FILES

Chapter 5. FILES

The CA MICS Analyzer Option for VSE/POWER builds the VSE/POWER Information Area in the CA MICS Database. The information area consists of the following files, holding data produced by IBM's VSE/POWER product:

- VSE/POWER Job Activity (PWRPJB) File
- VSE/POWER Job Suspend (PWR_PJ) File
- VSE/POWER Program Activity (PWRPPG) File
- VSE/POWER Output Activity (PWRPOA) File
- VSE/POWER Remote Activity (PWRPRA) File
- VSE/POWER Device Activity (PWRPDA) File

Figure 5-1 illustrates the data flow from input sources through product processing to producing files. Chapter 6 of this guide describes each record type.

This chapter is divided into the following sections:

1 - Data Element Naming Conventions
2 - VSE/POWER Information Area Files

```
+-----------+   +-----------+   +-----------+   +-----------+   +-----------+   +-----------+
| Execution |   |  Reader   |   |   List    |   |  Punch    |   |  Network  |   |  RJE-BSC  |
| Record    |   | Record    |   | Record    |   | Record    |   | Record    |   | Record    |
|   (E)     |   |   (R)     |   |   (L)     |   |   (P)     |   |   (N)     |   |   (T)     |
+-----------+   +-----------+   +-----------+   +-----------+   +-----------+   +-----------+
                                +-----------+   +-----------+   +-----------+   +-----------+
                                | Transmitter |  | Receiver |   | RJE-SNA   |
                                | Record    |   | Record    |   | Record    |
                                |   (M)     |   |   (V)     |   |   (S)     |
                                +-----------+   +-----------+   +-----------+
                                                                                VSE/POWER
                                                                                Accounting
                                                                                  Data
= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
                                                                                Database
                                                                                  Files
+-----------+   +-----------+                 +-----------+                   +-----------+
| PWR Device |  | PWR Program |               | PWR Output |                  | PWR RJE   |
| Activity  |   | Activity  |                | Activity  |                   | Activity  |
| (PWRPDA)  |   | (PWRPPG)  |                | (PWRPOA)  |                   | (PWRPRA)  |
+-----------+   +-----------+                 +-----------+                   +-----------+
                +---------->
                +-----------+   +-----------+
                | PWR Job   |   | PWR Job   |
                | Activity  |   | Suspend File|
                | (PWRPJB)  |   | (PWR_PJ)  |
                +-----------+   +-----------+
```

Figure 5-1. Analyzer Option for VSE/POWER Data Flow

5.1 - Data Element Naming Conventions

The data elements in the CA MICS Database files follow naming conventions that depend on whether they are standard or common data elements. Standard data elements use the first three characters of their name to identify the file in which they are defined. The exception to this rule is that elements in the Job Suspend File (PWR_PJ), which is designed to parallel the Job Activity File (PWRPJB), use the PJB prefix. The following chart lists the three-character prefix with which the standard data element names begin and the file in which they are contained.

File Name	File	Names Begin With
VSE/POWER Job Activity	PWRPJB	PJB
VSE/POWER Job Suspend	PWR_PJ	PJB
VSE/POWER Program Activity	PWRPPG	PPG
VSE/POWER Output Activity	PWRPOA	POA
VSE/POWER Remote Activity	PWRPRA	PRA
VSE/POWER Device Activity	PWRPDA	PDA

Common data elements do not use a data element prefix. They have a common definition across database information areas or across files within an information area. You will find common data elements listed under Sequence/Summary Data Elements and Common Data Elements in Section 5.2.3.2, Data Elements List.

5.2 - VSE/POWER Information Area Files

This section describes each file built by the CA MICS Analyzer Option for VSE/POWER. The descriptions contain the following:

- o File description
- o File organization
- o Data elements list

Data elements are defined in Appendix B, Data Dictionary.

The table below gives an overview of the timespans at which each file is supported. This table has been generated to accurately reflect the CA MICS system at your installation.

VSE/POWER Information Area	Date Generated: Thu, Jul 18, 2019

XDWMYT	File	File Name
X.....	PWR_PJ	VSE/POWER JOB SUSPEND FILE
X.....	PWR_PP	VSE/POWER PROGRAM SUSPEND FILE
X.....	PWR_PR	VSE/POWER READER SUSPEND FILE
.DWM..	PWRPDA	VSE/POWER DEVICE ACTIVITY FILE
X..MY.	PWRPJB	VSE/POWER JOB ACTIVITY FILE
X..M..	PWRPOA	VSE/POWER OUTPUT ACTIVITY FILE
X..M..	PWRPPG	VSE/POWER PROGRAM ACTIVITY FILE
X..M..	PWRPRA	VSE/POWER REMOTE ACTIVITY FILE

Figure 5-2. VSE/POWER File Timespan Granularity Chart

The files are described in the following sections:

1 - VSE/POWER Job Activity (PWRPJB) File
2 - VSE/POWER Job Suspend (PWR_PJ) File
3 - VSE/POWER Program Activity (PWRPPG) File
4 - VSE/POWER Output Activity (PWRPOA) File
5 - VSE/POWER Remote Activity (PWRPRA) File
6 - VSE/POWER Device Activity (PWRPDA) File

5.2.1 - VSE/POWER Job Activity (PWRPJB) File

FILENAME=PWRPJBxx

The records in the VSE/POWER Job Activity File quantify the resources consumed by a single POWER job, including all VSE jobs within it. Additional information includes termination reasons, turnaround specifications, and identification fields such as Job Priority, Job Class, etc. The records in this file are built from the Reader Account Record and the Execution Account Record of VSE/POWER Accounting.

The following sections describe the file's organization and list the data elements maintained.

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

5.2.1.1 - File Organization

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

Because CA MICS allows you to define the timespans in which a file is supported, this table has been generated as part of the installation process and accurately reflects the CA MICS system at your installation.

Timespan	Level of Data Granularity				
DETAIL	SYSID	PWRACT1	PWRACT2	PWRACT3	JOBGROUP
	YEAR	MONTH	ZONE	DAY	HOUR
	ENDTS				
DAYS	N/A				
WEEKS	N/A				
MONTHS	SYSID	PWRACT1	PWRACT2	JOBGROUP	YEAR
	MONTH	ZONE			
YEARS	SYSID	PWRACT1	PWRACT2	JOBGROUP	YEAR
	ZONE				
TABLES	N/A				

Generation Date: Thu, Jul 18, 2019

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

Figure 5-3. PWRPJB Time-Span Granularity Chart

5.2.1.2 - Data Elements List

The list below identifies data elements contained in this file. The format for data element entries is

```
    time_span  data_element - description
```

where:

```
time_span     = the timespans in which the data element is
                supported.  A period (.) indicates that the
                data element is not supported.  Supported
                timespans are indicated by the letters
                XDWMYTE, meaning:

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

data_element  = the data element name.

description   = the long name of the data element.
```

Because CA MICS allows you to define the timespans in which a file is supported, this table has been generated as part of the installation process and accurately reflects the CA MICS system at your installation.

GENERATION DATE: Thu, Jul 18, 2019

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

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

Sequence/Summary Data Elements

```
 X.....E  DAY      - Day of Month
 X.....E  HOUR     - Hour of Day
 X..MY.E  JOBGROUP - Job Group
 X..M..E  MONTH    - Month of Year
 X..MY.E  PWRACT1  - DIVISION
 X..MY.E  PWRACT2  - PROJECT
 X.....E  PWRACT3  - USER
 X..MY.E  SYSID    - System Identifier
 X.....E  WEEK     - Week of Year
 X..MY.E  YEAR     - Year of Century
 X..MY.E  ZONE     - Time Zone
```

Common Data Elements

```
 X.....E  DAYNAME  - Name of Day of Week
 X..MY.E  ENDTS    - End Time Stamp
 X.....E  JOB      - Job Identification
 X.....E  JOBCLASS - Job Input Class
 X..MY.E  ORGSYSID - Originating System Identification
 X.....E  PWRJOBNO - POWER Job Number
 X.....E  PWRJUSER - POWER JOB User Information
 X.....E  PWRNETAC - NJE Network Account Number
 X.....E  RDRTS    - Reader Time Stamp
 X..MY.E  STARTTS  - Start Time Stamp
 X.....E  VSEPRTID - VSE Partition Identifier
 X..MY.E  VSESYSID - VSE System Identifier
 X..MY.E  VSEVER   - VSE Version
```

Retained Data Elements

```
 X.....E  PJBEPRTY - Job Execution Priority
 X.....   PJBEXCNN - Execution Node Name
 X.....E  PJBGRPRC - Job Group Received
 X.....E  PJBINCLS - Job Input Class
 X.....   PJBINCPU - Input Processor System ID
 X.....   PJBINDEV - Input Device Name
 X.....   PJBINVID - Input Processor VSE System ID
 X.....   PJBJPRTY - Job Input Priority
 X.....E  PJBMASK  - Record Construction Audit Mask
 X.....   PJBORGID - Origin User Identification
 X.....   PJBORGJN - Origin Job Number
 X.....   PJBORGNN - Origin Node Name
 X.....E  PJBPTERM - POWER Termination Code
 X.....E  PJBRENTS - Job Reader End Time Stamp
 X.....   PJBSRMT  - Source Remote
 X.....E  PJBSUSPN - Job Suspend Flag
 X..MY.E  PJBTARTM - Job Turnaround Target Time
 X.....E  PJBVTERM - VSE Termination Code
```

Accumulated Data Elements

```
 X..MY.E  PJBALLTM - All Bound Time
 X..MY.E  PJBBADCT - Jobs with Bad SIO Counts
 X..MY.E  PJBCOST  - Job Cost
 X..MY.E  PJBCOUNT - POWER Jobs Executed
 X..MY.   PJBCPUNI - Program Instructions
 X..MY.E  PJBCPUTM - Program Processor Time
 X..MY.E  PJBDSIO  - DASD SIOs Issued
 X..MY.E  PJBEXCTM - Job Execution Time
```

```
 X..MY.E  PJBEXITC - Jobs Cancelled by RDREXIT
 X..MY.E  PJBFLUSH - Jobs Flushed
 X..MY.E  PJBINQTM - Input Queue Time
 X..MY.E  PJBIOERR - Jobs Terminated with I/O Error
 X..MY.E  PJBOSIO  - Other SIOs Issued
 X..MY.   PJBOVHNI - Overhead Instructions
 X..MY.E  PJBOVHTM - Overhead Time
 X..MY.E  PJBRDRTM - Reader Time
 X..MY.E  PJBSIO   - Total SIOs Issued
 X..MY.E  PJBSPPG  - Pages Spooled
 X..MY.   PJBSPPR  - Lines Spooled
 X..MY.   PJBSPPU  - Cards Spooled
 X..MY.E  PJBSRVEX - Jobs Exceeding Target
 X..MY.E  PJBSRVMS - Jobs Missing Target
 X..MY.E  PJBSRVMT - Jobs Meeting Target
 X..MY.E  PJBSSIO  - Spool SIOs Issued
 X..MY.E  PJBSTEPS - Phases Executed
 X..MY.   PJBSYSIN - Input Cards Read
 X..MY.   PJBTKOBL - Tracks or Blocks for Input Storage
 X..MY.E  PJBTSIO  - Tape SIOs Issued
 X..MY.E  PJBTURTM - Job Turnaround Time
 X..MY.E  PJBVJOBS - VSE Jobs Executed

Maximum Data Elements

 X..MY.E  PJBMXCTM - Maximum Job Program Processor Time
 X..MY.E  PJBMXDAS - Maximum DASD Devices Used
 X..MY.E  PJBMXMUS - Maximum Step Memory Used
 X..MY.E  PJBMXSIO - Maximum Job SIOs Issued
 X..MY.E  PJBMXTAP - Maximum Tape Devices Used

Derived Data Elements

 X..MY.E  PJBPCSEX - Pct Jobs Exceeding Target
 X..MY.E  PJBPCSMS - Pct Jobs Missing Target
 X..MY.E  PJBPCSMT - Pct Jobs Meeting Target
```

5.2.1.3 - Usage Considerations

This section identifies the special considerations or techniques related to using the PWRPJB File.

1. You must exercise care in using the special date and time data elements contained in each CA MICS file. As the file's granularity increases in higher timespans, certain fields lose significance and should not be used.

   - o HOUR should not be used in the MONTHS timespan or above.
   - o DAY and DAYNAME should not be used in the WEEKS timespan or above.
   - o WEEK should not be used in the MONTHS timespan or above.

2. The following data elements have meaning only when using the PWRPJB File in the DETAIL timespan because they lose significance once summarization has been performed. These data elements appear in the PWRPJB File in the DETAIL timespan only.

```
JOB      - Job Identification
JOBCLASS - Job Input Class
PJBEPRTY - Job Execution Priority
PJBEXCNN - Execution Node Name
PJBGRPRC - Job Group Received
PJBINCLS - Job Input Class
PJBINCPU - Input Processor System ID
PJBINDEV - Input Device Name
PJBINVID - Input Processor VSE System ID
PJBJPRTY - Job Input Priority
PJBMASK  - Record Construction Audit Mask
PJBORGID - Origin User Identification
PJBORGJN - Origin Job Number
PJBORGNN - Origin Node Name
PJBPTERM - POWER Termination Code
PJBRENTS - Job Reader End Time Stamp
PJBSRMT  - Source Remote
PJBSUSPN - Job Suspend Flag
PJBVTERM - VSE Termination Code
PWRACTx  - POWER Account Codes
PWRJOBNO - POWER Job Number
PWRJUSER - POWER Job User Information
RDRTS    - Reader Time Stamp
VSEPRTID - VSE Partition Identifier
```

3. The following data elements are user-defined. The value in each is dependent on user-selected options or user-supplied SAS code:

```
     PJBCOST  - Job Cost
     PJBCPUNI - Program Instructions
     PJBDSIO  - DASD SIOs Issued
     PJBGRPRC - Job Group Received
     PJBOSIO  - Other SIOs Issued
     PJBOVHNI - Overhead Instructions
     PJBPCSEX - Pct Jobs Exceeding Target
     PJBPCSMS - Pct Jobs Missing Target
     PJBPCSMT - Pct Jobs Meeting Target
     PJBSSIO  - Spool SIOs Issued
     PJBTARTM - Job Turnaround Target Time
     PJBTSIO  - Tape SIOs Issued
     PJBTURTM - Job Turnaround Time

     For more details, refer to the Data Dictionary in
     Appendix B of this guide.

 4.  The following elements are normally unavailable.  They
     are turned off for all timespans in order to conserve
     storage.

     PJBTOHRS - Tape Occupancy Hours
     PJBVKHRS - Virtual Kcore Hours

 5.  The observations in the PWRPJB File are created by
     merging information from VSE/POWER Account Data record
     types R and E.  This provides a complete picture of the
     input queue and execution stages of a job's processing.
     Output processing has not been added because of the lack
     of a unique job identifier.

     The best identifier available for VSE/POWER jobs consists
     of the elements PWRJOBNO and JOB.  The SYSID element can
     also be added if there is only one POWER system, or if
     the systems do not share work via shared spool or NJE
     facilities.  Even with these restrictions, it is possible
     to combine observations incorrectly for unrelated jobs.
```

5.2.1.4 - Retrieval Examples

This section presents a retrieval example for the VSE/POWER Job Activity File.

In the example, several CA MICS macros are used to specify the files used and the summarization done.

Example: Print a listing of the 50 jobs that were the largest consumers of CPU resources.

```
DATA JOBS ;
  SET &pPWRX..PWRPJB01 ;
RUN ;

PROC SORT ;
  BY DESCENDING PJBCPUTM ;
RUN ;

PROC PRINT DATA=JOBS(OBS=50) UNIFORM LABEL ;
TITLE 'TOP 50 CPU CONSUMING JOBS' ;
  ID SYSID JOB PWRJOBNO ;
  VAR PJBCPUTM PJBEXCTM PJBDSIO PJBTSIO ;
RUN ;
```

5.2.2 - VSE/POWER Job Suspend (PWR_PJ) File

FILENAME=PWR_PJxx

Since all of the information from the single execution of a POWER job may not be available in a single update of CA MICS, it is necessary to maintain the incomplete job information for further completion. The VSE/POWER Job Suspend File contains the consolidated record for a POWER job if the last step record has not been received. This file parallels the VSE/POWER Job Activity File (PWRPJB) and contains the same variables.

The following sections describe the file's organization and list the data elements maintained.

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

5.2.2.1 - File Organization

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

Because CA MICS allows you to define the timespans in which a file is supported, this table has been generated as part of the installation process and accurately reflects the CA MICS system at your installation.

Timespan	Level of Data Granularity				
DETAIL	SYSID YEAR ENDTS	PWRACT1 MONTH	PWRACT2 ZONE	PWRACT3 DAY	JOBGROUP HOUR
DAYS	N/A				
WEEKS	N/A				
MONTHS	N/A				
YEARS	N/A				
TABLES	N/A				

Generation Date: Thu, Jul 18, 2019

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

Figure 5-4. PWR_PJ Time-Span Granularity Chart

5.2.2.2 - Data Elements List

The list below identifies data elements contained in this file. The format for data element entries is

```
    time_span  data_element - description
```

where:

```
time_span     = the timespans in which the data element is
                supported.  A period (.) indicates that the
                data element is not supported.  Supported
                timespans are indicated by the letters
                XDWMYTE, meaning:

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

data_element  = the data element name.

description   = the long name of the data element.
```

Because CA MICS allows you to define the timespans in which a file is supported, this table has been generated as part of the installation process and accurately reflects the CA MICS system at your installation.

GENERATION DATE: Thu, Jul 18, 2019

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

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

Sequence/Summary Data Elements

```
 X.....E  DAY      - Day of Month
 X.....E  HOUR     - Hour of Day
 X.....E  JOBGROUP - Job Group
 X.....E  MONTH    - Month of Year
 X.....E  PWRACT1  - DIVISION
 X.....E  PWRACT2  - PROJECT
 X.....E  PWRACT3  - USER
 X.....E  SYSID    - System Identifier
 X.....E  WEEK     - Week of Year
 X.....E  YEAR     - Year of Century
 X.....E  ZONE     - Time Zone
```

Common Data Elements

```
 X.....E  DAYNAME  - Name of Day of Week
 X.....E  ENDTS    - End Time Stamp
 X.....E  JOB      - Job Identification
 X.....E  JOBCLASS - Job Input Class
 X.....E  ORGSYSID - Originating System Identification
 X.....E  PWRJOBNO - POWER Job Number
 X.....E  PWRJUSER - POWER JOB User Information
 X.....E  PWRNETAC - NJE Network Account Number
 X.....E  RDRTS    - Reader Time Stamp
 X.....E  STARTTS  - Start Time Stamp
 X.....E  VSEPRTID - VSE Partition Identifier
 X.....E  VSESYSID - VSE System Identifier
 X.....E  VSEVER   - VSE Version
```

Retained Data Elements

```
 X.....E  PJBEPRTY - Job Execution Priority
 X.....E  PJBEXCNN - Execution Node Name
 X.....E  PJBGRPRC - Job Group Received
 X.....E  PJBINCLS - Job Input Class
 X.....E  PJBINCPU - Input Processor System ID
 X.....E  PJBINCRS - Suspended by INCRccc Flag
 X.....E  PJBINDEV - Input Device Name
 X.....E  PJBINVID - Input Processor VSE System ID
 X.....E  PJBJPRTY - Job Input Priority
 X.....E  PJBMASK  - Record Construction Audit Mask
 X.....E  PJBORGID - Origin User Identification
 X.....E  PJBORGJN - Origin Job Number
 X.....E  PJBORGNN - Origin Node Name
 X.....E  PJBPTERM - POWER Termination Code
 X.....E  PJBRENTS - Job Reader End Time Stamp
 X.....E  PJBSRMT  - Source Remote
 X.....E  PJBSUSPN - Job Suspend Flag
 X.....E  PJBTARTM - Job Turnaround Target Time
 X.....E  PJBVTERM - VSE Termination Code
```

Accumulated Data Elements

```
 X.....E  PJBALLTM - All Bound Time
 X.....E  PJBBADCT - Jobs with Bad SIO Counts
 X.....E  PJBCOST  - Job Cost
 X.....E  PJBCOUNT - POWER Jobs Executed
 X.....E  PJBCPUNI - Program Instructions
 X.....E  PJBCPUTM - Program Processor Time
 X.....E  PJBDSIO  - DASD SIOs Issued
```

```
 X.....E  PJBEXCTM - Job Execution Time
 X.....E  PJBEXITC - Jobs Cancelled by RDREXIT
 X.....E  PJBFLUSH - Jobs Flushed
 X.....E  PJBINQTM - Input Queue Time
 X.....E  PJBIOERR - Jobs Terminated with I/O Error
 X.....E  PJBOSIO  - Other SIOs Issued
 X.....E  PJBOVHNI - Overhead Instructions
 X.....E  PJBOVHTM - Overhead Time
 X.....E  PJBRDRTM - Reader Time
 X.....E  PJBSIO   - Total SIOs Issued
 X.....E  PJBSPPG  - Pages Spooled
 X.....E  PJBSPPR  - Lines Spooled
 X.....E  PJBSPPU  - Cards Spooled
 X.....E  PJBSRVEX - Jobs Exceeding Target
 X.....E  PJBSRVMS - Jobs Missing Target
 X.....E  PJBSRVMT - Jobs Meeting Target
 X.....E  PJBSSIO  - Spool SIOs Issued
 X.....E  PJBSTEPS - Phases Executed
 X.....E  PJBSYSIN - Input Cards Read
 X.....E  PJBTKOBL - Tracks or Blocks for Input Storage
 X.....E  PJBTSIO  - Tape SIOs Issued
 X.....E  PJBTURTM - Job Turnaround Time
 X.....E  PJBVJOBS - VSE Jobs Executed

Maximum Data Elements

 X.....E  PJBMXCTM - Maximum Job Program Processor Time
 X.....E  PJBMXDAS - Maximum DASD Devices Used
 X.....E  PJBMXMUS - Maximum Step Memory Used
 X.....E  PJBMXSIO - Maximum Job SIOs Issued
 X.....E  PJBMXTAP - Maximum Tape Devices Used

Derived Data Elements

 X.....E  PJBPCSEX - Pct Jobs Exceeding Target
 X.....E  PJBPCSMS - Pct Jobs Missing Target
 X.....E  PJBPCSMT - Pct Jobs Meeting Target
```

5.2.2.3 - Usage Considerations

This section identifies the special considerations or techniques related to using the PWR_PJ File.

1. This file is identical to the PWRPJB File. Any considerations given in Section 5.2.1.3 also apply to this file.

2. The following elements may be useful when combining this file with the PWRPJB File:

   o PJBSUSPN - Job Suspend Flag. Indicates the suspend status:

```
-1 = Previously suspended (PWRPJB only)
 0 = Never suspended (PWRPJB only)
> 0 = Suspend age - number of updates since last
      job activity (PWR_PJ only)
```

5.2.2.4 - Retrieval Examples

This section presents a retrieval example for the VSE/POWER Job Suspend File.

In the example, several CA MICS macros are used to specify the files used and the summarization done.

Example: List all jobs read in more than two days ago which have not started executing yet.

```
DATA JOBS ;
  SET &PPWRX..PWR_PJ01 ;
  IF PJBMASK EQ 'R.' AND PJBSUSPN GE 2 ;
RUN ;

PROC PRINT DATA=JOBS(OBS=50) UNIFORM LABEL N ;
  LABEL PJBSUSPN='SUSPEND AGE' ;
  BY SYSID ;
  ID SYSID JOB PWRJOBNO ;
  VAR RDRTS PJBSUSPN JOBCLASS PJBJPRTY ;
RUN ;
```

5.2.3 - VSE/POWER Program Activity (PWRPPG) File

FILENAME=PWRPPGxx

The VSE/POWER Program Activity File quantifies the resource consumption for the execution of a program in a POWER Job. Additional information includes termination reasons, turnaround specifications, and identification fields such as Job Priority, Jobs Class, etc. The records in this file are built from the Execution Account Record of VSE/POWER Accounting.

The following sections describe the file's organization and list the data elements maintained.

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

5.2.3.1 - File Organization

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

Because CA MICS allows you to define the timespans in which a file is supported, this table has been generated as part of the installation process and accurately reflects the CA MICS system at your installation.

Timespan	Level of Data Granularity				
DETAIL	SYSID	PWRACT1	PWRACT2	PWRACT3	PROGRAM
	YEAR	MONTH	ZONE	DAY	HOUR
	ENDTS				
DAYS	N/A				
WEEKS	N/A				
MONTHS	SYSID	PWRACT1	PWRACT2	PROGRAM	YEAR
	MONTH	ZONE			
YEARS	N/A				
TABLES	N/A				

Generation Date: Thu, Jul 18, 2019

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

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

Figure 5-5. PWRPPG Time-Span Granularity Chart

5.2.3.2 - Data Elements List

The list below identifies data elements contained in this file. The format for data element entries is

```
time_span  data_element - description
```

where:

time_span = the timespans in which the data element is supported. A period (.) indicates that the data element is not supported. Supported timespans are indicated by the letters XDWMYTE, meaning:

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

data_element = the data element name.

description = the long name of the data element.

Because CA MICS allows you to define the timespans in which a file is supported, this table has been generated as part of the installation process and accurately reflects the CA MICS system at your installation.

GENERATION DATE: Thu, Jul 18, 2019

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

Time-Span *	Data Element	Data Element Description (LABEL)
		Sequence/Summary Data Elements
X.....E	DAY	- Day of Month
X.....E	HOUR	- Hour of Day
X..M..E	MONTH	- Month of Year
X..M..E	PROGRAM	- Program Name
X..M..E	PWRACT1	- DIVISION
X..M..E	PWRACT2	- PROJECT
X.....E	PWRACT3	- USER

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

Common Data Elements

 X.....E  DAYNAME  - Name of Day of Week
 X..M..E  DURATION - Recording Interval Time
 X..M..E  ENDTS    - End Time Stamp
 X.....E  JOB      - Job Identification
 X.....E  JOBCLASS - Job Input Class
 X..M..E  ORGSYSID - Originating System Identification
 X.....E  PWRJOBNO - POWER Job Number
 X.....E  PWRJUSER - POWER JOB User Information
 X.....E  PWRNETAC - NJE Network Account Number
 X..M..E  STARTTS  - Start Time Stamp
 X.....E  VSEJOB   - VSE Job Name
 X.....E  VSEJUSER - VSE JOB User Information
 X.....E  VSEPRTID - VSE Partition Identifier
 X..M..E  VSESYSID - VSE System Identifier
 X..M..E  VSEVER   - VSE Version

Retained Data Elements

 X.....E  PPGEPRTY - Job Execution Priority
 X.....   PPGEXCNN - Execution Node Name
 X.....E  PPGMEMUS - Kilobytes Memory Used
 X.....   PPGORGID - Origin User
 X.....   PPGORGJN - Origin Job Number
 X.....   PPGORGNN - Origin Node Name
 X.....E  PPGPTERM - POWER Termination Code
 X.....E  PPGRTYPE - Step Record Type
 X.....   PPGSRMT  - Source Remote
 X.....E  PPGVTERM - VSE Termination Code

Accumulated Data Elements

 X..M..E  PPGALLTM - All Bound Time
 X..M..E  PPGBADCT - SIO Count May Be Wrong Flag
 X..M..E  PPGCOST  - Program Cost
 X..M..E  PPGCOUNT - Program Executions
 X..M..   PPGCPUNI - Program Instructions
 X..M..E  PPGCPUTM - Program Processor Time
 X..M..E  PPGDSIO  - DASD SIOs Issued
 X..M..E  PPGEXCTM - Program Execution Time
 X..M..E  PPGFLUSH - Programs Flushed
 X..M..E  PPGIOERR - Programs Terminated with I/O Error
 X..M..E  PPGOSIO  - Other SIOs Issued
 X..M..   PPGOVHNI - Overhead Instructions
 X..M..E  PPGOVHTM - Overhead Time
 X..M..E  PPGSIO   - Total SIOs Issued
```

```
 X..M..E  PPGSPPG  - Pages Spooled
 X..M..   PPGSPPR  - Lines Spooled
 X..M..   PPGSPPU  - Cards Spooled
 X..M..E  PPGSSIO  - Spool SIOs Issued
 X..M..E  PPGTSIO  - Tape SIOs Issued

Maximum Data Elements

 X..M..E  PPGMXCTM - Maximum Program Processor Time
 X..M..E  PPGMXDAS - Maximum DASD Devices Used
 X..M..E  PPGMXMUS - Maximum Memory Used
 X..M..E  PPGMXSIO - Maximum SIOs Issued
 X..M..E  PPGMXTAP - Maximum Tape Devices Used
```

5.2.3.3 - Usage Considerations

This section identifies the special considerations or techniques related to using the PWRPPG File.

1. You must exercise care in using the special date and time data elements contained in each CA MICS file. As the file's granularity increases in higher time-spans, certain fields lose significance and should not be used.

   - o HOUR should not be used in the MONTHS time-span or above.
   - o DAY and DAYNAME should not be used in the WEEKS time-span or above.
   - o WEEK should not be used in the MONTHS time-span or above.

2. The following data elements have meaning only when using the PWRPPG File in the DETAIL time-span, because they lose significance once summarization has been performed. These data elements appear in the PWRPPG File in the DETAIL time-span only.

   JOB - Job Identifier
   JOBCLASS - Job Input Class
   PPGEPRTY - Job Execution Priority
   PPGMEMUS - Kilobytes Memory Used
   PPGPTERM - POWER Termination Code
   PPGRTYPE - Step Record Type
   PPGVTERM - VSE Termination Code
   PWRJOBNO - POWER Job Number
   PWRJUSER - POWER Job User Information
   VSEJOB - VSE Job Name
   VSEJUSER - VSE Job User Information
   VSEPRTID - VSE Partition Identifier
   PPGDRMT - Destination Remote
   PPGEXCNN - Execution Node Name
   PPGORGID - Origin User
   PPGORGJN - Origin Job Number
   PPGORGNN - Origin Node Name
   PPGSRMT - Source Remote
   PPGUFLDL - User Field Length

3. The following data elements are user-defined. The value in each is dependent on user-selected options or user-supplied SAS code:

   PPGCOST - Program Cost
   PPGDSIO - DASD SIOs Issued
   PPGOSIO - Other SIOs Issued
   PPGSIO - Total SIOs Issued
   PPGSSIO - Spool SIOs Issued
   PPGTSIO - Tape SIOs Issued
   PWRACTX - POWER Account Codes
   PPGCPUNI - Program Instructions
   PPGOVHNI - Overhead Instructions

   For more details, refer to the Data Dictionary in Appendix B of this guide.

4. The following elements are normally unavailable. They are turned off for all time-spans in order to conserve storage.

   PPGTOHRS - Tape Occupancy Hours
   PPGUFLD1 - User Field 1
   PPGUFLD2 - User Field 2
   PPGUFLD3 - User Field 3
   PPGUFLD4 - User Field 4
   PPGUFLD5 - User Field 5
   PPGUFLDL - User Field Length
   PPGVKHRS - Virtual Kcore Hours

5.2.3.4 - Retrieval Examples

This section presents retrieval examples for the VSE/POWER Program Activity File.

In the examples, several CA MICS macros are used to specify the files used and the summarization done.

1. List the frequency of use for all programs by system ID for the last three months.

```
PROC FREQ DATA=%MFILE(DB=P,TS=MONTHS,F=PPG01-03) ;
  BY SYSID ;
  WEIGHT PPGCOUNT ;
  TABLE PROGRAM ;
RUN ;
```

2. Report the use of program BACKUP by department (PWRACT1) over the last two months, plus the current month to date. Summarize the resources consumed.

```
DATA SAS ;
  SET %MFILE(DB=P,TS=MONTHS,F=PPG00-02) ;
  IF PROGRAM EQ 'BACKUP' ;
RUN ;

%LET BY = PROGRAM PWRACT1 ;
%LET BREAK = PWRACT1 ;
PROC SORT ;
  BY &BY ;
RUN ;
DATA ;
 SET ;
 %PPGSUM ;
RUN ;

PROC PRINT UNIFORM LABEL ;
  BY PROGRAM ;
  ID PROGRAM PWRACT1 ;
  VAR PPGCOUNT PPGTSIO PPGMXTAP PPGCPUTM ;
RUN ;
```

5.2.4 - VSE/POWER Output Activity (PWRPOA) File

FILENAME=PWRPOAxx

The VSE/POWER Output Activity File quantifies the print and punch activity of the VSE/POWER system. Observations in this file are built from the List Account Record, the Punch Account Record, and the Transmitter/Receiver Record of VSE/POWER Accounting.

The following sections describe the file's organization and list the data elements maintained.

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

5.2.4.1 - File Organization

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

Because CA MICS allows you to define the timespans in which a file is supported, this table has been generated as part of the installation process and accurately reflects the CA MICS system at your installation.

Timespan	Level of Data Granularity				
DETAIL	SYSID	PWRACT1	PWRACT2	PWRACT3	SYSOUT
	FORMNUM	YEAR	MONTH	ZONE	DAY
	HOUR	ENDTS			
DAYS	N/A				
WEEKS	N/A				
MONTHS	SYSID	PWRACT1	PWRACT2	SYSOUT	FORMNUM
	YEAR	MONTH	ZONE		
YEARS	N/A				
TABLES	N/A				

Generation Date: Thu, Jul 18, 2019

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

Figure 5-6. PWRPOA Time-Span Granularity Chart

5.2.4.2 - Data Elements List

The list below identifies data elements contained in this file. The format for data element entries is

```
time_span  data_element - description
```

where:

time_span = the timespans in which the data element is supported. A period (.) indicates that the data element is not supported. Supported timespans are indicated by the letters XDWMYTE, meaning:

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

data_element = the data element name.

description = the long name of the data element.

Because CA MICS allows you to define the timespans in which a file is supported, this table has been generated as part of the installation process and accurately reflects the CA MICS system at your installation.

GENERATION DATE: Thu, Jul 18, 2019

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

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

Sequence/Summary Data Elements

X.....E	DAY	- Day of Month
X..M..E	FORMNUM	- Form Number
X.....E	HOUR	- Hour of Day
X..M..E	MONTH	- Month of Year
X..M..E	PWRACT1	- DIVISION
X..M..E	PWRACT2	- PROJECT
X.....E	PWRACT3	- USER

```
 X..M..E  SYSID    - System Identifier                          X..M..   POATKOBL - Tracks or Blocks for Input Storage
 X..M..E  SYSOUT   - SYSOUT Class                               X..M..   POAXRDEL - Records Deleted by OUTEXIT
 X.....E  WEEK     - Week of Year                               X..M..   POAXRINS - Records Inserted by OUTEXIT
 X..M..E  YEAR     - Year of Century
 X..M..E  ZONE     - Time Zone

Common Data Elements

 X.....E  DAYNAME  - Name of Day of Week
 X.....E  DEVADDR  - Device Address
 X..M..E  ENDTS    - End Time Stamp
 X.....E  JOB      - Job Identification
 X..M..E  ORGSYSID - Originating System Identification
 X.....E  PWRJOBNO - POWER Job Number
 X.....E  PWRJUSER - POWER JOB User Information
 X.....E  PWRNETAC - NJE Network Account Number
 X..M..E  STARTTS  - Start Time Stamp
 X..M..E  VSESYSID - VSE System Identifier
 X..M..E  VSEVER   - VSE Version

Retained Data Elements

 X.....   POAACTNN - Action Node Name
 X.....   POAADJNN - Adjacent Node Name
 X.....E  POACPSPR - Copies Printed
 X.....   POACPYMD - 3800 Copy Modification Module Name
 X.....   POADRMT  - Destination Remote
 X.....   POADSTID - Destination User Identification
 X.....   POADSTNN - Destination Node Name
 X.....   POAFLASH - 3800 Forms Overlay Name
 X.....   POALSTSG - Last Segment Indicator
 X.....E  POAOPRTY - Output Priority
 X.....   POAORGID - Origin User Identification
 X.....   POAORGJN - Original Job Number
 X.....   POAORGNN - Origin Node Name
 X.....E  POAPTERM - POWER Termination Code
 X.....E  POAQTYPE - Queue Type
 X.....   POASEGCT - Segment Count
 X.....   POASRMT  - Source Remote

Accumulated Data Elements

 X..M..E  POAACTTM - Active Time
 X..M..E  POACNLR  - Control Logical Records
 X..M..E  POACOST  - Output Cost
 X..M..E  POACOUNT - Activity Count
 X..M..E  POAENLR  - Extra Logical Writer Records
 X..M..E  POAEPGE  - Extra Pages Printed
 X..M..E  POANLR   - Logical Writer Records
 X..M..E  POANXDEL - Records Deleted by NETEXIT/XMTEXIT
 X..M..E  POANXINS - Records Inserted by NETEXIT/XMTEXIT
 X..M..E  POAPGE   - Pages Printed
```

5.2.4.3 - Usage Considerations

This section identifies the special considerations or techniques related to using the PWRPOA File.

1. You must exercise care in using the special date and time data elements contained in each CA MICS file. As the file's granularity increases in higher time-spans, certain fields lose significance and should not be used.

   - o HOUR should not be used in the MONTHS time-span or above.
   - o DAY and DAYNAME should not be used in the WEEKS time-span or above.
   - o WEEK should not be used in the MONTHS time-span or above.

2. The following data elements have meaning only when using the PWRPOA File in the DETAIL time-span, because they lose significance once summarization has been performed. These data elements appear in the PWRPOA File in the DETAIL time-span only.

   DEVADDR - Device Address
   JOB - Job Identifier
   POAACTNN - Action Node Name
   POAADJNN - Adjacent Node Name
   POACPSPR - Copies Printed
   POACPYMD - 3800 Copy Modification Module Name
   POADRMT - Destination Remote
   POADSTID - Destination User Identification
   POADSTNN - Destination Node Name
   POAFLASH - 3800 Forms Overlay Name
   POALSTSG - Last Segment Indicator
   POAOPRTY - Output Priority
   POAORGID - Origin User Identification
   POAORGJN - Original Job Number
   POAORGNN - Origin Node Name
   POAPTERM - POWER Termination Code
   POAQTYPE - Queue Type
   POASEGCT - Segment Count
   POASRMT - Source Remote
   PWRJOBNO - POWER Job Number
   PWRJUSER - POWER Job User Information

3. The following data elements are user-defined. The value in each is dependent on user-selected options or user-supplied SAS code:

   PWRACTx - POWER Account Codes
   POACOST - Output Cost

   For more details, refer to the Data Dictionary in Appendix B of this guide.

4. Observations in the PWRPOA File are derived from two different types of VSE/POWER Account records. Spool I/O activity records track movement of spool files to and from local unit record devices, including Reader (type R), printer (type L), and punch (type P). When CA MICS reads these records, it assigns the record type to the element POAQTYPE.

   The other class of data includes the remote spool transmission records: transmitter (type M) and receiver (type V). These records are produced when a spool file is sent to or received from a remote VSE/POWER system. Each record also has associated with it the queue type as listed above (R, L, or P).

   To help identify these records, the FORMNUM element is assigned a special value:

   FORMNUM='*r*q'

   where:

   r = VSE/POWER record type: M for transmitter, V for receiver.
   q = Spool queue type (same as POAQTYPE)

   For example, a punch file being transmitted to another system would result in the following:

   POAQTYPE = 'P' FORMNUM = '*M*P'

   Spool I/O records contain the FORMNUM obtained from the record.

5.2.4.4 - Retrieval Examples

This section presents retrieval examples for the VSE/POWER Output Activity File.

In the examples, several CA MICS macros are used to specify the files used and the summarization done.

1. Produce a summary of the remote spool traffic for the last three days. Summarize it by queue, type, origin, and destination.

```
DATA SPOOL ;
  SET %MFILE(DB=P,TS=DETAIL,F=POA01-03) ;
  IF FORMNUM EQ: '*' ;
  TYPE=SUBSTR(FORMNUM,2,1) ;
RUN ;

%LET BY = SYSID POAQTYPE TYPE POAORGNN POAACTNN
 POADSTNN ;
%LET BREAK = POADSTNN ;
PROC SORT ;
  BY &BY ;
DATA SPOOL ;
  SET ;
  %POASUM ;
RUN ;

PROC FORMAT ;
  VALUE $TYPE 'M'='SEND'
              'V'='RECEIVED' ;
  VALUE $QUEUE 'P'='PUNCH'
               'L'='LIST'
               'R'='READER' ;
RUN ;

PROC PRINT UNIFORM LABEL ;
  FORMAT TYPE $TYPE. POAQTYPE $QUEUE. ;
  BY SYSID POAQTYPE ;
  ID &BY ;
  VAR POANLR ;
RUN ;
```

2. Report printer activity yesterday by system, device address, and form number.

```
DATA SPOOL ;
  SET %MFILE(DB=P,TS=DETAIL,F=POA01) ;
  IF FORMNUM NE: '*' AND POAQTYPE EQ 'L' ;
RUN ;

%LET BY = SYSID DEVADDR FORMNUM ;
%LET BREAK = FORMNUM ;
PROC SORT ;
  BY &BY ;
DATA SPOOL ;
  SET ;
  %POASUM ;
RUN ;

PROC PRINT UNIFORM LABEL ;
  BY SYSID DEVADDR ;
  ID &BY ;
  VAR POANLR POAENLR ;
  SUM POANLR POAENLR ;
  SUMBY DEVADDR ;
RUN ;
```

5.2.5 - VSE/POWER Remote Activity (PWRPRA) File

FILENAME=PWRPRAxx

The VSE/POWER Remote Activity File maintains information on the BSC and SNA RJE Sessions. For SNA RJE Sessions, the session information is taken from the SNA Account Record of VSE/POWER Accounting. The session duration and identification is maintained. For BSC RJE Sessions, the session information is taken from the RJE Account Record of VSE/POWER Accounting. Session duration and identification are maintained as well as activity and errors. The Network Record is used here also.

The following sections describe the file's organization and list the data elements maintained.

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

5.2.5.1 - File Organization

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

Because CA MICS allows you to define the timespans in which a file is supported, this table has been generated as part of the installation process and accurately reflects the CA MICS system at your installation.

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

Generation Date: Thu, Jul 18, 2019

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

Figure 5-7. PWRPRA Time-Span Granularity Chart

5.2.5.2 - Data Elements List

The list below identifies data elements contained in this file. The format for data element entries is

```
    time_span  data_element - description
```

where:

```
time_span     = the timespans in which the data element is
                supported.  A period (.) indicates that the
                data element is not supported.  Supported
                timespans are indicated by the letters
                XDWMYTE, meaning:

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

data_element  = the data element name.

description   = the long name of the data element.
```

Because CA MICS allows you to define the timespans in which a file is supported, this table has been generated as part of the installation process and accurately reflects the CA MICS system at your installation.

GENERATION DATE: Thu, Jul 18, 2019

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

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

Sequence/Summary Data Elements

```
 X.....E  DAY      - Day of Month
 X.....E  HOUR     - Hour of Day
 X..M..E  MONTH    - Month of Year
 X..M..E  PRARMTID - Remote Identifier
 X..M..E  PRARMTNM - Remote Name
 X..M..E  SYSID    - System Identifier
 X.....E  WEEK     - Week of Year
 X..M..E  YEAR     - Year of Century
 X..M..E  ZONE     - Time Zone
```

Common Data Elements

```
 X.....E  DAYNAME  - Name of Day of Week
 X..M..E  DURATION - Recording Interval Time
 X..M..E  ENDTS    - End Time Stamp
 X..M..E  ORGSYSID - Originating System Identification
 X..M..E  STARTTS  - Start Time Stamp
 X..M..E  VSESYSID - VSE System Identifier
 X..M..E  VSEVER   - VSE Version
```

Retained Data Elements

```
 X.....E  PRAPTERM - POWER Termination Reason
 X..M..E  PRATYPE  - Remote Type
 X.....   PRAUSER  - SIGNON User Information
```

Accumulated Data Elements

```
 X..M..E  PRABUFRV - Buffers Received
 X..M..E  PRABUFTR - Buffers Transmitted
 X..M..E  PRAERROR - Errors Count
 X..M..E  PRAINRSP - Invalid Responses
 X..M..E  PRASESSN - Sessions
 X..M..E  PRATIMOT - Timeouts
 X..M..E  PRATRMER - Terminal Errors
```

5.2.5.3 - Usage Considerations

This section identifies the special considerations or techniques related to using the PWRPRA File.

1. You must exercise care in using the special date and time data elements contained in each CA MICS file. As the file's granularity increases in higher timespans, certain fields lose significance and should not be used.

   - o HOUR should not be used in the MONTHS timespan or above.
   - o DAY and DAYNAME should not be used in the WEEKS timespan or above.
   - o WEEK should not be used in the MONTHS timespan or above.

2. The following data elements have meaning only when using the PWRPRA File in the DETAIL timespan, because they lose significance once summarization has been performed. These data elements appear in the PWRPRA File in the DETAIL timespan only.

   PRAPTERM - POWER Termination Reason
   PRAUSER - SIGNON User Information

3. The following elements are normally unavailable. They are turned off for all timespans in order to conserve storage.

   PRALPSWD - Line Password
   PRANPSWD - Node Password

5.2.5.4 - Retrieval Examples

This section presents a retrieval example for the VSE/POWER Remote Activity File.

In the example, several CA MICS macros are used to specify the files used and the summarization done.

Example: Summarize remote activity statistics by system and remote system identifier.

```
%LET BY = SYSID PRARMTID ;
%LET BREAK = PRARMTID ;
PROC SORT DATA=%MFILE(DB=P,TS=MONTHS,F=PRA)
 OUT=SESSIONS ;
  BY &BY ;
RUN ;
DATA ;
  SET ;
  %PRASUM ;
RUN ;

PROC PRINT LABEL UNIFORM ;
  BY SYSID ;
  ID SYSID PRARMTID PRATYPE ;
  VAR PRASESSN DURATION PRABUFRV PRABUFTR ;
RUN ;
```

5.2.6 - VSE/POWER Device Activity (PWRPDA) File

FILENAME=PWRPDAxx

The VSE/POWER Device Activity File quantifies the SIO activity to devices by partitions that are under the control of VSE/POWER. It is built from the SIO segments in the Execution Account Record of VSE/POWER Accounting. Device Class and Device Type are derived from user-supplied configuration parameters.

The following sections describe the file's organization and list the data elements maintained.

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

5.2.6.1 - File Organization

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

Because CA MICS allows you to define the timespans in which a file is supported, this table has been generated as part of the installation process and accurately reflects the CA MICS system at your installation.

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

Generation Date: Thu, Jul 18, 2019

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

Figure 5-8. PWRPDA Time-Span Granularity Chart

5.2.6.2 - Data Elements List

The list below identifies data elements contained in this file. The format for data element entries is

```
    time_span  data_element - description
```

where:

```
time_span     = the timespans in which the data element is
                supported.  A period (.) indicates that the
                data element is not supported.  Supported
                timespans are indicated by the letters
                XDWMYTE, meaning:

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

data_element  = the data element name.

description   = the long name of the data element.
```

Because CA MICS allows you to define the timespans in which a file is supported, this table has been generated as part of the installation process and accurately reflects the CA MICS system at your installation.

GENERATION DATE: Thu, Jul 18, 2019

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

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

Sequence/Summary Data Elements

```
 .D....E  DAY      - Day of Month
 .DWM..E  DEVADDR  - Device Address
 .DWM..E  DEVCLASS - Device Class
 .DWM..E  DEVTYPE  - Device Type
 .DW...E  HOUR     - Hour of Day
 ......E  JOB      - Job Identification
 .D.M..E  MONTH    - Month of Year
 ......E  PWRJOBNO - POWER Job Number
 .DWM..E  SYSID    - System Identifier
 .DW...E  WEEK     - Week of Year
 .DWM..E  YEAR     - Year of Century
 .DWM..E  ZONE     - Time Zone
```

Common Data Elements

```
 .D....E  DAYNAME  - Name of Day of Week
 .DWM..E  ENDTS    - End Time Stamp
 .DWM..E  ORGSYSID - Originating System Identification
 .DWM..E  STARTTS  - Start Time Stamp
 .DWM..E  VSESYSID - VSE System Identifier
 .DWM..E  VSEVER   - VSE Version
```

Accumulated Data Elements

```
 .DWM..E  PDASIOCT - Device SIO Count
```

5.2.6.3 - Usage Considerations

This section identifies the special considerations or techniques related to using the PWRPDA File.

1. You must exercise care in using the special date and time data elements contained in each CA MICS file. As the file's granularity increases in higher timespans, certain fields lose significance and should not be used.

   - o HOUR should not be used in the MONTHS timespan or above.
   - o DAY and DAYNAME should not be used in the WEEKS timespan or above.
   - o WEEK should not be used in the MONTHS timespan or above.

2. The following data elements are user-defined. The value in each is dependent on user-selected options or user-supplied SAS code:

   DEVCLASS - Device Class
   DEVTYPE - Device Type

   For more details, refer to the Data Dictionary in Appendix B of this guide.

5.2.6.4 - Retrieval Examples

This section presents a retrieval example for the VSE/POWER Device Activity File.

In the example, several CA MICS macros are used to specify the files used and the summarization done.

Example: Produce a vertical bar chart of I/O activity for tape drives by hour and sub-grouped by device address.

```
DATA DEVICES ;
  SET &PPWRD..PWRPDA01 ;
  IF DEVCLASS EQ 'TAPE' ;
  DATE = DATEPART(ENDTS) ;
  FORMAT DATE DATE7. ;
RUN ;

PROC SORT ;
  BY SYSID DATE ;
RUN ;

PROC CHART ;
  BY SYSID DATE ;
  VBAR HOUR/DISCRETE SUMVAR=PDASIOCT SUBGROUP=DEVADDR ;
RUN ;
```

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

CHAPTER 6

DATA SOURCES

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

CHAPTER 6

DATA SOURCES

Chapter 6. DATA SOURCES

The CA MICS Analyzer Option for VSE/POWER uses IBM's VSE/POWER accounting data to produce files in the VSE/POWER Information Area of the CA MICS Database. IBM's PACCOUNT command allows you to save the data in the VSE/POWER account file; you are responsible for getting this saved data to CA MICS. See Section 7.3.6 of this guide for information on defining the input source DD statements.

The Analyzer Option for VSE/POWER uses the following record types to produce files:

- Execution Account Record, type E
- Reader Account Record, type R
- List Account Record, type L
- Punch Account Record, type P
- Transmitter/Receiver Account Record, types M/V, respectively
- Network Account Record, type N
- RJE-BSC Line Account Record, type T
- RJE-SNA Session Account Record, type S

The System Up Account Record, type U, is used to produce an operational status report as shown in Section 9.2.5 of this guide.

The following records are not used by the Analyzer Option for VSE/POWER:

- Spool-Access Connect Account Record, type C
- Spool-Access Operation Account Record, type X

Details about records used by this CA MICS product are discussed later in this chapter.

This chapter contains information on the following topics:

1 - Data Collector Considerations
2 - Record Descriptions

6.1 - Data Collector Considerations

The data produced by the Job Accounting facility of VSE/POWER is controlled through the PACCNT macro. Individual records can be turned off or the entire facility can be disabled. Contact your VSE systems programmer to determine what collection options are active.

POWER data is collected continuously to an Account disk file. This must be dumped to an external file using the PACCOUNT operator command, which permits the file to be dumped to a disk or tape file, or to the punch spool. CA MICS can accept data produced using either the disk or tape forms of the command. The punch form of the command produces segmented card image records that would have to be reassembled to be used by CA MICS. CA MICS Product Support can advise you about the issues related to using this technique. You must make sure that the reassembled POWER data file is built as a VB (Variable Blocked) file with the LRECL attribute greater than or equal to the longest record in the file.

When preparing data for CA MICS, please do not combine data from different systems into a single file. CA MICS expects account data from each VSE/POWER system or shared spool environment to be provided through a separate DD card. Since only data from shared spool environments contains a system identifier, it would be impossible for CA MICS to determine the source of a given record if data from different systems were combined. Also, the CA MICS job summarization logic assumes that all systems associated with a given DD card share the same spool file set. If this is not true, it may attempt to combine records from unrelated jobs into a single job observation.

Another issue that may impact shared spool environments is system clock synchronization. Differences in clock settings can invalidate certain job service elements, including PJBTURTM, PJBSRVMT, PJBSRVMS, and PJBSRVEX. You should keep the system clocks in as close agreement as is practical.

6.2 - Record Descriptions

The VSE/POWER accounting records shown in Figure 6-1 are used by the CA MICS Analyzer Option for VSE/POWER. The figure shows when each record is written and what each record contains.

Figure 5-1 in Chapter 5 of this guide illustrates the relationship between these records and the files in the VSE/POWER Information Area of the CA MICS Database. Chapter 3 discusses how the files are used to generate the reports produced by the Analyzer Option for VSE/POWER.

RECORD NAME TYPE	WRITTEN	RECORD CONTENTS
Execution Type E	At the end of each VSE job step	Job identification CPU time I/O counts
Reader Type R	For every job submitted for spooling	Job identification Number of input lines spooled
List Type L	For each list queue entry processed by a list task	Job identification Number of lines and pages printed Where printed
Punch Type P	For each punch queue entry processed by a punch task	Job identification Number of cards punched Where punched
Transmitter/ Receiver Type M / Type V	For every job or output transmission via a connection or during a session	Job identification Routing information Number of records
Network Type N	For each session terminated on an existing communication path	Activities during a session
RJE-BSC Line Type T	For a user session sign-off or when a line stop occurs	Transmission statistics
RJE-SNA Session Type S	When an SNA user session ends	Transmission statistics
System Up Type U	When start-up completes for the VSE/POWER system	Status of the VSE/POWER partition

Figure 6-1. VSE/POWER Record Descriptions

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

CHAPTER 7

PARAMETERS

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

CHAPTER 7

PARAMETERS

Chapter 7. PARAMETERS

This chapter describes how to complete the required parameter definitions needed to install the CA MICS Analyzer Option for VSE/Power. The system administrator should use it as a detailed reference in conjunction with the PIOM.

Installing CA MICS requires the following:

- o Gaining the necessary understanding of your data center and its needs.
- o Translating that understanding into CA MICS parameters.

In particular, you must do the following:

- o Arrive at a number of policy decisions.
- o Fill out several worksheets.
- o Translate the worksheet entries into the corresponding CA MICS parameter library member entries.

This chapter focuses on considerations that are unique to the CA MICS Analyzer Option for VSE/Power. Chapters 2 and 3 of the PIOM document the mechanics of the CA MICS installation process and include checklists that describe each installation step.

If you have a question at any time during your review of the material presented here, contact Technical Support at http://ca.com/support.

This chapter contains information on the following topics:

1 - Environmental Considerations
2 - Complex Level Parameters
3 - Unit Level Parameters

7.1 - Environmental Considerations

Before coding product parameters, you need to know about the VSE environments at your installation. Before you specify parameters for the product:

- o Examine existing job groups, account codes, and job control information used by the VSE system. This information helps you code appropriate values for account codes and PWRGROUP parameters.
- o Review the default options for the parameters to determine their applicability to your site.
- o Review reporting requirements to determine whether or not you need to code MICF inquiries to satisfy the needs of the VSE group.
- o Review current CA MICS parameter specifications:
  - Review database unit specifications to determine which unit or units should include VSE/POWER data.
  - Review the SYSID parameter to determine whether or not it correlates to the VSE data. Your site's SYSID definition is located in the prefix.MICS.PARMS data set associated with each database unit.
  - Review the CA MICS ZONE parameter to ensure that it reflects the variations in VSE data. This parameter is located in the prefix.MICS.PARMS data set associated with each database unit.
  - Examine existing accounting standards for other CA MICS components, if applicable, to ensure that the CA MICS Accounting and Chargeback product aggregates information consistently.

7.2 - Complex Level Parameters

Complex level parameters describe the CA MICS Analyzer Option for VSE/POWER to the CA MICS system. These parameters, listed below and described in the subsections noted, are:

1 - Account Code Specification (PWRACCT)
2 - Account Code Exit Routine (PWRACRT)
3 - Generation (PWRGENIN)

7.2.1 - Account Code Specification (PWRACCT)

Account codes tell CA MICS how to associate jobs with the individual or group responsible for running the jobs. Account codes are part of the file keys of the files that support them, as discussed below. The PIOM discusses account codes in greater detail (see Section 2.3.1.7.1).

The account code specification parameter PWRACCT defines how many account fields will be maintained in the CA MICS Analyzer Option for VSE/Power files that support account codes (CA MICS supports from one to nine account fields). In addition to the number of fields, the PWRACCT parameter describes the length of each field and its contents.

The following Analyzer Option for VSE/Power files support account codes:

- o VSE/POWER Job Activity File (PWRPJB)
- o VSE/POWER Job Suspend File (PWR_PJ)
- o VSE/POWER Program Activity File (PWRPPG)
- o VSE/POWER Output Activity File (PWRPOA)

The parameters specified in the PWRACCT member of the sharedprefix.MICS.PARMS data set define the account field structure. To assign values to the account fields, you need to code an account code exit routine, PWRACRT, which is described later in this chapter.

PREPARATION

Before you define the account code structure, consult your site's VSE system programmer to determine:

- o What naming standards are used to associate jobs to those responsible for running them.
- o How codes are specified.
- o How codes are verified.

Consider the following in determining the number of account fields required to meet your data center's reporting and analysis needs:

- o Account fields are part of the file keys for the files that support them. As such, at least one record is generated for each combination of values. (There may be more than one record generated, because other fields also make up the file keys.) A greater number of account fields means that the database will be larger than if fewer

account fields are defined, but reporting and analysis can be performed in greater detail.

- If you anticipate needing to expand the account code structure in the future, establish an extra account code now to eliminate the need to retrofit the database later to add the new account code.

COLLECTING DATA TO SPECIFY ACCOUNT CODES

A worksheet for organizing the information needed to code PWRACCT is shown in Figure 7-1.

```
+-------------------------------------------------------------------------+
| INSTALLATION PREPARATION WORKSHEET:  VSE/POWER Account Code Specification|
| PARMS Library Member is PWRACCT                                         |
| Reference Section:  7.2.1, CA MICS Analyzer Option for VSE/POWER Guide  |
+-------------------------------------------------------------------------+
|                                                                         |
|  ACCOUNT  TIMESPAN   FIELD                                              |
| CODE LEVEL  MASK     LENGTH  DESCRIPTION                                |
|   (1-9)                                                                 |
|                                                                         |
|     _     T(______)   __    '_________________________________________'  |
|                                                                         |
|     _     T(______)   __    '_________________________________________'  |
|                                                                         |
|     _     T(______)   __    '_________________________________________'  |
|                                                                         |
|     _     T(______)   __    '_________________________________________'  |
|                                                                         |
|     _     T(______)   __    '_________________________________________'  |
|                                                                         |
|     _     T(______)   __    '_________________________________________'  |
|                                                                         |
|     _     T(______)   __    '_________________________________________'  |
|                                                                         |
|     _     T(______)   __    '_________________________________________'  |
|                                                                         |
|     _     T(______)   __    '_________________________________________'  |
|                                                                         |
|                                                                         |
|                                                                         |
|                                                                         |
|                                                                         |
+-------------------------------------------------------------------------+
| ....5...10...15...20...25...30...35...40...45...50...55...60...65...70.. |
+-------------------------------------------------------------------------+
```

Figure 7-1. VSE/POWER Account Code Specification Worksheet

The following is a description of the fields in Figure 7-1:

ACCOUNT CODE LEVEL: The level of importance of the element. Level 1 is the most important field and level 9 is the least important.

TIMESPAN MASK: Account code levels can be deactivated in the DAYS, WEEKS, MONTHS, and YEARS timespans. For example, the DETAIL timespan may have account code levels 1, 2, and 3, while the MONTHS timespan has only level 1. Setting account code levels by timespan is accomplished by specifying this additional parameter on the account code statements, as described below.

FIELD LENGTH: The length of the specified element. Valid lengths range from 1 to 30.

DESCRIPTION: The title that describes the account code level. Valid descriptions range from 1 to 40 characters.

Once prepared, code the contents of the worksheet in the data set sharedprefix.MICS.PARMS(PWRACCT). Observe the following conventions when coding:

- o Blank statements are permitted. Comments are coded by beginning the statement with an asterisk (*).
- o Account levels are provided in ascending order, starting with 1. You can specify up to nine account levels, with no gaps between the numbers.
- o The statement is free-form but positional.

A sample PWRACCT member is:

```
* SAMPLE ACCOUNT CODE SPECIFICATION
     1 T(YYYYYY)  3 'DIVISION'
     2 T(YYYYYY)  3 'PROJECT'
     3 T(YNNNNN) 16 'USER'
```

The primary field in this account code structure is the division identifier. This identifier is limited to three positions. The second field identifies the project, and is also limited to three positions. The final field identifies the user that submitted the job, and can contain up to 16 positions. PWRACCT3 is only kept in the DETAIL timespan.

SPECIFYING THE TIMESPAN MASK

Timespans can be specified on the account code statement using the timespan mask parameter T(.....) as follows:

```
level T(......) length 'descriptive title'
```

This example shows the placement and syntax of the parameter on the account code statement. Each position (.) in the timespan parameter represents a timespan, in this order: DETAIL, DAYS, WEEKS, MONTHS, YEARS, and TABLES. For each timespan, a Y indicates that the account level should be active and an N indicates that the account level should be inactive.

This parameter is optional. If it is not coded, the assumed value is T(YYYYYY).

The following rules apply if you code this parameter:

- o DETAIL must always be Y. Account codes may not be deactivated in this timespan.
- o If DAYS is N, then WEEKS, MONTHS, and YEARS must also be N. If the account code level is inactive in the DAYS timespan, it cannot be active in higher timespans.
- o If MONTHS is N, then YEARS must be N. If the account code level is inactive in the MONTHS timespan, it cannot be active in the YEARS timespan.

7.2.2 - Account Code Exit Routine (PWRACRT)

An account code exit routine tells CA MICS how to assign values to the account fields defined by the account code specification.

The routine is invoked to build the elements PWRACTn, where n is the account code level. For example, if PWRACCT defines three account code levels, PWRACRT builds the elements PWRACT1, PWRACT2, and PWRACT3.

The routine sets the values of all the PWRACTn variables in the following files:

- o VSE/POWER Job Activity File (PWRPJB)
- o VSE/POWER Job Suspend File (PWR_PJ)
- o VSE/POWER Program Activity File (PWRPPG)
- o VSE/POWER Output Activity File (PWRPOA)

You code one routine, but it is invoked three times. The SAS variable PWRACTEX can be used to determine the file for which the routine is being invoked as follows:

PWRACTEX	FILE
PJB	VSE/POWER Job Activity File
PJB	VSE/POWER Job Suspend File
PPG	VSE/POWER Program Activity File
POA	VSE/POWER Output Activity File

You can use any of the data elements available in the files for which the routine is invoked except the fffCOST variable which has not yet been calculated (see Chapter 5, Files, for lists of data elements). The variable VSEDDNAM is also available; its value is the DDname of the records used to build the observation.

When processing data for the VSE/POWER Program Activity File, you can use the job elements that come from IBM's VSE/POWER Accounting Reader record. The element PJBMASK will have a value of R if these elements are valid. These job elements are:

PJBDRMT	Destination Remote
PJBINCPU	Input Processor System ID
PJBINDEV	Input Device Name
PJBORGID	Origin User Identification
PJBORGNN	Origin Node Name
PJBJPRTY	Job Input Priority
PJBPTERM	POWER Termination Code
PJBSRMT	Source Remote
PJBSYSIN	Input Cards Read
PJBTKOBL	Input Storage Tracks

Code the account code exit routine in SAS and verify that it is correct. A sample PWRACRT member is provided in sharedprefix.MICS.PARMS(PWRACRT). See Section 2.3.1.5, Notes on Coding CA MICS Parameters, in the CA MICS Planning, Installation, Operation, and Maintenance Guide for coding help. Figure 7-2 provides a worksheet for coding your routine.

EXAMPLE

The account code specification illustrated in Section 7.2.1 defines account code levels by division, project, and user, respectively. The account code exit routine to support these account codes might be:

```
* SAMPLE ACCOUNT CODE EXIT ROUTINE
*
    PWRACT1 = SUBSTR(PWRJUSER,ONE,3);
    PWRACT2 = SUBSTR(JOB,ONE,3);
    IF PWRACTEX = 'PPG' THEN PWRACT3 = VSEJUSER;
                        ELSE PWRACT3 = BLANKS;
```

For each record, the value for division (PWRACT1) is the first three characters of the PWRJUSER variable. The value for project (PWRACT2) is the first three characters of the JOB variable. The value of user (PWRACT3) is set to the value of VSEJUSER if the record goes to the VSE/POWER Program Activity File (PWRPPG). If the record goes to either the Job Activity (PWRPJB) or Output Activity (PWRPOA) File, the value for user is set to blanks.

```
INSTALLATION PREPARATION WORKSHEET:  VSE/POWER Account Code Exit Routine

PARMS Library Member is PWRACRT
Reference Section:  7.2.2, CA MICS Analyzer Option for VSE/POWER Guide

* VALIDATE FOR VALID ACCOUNT CODES, WHERE POSSIBLE ;

IF { account data is valid } THEN DO;

* BUILD ACCOUNT CODE FIELDS AS IN THE WORKSHEET 7-1

    PWRACT1=field source 1 ;
    PWRACTn=field source n ;
    ____________________________________________________________________
    ____________________________________________________________________
    ____________________________________________________________________
    ____________________________________________________________________
    ____________________________________________________________________
    ____________________________________________________________________
    ____________________________________________________________________

END;
ELSE DO;

* ROUTINE TO BUILD INSTALLATION OVERHEAD ACCOUNT CODES ;

    PWRACT1='overhead category' ;
    PWRACTn='overhead category' ;
    ____________________________________________________________________
    ____________________________________________________________________
    ____________________________________________________________________
    ____________________________________________________________________
    ____________________________________________________________________
    ____________________________________________________________________

END;

....5...10...15...20...25...30...35...40...45...50...55...60...65...70..
```

Figure 7-2. VSE/POWER Account Code Exit Routine Worksheet

7.2.3 - Generation (PWRGENIN)

The CA MICS Analyzer Option for VSE/POWER does not need an OPTION statement in sharedprefix.MICS.GENLIB(PWRGENIN). If, after running the product for six months, you need to perform special tailoring, see Chapter 6 of the CA MICS System Modification Guide.

7.3 - Unit Level Parameters

Unit level parameters describe the structure and sources of IBM's VSE/POWER Accounting data.

This section contains information on the following unit level parameters for the CA MICS Analyzer Option for VSE/POWER:

1 - VSE/POWER Options (PWROPS)
2 - VSE/POWER Job Groups (PWRGROUP)
3 - VSE/POWER Job Group Routine (PWRGPRTE)
4 - VSE/POWER Job Turnaround Time Routine (PWRTNRTE)
5 - VSE/POWER Configuration (PWRCONFG)
6 - Input Source Definition (INPUTPWR)
7 - Generating PWR System Code (PWRPGEN)
8 - Database Space Modeling (DBMODEL)

7.3.1 - VSE/POWER Options (PWROPS)

This section shows you how to specify the operational statements that control the CA MICS Analyzer Option for VSE/POWER processing.

Operational statements are stored in the prefix.MICS.PARMS cccOPS member, where ccc is the component identifier, and are incorporated into the CA MICS system by running the prefix.MICS.CNTL(cccPGEN) job.

```
************************************************************
*                                                          *
*  NOTE:  CHANGES to prefix.MICS.PARMS(cccOPS) members     *
*         REQUIRE EXECUTION of prefix.MICS.CNTL(cccPGEN)   *
*         to take effect.                                  *
*                                                          *
*         In addition, any change to parameters that       *
*         impact the DAILY operational job JCL such as,    *
*                                                          *
*         o  changing RESTART NO to RESTART YES,           *
*                                                          *
*         o  WORK parameter changes when RESTART NO is in  *
*            effect,                                       *
*                                                          *
*         o  Specifying TAPEfff (if this product supports  *
*            a DETAIL level TAPE option),                  *
*                                                          *
*         o  or changes to prefix.MICS.PARMS(INPUTccc),    *
*                                                          *
*         will require regeneration of the DAILY job by    *
*         executing prefix.MICS.CNTL(JCLGEND) or by        *
*         specifying DAILY in prefix.MICS.PARMS(JCLGENU)   *
*         and executing prefix.MICS.CNTL(JCLGENU).         *
*                                                          *
*         Refer to the checklist (if provided) for updating *
*         cccOPS parameters and running required generation *
*         jobs.                                            *
*                                                          *
************************************************************
```

The PWROPS member describes the data to be processed by the DAY035 DAILY update step and allows you to customize the process. A worksheet for recording the statement values for PWROPS is shown in Figure 7-3.

The PWROPS member contains the following statements, described in detail below. A comment line is defined by an asterisk (*) as the first non-blank character.

Required Statements

```
-------------------
OPTIONS

Optional Statements
-------------------
SUSPENDLIMIT
```

7.3.1.1 - OPTIONS Statement

The OPTIONS statement describes the attributes of IBM's VSE/Power accounting data that will be processed by the CA MICS Analyzer Option for VSE/Power. You must provide one OPTIONS statement for each VSE/Power system.

Consider consulting with your VSE systems programmer before implementing the PWROPS definition to ensure that the definition reflects your VSE system.

The OPTIONS statement has the following format:

OPTIONS orgsysid ddname vsesysid datefmt sysid_sw version

where:

orgsysid = The original system identifier as described in prefix.MICS.PARMS(SYSID) for this unit.

ddname = The ddname pointing to the data set containing the VSE/Power accounting data.

vsesysid = The single-character VSE/Power system identification contained in the SYSID record header, or X if there is no header.

If your VSE/Power system was generated with shared spool support, VSE/Power uses VSESYSID in all account records and in its responses to PDISPLAY requests. The value of VSESYSID was set in IBM's SYSID parameter of the POWER macro used to install VSE/Power. It may have been overridden by a SET statement in IBM's VSE/Power autostart function.

datefmt = The system date format as defined to VSE/Power; it must be either MM/DD/YY or DD/MM/YY. The DATE parameter of the STDOPT statement controls the format of the system date. The STDOPT statement is usually executed as part of a VSE system's Automatic System Initialization (ASI).

sysid_sw = Specify SYSID if the data contains a system identification header; if not, specify NOSYSID.

VSE/Power systems generated with shared spool support contain a system identification header. To determine whether or not your system was generated with shared spool support, examine the SHARED parameter of the POWER macro used to install VSE/Power. A value of NO indicates that the system was generated without shared spool support. A value of (Q) indicates that the system was generated with shared spool support. A value of (Q,A) indicates that the system was generated with shared spool support and a shared accounting file.

version = The version and release of IBM's VSE/Power that produced the data. Valid values are 2.1.0, 2.2.0, 2.3.0, 4.1, 5.1, 5.2, 6.1, 6.3, 6.4, 6.5, 6.6, 6.7, 7.1, 8.1, 8.2, 8.3, 9.1, 9.2, 9.3, and 9.4.

CA MICS requires that all data produced by VSE/Power systems that share the same queues be processed through a single DD statement. Each VSE/Power system has a unique VSE system identification. If the systems were generated with shared accounting file support (a value of (Q,A) on the SHARED parameter of IBM's POWER macro), your VSE/Power system will build only one POWER accounting file. However, if each system has its own POWER accounting file, the input from all systems sharing the same queues must be concatenated through a single DD statement for input to CA MICS.

Example:

```
OPTIONS  VSE1  INPUTVSE  1  MM/DD/YY  SYSID   7.1
OPTIONS  VSE2  INPUTVSE  2  MM/DD/YY  SYSID   7.1
OPTIONS  VSE3  INPUTVSE  3  MM/DD/YY  SYSID   7.1
OPTIONS  VSE4  INPUTVSE  4  MM/DD/YY  SYSID   7.1
OPTIONS  VSEA  INPUTA    X  MM/DD/YY  NOSYSID 5.2
```

Accounting data for the VSE/Power shared spool complex is read from ddname INPUTVSE. It is associated with ORGSYSID VSE1, VSE2, VSE3, or VSE4 depending upon the VSESYSID value of 1, 2, 3, or 4, respectively. All of the data from these systems is processed as if it were produced by a VSE/Power system at Version 7 Release 1. The system date format in the records is MM/DD/YY.

All of the records processed from ddname INPUTA will be associated with ORGSYSID VSEA. These records contain no SYSID header, have a system date format of MM/DD/YY, and will be processed as though they were produced by a VSE/Power system at Version 5.2.

The two DD statements in prefix.MICS.PARMS(INPUTPWR) will be for INPUTVSE and INPUTA. The PWRPGEN process will check the PWROPS and INPUTPWR members for a one-to-one correspondence of ddnames. See Section 7.3.6 of this guide for more information on INPUTPWR.

7.3.1.2 - SUSPENDLIMIT Statement

The SUSPENDLIMIT statement specifies the maximum number of days that an incomplete job should remain in the VSE/POWER Job Suspend File (PWR_PJ). Refer to Section 2.2.3 of this guide for a description of the suspend process.

The SUSPENDLIMIT statement has the following format:

```
SUSPENDLIMIT days
```

where: days is the limit in days (DAILY updates) in the range of 0 to 99.

7.3.1.3 - WORK, MULTWORK, and NOMULT Statements

WORK

This statement is optional. It enables sites experiencing either SAS WORK space allocation problems or out of work space conditions during DAYnnn or INCRnnn (where nnn is the job step number), daily or incremental update processing, to allocate multiple WORK files.

You can allocate multiple WORK files for use during the daily and/or incremental update job step. The maximum number of WORK files you can allocate varies by product. These additional work files are used in conjunction with the single work data set allocated by default using the JCLDEF parameters WORKUNIT and WORKSPACE.

Because the individual space allocation requirement for each WORK file is typically much smaller, it is more likely to be satisfied.

To take advantage of multiple WORK files support, edit prefix.MICS.PARMS(cccOPS) and insert a WORK statement as shown below:

```
WORK n data_set_allocation_parameters
```

where n is the number of WORK data sets

NOTE: The default is zero (0).
The maximum is nine (9).

data_set_allocation_parameters is one or more data set allocation parameters (for example, STORCLAS or SPACE) separated by spaces.

You can also specify the WORK parameter as the following:

```
WORK n XXX pppp ssss
```

where:

```
n    is the number of WORK data sets
XXX  is TRK or CYL
pppp is the primary allocation
ssss is the secondary allocation
```

Note: When allocating any number of SAS WORK data sets, be aware that one additional SAS WORK data set is automatically allocated to facilitate sorting. For example, if you allocate six SAS WORK data sets, you will actually get seven.

If you omit the data_set_allocation_parameters or the WORK parameter, the work data sets are allocated according to the values you specified for the WORKUNIT and WORKSPACE parameters in prefix.MICS.PARMS(JCLDEF). Use the data_set_allocation_parameters to override this default, either to alter the space allocation or to use System Managed Storage (SMS) parameters to control data set placement and characteristics.

Note: If you allocate insufficient space for the WORK data sets, DAYnnn and/or INCRnnn processing will fail and can only be restarted from the beginning.

Note: If internal step restart is active, you can override the WORK data set allocation parameters at execution-time using the //PARMOVRD facility. For more information about execution-time override of dynamic data set allocation parameters, see the PIOM, section 2.3.6.

Specify data set allocation parameters, separated by blanks, according to SAS LIBNAME statement syntax. If you need multiple lines, repeat the WORK keyword on the continuation line.

WORK accepts the engine/host options documented in the SAS Companion for the z/OS environment, including STORCLAS, UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and VOLSER.

Important! Do not specify the DISP parameter.

Example 1:

```
WORK n STORCLAS=MICSTEMP SPACE=(XXX,(pppp,ssss),RLSE)
```

where:

```
  n        - is the number of WORK data sets.
  STORCLAS - specifies a storage class for a new data set.
             The name can have up to 8 characters.
  SPACE    - specifies how much disk space to provide for
             a new data set being allocated.
  XXX      - is TRK or CYL.
  pppp     - is the primary allocation.
  ssss     - is the secondary allocation.
  RLSE     - specifies that free-space should be released
             when the data set is closed.
```

Example 2:

```
WORK n XXX pppp ssss
```

where:

```
  n        - is the number of WORK data sets.
  XXX      - is TRK or CYL.
  pppp     - is the primary allocation.
  ssss     - is the secondary allocation.
```

Example 3 (multiple lines):

```
WORK n STORCLAS=MICSTEMP UNIT=SYSDA
WORK   SPACE=(xxxx,(pppp,ssss),,,ROUND))
```

where:

```
  n        - is the number of WORK data sets.
  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.
  UNIT     - specifies the generic unit for a new data set.
             The name can have up to eight characters.
  SPACE    - specifies how much disk space to provide for
             a new data set being allocated.
  XXX      - is TRK or CYL.
  pppp     - is the primary allocation.
  ssss     - is the secondary allocation.
```

Note: Since there is some performance impact when using multiple WORK files, you should specify the minimum number of WORK data sets to meet your work space requirements. As a start, try incrementing the number gradually beginning from the default.

WORK Considerations

How Much Space Should You Allocate?

o First Time Implementation of Multiple Work Files

If this is the first time you are implementing multiple work files for this product in this unit, review prefix.MICS.PARMS(JCLDEF) and find the WORKSPACE parameter. It will resemble this sample statement:

```
WORKSPACE      TRK 500 250
```

The value shows the current SAS WORK space allocation for the unit as a single data set. It also serves as the default value used in the unit's DAYnnn daily update (and/or INCRnnn incremental update) step unless you provide a WORK parameter.

To achieve the equivalent work space allocation of WORKSPACE TRK 500 250 using multiple WORK data sets that will collectively share the work space requirements of the daily and/or incremental update step, you could code either one of these:

```
WORK 2 SPACE=(TRK,(250,125))

WORK 5 SPACE=(TRK,(100,50))
```

To determine the total work space, multiply the number of WORK files (n) by the primary (pppp) and secondary (ssss) values specified.

Note: To simplify the example, only the SPACE parameter is shown above. You can follow either with data set allocation parameters like UNIT or STORCLAS as required for your site.

o Adjusting Allocation for Existing Multiple WORK Files

If you have previously implemented multiple WORK file support for this product in this unit, and you want to change either the number of WORK files or the space allocations, examine prefix.MICS.PARMS(cccOPS) and find the existing WORK statement.

- If the existing WORK statement only specifies the number of WORK files but does not contain space allocation information as shown below:

  ```
  WORK 5
  ```

  Then each of the multiple WORK files is allocated using the values from the WORKSPACE parameter of prefix.MICS.PARMS(JCLDEF), as described earlier under First Time Implementation of Multiple Work Files.

  To increase workspace, you can increase the number of WORK files (for example, change WORK 5 to WORK 6,7,8, or 9), increase the space allocation in the WORKSPACE parameter, or do both.

  To decrease workspace, you can decrease the number of WORK files (for example, change WORK 5 to WORK 4,3,2, or 1), decrease the space allocation in the WORKSPACE parameter, or do both.

  You can also elect to explicitly specify the multiple WORK file space allocation by adding the space allocation values directly to the WORK statement. This will remove the link to the prefix.MICS.PARMS(JCLDEF) WORKSPACE parameter for multiple WORK file space allocation. This is recommended as it serves to clearly document, in one place, how multiple WORK files are allocated.

- If the existing WORK statement does include space allocation as shown in the examples below:

  ```
  WORK 5 TRK 200 100

  or

  WORK 5 SPACE=(TRK,(200,100)) STORCLAS=MICSTEMP
  ```

  Simply change the values to meet your needs.

  If you need more work space, you can increase the number of WORK files (for example, change WORK 5 to WORK 6,7,8, or 9), increase the space allocation (for example, change TRK 200 100 to TRK 250 120), or do both.

  To decrease work space, you can decrease the number of WORK files (for example, change WORK 5 to WORK 4,3,2, or 1), decrease the space allocation (for example, change TRK 200 100 to TRK 150 80), or do both.

Note: If internal step restart is NOT active (RESTART NO) and you change the WORK parameter, you must:

o Run cccPGEN
o Run JCLGENU for DAILY (to regenerate DAILY) and, if incremental update is enabled, INCRccc

When internal step restart is active, (RESTART YES), then, when you change WORK and run cccPGEN, changes take effect immediately. There is no need to run JCLGENU.

SASWORK

This statement is optional.

The WORK DD statement in the CA MICS procedures allocates a temporary data set where SAS keeps its temporary data files and other items that SAS uses during processing of the current job.

By default, the space allocated is defined in the member prefix.MICS.PARMS(JCLDEF) with the WORKSPACE and WORKUNIT parameters, then generated into all the JCL procedures for

a given unit.

With the SASWORK statement you have the option to override this unit-wide definition to specify the space allocation individually for the current step.

The format of the SASWORK statement is:

```
SASWORK data_set_allocation_parameters
```

where data_set_allocation_parameters is one or more data set allocation parameters (for example, STORCLAS or SPACE) separated by spaces.

You can also specify the SASWORK parameter as the following:

```
SASWORK XXX pppp ssss
```

where:

```
  XXX  is TRK or CYL
  pppp is the primary allocation
  ssss is the secondary allocation
```

If you omit the data_set_allocation_parameters or the SASWORK statement, the WORK data set is allocated according to the values you specified for the WORKUNIT and WORKSPACE parameters in prefix.MICS.PARMS(JCLDEF). Use the data_set_allocation_parameters to override this default, either to alter the space allocation or to use System Managed Storage (SMS) parameters to control data set placement and characteristics.

Specify data set allocation parameters, separated by blanks, according to SAS LIBNAME statement syntax. If you need multiple lines, repeat the SASWORK keyword on the continuation line.

Example:

```
SASWORK STORCLAS=MICSTEMP SPACE=(XXX,(pppp,ssss))
```

where:

```
  STORCLAS - specifies a storage class for a new data set.
             The name can have up to 8 characters.
  SPACE    - specifies how much disk space to provide for
             a new data set being allocated.
  XXX      - is TRK or CYL.
  pppp     - is the primary allocation.
  ssss     - is the secondary allocation.
```

Note: If you change the SASWORK parameter, you must:

- o Run cccPGEN
- o Run JCLGENU for DAILY (to regenerate DAILY) and, if incremental update is enabled, INCRccc

```
MULTWORK|NOMULT fff fff ... fff
-------------------------------

Since multiple work files usage impacts performance, this
product provides these optional parameters so you can
restrict multiple work files usage to only those files having
excessive space requirements.

Note:  You can only use one of these optional parameters with
the WORK statement, NOT both.

The MULTWORK parameter restricts the use of multiple WORK
files to ONLY those listed after the MULTWORK keyword.

MULTWORK fff fff ... fff

where fff is the unique three character identifier

If you need multiple lines, repeat the MULTWORK on the
continuation line.

The NOMULT parameter forces the use of multiple WORK files
for all files EXCEPT those specified after the NOMULT
keyword.

NOMULT fff fff ... fff

where fff is the unique three character identifier

If you need multiple lines, repeat the NOMULT on the
continuation line.

The default is as follows if neither MULTWORK nor NOMULT
parameters are specified:

MULTWORK _PJ _PP _PR PDA PJB POA PPG PRA DAT PGT


The following files are eligible for multiple WORK support:

PWR VSE/POWER Information Area Files

  _PJ    VSE/POWER Job Suspend File
  _PP    VSE/POWER Program Suspend File
  _PR    VSE/POWER Reader Suspend File
  PDA    VSE/POWER Device Activity File
  PJB    VSE/POWER Job Activity File
  POA    VSE/POWER Output Activity File
  PPG    VSE/POWER Program Activity File
  PRA    VSE/POWER Remote Activity File
  DAT    VSE/POWER Device Activity File (internal only)
  PGT    VSE/POWER Program Activity File (internal only)
```

The following section discusses changing the WORK option:

1 - Change the Number of Work Files

7.3.1.3.1 - Change the Number of Work Files

To change the number of work files used in the CA MICS Analyzer Option for VSE/POWER processing in step DAY035, follow the checklist provided below for each unit.

```
*****************************************************
*                                                   *
*           CHANGE NUMBER OF WORK FILES             *
*                                                   *
*****************************************************
```

___ 1. Update the WORK statement in prefix.MICS.PARMS(cccOPS), where (ccc) is the component identifier, to specify the number of work data sets required. Below is an example:

```
WORK n STORCLAS=MICSTEMP SPACE=(XXX,(pppp,ssss))
```

where:

```
n        - is the number of WORK data sets.
STORCLAS - specifies a storage class for a new data
           set.  The name can have up to eight
           characters.
SPACE    - specifies how much disk space to provide
           for a new data set being allocated.
XXX      - is TRK or CYL.
pppp     - is the primary allocation.
ssss     - is the secondary allocation.
```

You should specify the minimum number of WORK data sets to meet your work space requirements. As a start, try incrementing the number gradually beginning from the default.

___ 2. If this is the first time you are implementing multiple work files for this product, then continue with Step 2. If you are just changing the number currently in use, or simply the space definitions, then proceed to Step 3 of this checklist.

Browse sharedprefix.MICS.PROTOLIB(DYcccnnn) and sharedprefix.MICS.PROTOLIB(cccINCR), where (nnn) is the job step number and (ccc) is the product ID for this product, checking for the presence of the WORK symbolic on the EXEC statement to determine if you have previously modified this product to increase the allocation of SAS WORK space.

___ 2a. If you find a WORK symbolic, simply divide the primary and secondary allocation values from the WORK symbolic by the number of work files specified above (value of n on the WORK statement coded in Step 1).

Coding the resulting values will yield the same aggregate space allocation you have been using with a single WORK file. To double your available WORK space, carry out the division, double the results and use the values in the WORK definition above.

___ 2b. If you did not find a WORK symbolic in PROTOLIB, examine prefix.MICS.PARMS(JCLDEF) for each CA MICS unit containing this product. Find the WORKSPACE keyword. The space allocation specified is used for a single SAS WORK file. Perform the same division as described in the previous paragraph to determine the quantity that will yield equivalent total allocation with multiple WORK files. Then adjust the values upward to meet your needs.

___ 3. Submit the job in prefix.MICS.CNTL(cccPGEN).

___ 4. If you specified RESTART YES in the product's cccOPS, you are done. Otherwise, you must do Steps 5, 6, and 7.

___ 5. Edit prefix.MICS.PARMS(JCLGENU) so that it contains a single line that reads:

DAILY

or, if incremental update is enabled for this product in this unit database, specify:

DAILY INCRccc

where ccc is the product ID.

___ 6. Submit the job in prefix.MICS.CNTL(JCLGENU). Ensure that there are no error messages in MICSLOG or SYSTSPRT, that the MICSLOG contains the normal termination message, BAS10999I, and that the job completes with a condition code of zero.

___ 7. The following operational job(s) have changed:

DAILY

INCRccc (if incremental update is enabled)

If your site has implemented the operational CA MICS processes in a scheduling product, the JCL may have to be refreshed in that product. See the scheduling

product's administrator for the exact processes involved in updating that product's representation of the CA MICS jobs.

7.3.1.4 - Internal Step Restart Statements

RESTART YES/NO

This statement is optional. Specify this to activate internal step restart for this product's DAILY and/or INCRccc database update job steps:

RESTART YES

If you do not specify or enable the RESTART parameter, then this option defaults to the following and internal step restart is disabled:

RESTART NO

```
*************************************************************
*                                                           *
*  Note:  Changing the RESTART parameter (either from NO    *
*         to YES or from YES to NO) requires regeneration   *
*         of the DAILY operational job by executing         *
*         prefix.MICS.CNTL(JCLGEND) or by specifying        *
*         DAILY in prefix.MICS.PARMS(JCLGENU) and           *
*         executing prefix.MICS.CNTL(JCLGENU).              *
*                                                           *
*         If incremental update is active for this product, *
*         you must also regenerate the INCRccc job.         *
*                                                           *
*************************************************************
```

Internal step restart can significantly reduce time and resource usage to recover from daily and/or incremental update processing failures. CA MICS uses a checkpoint/restart technique.

- o When internal step restart is activated, the database update job step "checkpoints" (or saves) intermediate results (work file contents) and the operational environment at the end of each processing phase.

- o Then, if required, the database update step can resume execution at the beginning of the processing phase in which the failure occurred.

- o Restart is accomplished by restoring the operational environment from the last checkpoint, bypassing completed processing phases, and resuming execution using intermediate results (work files) from the last checkpoint.

Note: When you activate internal step restart (RESTART YES), the following optional restart parameters are enabled. These parameters have no effect if restart is disabled (RESTART NO). For more details, see the individual parameter descriptions later in this section.

- o RESTARTCKPT data_set_allocation_parameters
- o RESTARTWORK data_set_allocation_parameters
- o DYNAMWAIT minutes

Processing Phases:

This product employs two database update processing phases followed by the two common roll-up phases.

Phase	Description
FORMAT	Read raw input data, convert to SAS format, and output to intermediate work files.
DBUPDATE	Sort intermediate work file contents, eliminate duplicate input data, prepare for DETAIL cycle creation, merge data across optional multiple work files, enhance data content, and create the new DETAIL cycle.
DYSUM	Summarize DETAIL data to create new DAYS cycles and to update current week-to-date and month-to-date cycles.
DYAGE	Cutover new database cycles to production and "age" existing cycles.

RESTART Considerations

- o Overhead

  Enabling internal step restart adds some overhead to the database update job step -- the cost of taking checkpoints and managing saved materials. Since this overhead is relatively constant and independent of input data volume, you may find that costs outweigh potential savings when input data volume is low, for example in a test unit. For high volume, production units, internal step restart support overhead should be a minor portion of total resource usage.

- o Cataloged Work Files

  When internal step restart is enabled, the SAS work data set, internal step restart control data set, and multiple work file data sets are allocated and cataloged with permanent dataset names so they will be retained for use in restart if the step abends. These data sets are deleted when the step completes successfully.

  Prior to enabling internal step restart support, these data sets were probably allocated on system "scratch" space with a temporary, system assigned data set names. If your installation standards do not allow "permanent" data sets on DASD volumes used for temporary work space, you may need to use the WORK, RESTARTCKPT, and RESTARTWORK parameters to direct the internal step restart data sets to a generic unit or storage class that allows cataloged data sets.

- o Dynamic Allocation

  When internal step restart is active, dynamic allocation is employed for the work data sets. If your installation restricts dynamic allocation of large, cataloged data sets, you may need to use the WORK, RESTARTCKPT, and RESTARTWORK parameters to direct work data set allocation to a generic unit or storage class where dynamic allocation is allowed.

- o Data Set Names

  The SAS work data set, internal step restart control data set, and multiple work file data sets are allocated and cataloged according to the standard CA MICS unit database data set name conventions. The default DDNAME and data set names are:

```
      o SAS work data set,
            //cccXWORK DD DSN=prefix.MICS.cccXWORK,.....

      o Internal step restart control data set,
            //cccXCKPT DD DSN=prefix.MICS.cccXCKPT,.....

      o Multiple work file data sets,
            //WORKnn   DD DSN=prefix.MICS.cccWRKnn,.....

    Since these data sets conform to the same data set name
    conventions as your existing CA MICS data sets, there
    should be few, if any, data set name related allocation
    issues.  However, it is possible to override the data set
    names if required.  Please contact CA MICS Product
    Support for assistance if you must alter data set names.


RESTARTCKPT
-----------

This statement is optional.  Specify the following to
override default data set allocation parameters for the
internal step restart checkpoint data set:

RESTARTCKPT   data_set_allocation_parameters

Note:  RESTARTCKPT is ignored when you specify RESTART NO.

The internal step restart checkpoint data set (or cccXCKPT
data set) contains processing status, control, and SAS
environmental information for internal step restart
processing checkpoints.  This includes a copy of the SAS WORK
format and macro catalogs, current macro variable values, and
a description of work files that may be needed to restart
DAYnnn processing.

By default, the cccXCKPT data set is allocated according to
the values you specified for the WORKUNIT and WORKSPACE
parameters in prefix.MICS.PARMS(JCLDEF).  Specify RESTARTCKPT
to override this default, either to alter the space
allocation or to use System Managed Storage (SMS) parameters
to control data set placement and characteristics.

Note:  If you allocate insufficient space for the cccXCKPT
data set, DAYnnn processing will fail and can only be
restarted from the beginning.

Note:  You can override the RESTARTCKPT data set allocation
parameters at execution-time using the //PARMOVRD facility.
For more information about execution-time override of dynamic
data set allocation parameters, see the PIOM, section 2.3.6.

Specify data set allocation parameters, separated by blanks,
according to SAS LIBNAME statement syntax.  If you need
multiple lines, repeat the RESTARTCKPT keyword on the
continuation line.

RESTARTCKPT accepts the engine/host options documented in the
SAS Companion for the z/OS Environment, including STORCLAS,
UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and VOLSER.

Important!  DO NOT SPECIFY THE DISP PARAMETER.

Example 1:

RESTARTCKPT  STORCLAS=MICSTEMP SPACE=(xxxx,(pp,ss),,,ROUND)

where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated, where:

             xxxx is TRK, CYL, or blklen
             pp is the primary allocation
             ss is the secondary allocation

             and ROUND specifies that the allocated space be
             "rounded" to a cylinder boundary when the unit
             specified was a block length.  ROUND is ignored
             with the TRK or CYL options.

Example 2 (multiple lines):

RESTARTCKPT  STORCLAS=MICSTEMP UNIT=SYSDA
RESTARTCKPT  SPACE=(xxxx,(pp,ss),,,ROUND)

where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  UNIT     - specifies the generic unit for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated.


RESTARTWORK
-----------
```

This statement is optional. Specify the following to override default data set allocation parameters for the internal step restart WORK data set:

```
RESTARTWORK   data_set_allocation_parameters
```

Note: RESTARTWORK is ignored when you specify RESTART NO.

The internal step restart WORK data set (or cccXWORK data set) contains the intermediate work files that are not enabled to multiple work file support, including those files you may have specified on the optional NOMULT statement.

By default, the cccXWORK data set is allocated according to the values you specified for the WORKUNIT and WORKSPACE parameters in prefix.MICS.PARMS(JCLDEF). Specify RESTARTWORK to override this default, either to alter the space allocation or to use System Managed Storage (SMS) parameters to control data set placement and characteristics.

Note: If you allocate insufficient space for the cccXWORK data set, DAYnnn processing will fail and can only be restarted from the beginning.

Note: You can override the RESTARTWORK data set allocation parameters at execution-time using the //PARMOVRD facility. For more information about execution-time override of dynamic data set allocation parameters, see the PIOM, section 2.3.6.

Specify data set allocation parameters, separated by blanks, according to SAS LIBNAME statement syntax. If you need multiple lines, repeat the RESTARTWORK keyword on the continuation line.

RESTARTWORK accepts the engine/host options documented in "SAS Companion for the z/OS Environment", including STORCLAS, UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and VOLSER.

Important! DO NOT SPECIFY THE DISP PARAMETER.

Example 1:

```
  RESTARTWORK  STORCLAS=MICSTEMP SPACE=(xxxx,(pp,ss),,,ROUND)
```

where:

```
  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated, where:

             xxxx is TRK, CYL, or blklen
             pp is the primary allocation
             ss is the secondary allocation

             and ROUND specifies that the allocated space be
             "rounded" to a cylinder boundary when the unit
             specified was a block length.  ROUND is ignored
             with the TRK or CYL options.
```

Example 2 (multiple lines):

```
  RESTARTWORK  STORCLAS=MICSTEMP UNIT=SYSDA
  RESTARTWORK  SPACE=(xxxx,(pp,ss),,,ROUND)
```

where:

```
  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  UNIT     - specifies the generic unit for a new data set.
             The name can have up to 8 characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated.
```

The following section discusses enabling this option:

1 - Enable Internal Step Restart

7.3.1.4.1 - Enable Internal Step Restart

the CA MICS jobs.

To enable the internal step restart in the CA MICS Analyzer Option for VSE/POWER, follow the checklist provided below:

```
**************************************************
*                                                *
*           ENABLE INTERNAL STEP RESTART         *
*                                                *
**************************************************
```

___ 1. Edit prefix.MICS.PARMS(cccOPS), where (ccc) is the component identifier, and specify:

RESTART YES

For additional information on related topic, review the documentation for this product on WORK, RESTARTWORK, and RESTARTCKPT parameters to override default data set allocation parameters.

___ 2. Submit the job in prefix.MICS.CNTL(cccPGEN).

___ 3. Edit prefix.MICS.PARMS(JCLGENU) so that it contains a single line that reads:

DAILY

or, if incremental update is enabled for this product in this unit database, specify:

DAILY INCRccc

where ccc is the product ID.

___ 4. Submit the job in prefix.MICS.CNTL(JCLGENU). Ensure that there are no error messages in MICSLOG or SYSTSPRT, that the MICSLOG contains the normal termination message, BAS10999I, and that the job completes with a condition code of zero.

___ 5. The following operational job(s) have changed:

DAILY

INCRccc (if incremental update is enabled)

If your site has implemented the operational CA MICS processes in a scheduling product, the JCL may have to be refreshed in that product. See the scheduling product's administrator for the exact processes involved in updating that product's representation of

7.3.1.5 - Incremental Update Statements

INCRUPDATE

This statement is optional. Specify this to enable incremental update for this product:

```
INCRUPDATE YES
```

If you do not specify or enable the INCRUPDATE parameter, then this option defaults to this and incremental update is disabled:

```
INCRUPDATE NO
```

```
*************************************************************
*                                                           *
*  Note:  Changing the INCRUPDATE parameter (either from NO *
*         to YES or from YES to NO) requires regeneration   *
*         of the DAILY operational job by executing         *
*         prefix.MICS.CNTL(JCLGEND) or by specifying        *
*         DAILY in prefix.MICS.PARMS(JCLGENU) and           *
*         executing prefix.MICS.CNTL(JCLGENU).              *
*                                                           *
*         If you specify INCRUPDATE YES, you must also      *
*         generate the INCRccc, cccIUALC, and cccIUGDG jobs *
*         (where ccc is the 3 character product ID).        *
*         Depending on the options you select, you may also *
*         need to execute the cccIUALC and/or cccIUGDG      *
*         jobs.                                             *
*                                                           *
*************************************************************
```

Incremental update can significantly reduce time and resource usage in the DAILY job by letting you split out a major portion of daily database update processing into multiple, smaller, incremental updates executed throughout the day.

- o Standard CA MICS database update processing involves (1) reading and processing raw input data to generate DETAIL and DAYS level CA MICS database files, followed by (2) summarization of DETAIL/DAYS level data to update week-to-date and month-to-date database files.

- o When you activate incremental update:

  - You can execute the first-stage processing (raw data input to create DETAIL/DAYS files) multiple times throughout the day, each time processing a subset of the total day's input data.

  - Then, during the final update of the day (in the DAILY job), the incremental DETAIL/DAYS files are "rolled-up" to the database DETAIL and DAYS timespans, and then summarized to update the week-to-date and month-to-date files.

- o Incremental update is independent of your internal step restart or DBSPLIT specifications. You have the option to perform incremental updates with or without internal step restart support.

- o Incremental update is activated and operates independently by product. The incremental update job for this product, INCRccc (where ccc is the product ID), can execute concurrently with the incremental update job for another product in the same unit database.

- o The CA MICS database remains available for reporting and analysis during INCRccc job execution.

```
*************************************************************
*                                                           *
*  Note:  CA MICS is a highly configurable system           *
*         supporting up to 36 unit databases, each of which *
*         can be configured and updated independently.      *
*         Incremental update is just one of the options you *
*         can use to configure your CA MICS complex.        *
*                                                           *
*         All efforts should be made to employ CA MICS      *
*         configuration capabilities to minimize issues     *
*         prior to activating incremental update.  For      *
*         example:                                          *
*                                                           *
*         o  Splitting work to multiple units is an         *
*            effective way to enable parallel database      *
*            update processing                              *
*                                                           *
*         o  Adjusting account code definitions to ensure   *
*            adequate data granularity while minimizing     *
*            total database space and processing time       *
*                                                           *
*         o  Tailoring the database to drop measurements    *
*            and metrics of lesser value to your            *
*            data center, thereby reducing database update  *
*            processing and resource consumption            *
*                                                           *
*         While incremental update is intended to reduce    *
*         DAILY job elapsed time, total resource usage of   *
*         the combined INCRccc and DAILY jobs steps can     *
*         increase due to the additional processing         *
*         required to maintain the incremental update       *
*         "to-date" files and for roll-up to the unit       *
*         database.  The increased total resource usage     *
*         will be more noticeable with small data volumes,  *
*         where processing code compile time is a greater   *
*         percentage of total processing cost.              *
*                                                           *
*************************************************************
```

Note: When you activate incremental update (INCRUPDATE YES), the following optional incremental update parameters are enabled. These parameters have no effect if incremental update is disabled (INCRUPDATE NO). For more details, see the individual parameter descriptions later in this section.

o INCRDB PERM/TAPE/DYNAM

o INCRDETAIL data_set_allocation_parameters

o INCRDAYS data_set_allocation_parameters

o INCRCKPT data_set_allocation_parameters

o INCRSPLIT USE/IGNORE data_set_allocation_parameters

Incremental update processing reads and processes raw measurement data to create and maintain DETAIL and DAYS level "to-date" files for the current day.

o These incremental update database files are maintained on unique z/OS data sets, independent of the standard CA MICS database files, and independent of any other product's incremental update database files. There is one data set each for DETAIL and DAYS level "to-date" data and a single incremental update checkpoint data set for this product in this unit.

o The incremental update DETAIL and DAYS files can be permanent DASD data sets, or they can be allocated dynamically as needed and deleted after DAILY job processing completes. Optionally, you can keep the incremental update DETAIL and DAYS files on tape, with the data being loaded onto temporary DASD space as needed for incremental update or DAILY job processing. See the INCRDB PERM/TAPE/DYNAM option for more information.

After activating incremental update, you will use three incremental update facility jobs found in prefix.MICS.CNTL (Note that ccc is the product ID):

o cccIUALC

   You execute this job to allocate and initialize the incremental update checkpoint file, and optionally the incremental update DETAIL and DAYS database files. cccIUALC is generally executed just ONE time.

o cccIUGDG

   You execute this job to add generation data group (GDG) index definitions to your system catalog in support of the INCRDB TAPE option. cccIUGDG is generally executed just ONE time.

o INCRccc

   This is the job you execute for each incremental update. You will integrate this job into your database update procedures for execution one or more times per day to process portions of the total day's measurement data.

   Note: The DAILY job is run once at the end of the day. It will perform the final incremental update for the day's

data, and then roll-up the incremental DETAIL/DAYS files to the database DETAIL and DAYS timespans and update the week-to-date and month-to-date files.

INCRUPDATE Considerations

o Overhead

Incremental update is intended to reduce DAILY job resource consumption and elapsed time by offloading a major portion of database update processing to one or more executions of the INCRccc job. In meeting this objective, incremental update adds processing in the INCRccc and DAILY jobs to accumulate data from each incremental update execution into the composite "to-date" DETAIL and DAYS incremental update files, and also adds processing in the DAILY job to copy the incremental update files to the unit database DETAIL and DAYS timespans. The amount of this overhead and the savings in the DAILY job are site-dependent, and will vary based on input data volume and on the number of times INCRccc is executed each day.

In addition, activating incremental update will cause additional compile-based CPU time to be consumed in the DAYnnn DAILY job step. The increase in compile time is due to additional code included for each file structure in support of the feature. This increase should be static based on the scope of the CA MICS data integration product in terms of files. This compile-time increase does not imply an increase in elapsed or execution time. Incremental update allows I/O bound, intensive processing (raw data inputting, initial CA MICS transformation, etc.) to be distributed outside of the DAILY job. I/O processing is the largest contributor to elapsed time in large volume applications. Thus, the expected overall impact is a decrease in the actual runtime of the DAYnnn job step.

o Increased "Prime Time" Workload

By offloading work from the DAILY job to one or more INCRccc executions throughout the day, you are potentially moving system workload and DASD work space usage from the "off-hours," (when the DAILY job is normally executed) to periods of the day where your system resources are in highest demand. You should schedule INCRccc executions carefully to avoid adverse impact to batch or online workloads. For example, if your site's "prime shift" is 8:00 AM to 5:00 PM, you might choose to schedule incremental updates for 7:00 AM (just before "prime shift") and 6:00 PM (just after "prime shift"), with the DAILY job executing just after midnight.

o Increased DASD Usage

The DASD space required for the incremental update DETAIL and DAYS database files is in addition to the DASD space already reserved for the CA MICS database. By default, the incremental update database files are permanently allocated, making this DASD space unavailable for other applications. In general, you can assume that the incremental update database files will require space equivalent to two cycles of this product's DETAIL and DAYS timespan files.

Alternatively, the incremental update database files can be allocated in the first incremental update of the day and deleted by the DAILY job (see the INCRDB DYNAM option later in this section). This approach reduces the amount of time that the DASD space is dedicated to incremental update, and lets the amount of DASD space consumed increase through the day as you execute each incremental update.

A third option is to store the incremental update database files on tape (see the INCRDB TAPE option). With this approach, the DASD space is required just for the time that each incremental update or DAILY job step is executing. Note that while this alternative reduces the "permanent" DASD space requirement, the total amount of DASD space required while the incremental update or DAILY jobs are executing is unchanged. In addition, the TAPE option adds processing to copy the incremental update files to tape, and to reload the files from tape to disk.

Note: The incremental update checkpoint file is always a permanently allocated disk data set. This is a small data set and should not be an issue.

o Operational Complexity

Incremental update expands your measurement data management and job scheduling issues. You must ensure that each incremental update and the DAILY job processes your measurement data chronologically; that is, each job must see data that is newer than the data processed by the prior job. By incrementally updating the database, you have more opportunities to miss a log file, or to process a log out of order.

o Interval End Effects

Each incremental update processes a subset of the day's measurement data, taking advantage of early availability of some of the day's data, for example, when a measurement log fills and switches to a new volume. This can cause a problem if the measurement log split occurs while the data source is logging records for the end of a measurement interval, thus splitting the data for a single measurement interval across two log files. When an incremental update processes the first log file, the checkpoint high end timestamp is set to indicate that this split measurement interval has been processed. Then, when the rest of the measurement interval's data is encountered in a later update, it can be dropped as duplicate data (because data for this measurement interval end timestamp has already been processed).

Appropriate scheduling of log dumps and incremental updates can avoid this problem. For example, if you plan to run incremental updates at 7:00 AM and 6:00 PM, you could force a log dump in the middle of the measurement interval just prior to the scheduled incremental update executions. This is an extension of the procedure you may already be using for end-of-day measurement log processing. The objective is to ensure that all records for each monitor interval are processed in the same incremental update.

o Dynamic Allocation

When you activate incremental update and specify TAPE or DYNAM for the INCRDB parameter, dynamic allocation is employed for the incremental update database files. If your site restricts dynamic allocation of large, cataloged data sets, you must use the INCRDETAIL and INCRDAYS parameters to direct incremental update data set allocation to a generic unit or storage class where dynamic allocation is allowed.

o Data Set Names

The incremental update database files are allocated and cataloged according to standard CA MICS unit database data set name conventions. The DDNAME and default data set names are (where ccc is the product ID):

o Incremental update checkpoint file,
```
//IUCKPT   DD DSN=prefix.MICS.ccc.IUCKPT,.....
```

o Incremental update DETAIL
```
//IUDETAIL DD DSN=prefix.MICS.ccc.IUDETAIL,.....
```

o Incremental update DAYS
```
//IUDAYS   DD DSN=prefix.MICS.ccc.IUDAYS,....
```

Since these data sets conform to the same data set name conventions as your existing CA MICS data sets, there should be few, if any, data-set-name-related allocation issues. However, it is possible to override the data set names if required. Contact Technical Support at http://ca.com/support for assistance if you must change data set names.

INCRDB

This statement is optional. The default is this:

```
INCRDB PERM
```

Note: INCRDB is ignored when you specify INCRUPDATE NO.

Specify this statement or take the default, to keep the incremental update database DETAIL and DAYS files on permanently allocated DASD data sets:

```
INCRDB PERM
```

Execute the prefix.MICS.CNTL(cccIUALC) job to allocate the incremental update database files.

```
************************************************************
*                                                          *
*  Note:  The incremental update checkpoint file is always *
*         a permanently allocated DASD data set.           *
*                                                          *
************************************************************
```

Specify this to offload the incremental update DETAIL and DAYS files to tape between incremental update executions:

```
INCRDB TAPE #gdgs UNIT=name
```

With the TAPE option, the incremental update DETAIL and DAYS DASD data sets are dynamically allocated at the beginning of the incremental update job or DAILY job step, and then are deleted after the job step completes.

- o The first incremental update job of the day allocates and initializes the incremental update database files. At the end of the job, the DETAIL and DAYS files are copied to a new (+1) generation of the incremental update tape data sets. Then the DASD files are deleted.

- o Subsequent incremental update jobs restore the DASD incremental update database files from the current, (0) generation, incremental update tape data sets before processing the input measurement data. At the end of the job, the DETAIL and DAYS files are copied to a new (+1) generation of the incremental update tape data sets. Then the DASD files are deleted.

- o The DAILY job step also restores the DASD incremental update database files from the (0) generation tape files before processing the input data, but does NOT copy the incremental update database files to tape. Thus, the DAILY job actually creates a new, null (+1) generation.

- o Use the #gdgs parameter to specify the maximum number of incremental update tape generations. The minimum is 2 and the maximum is 99, with a default of 5. Set the number of generations equal to or greater than the number of incremental updates, including the DAILY job you plan to execute each day. This facilitates restart and recovery if you encounter problems requiring you to reprocess portions of the daily measurement data.

- o Use the optional UNIT=name parameter to specify a tape unit name for the incremental update database output tapes. The default is to use the same tape unit as the input tapes.

- o A special index must be created in your system catalog for each of the incremental update tape data set generation data groups. The prefix.MICS.CNTL(cccIUGDG) job will generate the statements to create the incremental update GDG index definitions.

  - Before each index is built, it is deleted. These DLTX (or DELETE) statements causes an error message if no entry exists. This is done so that you can change the number of entries without having to delete each of the index entries.

  - DLTX and BLDG (or DELETE and DEFINE) fail if there is a cataloged data set with the same index. IDCAMS issues a message and gives a return code of 8. This issue is not a problem for non-GDG entries or if the GDG already has the desired number of entries.

  - If you want to change the number of entries kept in a GDG with cataloged data sets, do the following:

    1. Uncatalog any existing entries in the GDG.
    2. Delete the index with a DLTX (or DELETE).
    3. Create the index with a BLDG (or DEFINE).
    4. Catalog any entries that are uncataloged in step 1.

- o The incremental update tape data set names are as follows, where ccc is the product ID:

  - Incremental update tape DETAIL file
    tapeprefix.MICS.ccc.IUXTAPE.GnnnnV00

  - Incremental update tape DAYS file
    tapeprefix.MICS.ccc.IUDTAPE.GnnnnV00

```
************************************************************
*                                                          *
*  Note:  The INCRDETAIL and INCRDAYS parameters are       *
*         required when you specify INCRDB TAPE.           *
*                                                          *
************************************************************
```

Specify this parameter to allocate dynamically the incremental update DETAIL and DAYS DASD data sets in the first incremental update of the day, and then delete these data sets at the end of the DAILY job step:

INCRDB DYNAM

- o With this option, no space is used for the incremental update database files during the time between the end of the DAILY job step and the beginning of the next day's first incremental update.
- o With this approach, you can set the data set allocation parameters so that the incremental update DETAIL and DAYS data sets start out with a minimum allocation and then grow through secondary allocations as more space is required for subsequent incremental updates. For example, enough space for one incremental update.

```
************************************************************
*                                                          *
*  Note:  The INCRDETAIL and INCRDAYS parameters are       *
*         required when you specify INCRDB DYNAM.          *
*                                                          *
************************************************************
```

INCRDETAIL

This statement is required if you specify either of these:

INCRDB TAPE

INCRDB DYNAM

Otherwise, this statement is optional. There is no default.

Specify this to define data set allocation parameters for the incremental update DETAIL data set (IUDETAIL):

INCRDETAIL data_set_allocation_parameters

Note: INCRDETAIL is ignored when you specify INCRUPDATE NO.

The incremental update DETAIL data set (IUDETAIL) contains the current incremental update detail-level database files, and the DETAIL "to-date" data for the current daily update cycle. You should allocate DASD space equivalent to two cycles of this product's DETAIL timespan data.

If you specified INCRDB PERM (the default), your INCRDETAIL parameter specifications are used in generating the cccIUALC job (where ccc is the product ID).

- o You will execute the cccIUALC job to allocate and initialize the incremental update database and checkpoint files.
- o Omit the INCRDETAIL parameter if you prefer to specify data set allocation parameters directly in the generated prefix.MICS.CNTL(cccIUALC) job.

If you specified INCRDB TAPE or INCRDB DYNAM, your INCRDETAIL parameter specifications are used in incremental update DETAIL data set dynamic allocation during incremental update or DAILY job step execution.

- o The INCRDETAIL parameter is required for the TAPE or DYNAM option.
- o Specify data set allocation parameters, separated by blanks, according to SAS LIBNAME statement syntax. If you need multiple lines, repeat the INCRDETAIL keyword on the continuation line.
- o INCRDETAIL accepts the engine/host options documented in the SAS Companion for the z/OS Environment, including STORCLAS, UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and VOLSER.

  Important! DO NOT SPECIFY THE DISP PARAMETER.
- o You can override the INCRDETAIL data set allocation parameters at execution-time using the //PARMOVRD facility. For more information about execution-time override of dynamic data set allocation parameters, see the PIOM, section 2.3.6.

Example 1:

INCRDETAIL STORCLAS=MICSTEMP SPACE=(xxxx,(pp,ss),,,ROUND)

```
where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated, where:

             xxxx is TRK, CYL, or blklen
             pp   is the primary allocation
             ss   is the secondary allocation

             and ROUND specifies that the allocated space be
             "rounded" to a cylinder boundary when the unit
             specified was a block length.  ROUND is ignored
             with the TRK or CYL options.

Example 2 (multiple lines):

INCRDETAIL   STORCLAS=MICSTEMP UNIT=SYSDA
INCRDETAIL   SPACE=(xxxx,(pp,ss),,,ROUND)

where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  UNIT     - specifies the generic unit for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated.


INCRDAYS
--------

This statement is required if you specify either of these:

INCRDB TAPE

INCRDB DYNAM

Otherwise, this statement is optional.  There is no default.


Specify this to define data set allocation parameters for the
incremental update DAYS data set (IUDAYS):

INCRDAYS      data_set_allocation_parameters

Note:  INCRDAYS is ignored when you specify INCRUPDATE NO.
```

The incremental update DAYS data set (IUDAYS) contains the current incremental update days-level database files, and the DAYS "to-date" data for the current daily update cycle. You should allocate DASD space equivalent to two cycles of this product's DAYS timespan data.

If you specified INCRDB PERM (the default), your INCRDAYS parameter specifications are used in generating the cccIUALC job (where ccc is the product ID).

- o You will execute the cccIUALC job to allocate and initialize the incremental update database and checkpoint files.
- o Omit the INCRDAYS parameter if you prefer to specify data set allocation parameters directly in the generated prefix.MICS.CNTL(cccIUALC) job.

If you specified INCRDB TAPE or INCRDB DYNAM, your INCRDAYS parameter specifications are used in incremental update DAYS data set dynamic allocation during incremental update or DAILY job step execution.

- o The INCRDAYS parameter is required for the TAPE or DYNAM option.
- o Specify data set allocation parameters, separated by blanks, according to SAS LIBNAME statement syntax. If you need multiple lines, repeat the INCRDAYS keyword on the continuation line.
- o INCRDAYS accepts the engine/host options documented in the SAS Companion for the z/OS Environment, including STORCLAS, UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and VOLSER.

  Important! DO NOT SPECIFY THE DISP PARAMETER.
- o You can override the INCRDAYS data set allocation parameters at execution-time using the //PARMOVRD facility. For more information about execution-time override of dynamic data set allocation parameters, see the PIOM, Section 2.3.6.

Example 1:

```
INCRDAYS     STORCLAS=MICSTEMP SPACE=(xxxx,(pp,ss),,,ROUND)
```

where:

STORCLAS - specifies a storage class for a new data set.

```
              The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated, where:

             xxxx is TRK, CYL, or blklen
             pp   is the primary allocation
             ss   is the secondary allocation

             and ROUND specifies that the allocated space be
             "rounded" to a cylinder boundary when the unit
             specified was a block length.  ROUND is ignored
             with the TRK or CYL options.

Example 2 (multiple lines):

INCRDAYS     STORCLAS=MICSTEMP UNIT=SYSDA
INCRDAYS     SPACE=(xxxx,(pp,ss),,,ROUND)

where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  UNIT     - specifies the generic unit for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated.


INCRCKPT
--------

This statement is optional.  Specify this to override default
data set allocation parameters for the incremental update
checkpoint data set:

INCRCKPT      data_set_allocation_parameters

Note:  INCRCKPT is ignored when you specify INCRUPDATE NO.


The incremental update checkpoint data set tracks incremental
update job status and the data that has been processed during
the current daily update cycle.  The incremental update
checkpoint is used to detect and block the input of duplicate
data during incremental update processing.  This data set
will be exactly the same size as prefix.MICS.CHECKPT.DATA
(the unit checkpoint data set), usually 20K to 200K depending
on the prefix.MICS.PARMS(SITE) CKPTCNT parameter (100-9999).
```

```
Your INCRCKPT parameter specifications are used in generating
the cccIUALC job (where ccc is the product ID).

o  You will execute the cccIUALC job to allocate and
   initialize the incremental update checkpoint file.  If you
   specified INCRDB PERM, then the cccIUALC job will also
   allocate the incremental update DETAIL and DAYS database
   files.

o  By default the incremental update checkpoint data set is
   allocated as SPACE=(TRK,(5,2)) using the value you
   specified for the prefix.MICS.PARMS(JCLDEF) DASDUNIT
   parameter.

o  Omit the INCRCKPT parameter if you prefer to override data
   set allocation parameters directly in the generated
   prefix.MICS.CNTL(cccIUALC) job.

Specify data set allocation parameters, separated by blanks,
according to SAS LIBNAME statement syntax.  If you need
multiple lines, repeat the INCRCKPT keyword on the
continuation line.

INCRCKPT accepts the engine/host options documented in the
SAS Companion for the MVS Environment, including STORCLAS,
UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and VOLSER.

Important!  DO NOT SPECIFY THE DISP PARAMETER.


Example 1:

INCRCKPT     STORCLAS=MICSTEMP SPACE=(xxxx,(pp,ss),,,ROUND)


where:

  STORCLAS - specifies a storage class for a new data set.
             The name can have up to eight characters.

  SPACE    - specifies how much disk space to provide for
             a new data set being allocated, where:

             xxxx is TRK, CYL, or blklen
             pp   is the primary allocation
             ss   is the secondary allocation

             and ROUND specifies that the allocated space be
             "rounded" to a cylinder boundary when the unit
             specified was a block length.  ROUND is ignored
             with the TRK or CYL options.
```

Example 2 (multiple lines):

```
INCRCKPT     STORCLAS=MICSTEMP UNIT=SYSDA
INCRCKPT     SPACE=(xxxx,(pp,ss),,,ROUND)
```

where:

STORCLAS - specifies a storage class for a new data set. The name can have up to eight characters.

UNIT - specifies the generic unit for a new data set. The name can have up to eight characters.

SPACE - specifies how much disk space to provide for a new data set being allocated.

INCRSPLIT

This statement is optional and defaults to this:

```
INCRSPLIT IGNORE
```

Specify the following if you want the incremental update job for this product to get input measurement data from the output of the SPLITSMF job. The optional data_set_allocation_parameters are used by the SPLITSMF job when creating the measurement data file for this product.

```
INCRSPLIT  USE  data_set_allocation_parameters
```

Note: INCRSPLIT is ignored when you specify INCRUPDATE NO.

This option would be used when multiple products in a single unit database are enabled to incremental update. The SPLITSMF job performs the same function for incremental update jobs as the DAILY job DAYSMF step performs for the DAYnnn database update steps.

- o The SPLITSMF job dynamically allocates, catalogs, and populates prefix.MICS.ccc.IUSPLTDS data sets for each product in the unit database for which you specified both the INCRUPDATE YES and INCRSPLIT USE parameters. These data sets are then deleted after processing by the appropriate INCRccc job.
- o Specify data set allocation parameters, separated by blanks, according to SAS LIBNAME statement syntax. If you need multiple lines, repeat the INCRSPLIT keyword on each continuation line.
- o INCRSPLIT accepts the engine/host options documented in the SAS Companion for the MVS Environment, including STORCLAS, UNIT, SPACE, BLKSIZE, DATACLAS, MGMTCLAS, and VOLSER.

  Important! DO NOT SPECIFY THE DISP PARAMETER.

Specify the following or accept the default if you want the incremental update jobs for this product to get their input measurement data from the data sets specified in the INPUTccc (or INPUTSMF) member of prefix.MICS.PARMS:

```
INCRSPLIT  IGNORE
```

When you specify INCRSPLIT IGNORE, this product will NOT participate in SPLITSMF job processing.

Example 1:

```
INCRSPLIT USE  STORCLAS=MICSTEMP SPACE=(xxxx,(pp,ss),,,ROUND)
```

where:

STORCLAS - specifies a storage class for a new data set. The name can have up to eight characters.

SPACE - specifies how much disk space to provide for a new data set being allocated, where:

xxxx is TRK, CYL, or blklen
pp is the primary allocation
ss is the secondary allocation

and ROUND specifies that the allocated space be "rounded" to a cylinder boundary when the unit specified was a block length. ROUND is ignored with the TRK or CYL options.

Example 2 (multiple lines):

```
INCRSPLIT  USE  STORCLAS=MICSTEMP UNIT=SYSDA
INCRSPLIT       SPACE=(xxxx,(pp,ss),,,ROUND)
```

where:

```
STORCLAS - specifies a storage class for a new data set.
           The name can have up to eight characters.

UNIT     - specifies the generic unit for a new data set.
           The name can have up to eight characters.

SPACE    - specifies how much disk space to provide for
           a new data set being allocated.
```

DYNAMWAIT

This statement is optional. Specify the following:

```
DYNAMWAIT   minutes
```

to override the default amount of time, in minutes, the DAILY and/or INCRccc job will wait for an unavailable data set.

Note: This optional parameter is not normally specified. The system default is adequate for most data centers.

Internal Step Restart and Incremental Update facilities use z/OS dynamic allocation services to create new data sets and to access existing data sets. Data set naming conventions and internal program structure are designed to minimize data set contention. However, if data set allocation does fail because another batch job or online user is already using a data set, DAILY and/or INCRccc processing will wait 15 seconds and then try the allocation again. By default, the allocation will be attempted every 15 seconds for up to 15 minutes. After 15 minutes, the DAILY or INCRccc job will abort.

If data set contention in your data center does cause frequent DAILY or INCRccc job failures, and you are unable to resolve the contention through scheduling changes, you may want to use the DYNAMWAIT parameter to increase the maximum number of minutes the DAILY and/or INCRccc jobs will wait for the data set to become available.

On the other hand, if your data center standards require that the DAILY and/or INCRccc jobs fail immediately if required data sets are unavailable, specify the following:

```
DYNAMWAIT 0
```

Note: You can override the DYNAMWAIT parameter at execution-time using the //PARMOVRD facility. For more information about execution-time override of dynamic data set allocation parameters, see the PIOM, section 2.3.6.

The following section discusses enabling this option:

1 - Implement Incremental Update

7.3.1.5.1 - Implement Incremental Update

To implement incremental update in the CA MICS Analyzer Option for VSE/POWER, follow the checklist provided below:

```
*****************************************************
*                                                   *
*           IMPLEMENT INCREMENTAL UPDATE            *
*                                                   *
*****************************************************
```

___ 1. Edit prefix.MICS.PARMS(cccOPS), where (ccc) is the component identifier:

- o Specify the following:

  INCRUPDATE YES

- o If you want to store the incremental update database files on tape between incremental updates, specify this:

  INCRDB TAPE #gdgs

- o If you want to allocate the incremental update database files during the first incremental update of the day and delete these data sets at the end of the DAILY job step, specify this:

  INCRDB DYNAM

- o If you specified INCRDB TAPE or INCRDB DYNAM, then you must also specify this:

  INCRDETAIL data_set_allocation_parameters
  INCRDAYS data_set_allocation_parameters

- o If you want the incremental update job for this product to get input measurement data from the output of the SPLITSMF job, specify this:

  INCRSPLIT USE data_set_allocation_parameters

- o For additional information on related topic, review the documentation for this product on INCRCKPT, INCRDETAIL, INCRDAYS, or INCRSPLIT parameters to override default data set allocation parameters.

___ 2. Submit the job in prefix.MICS.CNTL(cccPGEN).

___ 3. Edit prefix.MICS.PARMS(JCLGENU) so that it contains two or more lines reading:

DAILY
INCRccc cccIUALC cccIUGDG

___ 4. Submit the job in prefix.MICS.CNTL(JCLGENU). Ensure that there are no error messages in MICSLOG or SYSTSPRT, that the MICSLOG contains the normal termination message, BAS10999I, and that the job completes with a condition code of zero.

___ 5. Edit the job in prefix.MICS.CNTL(cccIUALC).

- o Inspect and/or specify data set allocation parameters for the incremental update database and checkpoint files. If you specified INCRDB TAPE or INCRDB DYNAM, the cccIUALC job will only allocate the incremental update checkpoint data set.

- o Submit the job. Ensure that there are no error messages in MICSLOG or SASLOG, and that the job completes with a condition code of zero.

___ 6. If you specified INCRDB TAPE, submit the job in prefix.MICS.CNTL(cccIUGDG) to define generation group indexes for the incremental update DETAIL and DAYS tape data sets. Examine SASLOG, MICSLOG, and SYSPRINT to verify that the generation group indexes were correctly defined.

Note: You may see error messages for the DLTX (or DELETE) statements. This is not a problem. cccIUGDG deletes each index prior to defining it, and an error message is issued if the index does not yet exist (e.g., if this is the first time you ran the cccIUGDG job).

___ 7. The following operational job(s) have changed:

DAILY INCRccc

If your site has implemented the operational CA MICS processes in a scheduling product, the JCL may have to be refreshed in that product. See the scheduling product's administrator for the exact processes involved in updating that product's representation of the CA MICS jobs.

___ 8. Implement operational procedures for gathering input measurement data and executing incremental updates (INCRccc) during the day.

You may also need to modify operational procedures for the DAILY job to ensure that processing is limited to input measurement data that has not been input to one of the day's incremental update executions.

7.3.1.6 - Sample PWROPS

Following is a sample of required and optional statements that may be coded in prefix.MICS.PARMS(PWROPS).

```
INSTALLATION PREPARATION WORKSHEET: VSE/POWER Analyzer Options

PARMS Library Member is PWROPS
Reference Section:  7.3.1, CA MICS Analyzer Options for VSE/POWER Guide

VSE/POWER ANALYZER PROCESSING OPTIONS:

ORGSYSID   _________________

  DDNAME   _________________

  VSESYSID  ___________ (X IF NOSYSID IS SPECIFIED FOR SYSID_SW)

  DATEFMT   ______ (MM-DD-YY)  ______ (DD-MM-YY)

  SYSID_SW  ______ (SYSID)     ______ (NOSYSID)

  VERSION   ______ (2.1.0)     ______ (2.2.0)     ______ (2.3.0)


ORGSYSID   _________________

  DDNAME   _________________

  VSESYSID  ___________ (X IF NOSYSID IS SPECIFIED FOR SYSID_SW)

  DATEFMT   ______ (MM-DD-YY)  ______ (DD-MM-YY)

  SYSID_SW  ______ (SYSID)     ______ (NOSYSID)

  VERSION   ______ (2.1.0)     ______ (2.2.0)     ______ (2.3.0)


....5...10...15...20...25...30...35...40...45...50...55...60...65...70..
```

Figure 7-3. VSE/POWER Options Definition Worksheet

7.3.2 - VSE/POWER Job Groups (PWRGROUP)

The PWRGROUP parameter tells CA MICS how to calculate actual turnaround times and establishes job groups for your VSE/POWER data.

Users generally hold the data center responsible for those parts of a job's life that the data center has control over (such as the amount of time it takes for an operator to mount a tape). Because turnaround time definitions, though not universally definable, tend to reflect users' perceptions, they contain only job-related resource use times.

A job group provides a means of classifying batch job activity in a record by its service requirements, job resource requirements, or other factors.

The statement format presented here is followed by more detail later in this section.

STATEMENT FORMAT

The statement format for the PWRGROUP parameter is

```
TURNTIME  a  b  c
GROUP     d  e  f  g
DEADLINE  h  i  j  f  g
OPEN      k  f  g
```

where:

TURNTIME = the keyword for the turnaround service definition for standard and deadline jobs.

a = a time descriptor. Valid values are STANDARD (standard job -- GROUP statement below) and DEADLINE (a deadline job -- DEADLINE statement below).

b = the origin of the job. Valid values are LOCAL (submitted locally) and REMOTE (submitted from a remote site).

c = the list of elements used to determine actual job service. The list entries are numeric and must be separated by at least one blank. See Figure 7-4 for a list of valid values.

GROUP = the keyword for standard job group (one with a conventional service requirement like 10 minute turnaround).

d = an identifier. Valid values for standard job groups are integers from 1 to 149.

e = the target turnaround time in minutes. Valid values are integers that are less than six digits long. This target must be greater than or equal to the target of the previous GROUP, if there is one.

f = the service factor. It allows the CA MICS Accounting and Chargeback product to perform priority accounting.

g = a descriptive title for the job group. Valid titles are up to 30 characters long and must be enclosed in single quotes.

DEADLINE = the keyword for a deadline job group (one that must be completed within a stated time frame).

h = an identifier. Valid values are integers from 150 through 179.

i = a group made up of four sets of times. The first two digits of i represent the starting hour of the deadline group. The second two digits of i represent the starting minutes of the deadline group. The third two digits of i represent the ending hour of the deadline group. The fourth two digits of i represent the ending minutes of the deadline group. Valid hours values are integers from 00 through 23. Valid minutes values are integers from 00 through 59.

j = the number of days spanned for the deadline. Valid values are integers from 1 to 7, where 1 denotes that the deadline falls in the same day.

OPEN = the keyword for an open job group (one that does not lend itself to turnaround time studies).

k = an identifier. Valid values are integers from 180 through 195.

A sample PWRGROUP statement is

```
TURNTIME STANDARD LOCAL 1 2 3
GROUP      1 10 1 '10 MIN BATCH SERVICE'
DEADLINE 150 08 00 20 00 1 1 'IN BY 8 OUT BY 8 SERVICE'
OPEN     180 1 'CICS'
```

Actual turnaround times are calculated as the sum of elements 1, 2, and 3 (see Figure 7-4). The standard job group 1 is described as providing 10 minute batch service. Its turnaround time objective is 10 minutes and its service factor of 1 means that, for accounting purposes, this job is charged at its normal rate--neither discounted nor surcharged.

The deadline job group 150 provides for jobs that are in by 8:00 a.m. (08 00) and out by 8:00 p.m. (20 00). Jobs can span one day (jobs submitted by 8 a.m. Monday are due to complete by 8 p.m. Monday). The service factor of 1 again means that, for accounting purposes, the jobs are neither discounted nor surcharged.

Jobs from the CICS system fall into the open job group 180. They are charged at their normal rate (neither discounted nor surcharged).

More information on job group service evaluation is provided in Section 2.2.1 of this guide.

The worksheets in Figures 7-4 and 7-5 are provided to help you determine the values of these parameters.

```
INSTALLATION PREPARATION WORKSHEET: Turnaround Time Definition

PARMS Library Member is PWRGROUP
Reference Section:  7.3.2, CA MICS Analyzer Option for VSE/POWER Guide

The following comments give the meanings of the numbers to be coded
for Standard Job Groups.  The data element, the name in parentheses,
is available in the PWRPJB file.

     1 - Reader Time           (PJBRDRTM)
     2 - Input Queue Time      (PJBINQTM)
     3 - Job Execution Time    (PJBEXCTM)

The turnaround time for a STANDARD job group is defined as the sum of
the elements listed below.

TURNTIME STANDARD LOCAL  _ _ _
TURNTIME STANDARD REMOTE _ _ _
_____________________________________________________________________

The following comments give  the meanings of the allowable starting
time stamp numbers for DEADLINE Job Groups:

     1 - Reader Time Stamp (RDRTS)
     2 - Job Reader End Time Stamp (PJBRENTS)
     3 - Start Time Stamp (STARTTS)

Allowable ending time stamp numbers and their meanings are:

     3 - Start Time Stamp (STARTTS)
     4 - End Time Stamp (ENDTS)

You cannot specify "3" as both the start and end time stamp
designator.

TURNTIME DEADLINE LOCAL  _ _
TURNTIME DEADLINE REMOTE _ _

....5...10...15...20...25...30...35...40...45...50...55...60...65...70..
```

Figure 7-4. VSE/POWER Job Group Worksheet, Turnaround Time Definition

```
+-----------------------------------------------------------------------+
| INSTALLATION PREPARATION WORKSHEET:  VSE/POWER Job Groups             |
|                                                                       |
| PARMS Library Member is PWRGROUP                                      |
| Reference Section:  7.3.2, CA MICS Analyzer Option for VSE/POWER Guide |
+-----------------------------------------------------------------------+
|  STANDARD Job Groups (# is 1-149)                                     |
|                                                                       |
|             Turn Time                                                 |
|              Target   Service   Descriptive Title                     |
|         #    (mins)   Factor                                          |
|                                                                       |
|  GROUP ___   ______   _____    '______________________________________' |
|                                                                       |
|  GROUP ___   ______   _____    '______________________________________' |
|                                                                       |
|  GROUP ___   ______   _____    '______________________________________' |
|                                                                       |
|                                                                       |
|  DEADLINE Job Groups (# is 150-179)                                   |
|                                                                       |
|                         Time                                          |
|                    Start       End      Days   Service   Descriptive  |
|             #  (hr) (min)  (hr) (min)  Span   Factor    Title        |
|                                                                       |
|  DEADLINE ___ ____ ____   ____ ____   ____   _____    '______________' |
|                                                                       |
|  DEADLINE ___ ____ ____   ____ ____   ____   _____    '______________' |
|                                                                       |
|  DEADLINE ___ ____ ____   ____ ____   ____   _____    '______________' |
|                                                                       |
|                                                                       |
|  OPEN Job Groups (# is 180-195)                                       |
|                                                                       |
|              Service   Descriptive Title                              |
|         #    Factor                                                   |
|                                                                       |
|  OPEN  ___   ______   '______________________________________________' |
|                                                                       |
|  OPEN  ___   ______   '______________________________________________' |
|                                                                       |
|  OPEN  ___   ______   '______________________________________________' |
+-----------------------------------------------------------------------+
| ....5...10...15...20...25...30...35...40...45...50...55...60...65...70.. |
+-----------------------------------------------------------------------+
```

Figure 7-5. VSE/POWER Job Group Worksheet, VSE/POWER Job Groups Definition

7.3.3 - VSE/POWER Job Group Routine (PWRGPRTE)

The VSE/POWER Job Group Routine assigns a value to the data element JOBGROUP for each observation in the VSE/POWER Job Activity (PWRPJB) and VSE/POWER Job Suspend (PWR_PJ) Files. The routine does NOT have to consider the computation of job turnaround time or the determination of the JOBGROUP service received, as these tasks are handled automatically by CA MICS through the parameters in prefix.MICS.PARMS(PWRGROUP).

This routine is coded in SAS and is placed in prefix.MICS.PARMS(PWRGPRTE). The routine must assign the correct JOBGROUP to every job passed to it; testing the routine is your responsibility.

Your VSE/POWER job group routine has each of the data elements contained in the VSE/POWER Job Activity (PWRPJB) File available to it, as well as the data element VSEDDNAM. VSEDDNAM contains the DDname used to read the VSE/POWER accounting records that are used to build the observation. The data elements most often used to determine JOBGROUP classification are:

```
JOB      - Job Identification (jobname)
JOBCLASS - Job Input Class
PWRJUSER - POWER Job User Information
VSEPRTID - VSE Partition Identifier
```

IMPORTANT NOTE: Your code must not modify the values contained in the fields listed above under ANY circumstances. The only field that should be modified is the data element JOBGROUP, which must be set to the correct value for the job which was executed. No CA MICS user exit may issue a RETURN statement or exit in any fashion other than "falling off at the bottom".

EXAMPLE

An installation commits to turnaround times based on the job class specified for the service requested. The relevant portion of this shop's specification in prefix.MICS.PARMS(PWRGROUP) is:

```
GROUP 1     10 1 '10 MIN BATCH SERVICE'         (class A)
GROUP 3     30 1 '30 MIN BATCH SERVICE'         (class B)
GROUP 5     60 1 '60 MIN BATCH SERVICE'         (class C)
GROUP 7    240 1 '4 HOUR BATCH SERVICE'         (class D)
GROUP 9   1440 1 '24 HOUR BATCH SERVICE'        (class E)
GROUP 11 10080 1 '7 DAY BATCH SERVICE'          (class F)
GROUP 13 10080 1 'OTHER'
```

Assuming that the above job groups correspond to job classes A through F, the following SAS code would serve as this site's PWRGPRTE exit:

```
IF JOBCLASS='A' THEN JOBGROUP=1 ;
ELSE IF JOBCLASS='B' THEN JOBGROUP=3 ;
ELSE IF JOBCLASS='C' THEN JOBGROUP=5 ;
ELSE IF JOBCLASS='D' THEN JOBGROUP=7 ;
ELSE IF JOBCLASS='E' THEN JOBGROUP=9 ;
ELSE IF JOBCLASS='F' THEN JOBGROUP=11;
ELSE JOBGROUP=13;
```

Jobs not matching the standard six groups that were defined are assigned to job group 13. This "defensive programming" should always be done.

7.3.4 - VSE/POWER Job Turnaround Time Routine (PWRTNRTE)

The turnaround time routine PWRTNRTE provides flexibility for those sites whose turnaround time calculations cannot be performed by the TURNTIME statement of PWRGROUP.

This routine can use any of the data elements available in the VSE/POWER Job Activity File (PWRPJB); however, you can only modify the contents of the elements PJBTURTM, SUBMITTS, and PURGETS.

For jobs in a standard job group, the routine is entered after the element PJBTURTM is calculated. This exit may modify PJBTURTM.

For jobs in a DEADLINE job group, the routine is entered after the calculation of the elements SUBMITTS and PURGETS, the time the job is considered to be available to the system and the time the job is out of the system, respectively. This exit may modify either or both of these elements. PJBTURTM will be missing for jobs in a DEADLINE job group because the element does not have meaning for a DEADLINE job group.

For jobs in an OPEN job group, the routine is entered with PJBTURTM, SUBMITTS, and PURGETS all having missing values because these elements do not have meaning for an OPEN job group.

Code your routine in SAS, following the guidelines for coding exits documented in Section 2.3.1.5 of the CA MICS Planning, Installation, Operation, and Maintenance Guide. Save your routine in prefix.MICS.PARMS(PWRTNRTE).

7.3.5 - VSE/POWER Configuration (PWRCONFG)

The VSE/POWER configuration member PWRCONFG contains a list, by VSESYSID, of device addresses with their device types and device classes.

The information is used to accumulate a table of start I/O counts (SIOs) by device class which is used to build the VSE/POWER Program Activity (PWRPPG) and VSE/POWER Job Activity (PWRPJB) Files. In addition, the value of the device class is used as a summarization key to the VSE/POWER Device Activity (PWRPDA) File.

A VSE/POWER configuration sample and a worksheet to help you build this member is shown in Figure 7-6. The fields are described after the figure.

```
INSTALLATION PREPARATION WORKSHEET:  VSE/POWER Configuration Worksheet

PARMS Library Member is PWRCONFG
Reference Section:  7.3.5, CA MICS Analyzer Option for VSE/POWER Guide
SAMPLE:

*
* ORGSYSID   DEVICE        DEVICE   DEVICE
*            ADDRESS(ES)   CLASS    TYPE
*
  VSE1       00C           SPOOL    2501
  VSE1       01F           SPOOL    3211
  VSE1       140-14F       DASD     3350
  VSE1       150-15F       DASD/FBA 3370
  VSE1       380-38F       TAPE     3420
  VSE2       00C           SPOOL    2501
  VSE2       01F           SPOOL    3211
  VSE2       140-14F       DASD     3350
  VSE2       150-15F       DASD/FBA 3370
  VSE2       380-38F       TAPE     3420
  VSE3       00C           SPOOL    2501
  VSE3       01F           SPOOL    3211
  VSE3       140-14F       DASD     3350
  VSE3       150-15F       DASD/FBA 3370
  VSE3       380-38F       TAPE     3420
  VSE4       00C           SPOOL    2501
  VSE4       01F           SPOOL    3211
  VSE4       140-14F       DASD     3350
  VSE4       150-15F       DASD/FBA 3370
  VSE4       380-38F       TAPE     3420

WORKSHEET:

             DEVICE        DEVICE   DEVICE
  ORGSYSID   ADDRESS(ES)   CLASS    TYPE

  ______     ______        ______   ______
  ______     ______        ______   ______
  ______     ______        ______   ______

....5...10...15...20...25...30...35...40...45...50...55...70..
```

Figure 7-6. VSE/POWER Configuration Sample and Worksheet

The following is a description of the fields in Figure 7-6:

ORGSYSID: Original system identifier as described in prefix.MICS.PARMS(SYSID) for this unit.

DEVICE ADDRESS(ES): Value representing the location of the device.

DEVICE CLASS: Recognized values are COMMGEAR, DASD, DASD/FBA, GRAPHICS, SPECIAL, SPOOL, TAPE, and UNIT-REC. Other values may be used (see comments below).

DEVICE TYPE: The device model (e.g., 3380).

DASD and DASD/FBA (Fixed Block Architecture) devices:

2305-1	2305-2	2311	2314	2314/19	2319
3310	3330	3330V	3330-11	3340	3344
3350	3370	3375	3380	3380D	3380E
3390	3390-1	3390-2	3390-3	3390-9	

TAPE devices:

2400	2401	2402	2403	2415	2420
3400	3410	3411	3420	3430	3480
3490	3490E	8809			

SPOOL and UNIT-REC devices:

1052	1219	1255	1259	1275-PC	1275-SC
1287	1288	1403	1404	1403/4	1419-PC
1442	1443	2150	2495	2501	2520
2540	2540-R	2540-P	2671	3102	3203
3210	3211	3213	3215	3230	3262
3268	3505	3525	3694	3800	3800-3
3820	3838	3851	3881	3886	3890
3895	3896	4245	4248	4250	7436

GRAPHICS devices:

1053	2250	2260	3036	3158	3180
3250	3270	3277	3278	3279	3284
3286	3287	328X	7350		

COMMGEAR devices:

ICA	270X	2701	2702	2703	3705
3725	37X5	7171	7770	SERIES1	

SPECIAL devices:

CTC	3088	7443

CA MICS performs separate validations on the device type and device class values for each device address. If the device type value is not recognized or if the device class and device type combination is not valid for the address, a warning message is issued. Processing continues, but the SIO counts for the device will be accumulated into the OTHER category. Chapter 2, Usage Guidelines, discusses the validation and SIO counts in greater detail.

7.3.6 - Input Source Definition (INPUTPWR)

The member INPUTPWR describes the location of the input data source used by the CA MICS Analyzer Option for VSE/POWER. The member consists of the prototype JCL that is incorporated into the DAILY job via JCLGEN.

You must code one DD statement for each ddname referenced in the prefix.MICS.PARMS(PWROPS) member (see Section 7.3.1). The PWRPGEN job will cross-check the DD statements in the INPUTPWR member and the ddnames referenced in the PWROPS member. An ABEND will occur if there is not a one-to-one correspondence of ddnames between these two members.

For example, assume the following statements were coded in prefix.MICS.PARMS(PWROPS):

```
OPTIONS  VSE1  INPUTVSE  1  DD/MM/YY  SYSID   7.1
OPTIONS  VSE2  INPUTVSE  2  DD/MM/YY  SYSID   7.1
OPTIONS  VSE3  INPUTVSE  3  DD/MM/YY  SYSID   7.1
OPTIONS  VSE4  INPUTVSE  4  DD/MM/YY  SYSID   7.1
OPTIONS  VSEA  INPUTA    X  MM/DD/YY  NOSYSID 5.2
```

A corresponding INPUTPWR member may be:

```
//INPUTVSE  DD  DISP=SHR,DSN=SHARED.SPOOL.VSE.INPUT
//INPUTA    DD  DISP=SHR,DSN=TEST.SYSTEM.INPUT
```

Getting the input data to be processed each day into the data set you specify here is your responsibility. See Section 2.1 of this guide for more information on the collection and preparation of VSE/POWER input data.

7.3.7 - Generating PWR System Code (PWRPGEN)

The cccPGEN process activates the specifications you coded in the members of the prefix.MICS.PARMS library using system code generator routines.

Before submitting the PWRPGEN job, you must code the input members, listed below, in the prefix.MICS.PARMS library:

- o PWR Product Options Definition (PWROPS)
- o PWR Job Group Definition (PWRGROUP, PWRGPRTE, PWRTNRTE)

The chart below identifiers the members input by the PWRPGEN job and the generated output members, output macros (a member may contain the definition of more than one SAS macro), and SAS formats that are generated. You must code the input members prior to submitting the PWRPGEN job. The output libraries are at the database unit level (prefix) unless noted otherwise.

System Code Generator	prefix. MICS.PARMS Input Member	prefix.MICS.USER. SOURCE Output Members and SAS Macro Names	prefix.MICS. MUOLIB Output SAS Formats
PWRPGEN	PWROPS	$PWRMSTR PWRLOOP PWRTURN PWRGRP	
	PWRGROUP		$PWRCNFG PWRTURN $PWRGRP SF_PG

7.3.8 - Database Space Modeling (DBMODEL)

This section describes the information required to define the Analyzer to the Database Space Modeling Facility. Specifically, the user must provide values for the cycle (data retention) definitions. The special considerations for defining the FILE input statements to the Database Space Modeling facility are discussed.

Section 2.3.4 of the PIOM, Database Space Modeling Facility, explains how these values are used in estimating the DASD requirements of the database, and how the user can input these values to the modeling facility.

This section covers the following topics:

1 - Data Retention Specifications (FILE Statements)
2 - DBMODEL Input Statements

7.3.8.1 - Data Retention Specifications (FILE Statements)

Data retention specifications tell the CA MICS database how many cycles of data, for each file in each supported timespan, to save both online and in archive mode. Figure 7-7 is a worksheet that helps you collect this information.

The suggested retention period for each file is shown in parentheses for each timespan (DETAIL, DAYS, WEEKS, MONTHS, YEARS, and the TABLES area). If 00 shows as the retention value for the timespan, the file is not supported in the timespan. To add support, you must perform database tailoring as described in Chapter 6 of the CA MICS System Modification Guide.

```
+-------------------------------------------------------------------------+
| INSTALLATION PREPARATION WORKSHEET: Data Retention Specifications       |
|                                                                         |
| PARMS Library Member is DBMODEL                                         |
|                                                                         |
| Reference Section:  7.3.8.1, CA MICS Analyzer Option for VSE/POWER Guide |
+------+----------------------------------------------+-------------------+
|      |           Online Database Retention          |  Archive Cut-Off  |
| File |DETAIL    DAYS   WEEKS   MONTHS  YEARS  TABLES | WEEKS    MONTHS   |
| Name | __(NA)  __(NA)  __(NA)  __(NA)   _(NA)  __(NA)|___ (NA)  ___ (NA) |
+------+----------------------------------------------+-------------------+
|PWRPJB| __(10)  __(00)  __(00)  __(06)   _(01)  __(00)|___ (000) ___ (024)|
|PWR_PJ| 01(01)  00(00)  00(00)  00(00)   0(00)  00(00)|000 (000) 000 (000)|
|PWRPPG| __(10)  __(00)  __(00)  __(02)   _(00)  __(00)|___ (000) ___ (006)|
|PWRPOA| __(10)  __(00)  __(00)  __(06)   _(01)  __(00)|___ (000) ___ (024)|
|PWRPRA| __(10)  __(00)  __(00)  __(06)   _(00)  __(00)|___ (000) ___ (024)|
|PWRPDA| 00(00)  __(10)  __(09)  __(06)   _(00)  __(00)|___ (027) ___ (012)|
+------+----------------------------------------------+-------------------+
| ....5...10...15...20...25...30...35...40...45...50...55...60...65...70.. |
+-------------------------------------------------------------------------+
```

Figure 7-7. Data Retention Specifications Worksheet

The statement format is

```
  FILE ccc cccfff xx dd ww mm yy tt hw hm
```

where:

ccc = the product identifier. The VSE/POWER product's identifier is PWR.

cccfff = the file name. The Analyzer Option for VSE/POWER has six files, PWRfff. Valid values for fff are documented in Chapter 5, Files.

xx = the number of days of data being retained in the DETAIL timespan of the database for the specified file. Valid values are integers.

dd = the number of days of data being retained in the DAYS timespan of the database for the specified file. Valid values are integers.

ww = the number of weeks of data being retained in the WEEKS timespan of the database for the specified file. Valid values are integers.

mm = the number of months of data being retained in the MONTHS timespan of the database for the specified file. Valid values are integers.

yy = the number of years of data being retained in the YEARS timespan of the database for the specified file. Valid values are integers.

tt = the number of levels of data being retained in the TABLES data area of the database for the specified file. Valid values are integers. All database units must have the same value for any given file.

hw = the number of weeks of data being retained on the archive weekly history file. Valid values are integers.

hm = the number of months of data being retained on the archive monthly history file. Valid values are integers.

For more information about FILE statements, see Section 2.3.4.1.2 of the CA MICS Planning, Installation, Operation, and Maintenance Guide.

7.3.8.2 - DBMODEL Input Statements

The DBMODEL member of prefix.MICS.PARMS provides the input to the Database Space Modeling Facility.

Update the DBMODEL member using the information collected on the worksheet in Figure 7-7.

To actually perform the space modeling, submit the jobs as described in the CA MICS Planning, Installation, Operation, and Maintenance Guide, Section 2.3.4.2.

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

CHAPTER 8

INSTALLATION

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

CHAPTER 8

INSTALLATION

Chapter 8. INSTALLATION

The CA MICS Analyzer Option for VSE/Power is installed using the checklists in Section 3.8 of the PIOM and the information collected on the worksheets in Chapter 7, Parameters, of this product guide.

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

CHAPTER 9

PROCESSING

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

CHAPTER 9

PROCESSING

Chapter 9. PROCESSING

The processing information in this chapter provides an overview of how data from IBM's VSE/POWER accounting files becomes part of the CA MICS Database.

The chapter discusses the following information:

1 - Processing Overview
2 - Daily Update Processing Flow

9.1 - Processing Overview

The CA MICS Analyzer Option for VSE/POWER makes use of the standard database update and summarization facilities of CA MICS to maintain its data in the online and offline databases. VSE/POWER data is supplied to CA MICS in the DAY035 step of the DAILY database update job.

The daily update step:

- Reads and formats the raw data
- Maintains data integrity by eliminating duplicate data
- Summarizes device activity by hour
- Summarizes step activity by job
- Builds the accounting journal files if the CA MICS Accounting and Chargeback product is used
- Adds new cycles to the DETAIL and DAYS timespans
- Updates the week-to-date and month-to-date cycles.

A critical aspect of summarizing step activity is suspend processing. Suspend processing manages information on jobs which were still executing at the time that the VSE/POWER data was collected for CA MICS. For more information on suspend processing, see Section 2.2.3 of this guide. A more detailed description of DAY035 processing is presented in the next section.

Weekly processing is performed by the WEEK035 and WEEK300 steps. The WEEK035 step splits the week-to-date files into a new week-to-date and a new weekly 01 cycle.

The WEEK300 step creates the offline database files. As distributed, the Analyzer Option for VSE/POWER produces the following files:

```
tapeprefix.MICS.AUDIT.PWRPJB - Job Activity Audit
tapeprefix.MICS.AUDIT.PWRPOA - Output Activity Audit
tapeprefix.MICS.AUDIT.PWRPPG - Program Activity Audit
tapeprefix.MICS.HISTW.PWRPDA - Device Activity History
```

Monthly processing is performed in steps MONTH035 and MONTH300. The MONTH035 step splits the month-to-date files into a new month-to-date and a new cycle 01. It also updates the year-to-date cycle.

The monthly offline database files are created by the MONTH300 step. As distributed, the Analyzer Option for VSE/POWER produces the following files:

```
tapeprefix.MICS.HISTM.PWRPDA - Device Activity History
tapeprefix.MICS.HISTM.PWRPJB - Job Activity History
tapeprefix.MICS.HISTM.PWRPOA - Output Activity History
```

tapeprefix.MICS.HISTM.PWRPPG - Program Activity History
tapeprefix.MICS.HISTM.PWRPRA - RJE Activity History

Finally, the optional yearly processing is performed by the YEAR035 step, which splits the year-to-date files into a new year-to-date and a new cycle 01.

9.2 - Daily Update Processing Flow

The DAY035 step of the DAILY job processes information in the following phases using the routines shown:

- o Phase 1 - Input Raw Data
  DYPWRFMT to format the POWER data.

- o Phase 2 - Information Area Processing
  DYPWRFMT to eliminate duplicate data, summarize device and step activity, and build the journal files used by the CA MICS Accounting and Chargeback product.

- o Phase 3 - Data Base Timespan Processing
  DYPWRSUM to create DAYS timespan files from DETAIL and to update week-to-date and month-to-date information where applicable.

- o Phase 4 - File Aging
  DYPWRAGE to age the DETAIL and DAYS cycles, deleting the oldest cycle. This routine also replaces the week-to-date and month-to-date cycles.

The first four of the sections which follow describe the general logic flow in each of the phases, as well as the location of standard user routines and user exits. In the figures contained in these sections, exits that are user-modifiable are shown in boxes whose corners are marked by asterisks (*). The final section describes the operational reports produced by step DAY035.

1 - Input Raw Data Phase
2 - VSE/POWER Information Area Processing Phase
3 - Data Base Timespan Update Phase
4 - File Aging Phase
5 - Operational Reports

9.2.1 - Input Raw Data Phase

In the Input Raw Data Phase, records are read from VSE/POWER Accounting files using the INPUTPWR DD statements and the DYPWRFMT routine. The data is processed and formatted to create SAS observations.

The following user exits are invoked in this phase:

- o General Exits

  _USRSEL - input record selection

- o Output Exits

  USRDPDA - PWRPDA element derivation
  USRDPPG - PWRPPG element derivation
  USRDPOA - PWRPOA element derivation
  USRSPRA - PWRPRA record selection
  USRDPJB - PWR_PR element derivation

- o Parameter-Related Exits

  PWRACRT - account code derivation (PWRPOA)

This phase is shown in Figures 9-1 and 9-2.

```
                                  +-------------+
                                  | Loop        |
                                  | through DDs |
                                  | in INPUTPWR |
                                  +-------------+
                                         |
                                  +-------------+
                                  | Read record |
                                  | header:     |
                                  | record type |
                                  | STARTTS     |
                                  | ENDTS       |
                                  | VSESYSID    |
                                  +-------------+
                                         |
                                  **------------**
                                  | _USRSEL exit |
                                  **------------**
                                         |
                   +------------------+------------------+--------------------+
                   |                  |                  |                    |
          +----------------+   +--------------+    +------------+       +-----------+
          | for Type E     |   | for Types L, |    | for Type U |       | for Types |
          +----------------+   | P, V, M, R,  |    +------------+       | C and X   |
                   |           | N, T, and S  |          |              +-----------+
          +----------------+   +--------------+    +----------------+         |
          | Read all fixed |          |            | Read records & |   +----------------+
          | length fields  |   +---------------+   | print report   |   | Delete records |
          +----------------+   | Read all      |   +----------------+   +----------------+
                   |           | record fields |         |                    |
                   |           +---------------+   +----------------+         |
                   |                  |            | Delete records |         |
                   |                  |            +----------------+         |
                   |                  |                  |                    |
                   +------------------+------------------+--------------------+
                                         |
                                  +-----------------+
                                  | Test SYSID &    |
                                  | ENDTS against   |
                                  | checkpoint file |
                                  +-----------------+
                                         |
                                  +--------------+
                                  | Build common |
                                  | variables    |
                                  +--------------+
                                         |
                                  +------------+
                                  | CONTINUE 1 |
                                  +------------+
```

Figure 9-1. Input Raw Data Phase (Part 1 of 2)

```
                                  +------------+
                                  | CONTINUE 1 |
                                  +------------+
                                         |
                 +---------------------+--------------------+-------------------+
                 |                     |                    |                   |
          +----------------+    +--------------+      +-------------+      +------------+
          | for Type E     |    | for Types L, |      | for Types N |      | for Type R |
          +----------------+    | P, V, and M  |      | T, and S    |      +------------+
                 |              +--------------+      +-------------+           |
          +--------------+             |                    |             **------------**
          | Loop through |      +-----------+         **------------**     | USRDPJB exit |
          | SIO table    |      | Build POA |         | USRSPRA exit |     **------------**
          +--------------+      | elements  |         **------------**          |
                 |              +-----------+                |             +---------------+
          +----------------+           |              +---------------+    | Write         |
          | Look up device |    +-----------------+   | Write         |    | WORK.PWR_PR00 |
          | type & class   |    | PWRACRT routine |   | WORK.PWRPRA00 |    +---------------+
          +----------------+    +-----------------+   +---------------+
                 |                     |
          +------------------+  **------------**
          | Increment device |  | USRDPOA exit |
          | class counts     |  **------------**
          +------------------+         |
                 |              +---------------+
          **------------**      | Write         |
          | USRDPDA exit |      | WORK.PWRPOA00 |
          **------------**      +---------------+
                 |
          +---------------+
          | Write         |
          | WORK.PWRPDA00 |
          +---------------+
                 |
          +------------+
          | Input user |
          | field      |
          +------------+
                 |
          +------------+
          | Derive PPG |
          | elements   |
          +------------+
                 |
          **------------**
          | USRDPPG exit |
          **------------**
                 |
          +---------------+
          | Write         |
          | WORK.PWRPPG00 |
          +---------------+
```

Figure 9-2. Input Raw Data Phase (Part 2 of 2)

9.2.2 - VSE/POWER Information Area Processing Phase

The VSE/POWER Information Area Processing Phase takes the work files from Phase I and manipulates them to produce the new cycles for the DETAIL timespan. This is also part of the DYPWRFMT module.

The following user exits are invoked in this phase:

- o Output Exits

  USRSPOA - PWRPOA record selection
  USRSPDA - PWRPDA record selection
  USRSPPG - PWRPPG record selection
  USRSPJB - PWRPJB record selection

- o Parameter-Related Exits

  PWRACRT - account code derivation (PWRPPG)
  PWRGPRTE - job group derivation
  PWRTNRTE - job turnaround derivation
  PWRACRT - account code derivation (PWRPJB)

The interface to the CA MICS Accounting and Chargeback product contains the following exits that are not normally modified:

  _USRUJPO - PWRPOA accounting interface
  _USRUJPP - PWRPPG accounting interface
  _USRUJPJ - PWRPJB accounting interface

Figures 9-3 and 9-4 illustrate this phase.

```
+---------+          +---------+          +---------+        +---------------+
| for PRA |          | for POA |          | for PDA |        | for PPG, PJB, |
|  File   |          |  File   |          |  File   |        | or _PJ File   |
+---------+          +---------+          +---------+        +---------------+
     |                    |                    |                    |
+---------------+    +---------------+    +---------------+    +---------------+
| Sort          |    | Sort          |    | Sort          |    | Sort          |
| WORK.PWRPRA00 |    | WORK.PWRPOA00 |    | WORK.PWRPDA00 |    | WORK.PWRPPG00 |
| to eliminate  |    | to eliminate  |    | to eliminate  |    | to eliminate  |
| duplicates    |    | duplicates    |    | duplicates    |    | duplicates    |
+---------------+    +---------------+    +---------------+    +---------------+
        |                    |                    |                    |
+-----------------+  **------------**      +---------------+    +-----------------+
| Write           |  | USRSPOA exit |      | Apportion SIO |    | Combine with    |
| DETAIL.PWRPRA00 |  **------------**      | counts by hour|    | DETAIL.PWR_PP01 |
+-----------------+         |              +---------------+    +-----------------+
                            |                     |                     |
                     +---------------+      +--------------+    +---------------+
                     | _USRUJPO exit |      | Build common |    | Identify last |
                     | if ACT from   |      | variables    |    | step of each  |
                     | the POA File  |      +--------------+    | job           |
                     +---------------+             |           +---------------+
                            |                **------------**          |
                     +-----------------+    | USRSPDA exit |    +---------------+
                     | Write           |    **------------**    | Suspend last  |
                     | DETAIL.ACTJPO00 |           |           | job in each   |
                     +-----------------+      +---------------+  | partition     |
                            |                 | Write         |  +---------------+
                     +-----------------+      | WORK.PWRPDA00 |          |
                     | Write           |      +---------------+  +---------------+
                     | DETAIL.PWRPOA00 |                         | If previously |
                     +-----------------+                         | suspended,    |
                                                                 | increment     |
                                                                 | suspend age   |
                                                                 +---------------+
                                                                         |
                                                                 +---------------+
                                                                 | If over limit,|
                                                                 | release from  |
                                                                 | suspend       |
                                                                 +---------------+
                                                                         |
                                                                 +------------+
                                                                 | CONTINUE 1 |
                                                                 +------------+
```

Figure 9-3. VSE/POWER Information Area Processing Phase (Part 1 of 2)

```
+-------------+
| CONTINUE 1 |
+-------------+
       |
+-------------------+
| Sort for job      |
| combination step  |
+-------------------+
       |
+---------------------+
| Sort WORK.PWR_PR00  |
| to eliminate        |
| duplicates          |
+---------------------+
       |
+---------------------+
| Combine             |
| WORK.PWRPPG00,      |
| WORK.PWR_PR00,      |
| DETAIL.PWR_PR01     |
+---------------------+
       |
+---------------------+
| Summarize program   |
| & reader statistics|
| by job              |
+---------------------+
       |
+----------------+
| If reader obs  |
| previously     |
| suspended,     |
| increment      |
| suspend age    |
+----------------+
       |
+----------------+
| If over limit,|
| release from   |
| suspend        |
+----------------+
       |
+----------------+
| If step        |
| suspended,     |
| write          |
| WORK.PWR_PP00  |
+----------------+
       |
+-------------+
| CONTINUE 2 |
+-------------+

+-------------+
| CONTINUE 2 |
+-------------+
       |
+------------------+
| PWRACRT routine |
+------------------+
       |
**-------------**
| USRSPPG exit |
**-------------**
       |
+----------------+
| _USRUJPP exit |
| if ACT from    |
| the PPG File   |
+----------------+
       |
+------------------+
| Write            |
| DETAIL.ACTJPP00 |
+------------------+
       |
+----------------+
| Write          |
| WORK.PWRPPG00 |
+----------------+
       |
+----------------+
| If program     |
| obs available,|
| use program    |
| suspend age    |
+----------------+
       |
+------------------+
| PWRGPRTE routine |
+------------------+
       |
+-------------+
| CONTINUE 3 |
+-------------+

+-------------+
| CONTINUE 3 |
+-------------+
       |
+-------------------+
| Perform standard |
| turnaround        |
| calculations      |
+-------------------+
       |
+-------------------+
| PWRTNRTE routine |
+-------------------+
       |
+------------------+
| PWRACRT routine |
+------------------+
       |
+-------------------+
| If job not being |
| suspended         |
+-------------------+
       |
**-------------**
| USRSPJB exit |
**-------------**
       |
+----------------+
| _USRUJPJ exit |
| if ACT from    |
| the PJB File   |
+----------------+
       |
+------------------+
| Write            |
| DETAIL.PWRJPJ00 |
+------------------+
       |
+----------------+
| Write          |
| WORK.PWRPJB00 |
+----------------+
       |
+-------------+
| CONTINUE 4 |
+-------------+

+-------------+
| CONTINUE 4 |
+-------------+
       |
+------------------+
| Else if job      |
| being suspended |
+------------------+
       |
+----------------+
| Write          |
| WORK.PWR_PJ00 |
+----------------+
       |
+----------------+
| If job contains|
| reader obs     |
+----------------+
       |
+------------------+
| Write            |
| DETAIL.PWR_PR00 |
+------------------+
       |
+---------------------+
| Sort WORK.PWRPJB00 |
| & write to          |
| DETAIL.PWRPJB00     |
+---------------------+
       |
+---------------------+
| Sort WORK.PWR_PJ00 |
| & write to          |
| DETAIL.PWR_PJ00     |
+---------------------+
       |
+---------------------+
| Sort WORK.PWRPPG00 |
| & write to          |
| DETAIL.PWRPPG00     |
+---------------------+
       |
+---------------------+
| Sort WORK.PWR_PP00 |
| & write to          |
| DETAIL.PWR_PP00     |
+---------------------+
```

Figure 9-4. VSE/POWER Information Area Processing Phase (Part 2 of 2)

9.2.3 - Database Timespan Update Phase

Processing in the Database Timespan Update Phase is controlled by the DYPWRSUM module. However, its first action is to include the #PDADSUM module to build the new DAYS cycle from the PWRPDA working file. This extra step is required because the file does not exist in the DETAIL timespan. The remaining processing updates the week-to-date and month-to-date cycles of each file as required.

There are no user exits invoked in this phase.

Figures 9-5 and 9-6 depict the database timespan update phase.

```
                    +--------------+
                    | for PDA File |
                    +--------------+
                            |                  +------------+
                    +------------------+       | CONTINUE 1 |
                    | Sort             |       +------------+
                    | WORK.PWRPDA00    |              |
                    | to DAYS sequence |       +----------------+
                    +------------------+       | If MONTHS time-|
                            |                  | span exists for|
                    +----------------+         | the PDA File   |
                    | Summarize file |         +----------------+
                    +----------------+                |
                            |                  +---------------+
                    +---------------+          | Sort          |
                    | Write         |          | DAYS.PWRPDA00 |
                    | DAYS.PWRPDA00 |          | to            |
                    +---------------+          | WORK.PWRPDA00 |
                            |                  +---------------+
                    +----------------+               |
                    | If WEEKS time- |         +---------------+
                    | span exists for|         | By MONTHS file|
                    | the PDA File   |         | sequence      |
                    +----------------+         +---------------+
                            |                       |
                    +---------------+          +----------------+
                    | Sort          |          | Combine with   |
                    | DAYS.PWRPDA00 |          | MONTHS.PWRPDA00|
                    | to            |          +----------------+
                    | WORK.PWRPDA00 |                |
                    +---------------+          +-----------+
                            |                  | Summarize |
                    +---------------+          +-----------+
                    | By WEEKS file |                |
                    | sequence      |          +----------------+
                    +---------------+          | Write          |
                            |                  | MONTHS.PWRPDAMO|
                    +----------------+         +----------------+
                    | Combine with   |
                    | WEEKS.PWRPDA00 |
                    +----------------+
                            |
                    +----------------+
                    | Summarize      |
                    +----------------+
                            |
                    +----------------+
                    | Write          |
                    | WEEKS.PWRPDAWO |
                    +----------------+
                            |
                    +----------------+
                    | CONTINUE 1     |
                    +----------------+
```

Figure 9-5. Database Timespan Update Phase (Part 1 of 2)

```
+-----------------+
| for Files (fff) |
| PJB, POA,       |
| PPG, and PRA    |
+-----------------+
         |
+----------------+
| If DAYS time-  |
| span exists for|
| the fff file   |
+----------------+
         |
+-----------------+
| Sort            |
| DETAIL.PWRfff00 |
| to              |
| WORK.PWRfff00   |
+-----------------+
         |
+--------------+
| By DAYS file |
| sequence     |
+--------------+
         |
+-----------+
| Summarize |
+-----------+
         |
+---------------+
| Write         |
| DAYS.PWRfff00 |
+---------------+
         |
+------------+
| CONTINUE 2 |
+------------+
```

```
+------------+
| CONTINUE 2 |
+------------+
       |
+----------------+
| If WEEKS time- |
| span exists for|
| the fff file   |
+----------------+
       |
+-----------------+
| Sort            |
| DETAIL.PWRfff00 |
| to              |
| WORK.PWRfff00   |
+-----------------+
       |
+---------------+
| By WEEKS file |
| sequence      |
+---------------+
       |
+----------------+
| Combine with   |
| WEEKS.PWRfff00 |
+----------------+
       |
+-----------+
| Summarize |
+-----------+
       |
+----------------+
| Write          |
| WEEKS.PWRfffWO |
+----------------+
       |
+------------+
| CONTINUE 3 |
+------------+
```

```
+------------+
| CONTINUE 3 |
+------------+
       |
+----------------+
| If MONTHS time-|
| span exists for|
| the fff file   |
+----------------+
       |
+-----------------+
| Sort            |
| DETAIL.PWRfff00 |
| to              |
| WORK.PWRfff00   |
+-----------------+
       |
+---------------+
| By MONTHS file|
| sequence      |
+---------------+
       |
+----------------+
| Combine with   |
| MONTHS.PWRfff00|
+----------------+
       |
+-----------+
| Summarize |
+-----------+
       |
+----------------+
| Write          |
| MONTHS.PWRfffMO|
+----------------+
```

Figure 9-6. Database Timespan Update Phase (Part 2 of 2)

9.2.4 - File Aging Phase

The File Aging Phase deletes the oldest cycles of the DETAIL and DAYS cycles, replacing them with the next oldest and so forth until the new interim cycle (00) becomes the current cycle (01). This phase also replaces the existing week-to-date and month-to-date cycles (00) with the updated cycles (W0 and M0, respectively).

There are no user exits invoked in this phase.

This process is illustrated in Figure 9-7.

```
+-------------------+
|  For all files    |
|  that exist at    |
|  DETAIL timespan  |
+-------------------+
         |
  +---------------+
  | Age cycle 00  |
  | through cycle |
  | limit         |
  +---------------+
         |
+-----------------+
|  For all files  |
|  that exist at  |
|  DAYS timespan  |
+-----------------+
         |
  +---------------+
  | Age cycle 00  |
  | through cycle |
  | limit         |
  +---------------+
         |
+------------------+
|  For all files   |
|  that exist at   |
|  WEEKS timespan  |
+------------------+
         |
  +---------------+
  | Age cycle W0  |
  | over cycle 00 |
  | (replaces     |
  |  cycle 00)    |
  +---------------+
         |
+-------------------+
|  For all files    |
|  that exist at    |
|  MONTHS timespan  |
+-------------------+
         |
  +---------------+
  | Age cycle M0  |
  | over cycle 00 |
  | (replaces     |
  |  cycle 00)    |
  +---------------+
```

Figure 9-7. File Aging Phase

9.2.5 - Operational Reports

The System-Up Report is produced by step DAY035 during the Input Raw Data Phase (see Section 9.2.1 for a description of the processing flow). POWER Account Data type S records, which are not otherwise used by CA MICS, are read to create this report. The type S records are produced at the startup completion of VSE/POWER. They record the environmental conditions in effect for that copy of POWER.

The System-Up Report is a tabular listing of the elements provided in a each record. Figure 9-8 contains an example of this report.

```
                    CA MICS VSE POWER ACCOUNTING COMPONENT - DAY035 FORMAT ROUTINE

VSE/POWER SYSTEM-UP FOR ORGSYSID VSEA VSESYSID 8 COMPLETED AT 04JAN88:08:57:38.00
  VERSION / MODIFICATION FROM RECORD....03.0                POWER PARTITION.......................F6
  POWER LEVEL IDENTIFIER FROM RECORD....G85                 PARTITION SIZE........................712K
  VSE VERSION FROM OPTIONS STATEMENT....2.1.0               NUMBER OF DATA FILE EXTENTS...........2
  FEATURE FLAGS........................00000000            TRACKS / BLOCKS IN DATA FILE..........60
  GETVIS SIZE..........................100K                TRACKS / BLOCKS IN QUEUE FILE.........5
  REAL STORAGE SIZE....................128K                TRACKS / BLOCKS IN ACCOUNT FILE.......30

VSE/POWER SYSTEM-UP FOR ORGSYSID VSE2 VSESYSID 2 COMPLETED AT 04JAN88:05:55:40.00
  VERSION / MODIFICATION FROM RECORD....03.0                POWER PARTITION.......................F1
  POWER LEVEL IDENTIFIER FROM RECORD....G85                 PARTITION SIZE........................512K
  VSE VERSION FROM OPTIONS STATEMENT....2.1.0               NUMBER OF DATA FILE EXTENTS...........1
  FEATURE FLAGS........................00000000            TRACKS / BLOCKS IN DATA FILE..........28855
  GETVIS SIZE..........................48K                 TRACKS / BLOCKS IN QUEUE FILE.........3072
  REAL STORAGE SIZE....................128K                TRACKS / BLOCKS IN ACCOUNT FILE.......6200

VSE/POWER SYSTEM-UP FOR ORGSYSID RMTA VSESYSID   COMPLETED AT 05JAN88:15:04:40.00
  VERSION / MODIFICATION FROM RECORD....V2R2                POWER PARTITION.......................F1
  POWER LEVEL IDENTIFIER FROM RECORD....A45                 PARTITION SIZE........................768K
  VSE VERSION FROM OPTIONS STATEMENT....2.2.0               NUMBER OF DATA FILE EXTENTS...........1
  FEATURE FLAGS........................00000000            TRACKS / BLOCKS IN DATA FILE..........30
  GETVIS SIZE..........................256K                TRACKS / BLOCKS IN QUEUE FILE.........30
  REAL STORAGE SIZE....................64K                 TRACKS / BLOCKS IN ACCOUNT FILE.......30

VSE/POWER SYSTEM-UP FOR ORGSYSID RMTA VSESYSID   COMPLETED AT 05JAN88:15:41:04.00
  VERSION / MODIFICATION FROM RECORD....V2R3                POWER PARTITION.......................F1
  POWER LEVEL IDENTIFIER FROM RECORD....A92                 PARTITION SIZE........................768K
  VSE VERSION FROM OPTIONS STATEMENT....2.2.0               NUMBER OF DATA FILE EXTENTS...........1
  FEATURE FLAGS........................00000000            TRACKS / BLOCKS IN DATA FILE..........30
  GETVIS SIZE..........................256K                TRACKS / BLOCKS IN QUEUE FILE.........30
  REAL STORAGE SIZE....................64K                 TRACKS / BLOCKS IN ACCOUNT FILE.......30
```

Figure 9-8. Systems-up Report

The following elements are reported:

ORGSYSID: The system identification for VSE/POWER.

Completed Time Stamp: The date and time when startup was complete.

Record Version: The version and modification level from the record. This field can contain either the Account Data record version in the form xx.y or the VSE/POWER product version in the form VxRz, where x is the version, y is the modification level, and z is the release. The format used depends upon the VSE/POWER version.

POWER Level: VSE/POWER product level.

PWROPS Version: The POWER version associated with this ORGSYSID in the OPTIONS statement of the PWROPS member.

Feature Flags: Binary flags indicating which product features are active.

GETVIS Size: The maximum storage available for GETVIS allocations in the VSE/POWER partition.

Real Size:	Storage The maximum processor storage available to VSE/POWER for fixing pages.
POWER Partition:	The partition used by VSE/POWER.
Partition Size:	The total partition size for VSE/POWER.
Data File Extents:	The number of physical disk extents allocated to the POWER Data File.
Data File Size:	The size of the Data File in tracks or DBLKs.
Queue File Size:	The size of the Queue File in tracks or DBLKs.
Account File Size:	The size of the Account File in tracks or DBLKs.

This report is useful to the VSE systems programming staff as an audit trail for changes to the VSE/POWER environment. It can also be used by the CA MICS Administrator to track the VSE/POWER version which is being used.

In a non-shared spool environment the type S record provides the only possible validation of the VSE/POWER version by CA MICS. In this case, a discrepancy between the record version and the PWROPS version causes CA MICS to issue message PWR1127E and ABEND with a User 998. The last entry in the System-Up Report lists the record which caused the ABEND.

The sample report in Figure 9-8 includes an example of this problem. The last two entries are for ORGSYSID RMTA. When POWER was initialized at 15:04:40, it was executing VSE/POWER Version 2, Release 2, which agrees with the version provided in the PWROPS member (2.2.0). However, POWER was restarted at 15:41:04 with Version 2, Release 3. In order to avoid corrupting the database, CA MICS immediately ABENDed.

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

CHAPTER 10

MODIFICATION

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

CHAPTER 10

MODIFICATION

Chapter 10. MODIFICATION

At times, additional system customizing is needed to tailor CA MICS to your data center. There are many user exit points provided within CA MICS. Each of these points corresponds to a position in the CA MICS logic where user modification:

- Is likely to occur, based on our experience
- Presents only a slight possibility of compromising CA MICS Database or operational integrity
- Is relatively easy to document and understand

Using the CA MICS exit facilities to augment CA MICS processing logic is the safest method of system modification. Generally, we consider that the CA MICS System Administrator has four levels or methods by which CA MICS can be augmented, changed, and enhanced by the user:

- CA MICS Standard Option and Parameter Definitions

  The diverse installation and definition options provide most users with adequate provisions for customizing CA MICS.

- Modification through User Exits

  Often there may be data center-dependent requirements that are not adequately addressed through the standard options and parameters. In these cases one or more of the user exits provided with CA MICS may be used to insert user-written routines that satisfy the requirements.

- Extension through User-Written Components

  Although most users do not, at first, consider this a way of modifying the CA MICS product environment, the development of user-written products may be the most advantageous way of addressing the need to modify a standard CA MICS product. For example, many times it may be better to write a user product to handle additional SMF data than to attempt to modify the logic of the SMF Component.

- System Code Modification

  Finally, if all else fails, you may be able to satisfy your data center's requirements by implementing a source code change.

This chapter explains the user exits that are provided with the CA MICS Analyzer Option for VSE/POWER product. You must carefully explore whether it is necessary to develop a user exit routine. First ensure that the requirement cannot be satisfied through one of the standard options or definitions by discussing your requirement with CA Technical Support.

BEFORE ATTEMPTING TO ACTIVATE AN EXIT, you should read and fully understand the information contained in Section 4.3, User Exit Facilities, of the CA MICS System Modification Guide. The following material is intended to supplement, not replace, that discussion.

The design, coding, testing, and implementation of CA MICS user exit routines should be approached with caution as errors may result, causing the corruption of the data. You should be extremely careful in the definition and validation of the exit routines to ensure that the system integrity and performance has not been adversely affected.

The following sections identify the user exits available for VSE/POWER product processing, provide a general overview of product processing logic, and describe in detail each of the user exits.

1 - Standard User Exits
2 - File and Data Element Customization

10.1 - Standard User Exits

There are two types of user exits that can be used to modify CA MICS logic: the general exits, which apply to all the installed products, and the product exits, which apply only to the product for which they are provided.

The general exits are briefly described in this guide. They are described in more detail in Section 4.3, User Exit Facilities, in the CA MICS System Modification Guide.

The product exits are classified according to their purpose and include product input, output, parameter-related, and accounting exits.

Input exits are invoked as the raw input records are read. Output exits are invoked just before CA MICS writes an observation to the CA MICS database.

The CA MICS Analyzer Option for VSE/POWER product provides the general input exit, _USRSEL, which you may use to select or exclude data meeting special installation-defined criteria, to add data elements, or to modify record fields as they are read.

VSE/POWER includes one input exit routine for each file, except PWRPRA. The exit is invoked in the input format processing phase, and may be used to modify elements before they are passed to the information area processing phase. Since no additional processing occurs for PWRPRA in the IA phase, the file output exit is used instead.

One output exit routine is provided for each product file and may be used to selectively block the writing of specified records, alter data elements in the records, or produce additional records for the target file or a user-defined file.

The product parameter-related exits are also user exits, but are defined as part of the standard CA MICS installation process. They are normally associated with other parameters or options. For example, the Account Code Derivation Routine is a user exit routine for completing values for account codes that were defined in a separate but related member of MICS.PARMS, PWRACRT, the Account Code Definition parameter member. These exits are identified in this chapter but are described in Chapter 7, Defining VSE/POWER Parameters.

The user exits for the Analyzer Option for VSE/POWER are identified below and discussed in the sections noted:

1 - General Exits

_USRSEL - Input record selection

2 - Input Exits

USRDPDA - PWRPDA element derivation
USRDPPG - PWRPPG element derivation
USRDPOA - PWRPOA element derivation
USRDPJB - PWR_PR element derivation

3 - Parameter-Related Exits

PWRACRT - VSE/POWER account code derivation
PWRGPRTE - Job group derivation
PWRTNRTE - Job turnaround time derivation

4 - Output Exits

USRSPDA - PWRPDA record selection
USRSPPG - PWRPPG record selection
USRSPOA - PWRPOA record selection
USRSPRA - PWRPRA record selection
USRSPJB - PWRPJB record selection

10.1.1 - General Exits

This section provides a description of the general exits that are shared by VSE/POWER with the other installed CA MICS products.

Each exit description includes the name and title, a description of its purpose, when it is invoked, and whether or not it has an interface to the CA MICS Accounting and Chargeback product. It also shows which data elements are available, the special considerations to note, and a sample user exit.

Input Record Selection Exit (_USRSEL)

```
+-------------+
| U S R S E L |  Input Record Selection Exit
+-------------+
```

DESCRIPTION: The exit provides the ability to select records that may be processed by the VSE/POWER input format routine. It is similarly invoked to provide data selection for each CA MICS component.

INVOCATION: The exit gains control during the input format phase of the POWER daily update process step (DAY035). It is invoked after the account data SYSID header and other common fields have been read, but before the front-end record processing. See Chapter 9 of this guide for more information.

ACCOUNTING INTERFACE: No interface is provided.

USES: This exit may be used to exclude records from processing based on their source, type, or origin.

ELEMENTS AVAILABLE: This exit is referenced by many different CA MICS products. To help identify the caller, the variable ROUTINE is initialized with the module name. For POWER, it will contain DYPWRFMT.

The element SKIP_REC is initialized to zero just prior to the exit. If the exit code sets this to one, that record will be bypassed.

The following POWER elements are also available:

```
VSEDDNAM - Input DD from which the record was read
PWRRTYPE - Record type
VSESYSID - VSE/POWER system identifier
STARTTS  - Event start timestamp
ENDTS    - Event end timestamp
VSEDATE  - Event date from the ACDATE field
STARTTM  - Event start time of day from the ACSTRT field
ENDTM    - Event end time of day from the ACSTOP field
```

CODING RESTRICTIONS: See the System Modification Guide, Section 4.3.2.1.

SPECIAL NOTES:

SAMPLE USER EXIT:

DESCRIPTION: DOS Job Accounting data can have limited compatibility with VSE/POWER Accounting data (see Chapter 2 of this guide for more information). For this example

only, the execution account record is compatible. All other records from the DOS account data file will be skipped.

USER EXIT EXAMPLE:

```
MACRO _USRSEL
  IF ROUTINE EQ 'DYPWRFMT' THEN DO ;
    IF VSEDDNAM EQ 'DOSACCT'
     AND PWRRTYPE NE 'E'
     THEN SKIP_REC=1 ;
  END ;
%
```

10.1.2 - Input Exits

This section presents a description of the input exits that are provided in the input format processing routine of the CA MICS Analyzer Option for VSE/POWER product. The exits are listed in alphabetical order.

Each exit description includes the name and title, a description of its purpose, when it is invoked, and whether or not it has an interface to the CA MICS Accounting and Chargeback component. It also shows which data elements are available, the special considerations to note, and a sample user exit.

PWRPDA Element Derivation Exit (USRDPDA)

```
+---------------+
| U S R D P D A |  PWRPDA Element Derivation Exit (USRDPDA)
+---------------+
```

DESCRIPTION: The exit provides control over the observations added to the working version of the PWRPDA File during input format processing.

INVOCATION: The exit is invoked in module DYPWRFMT during the processing of the SIO table in the Execution Account Record. See Chapter 9 of this guide for more information.

ACCOUNTING INTERFACE: No interface is provided.

USES: File elements can be modified before they undergo any summarization processing in the Information Area phase of DYPWRFMT. The exit can also be used to prevent selected observations from being added.

ELEMENTS AVAILABLE: Most elements available in the DETAIL timespan of the PWRPPG File and all elements of the PWRPDA File.

CODING RESTRICTIONS: See the CA MICS System Modification Guide, Section 4.3.2.1.

SPECIAL NOTES: This is an indirect macro language exit (see Section 4.3.2.1 of the CA MICS System Modification Guide). The member assignment statement is provided in prefix.MICS.USER.SOURCE($PWREXIT).

SAMPLE USER EXIT:

DESCRIPTION: In this exit, the user wants to save space by retaining only DASD and tape activity in the PWRPDA File.

USER EXIT EXAMPLE:

Member assignment:

```
%LET USRDPDA = MYEXIT1 ;
```

Exit code in prefix.MICS.USER.SOURCE(MYEXIT1):

```
IF DEVCLASS NE:  'DASD' AND DEVCLASS NE 'TAPE'
 THEN SKIP_REC = 1 ;
```

PWR_PR Element Derivation Exit (USRD_PR)

```
+---------------+
| U S R D P J B |  PWR_PR Element Derivation Exit (USRD_PR)
+---------------+
```

DESCRIPTION: The exit provides control over the observations added to the working version of the PWR_PR File during input format processing. The PWR_PR File contains data from the Reader Account records that will later be combined with the Program Activity File to construct the Job Activity File (PWRPJB).

INVOCATION: The exit is invoked in module DYPWRFMT prior to adding the observation to the PWR_PR File. See Chapter 9 of this guide for more information.

ACCOUNTING INTERFACE: No interface is provided.

USES: File elements can be modified before they undergo any summarization processing in the Information Area phase of DYPWRFMT. The exit can also be used to prevent selected observations from being added.

ELEMENTS AVAILABLE: Most elements available in the DETAIL timespan of the PWR_PR File.

CODING RESTRICTIONS: See the CA MICS System Modification Guide, Section 4.3.2.1.

SPECIAL NOTES: This is an indirect macro language exit (see Section 4.3.2.1 of the CA MICS System Modification Guide). The member assignment statement is provided in prefix.MICS.USER.SOURCE($PWREXIT).

SAMPLE USER EXIT:

DESCRIPTION: In this example the user does not want to retain jobs being routed to a particular remote system.

USER EXIT EXAMPLE:

Member assignment:

```
%LET USRDPJB = MYEXIT1 ;
```

Exit code in prefix.MICS.USER.SOURCE(MYEXIT1):

```
IF PJBDRMT EQ 5
 THEN SKIP_REC = 1 ;
```

PWRPOA Element Derivation Exit (USRDPOA)

| U S R D P O A | PWRPOA Element Derivation Exit (USRDPOA)

DESCRIPTION: The exit provides control over the observations added to the working version of the PWRPOA File during input format processing.

INVOCATION: The exit is invoked in module DYPWRFMT prior to adding the observation to the PWRPOA File. See Chapter 9 of this guide for more information.

ACCOUNTING INTERFACE: No interface is provided.

USES: File elements can be modified before they undergo any summarization processing in the Information Area phase of DYPWRFMT. The exit can also be used to prevent selected observations from being added.

ELEMENTS AVAILABLE: Most elements available in the DETAIL timespan of the PWRPOA File.

CODING RESTRICTIONS: See the CA MICS System Modification Guide, Section 4.3.2.1.

SPECIAL NOTES: This is an indirect macro language exit (see Section 4.3.2.1 of the CA MICS System Modification Guide). The member assignment statement is provided in prefix.MICS.USER.SOURCE($PWREXIT).

SAMPLE USER EXIT:

DESCRIPTION: In this example the user knows that output to form number F is routed to a device that automatically produces two copies of the output.

USER EXIT EXAMPLE:

Member assignment:

```
%LET USRDPOA = MYEXIT1 ;
```

Exit code in prefix.MICS.USER.SOURCE(MYEXIT1):

```
IF FORMNUM EQ 'F' THEN DO ;
  POANLR = POANLR*2 ;
  POAENLR = POAENLR*2 ;
END ;
```

PWRPPG Element Derivation Exit (USRDPPG)

| U S R D P P G | PWRPPG Element Derivation Exit (USRDPPG)

DESCRIPTION: The exit provides control over the observations added to the working version of the PWRPPG File during input format processing.

INVOCATION: The exit is invoked in module DYPWRFMT prior to adding the observation to the PWRPPG File. See Chapter 9 of this guide for more information.

ACCOUNTING INTERFACE: No interface is provided.

USES: File elements can be modified before they undergo any summarization processing in the Information Area phase of DYPWRFMT. The exit can also be used to prevent selected observations from being added.

ELEMENTS AVAILABLE: Most elements available in the DETAIL timespan of the PWRPPG File.

CODING RESTRICTIONS: See the CA MICS System Modification Guide, Section 4.3.2.1.

SPECIAL NOTES: This is an indirect macro language exit (see Section 4.3.2.1 of the CA MICS System Modification Guide). The member assignment statement is provided in prefix.MICS.USER.SOURCE($PWREXIT).

SAMPLE USER EXIT:

DESCRIPTION: In this case the user has added an additional measurement field to the user accounting portion of the Execution Account record. It will be added to the PWRPPG File, and, through step summarization, to the PWRPJB File.

USER EXIT EXAMPLE:

Member assignment:

```
%LET USRDPPG = MYEXIT1 ;
```

Exit code in prefix.MICS.USER.SOURCE(MYEXIT1):

```
IF PPGUFLDL GE 8 THEN
 PPGMEASR = INPUT(SUBSTR(PPGUFLD1,5,4),PIB4.) ;
ELSE PPGMEASR = .  ;
```

10.1.3 - Parameter-Related Exits

The following exits are defined during system generation. They are invoked by direct %INCLUDE of the member containing the code.

Chapter 7 of this guide describes each member.

VSE/POWER Account Code Derivation (PWRACRT)

```
+---------------+
| P W R A C R T |  VSE/POWER Account Code Derivation
+---------------+
```

DESCRIPTION: Derives the value of the account code elements described in prefix.MICS.PARMS(PWRACCT).

INVOCATION: The exit is referenced once for each of the following files: PWRPPG, PWRPOA, and PWRPJB.

ACCOUNTING INTERFACE: No interface is provided.

USES: This exit sets the value of the PWRACTx variables.

ELEMENTS AVAILABLE: The PWRACTEX variable can be tested to determine the exit for which the file was invoked. It will contain the three-character file identifier. All detail timespan elements of the file are available.

CODING RESTRICTIONS: Refer to Section 7.2.2 of this guide.

SPECIAL NOTES: The exit code is contained in prefix.MICS.PARMS(PWRACRT).

SAMPLE USER EXIT: See Figure 7-2 in Section 7.2.2. for a sample exit.

VSE/POWER Job Group Derivation (PWRGPRTE)

| P W R G P R T E | VSE/POWER Job Group Derivation

DESCRIPTION: Derives the value of the JOBGROUP variable of the PWRPJB File.

INVOCATION: The exit is invoked during the step summarization processing, just before the PWRPJB observation is added to the file. See Chapter 9 of this guide for more information.

ACCOUNTING INTERFACE: No interface is provided.

USES: This exit sets the value of the JOBGROUP variable.

ELEMENTS AVAILABLE: See Chapter 7 of this guide for more information.

CODING RESTRICTIONS: Refer to Section 7.3.3 of this guide.

SPECIAL NOTES: The exit code is contained in prefix.MICS.PARMS(PWRGPRTE).

SAMPLE USER EXIT: See Section 7.3.3 for a sample exit.

VSE/POWER Job Turnaround Time Derivation (PWRTNRTE)

| P W R T N R T E | VSE/POWER Job Turnaround Time Derivation

DESCRIPTION: Overrides the standard turnaround and deadline event calculations.

INVOCATION: The exit is referenced during step summarization prior to adding the new observation to the PWRPJB File. See Chapter 9 of this guide for more information.

ACCOUNTING INTERFACE: No interface is provided.

USES: The exit is used to override the default calculations of job turnaround time and the deadline event timestamps prior to assessment of service quality.

ELEMENTS AVAILABLE: All elements of the PWRPJB File DETAIL timespan are available. See Section 7.3.4 of this guide for more information.

CODING RESTRICTIONS: Refer to Section 7.3.4 of this guide.

SPECIAL NOTES: The exit code is contained in prefix.MICS.PARMS(PWRTNRTE).

SAMPLE USER EXIT: See Chapter 7 for a sample exit.

10.1.4 - Output Exits

Output exits are invoked just prior to adding the observation to the DETAIL timespan (or DAYS for PWRPDA) of the file. They can be used to modify the value of elements or prevent selected observations from being added.

The following exit description applies to these files:

- PWRPJB - Job Activity File
- PWRPPG - Program Activity File
- PWRPOA - Output Activity File
- PWRPRA - Remote Activity File
- PWRPDA - Device Activity File

POWER File Selection Exit (USRSfff)

```
+---------------+
| U S R S f f f |  POWER File Selection Exit (USRSfff)
+---------------+
```

DESCRIPTION: The exit provides the ability to modify or select observations immediately prior to output.

INVOCATION: These exits are invoked in the information area processing phase of the DYPWRFMT routine immediately before output of the file. See Chapter 9 of this guide for more information.

ACCOUNTING INTERFACE: No interface is provided.

USES: Allows elements to be modified and observations to be selectively excluded from processing.

ELEMENTS AVAILABLE: All elements in the file are available.

CODING RESTRICTIONS: Refer to the CA MICS System Modification Guide, Section 4.3.2.1.

SPECIAL NOTES: This is an indirect macro language exit (see Section 4.3.2.1 of the CA MICS System Modification Guide). The member assignment statement is provided in prefix.MICS.USER.SOURCE($PWREXIT).

SAMPLE USER EXIT:

DESCRIPTION: In this example the user wants to delete SYSID VSE1 only from the PWRPPG File.

USER EXIT EXAMPLE:

Member assignment:

```
%LET USRSPPG = MYEXIT1 ;
```

Exit code in prefix.MICS.USER.SOURCE(MYEXIT1):

```
IF SYSID EQ 'VSE1' THEN SKIP_REC ;
```

10.2 - File and Data Element Customization

See Section 4.2 of the CA MICS System Modification Guide for information on file and data element customization.

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

APPENDIX A

MESSAGES

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

APPENDIX A

MESSAGES

Appendix A. MESSAGES

The MICSLOG program converts message codes into text and places the message identifier and text into the MICSLOG data set. MICSLOG messages are printed after job output, enabling you to relate the messages to job steps.

The format of a MICSLOG message is

```
    hh:mm:ss.hs cccnnnnns ttttttt
```

```
+-----------------+
| P W R 0 0 0 0 1 |
+-----------------+

   TEXT:  VSE/POWER PARAMETER GENERATION STARTED

   TYPE:  Information

   REASON:  Acknowledges that the parameter generation
            process has started.

   ACTION:  None necessary.

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 0 2 |
+-----------------+

   TEXT:  LENGTH OF ORGSYSID MUST BE 4 OR LESS. ORGSYSID
            FOUND = %TOKEN1

   TYPE:  Error

   REASON:  The ORGSYSID coded on the OPTIONS statement
            exceeds four characters.

   ACTION:  Correct the ORGSYSID on the OPTIONS statement of
            prefix.MICS.PARMS(PWROPS)

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 0 3 |
+-----------------+

   TEXT:  DEVICE ADDRESS %ADD1C IS NOT A VALID ADDRESS

   TYPE:  Error

   REASON:  The address contains invalid hex characters.

   ACTION:  Correct the address.

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 0 4 |
+-----------------+

   TEXT:  DEVICE ADDRESS 2 MUST BE GT ADDRESS 1. ADDRESS
            RANGE FOUND = %TOKEN2

   TYPE:  Error

   REASON:  Address values in a range specification must be
            in ascending sequence.  For example, 140-14F is
            valid, but 14F-140 is not.

   ACTION:  Correct the value coded for device address in
            prefix.MICS.PARMS(PWRCONFG).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 0 5 |
+-----------------+

   TEXT:  DEVICE ADDRESS RANGE DOES NOT CONTAIN VALID
          HEXADECIMAL ADDRESS.  ADDRESS RANGE FOUND = %TOKEN2

   TYPE:  Error

   REASON:  One or both of the addresses specified contain
            invalid hexadecimal characters.

   ACTION:  Correct the value coded for device addresses in
            prefix.MICS.PARMS(PWRCONFG).

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 0 6 |
+-----------------+

   TEXT:  DEVICE ADDRESS NOT SPECIFIED

   TYPE:  Error

   REASON:  The device address in prefix.MICS.PARMS(PWRCONFG)
            is required.

   ACTION:  Code one or more device addresses in the PWRCONFG
            member of prefix.MICS.PARMS.

   REFERENCES:  PWRPGEN


+-----------------+
| P W R 0 0 0 0 7 |
+-----------------+

   TEXT:  FORMAT OF DEVICE ADDRESS NOT RECOGNIZED. DEVICE
            ADDRESS FOUND = %TOKEN2

   TYPE:  Error

   REASON:  The device address specification must be in the
            form xxx or xxx-xxx.

   ACTION:  Correct the value for device address coded in
            prefix.MICS.PARMS(PWRCONFG).

   REFERENCES:  PWRPGEN


+-----------------+
| P W R 0 0 0 0 8 |
+-----------------+

   TEXT:  ADDRESS RANGES MUST HAVE SAME FIRST 2 CHARACTERS.
            DEVICE ADDRESS FOUND = %TOKEN2

   TYPE:  Error

   REASON:  The address range form can be used to describe a
            maximum of 16 contiguous addresses.

   ACTION:  Correct the value for device address coded in
            prefix.MICS.PARMS(PWRCONFG).

   REFERENCES:  PWRPGEN


+-----------------+
| P W R 0 0 0 0 9 |
+-----------------+

   TEXT:  DEVICE CLASS NOT SPECIFIED

   TYPE:  Error

   REASON:  The device class in prefix.MICS.PARMS(PWRCONFG)
            is required.

   ACTION:  Code one or more device classes in the PWRCONFG
            member of prefix.MICS.PARMS.

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 1 0 |
+-----------------+

   TEXT:  DEVICE CLASS %DEVCLASS IS UNKNOWN

   TYPE:  Warning

   REASON:  The CA MICS Analyzer Option for VSE/POWER product
            accumulates SIO counts based on a list of
            recognized device classes.  The PWR00012 message
            is issued when you code an unrecognized value for
            device class.

   ACTION:  Ensure that the device class coded in
            prefix.MICS.PARMS(PWRCONFG) meets your reporting
            requirements for SIO information.

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 1 1 |
+-----------------+

   TEXT:  LENGTH OF DEVICE CLASS MUST BE 8 OR LESS. DEVICE
            CLASS FOUND = %TOKEN3

   TYPE:  Error

   REASON:  The value of device class is limited to eight or
            fewer characteristics.

   ACTION:  Correct the value of device class coded in
            prefix.MICS.PARMS(PWRCONFG).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 1 2 |
+-----------------+

   TEXT:  DEVICE TYPE NOT SPECIFIED

   TYPE:  Error

   REASON:  The device type in prefix.MICS.PARMS(PWRCONFG) is
            required.

   ACTION:  Code one or more device types in the PWRCONFG
            member of prefix.MICS.PARMS.

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 1 3 |
+-----------------+

   TEXT:  DEVICE TYPE %DEVTYPE IS UNKNOWN

   TYPE:  Warning

   REASON:  The CA MICS Analyzer Option for VSE/POWER product
            is distributed with a list of device types that
            it uses to validate the VSE/POWER configuration
            at your installation.  The validation process
            controls how SIO counts are accumulated in the CA
            MICS database. The PWR00013 message is issued
            when you code a value for device type that is not
            in the list.

   ACTION:  Ensure that the value for device type coded in
            prefix.MICS.PARMS(PWRCONFG) enables you to meet
            your reporting requirements.

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 1 4 |
+-----------------+

   TEXT:  DEVICE TYPE %DEVTYPE IS NOT KNOWN IN CLASS
            %DEVCLASS

   TYPE:  Warning

   REASON:  The CA MICS Analyzer Option for VSE/POWER product
            is distributed with a set of device types and
            classes that it uses to control how SIO counts
            are accumulated.  The PWR00014 message is issued
            when a device type and device class pair is not
            in the list.

   ACTION:  Ensure that your reporting needs for SIO count
            information can be met based on the device type
            and device class pairs coded in
            prefix.MICS.PARMS(PWRCONFG).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 1 5 |
+-----------------+

   TEXT:  LENGTH OF DEVICE TYPE MUST BE 8 OR LESS. DEVICE
            TYPE FOUND = %TOKEN4

   TYPE:  Error

   REASON:  The value of device type is limited to eight or
            fewer characteristics.

   ACTION:  Correct the value of device type coded in
            prefix.MICS.PARMS(PWRCONFG).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 1 6 |
+-----------------+

   TEXT:  NO CONFIGURATION HAS BEEN SPECIFIED. PJB ELEMENTS
            MAY BE INVALID

   TYPE:  Warning

   REASON:  No configuration information was provided. All
            SIO counts will be assigned to a device class and
            type of *UNKNOWN.  Also, device class SIO counts
            will be accumulated to element fffOSIO ('other').

   ACTION:  Define your system configuration in
            prefix.MICS.PARMS(PWRCONFG) if necessary to meet
            your measurement needs.

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 1 7 |
+-----------------+

   TEXT:  FATAL ERRORS ENCOUNTERED IN PWRCONFG MEMBER

   TYPE:  Error

   REASON:  The parameter specifications and/or validations
            performed for information coded in PWRCONFG did
            not complete satisfactorily.

   ACTION:  Review the error messages printed in MICSLOG
            prior to this message.  These earlier messages
            point you to the areas that you need to research
            to resolve the fatal errors.

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 1 8 |
+-----------------+

   TEXT:  LENGTH OF ORGSYSID MUST BE 4 OR LESS. ORGSYSID
            FOUND = %TOKEN2

   TYPE:  Error

   REASON:  Valid values for the original system identifier
            field of prefix.MICS.PARMS(PWROPS) are one to
            four characters long.

   ACTION:  Correct the value coded for ORGSYSID in
            prefix.MICS.PARMS(PWROPS).

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 1 9 |
+-----------------+

   TEXT:  LENGTH OF DDNAME MUST BE 8 OR LESS. DDNAME FOUND
            = %TOKEN3

   TYPE:  Error

   REASON:  Valid values for the DDNAME field of the PWROPS
            member of prefix.MICS.PARMS are one to eight
            characters long.

   ACTION:  Correct the value of the DDNAME field of
            prefix.MICS.PARMS(PWROPS).

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 2 0 |
+-----------------+

   TEXT:  VSE SYSID MUST BE A NUMERIC VALUE OR X. VALUE
            FOUND = %VSESYSID

   TYPE:  Error

   REASON:  Valid values for the field VSESYSID in the PWROPS
            member of prefix.MICS.PARMS are the single digits
            one through nine or the character X.

   ACTION:  Correct the value coded for VSESYSID in
            prefix.MICS.PARMS(PWROPS).

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 2 1 |
+-----------------+

   TEXT:  LENGTH OF VSE SYSID MUST BE 1. VSE SYSID FOUND =
            %TOKEN4

   TYPE:  Error

   REASON:  Valid values for the field VSESYSID in the PWROPS
            member of prefix.MICS.PARMS are the single digits
            one through nine or the character X.

   ACTION:  Correct the value coded for VSESYSID in
            prefix.MICS.PARMS(PWROPS).

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 2 2 |
+-----------------+

   TEXT:  DATE FORMAT VALUE NOT RECOGNIZED; IT MUST BE
            DD/MM/YY OR MM/DD/YY.
          DATE FORMAT FOUND = %TOKEN5

   TYPE:  Error

   REASON:  Valid values for the DATEFMT field of the PWROPS
            member of prefix.MICS.PARMS are DD/MM/YY and
            MM/DD/YY.

   ACTION:  Correct the value coded for the DATEFMT field in
            prefix.MICS.PARMS(PWROPS).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 2 3 |
+-----------------+

   TEXT:  LENGTH OF DATE FORMAT MUST BE 8. DATE FORMAT
            FOUND = %TOKEN5

   TYPE:  Error

   REASON:  Valid values for the DATEFMT field of the PWROPS
            member of prefix.MICS.PARMS are DD/MM/YY and
            MM/DD/YY.

   ACTION:  Correct the value coded for the DATEFMT field in
            prefix.MICS.PARMS(PWROPS).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 2 4 |
+-----------------+

   TEXT:  INVALID SYSID OPTION SPECIFIED. OPTION FOUND =
            %TOKEN6

   TYPE:  Error

   REASON:  Valid values for the SYSID_SW field in the PWROPS
            member of prefix.MICS.PARMS are SYSID and
            NOSYSID.

   ACTION:  Correct the value of the SYSID_SW field in
            prefix.MICS.PARMS(PWROPS).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 2 5 |
+-----------------+

   TEXT:  INVALID VSE VERSION SPECIFIED:  %TOKEN7

   TYPE:  Error

   REASON:  Valid values for the VERSION field of the PWROPS
            member of prefix.MICS.PARMS are 2.1.0 and above.

   ACTION:  Correct the value coded for VERSION in
            prefix.MICS.PARMS(PWROPS).

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 2 6 |
+-----------------+

   TEXT:  LENGTH OF VSE VERSION MUST BE 8 OR LESS. VSE
            VERSION FOUND = %TOKEN7

   TYPE:  Error

   REASON:  Valid values for the VERSION field of the PWROPS
            member of prefix.MICS.PARMS are 2.1.0 and above.

   ACTION:  Correct the value coded for VERSION in
            prefix.MICS.PARMS(PWROPS).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 2 7 |
+-----------------+

   TEXT:  OPTION SYSID SPECIFIED AND NUMERIC VALUE FOR VSE
            SYSID WAS NOT SPECIFIED

   TYPE:  Error

   REASON:  Stating that SYSID is the valid value for the
            field SYSID_SW means that there must be SYSID
            headers provided in the data.  Specifying X as
            the value for the field VSESYSID means that there
            are not headers provided in the data.

   ACTION:  Review the specifications for the fields SYSID_SW
            and VSESYSID in prefix.MICS.PARMS(PWROPS).
            Ensure that the values coded logically support
            one another (SYSID_SW=SYSID means VSESYSID=single
            digit one through nine; SYSID_SW=NOSYSID means
            VSESYSID=X).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 2 8 |
+-----------------+

   TEXT:  OPTION NOSYSID SPECIFIED AND A NUMERIC VALUE FOR
            VSE SYSID HAS BEEN SPECIFIED.
          VSE SYSID WILL NOT BE USED FOR RECORD
            SELECTION.  VSE SYSID HAS BEEN SET TO X.

   TYPE:  Warning

   REASON:  Stating that X is the valid value for the field
            VSESYSID means that SYSID headers will not be
            processed from the data, even if they are present
            (as indicated by coding SYSID for the SYSID_SW
            field).

   ACTION:  Review the specifications for the fields SYSID_SW
            and VSESYSID in prefix.MICS.PARMS(PWROPS).
            Ensure that the value coded for VSESYSID reflects
            the kind of data collection you intend to perform
            (collect by SYSID or not).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 2 9 |
+-----------------+

   TEXT:  ORGSYSID %ORGSYSID IS DUPLICATELY DEFINED

   TYPE:  Error

   REASON:  Each ORGSYSID value must be uniquely defined in
            an OPTIONS statement.

   ACTION:  Review the OPTIONS statement in
            prefix.MICS.PARMS(PWROPS) for the indicated value
            of ORGSYSID.

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 3 0 |
+-----------------+

   TEXT:  DDNAME %DDNAME AND VSE SYSID %VSESYSID DUPLICATELY
            DEFINED

   TYPE:  Error

   REASON:  The combination of DDNAME and VSESYSID uniquely
            identify the data from a single VSE/POWER system.
            There should be only one OPTIONS statement for
            each system.

   ACTION:  Review the OPTIONS statements in
            prefix.MICS.PARMS(PWROPS) for the indicated
            system.

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 3 1 |
+-----------------+

   TEXT:  LIMIT OF DEFINED ORGSYSIDS HAS BEEN REACHED.
            CONTACT CA MICS PRODUCT SUPPORT GROUP

   TYPE:  Error

   REASON:  A maximum of 99 OPTIONS statements (VSE/POWER
            systems) are supported.

   ACTION:  Contact the CA MICS Product Support Group for
            assistance.

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 3 2 |
+-----------------+

   TEXT:  UNIDENTIFIED KEYWORD ENCOUNTERED. KEYWORD FOUND =
            %TOKEN1

   TYPE:  Error

   REASON:  The only keyword statement supported is
            OPTIONS.

   ACTION:  Correct the value of the first field in
            prefix.MICS.PARMS(PWROPS).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 3 3 |
+-----------------+

   TEXT:  NO VALID OPTIONS STATEMENTS HAVE BEEN FOUND

   TYPE:  Error

   REASON:  You must define at least one VSE/POWER system to
            be processed.

   ACTION:  Add one or more OPTIONS statements to
            prefix.MICS.PARMS(PWROPS).

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 3 4 |
+-----------------+

   TEXT:  DDNAME %DDNAME SPECIFIED IN INPUTPWR NOT FOUND IN
            PWROPS

   TYPE:  Error

   REASON:  CA MICS generates input format code based on the
            DDname values in PWROPS.  All DDnames must be
            defined to be processed.

   ACTION:  Add the missing DDname to
            prefix.MICS.PARMS(PWROPS).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 3 5 |
+-----------------+

   TEXT:  DDNAME %DDNAME SPECIFIED IN PWROPS DOES NOT HAVE A
            CORRESPONDING INPUT STATEMENT IN INPUTPWR

   TYPE:  Error

   REASON:  CA MICS generates input format code based on the
            DDname values in PWROPS.  All DDnames must be
            defined to be processed.

   ACTION:  Add the missing DDname to
            prefix.MICS.PARMS(INPUTPWR).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 3 6 |
+-----------------+

   TEXT:  FATAL ERRORS ENCOUNTERED IN PWROPS/INPUTPWR

   TYPE:  Error

   REASON:  The CA MICS Analyzer Option for VSE/POWER product
            validates the DDnames in
            prefix.MICS.PARMS(INPUTPWR) against the values in
            the DDname field of prefix.MICS.PARMS(PWROPS).
            There must be an exact match between the values
            in both members because INPUTPWR tells the CA
            MICS product the location of the data set that
            contains the data for the system specified by the
            PWROPS statement.

   ACTION:  Review the specifications for the DDname field in
            prefix.MICS.PARMS(PWROPS) and the DDnames in
            prefix.MICS.PARMS(INPUTPWR).  Correct the members
            so that these specifications match.

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 3 7 |
+-----------------+

   TEXT:  KEYWORD NOT RECOGNIZED. KEYWORD FOUND = %TOKEN3

   TYPE:  Error

   REASON:  Valid values for the time descriptor associated
            with prefix.MICS.PARMS(PWRGROUP) field turntime
            are LOCAL and REMOTE.

   ACTION:  Correct the time descriptor.

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 3 8 |
+-----------------+

   TEXT:  VALID TURNAROUND TIME DATA ELEMENTS NOT SPECIFIED

   TYPE:  Error

   REASON:  At least one valid (numeric 1-3) turnaround time
            component must be specified.

   ACTION:  Correct the TURNTIME statement in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN


+-----------------+
| P W R 0 0 0 3 9 |
+-----------------+

   TEXT:  TURNAROUND TIME ELEMENTS NOT NUMERIC

   TYPE:  Error

   REASON:  The turnaround time element identifiers must be
            numeric in the range 1-3.

   ACTION:  Correct the TURNTIME statement in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN


+-----------------+
| P W R 0 0 0 4 0 |
+-----------------+

   TEXT:  STANDARD TURNAROUND VALUES MUST BE 1, 2, OR 3

   TYPE:  Error

   REASON:  The turnaround time element identifiers must be
            numeric in the range 1-3.

   ACTION:  Correct the TURNTIME statement in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN


+-----------------+
| P W R 0 0 0 4 1 |
+-----------------+

   TEXT:  STANDARD TURNAROUND VALUES HAVE BEEN REPEATED

   TYPE:  Error

   REASON:  Each turnaround element can be used only once.

   ACTION:  Correct the TURNTIME statement in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 4 2 |
+-----------------+

   TEXT:  DUPLICATE STANDARD LOCAL DEFINITIONS

   TYPE:  Error

   REASON:  The turnaround time definition for standard
            job groups with local jobs has been defined on
            more than one TURNTIME statement.

   ACTION:  Correct the TURNTIME statement in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 4 3 |
+-----------------+

   TEXT:  DUPLICATE STANDARD REMOTE DEFINITIONS

   TYPE:  Error

   REASON:  The turnaround time definition for standard
            job groups with remote jobs has been defined on
            more than one TURNTIME statement.

   ACTION:  Correct the TURNTIME statement in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 4 4 |
+-----------------+

   TEXT:  NO ENDING DEADLINE TIME DATA ELEMENT SPECIFIED

   TYPE:  Error

   REASON:  You must specify both a starting and an ending
            time for DEADLINE jobs.

   ACTION:  Correct the TURNTIME statement in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 4 5 |
+-----------------+

   TEXT:  STARTING VALUE FOR DEADLINE MUST BE 1, 2, OR 3

   TYPE:  Error

   REASON:  An invalid value was specified for the deadline
            start time.  It must be numeric in the range 1-3.

   ACTION:  Correct the TURNTIME statement in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 4 6 |
+-----------------+

   TEXT:  ENDING VALUE FOR DEADLINE MUST BE 3 OR 4

   TYPE:  Error

   REASON:  The end time element for deadline jobs must be
            either 3 or 4.

   ACTION:  Correct the TURNTIME statement in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN


+-----------------+
| P W R 0 0 0 4 7 |
+-----------------+

   TEXT:  DEADLINE 3 3 NOT VALID

   TYPE:  Error

   REASON:  The starting and ending times for deadline jobs
            must be different.

   ACTION:  Correct the TURNTIME statement in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN


+-----------------+
| P W R 0 0 0 4 8 |
+-----------------+

   TEXT:  DEADLINE VALUES MUST BE ASCENDING

   TYPE:  Error

   REASON:  The deadline end time value must be later than
            the start time.

   ACTION:  Correct the TURNTIME statement in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN


+-----------------+
| P W R 0 0 0 4 9 |
+-----------------+

   TEXT:  ONLY STARTING AND ENDING VALUES MAY BE SPECIFIED
            FOR DEADLINE TURNAROUND

   TYPE:  Error

   REASON:  Only starting and ending values are specified for
            deadline turnaround.

   ACTION:  Correct the TURNTIME statement in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 5 0 |
+-----------------+

   TEXT:  DUPLICATE DEADLINE LOCAL DEFINITIONS.

   TYPE:  Error

   REASON:  The turnaround time definition for deadline
            job groups with local jobs has been defined on
            more than one TURNTIME statement.

   ACTION:  Correct the TURNTIME statement in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 5 1 |
+-----------------+

   TEXT:  DUPLICATE DEADLINE REMOTE DEFINITIONS.

   TYPE:  Error

   REASON:  The turnaround time definition for deadline
            job groups with remote jobs has been defined on
            more than one TURNTIME statement.

   ACTION:  Correct the TURNTIME statement in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 5 2 |
+-----------------+

   TEXT:  KEYWORD NOT RECOGNIZED IN TURNTIME STMT. KEYWORD
            FOUND = %TOKEN2

   TYPE:  Error

   REASON:  The first keyword on the TURNTIME statement must
            be either STANDARD or DEADLINE.

   ACTION:  Correct the TURNTIME statement in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 5 3 |
+-----------------+

   TEXT:  TARGET TIMES MUST NOT BE LESS THAN THE TARGET TIME
            SPECIFIED FOR THE PREVIOUS JOB GROUP
          TARGET FOUND = %TARGET.  PREVIOUS FOUND =
            %LASTTAR

   TYPE:  Error

   REASON:  The GROUP statements must be in ascending
            sequence by the turnaround target time specified
            on each statement in order to assure that there
            is no overlap.

   ACTION:  Correct the GROUP statement in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 5 4 |
+-----------------+

   TEXT:  TARGET TIME IS EQUAL TO PREVIOUS TARGET TIME

   TYPE:  Warning

   REASON:  The turnaround service target assigned to each
            job group in the GROUP statement must not
            overlap.

   ACTION:  Correct the GROUP statement in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 5 5 |
+-----------------+

   TEXT:  PURGE TIME MUST BE GT SUBMIT TIME WITH DAYS
            SPANNED OF 1.

   TYPE:  Error

   REASON:  If a deadline job's processing is expected to
            complete in a single calendar day, then the
            target purge time of day must be later than the
            submit time of day.

   ACTION:  Correct the DEADLINE statement in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 5 6 |
+-----------------+

   TEXT:  KEYWORD NOT RECOGNIZED. KEYWORD = %TOKEN1

   TYPE:  Error

   REASON:  The only valid keywords for the PWRGROUP member
            are TURNTIME, GROUP, DEADLINE, and OPEN.

   ACTION:  Correct the DEADLINE statement in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 5 7 |
+-----------------+

   TEXT:  %VALUEN IS NOT NUMERIC. VALUE FOUND = %VALUEC

   TYPE:  Error

   REASON:  The value shown is from the last line processed.
            A numeric value was expected.

   ACTION:  Correct the statement in error in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 5 8 |
+-----------------+

   TEXT:  %VALUEN MUST BE IN THE RANGE %VALUEL - %VALUEH.
            VALUE FOUND = %VALUE

   TYPE:  Error

   REASON:  The value shown is from the last line processed.
            The value is outside of the expected range.

   ACTION:  Correct the statement in error in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 5 9 |
+-----------------+

   TEXT:  GROUP VALUE IS NOT NUMERIC. VALUE FOUND = %TOKEN2

   TYPE:  Error

   REASON:  The value shown is from the last line processed.
            The job group identifier must be numeric.

   ACTION:  Correct the statement in error in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 6 0 |
+-----------------+

   TEXT:  GROUP VALUE IS NOT INTEGER. VALUE FOUND = %TOKEN2

   TYPE:  Error

   REASON:  The value shown is from the last line processed.
            The job group identifier must be an integer.

   ACTION:  Correct the statement in error in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 6 1 |
+-----------------+

   TEXT:  STANDARD GROUP VALUE NOT IN RANGE 1-149. VALUE
            FOUND = %GROUP

   TYPE:  Error

   REASON:  The value shown is from the last line processed.
            The job group identifier for standard groups must
            be in the range 1-149.

   ACTION:  Correct the statement in error in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 6 2 |
+-----------------+

   TEXT:  DEADLINE GROUP VALUE NOT IN RANGE 150-179. VALUE
            FOUND = %GROUP

   TYPE:  Error

   REASON:  The value shown is from the last line processed.
            The job group identifier for deadline groups must
            be in the range 150-179.

   ACTION:  Correct the statement in error in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN


+-----------------+
| P W R 0 0 0 6 3 |
+-----------------+

   TEXT:  OPEN GROUP VALUE NOT IN RANGE 180-195. VALUE
            FOUND = %GROUP

   TYPE:  Error

   REASON:  The value shown is from the last line processed.
            The job group identifier for open groups must be
            in the range 180-195.

   ACTION:  Correct the statement in error in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN


+-----------------+
| P W R 0 0 0 6 4 |
+-----------------+

   TEXT:  JOB GROUP NAME IS NOT ENCLOSED IN QUOTES

   TYPE:  Error

   REASON:  The value shown is from the last line processed.
            The job group name must be enclosed in single
            quotation marks to delimit it from the rest of
            the statement.

   ACTION:  Correct the statement in error in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN


+-----------------+
| P W R 0 0 0 6 5 |
+-----------------+

   TEXT:  JOB GROUP PREVIOUSLY DEFINED. NAME = %DUPDDN

   TYPE:  Error

   REASON:  The job group name has been assigned to more than
            one job group identifier.  Job group names must
            be unique.

   ACTION:  Correct the statement in error in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 6 6 |
+-----------------+

   TEXT:  ALL 4 TURNTIME COMBINATIONS MUST BE DEFINED

   TYPE:  Error

   REASON:  All of the following turnaround time definition
            statements must be provided:

              TURNTIME STANDARD LOCAL ...
              TURNTIME STANDARD REMOTE ...
              TURNTIME DEADLINE LOCAL ...
              TURNTIME DEADLINE REMOTE ...

   ACTION:  Add the missing statement(s) to
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 6 7 |
+-----------------+

   TEXT:  NO JOB GROUPS WERE DEFINED IN THE PWRGROUP MEMBER

   TYPE:  Warning

   REASON:  At least one job group must be defined.

   ACTION:  Add the missing statement(s) to
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 6 8 |
+-----------------+

   TEXT:  FATAL ERRORS ENCOUNTERED IN PWRGROUP

   TYPE:  Error

   REASON:  The parameter specifications, validations, or
            both performed for information coded in PWRGROUP
            did not complete satisfactorily.

   ACTION:  Review the error messages printed in MICSLOG
            prior to this message.  These earlier messages
            point you to the areas that you need to research
            to resolve the fatal errors.

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 6 9 |
+-----------------+

   TEXT:  CONFIGURATION INFORMATION NOT SPECIFIED FOR SYSTEM
            %ORGSYSID.  SOME PJB ELEMENTS MAY BE INVALID

   TYPE:  Warning

   REASON:  No configuration information was provided for the
            ORGSYSID listed.  All SIO counts will be assigned
            to a device class and type of *UNKNOWN.  Also,
            device class SIO counts will be accumulated to
            element fffOSIO (other).

   ACTION:  Define the system configuration in
            prefix.MICS.PARMS(PWRCONFG) if required to meet
            your measurement needs.

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 7 0 |
+-----------------+

   TEXT:  OPTIONS NOT SPECIFIED FOR SYSTEM %ORGSYSID
            SPECIFIED IN PWRCONFG

   TYPE:  Error

   REASON:  There must be a one-to-one correspondence between
            the systems identified in the PWRCONFG member
            and the systems listed on the OPTIONS statement
            of prefix.MICS.PARMS(PWROPS).

   ACTION:  Review the system identifiers listed in the
            PWRCONFG and PWROPS members of prefix.MICS.PARMS.
            Revise the system identifiers and ensure that
            there is a one-to-one correspondence between the
            members.

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 7 1 |
+-----------------+

   TEXT:  VSE/POWER PARAMETER GENERATION COMPLETED
            SUCCESSFULLY

   TYPE:  Information

   REASON:  All processing has completed successfully.

   ACTION:  None necessary.

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 7 5 |
+-----------------+

   TEXT:  PROCESSING DSN=%DSNAME

   TYPE:  Information

   REASON:  Notice that processing has started on the
            parameter member.

   ACTION:  None necessary.

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 7 6 |
+-----------------+

   TEXT:  %LINEIN

   TYPE:  Information

   REASON:  For each line of the member processed, this
            message echoes its content to the MICSLOG.

   ACTION:  None necessary.

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 7 7 |
+-----------------+

   TEXT:  BUILDING DEVICE TYPE/DEVICE CLASS FORMAT

   TYPE:  Information

   REASON:  Acknowledges that the first step of generating
            code for the product is building the format for
            device types and classes.

   ACTION:  None necessary.

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 7 8 |
+-----------------+

   TEXT:  BUILDING PREFIX.MICS.USER.SOURCE($PWRMSTR).

   TYPE:  Information

   REASON:  Acknowledges that the $PWRMSTR code is being
            built.

   ACTION:  None necessary.

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 7 9 |
+-----------------+

   TEXT:  CONFIRMING SYSID MATCHES IN PWROPS AND PWRCONFG.

   TYPE:  Information

   REASON:  Acknowledges that the SYSID matching process has
            started.

   ACTION:  None necessary.

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 8 0 |
+-----------------+

   TEXT:  JOBGROUP SERVICE FACTOR IS REQUIRED BEFORE THE
            TITLE.

   TYPE:  Error

   REASON:  The job group service factor is missing from the
            previous statement.  It must be listed prior to
            the job group title in the statement.

   ACTION:  Correct the statement in error in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 8 1 |
+-----------------+

   TEXT:  JOBGROUP SERVICE FACTOR IS NOT NUMERIC. VALUE
            FOUND = %VALUEC.

   TYPE:  Error

   REASON:  The job group service factor must be numeric. If
            priority accounting is not being used, set this
            value to one.

   ACTION:  Correct the statement in error in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 8 2 |
+-----------------+

   TEXT:  JOBGROUP SERVICE FACTOR IS NOT IN RANGE .1 TO
            99.9.  VALUE FOUND = %PGPFCTR

   TYPE:  Error

   REASON:  The job group service factor must be in the range
            of .1 to 99.9.  If priority accounting is not in
            use, set this value to one.

   ACTION:  Correct the statement in error in
            prefix.MICS.PARMS(PWRGROUP).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 8 3 |
+-----------------+

   TEXT:  PROCESSING COMPLETED FOR MEMBER %PGENNAME

   TYPE:  Information

   REASON:  Acknowledges that the contents of the member of
            prefix.MICS.PARMS has been processed.

   ACTION:  None necessary.

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 8 4 |
+-----------------+

   TEXT:  DEVICE ADDRESS RANGE MUST BE SPECIFIED WITHOUT
            BLANKS

   TYPE:  Error

   REASON:  Device range definitions must be in the form
            xxx-xxx.  They may not contain embedded blanks.

   ACTION:  Correct the value coded for device address in
            prefix.MICS.PARMS(PWRCONFG).

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 0 0 8 5 |
+-----------------+

   TEXT:  A FATAL ERROR HAS BEEN DETECTED; JOB ABENDING

   TYPE:  Error

   REASON:  Before generating the $PWRMSTR code, errors
            detected in the validation and processing of the
            members of the prefix.MICS.PARMS data set must be
            resolved.  This ABEND ensures that code is not
            generated if errors have been detected.

   ACTION:  Review the error messages printed in MICSLOG
            prior to this message.  These earlier messages
            point you to the areas that you need to research
            to resolve the fatal errors.

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 8 6 |
+-----------------+

   TEXT:  DDNAME %DDNAME IS SPECIFIED IN PWROPS FOR MULTIPLE
            ORGSYSIDS
          AT LEAST ONE SPECIFIES THE NOSYSID OPTION

   TYPE:  Error

   REASON:  This error can result from one of two conditions.
            First, the OPTIONS statements for the DDname may
            contain a mixture of SYSID and NOSYSID keywords.
            This is invalid since all data read from an input
            DD must be in the same format.

            The other possibility is that all of the data
            being read is in NOSYSID form.  This is invalid
            because it is impossible to tell the source of
            the data without the VSESYSID contained in the
            SYSID record header.

   ACTION:  Review the data attributes and correct the
            OPTIONS statements in prefix.MICS.PARMS(PWROPS).

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 8 7 |
+-----------------+

   TEXT:  INVALID SUSPEND LIMIT:  %TOKEN2
          VALUE MUST BE AN INTEGER IN THE RANGE 0-99

   TYPE:  Error

   REASON:  The suspend limit value is out of range. It must
            be in days and have a value between 0 and 99
            inclusive.

   ACTION:  Review the data attributes and correct the
            SUSPENDLIMIT statement.

   REFERENCES:  PWRPGEN

+-----------------+
| P W R 0 0 0 8 8 |
+-----------------+

   TEXT:  SUSPENDLIMIT KEYWORD NOT FOUND; THE DEFAULT VALUE
            OF FIVE WILL BE USED

   TYPE:  Information

   REASON:  Notification that the default value will be used.

   ACTION:  None required.

   REFERENCES:  PWRPGEN
```

```
+-----------------+
| P W R 0 1 0 0 0 |
+-----------------+

   TEXT:  FIRST INPUT TIMESTAMP THIS RUN = %WRKTS
          FROM ORGSYSID %ORGSYSID DDNAME %VSEDDNAM

   TYPE:  Information

   REASON:  Acknowledges that CA MICS has started to process
            data.

   ACTION:  None necessary.

   REFERENCES:  DYPWRWFM


+-----------------+
| P W R 0 1 0 0 1 |
+-----------------+

   TEXT:  INPUT STATISTICS FOR FILE---------- %VSEDDNAM
          -C- SPOOL-ACCESS CONNECT RECORDS--- %MSGCC
            -S- RJE/SNA ACCOUNT RECORDS-------- %MSGCS
          -E- EXECUTION ACCOUNT RECORDS------ %MSGCE
            -T- RJE/BSC ACCOUNT RECORDS-------- %MSGCT
          -L- LIST ACCOUNT RECORDS----------- %MSGCL
            -U- SYSTEM-UP ACCOUNT RECORDS------ %MSGCU
          -M- TRANSMITTER ACCOUNT RECORDS---- %MSGCM
            -V- RECEIVER ACCOUNT RECORDS------- %MSGCV
          -N- NETWORK ACCOUNT RECORDS-------- %MSGCN
            -X- SPOOL-ACCESS OPERATION RECORDS- %MSGCX
          -P- PUNCH ACCOUNT RECORDS---------- %MSGCP
            -?- UNKNOWN RECORD TYPES----------- %MSGC0
          -R- READER ACCOUNT RECORDS--------- %MSGCR
            --- TOTAL RECORDS IN FILE---------- %MSGCTOT

   TYPE:  Information

   REASON:  Acknowledges that the number of records shown for
            each record type listed were read in.

   ACTION:  None necessary.

   REFERENCES:  DYPWRWFM
```

```
+-----------------+
| P W R 0 1 0 0 2 |
+-----------------+

   TEXT:  VSE SYSID %VSESYSID NOT DEFINED IN
            PREFIX.MICS.PARMS(PWROPS).  ABEND FOLLOWS.

   TYPE:  Error

   REASON:  An unknown VSE system identification has been
            found in the data.  All VSE/POWER systems must be
            defined in PWROPS.

   ACTION:  Define the new systems in the PWROPS, PWRCONFG,
            and SYSID members of prefix.MICS.PARMS.

   REFERENCES:  DYPWRWFM


+-----------------+
| P W R 0 1 0 0 3 |
+-----------------+

   TEXT:  PWRGPRTE DID NOT ASSIGN VALID VALUE TO JOBGROUP.
            ABEND FOLLOWS.

   TYPE:  Error

   REASON:  The PWRGPRTE routine assigned a job group value
            that was not defined in the PWRGROUP parameter
            member.  To prevent entering invalid data in the
            database, processing is ABENDed.

   ACTION:  Review the job group information in the members
            PWRGROUP and PWRGPRTE of prefix.MICS.PARMS and
            revise the parameters to match one another.

   REFERENCES:  DYPWRWFM
```

```
+-----------------+
| P W R 0 1 1 0 0 |
+-----------------+

   TEXT:  SHORT RECORD OF UNKNOWN TYPE FOUND IN FILE
            %VSEDDNAM
          RECORD COUNT FROM ALL FILES IS %INSMF
          NEXT COLUMN TO BE READ IS %COL
          LENGTH OF RECORD IS %RECLEN

   TYPE:  Warning

   REASON:  This message is printed when a short record is
            encountered and it is not possible to read the
            record type.

   ACTION:  Using the diagnostic information printed in the
            message text, review the records indicated.

   REFERENCES:  DYPWRWFM

+-----------------+
| P W R 0 1 1 0 2 |
+-----------------+

   TEXT:  SHORT EXECUTION ACCOUNT RECORD FOUND IN FILE
            %VSEDDNAM
          RECORD COUNT FROM ALL FILES IS %INSMF
          NEXT COLUMN TO BE READ IS %COL
          LENGTH OF RECORD IS %RECLEN

   TYPE:  Warning

   REASON:  This message is printed when a short record is
            encountered.

   ACTION:  Using the diagnostic information printed in the
            message text, review the records indicated.

   REFERENCES:  DYPWRWFM

+-----------------+
| P W R 0 1 1 0 4 |
+-----------------+

   TEXT:  SHORT EXECUTION ACCOUNT RECORD FOUND IN FILE
            %VSEDDNAM
          RECORD COUNT FROM ALL FILES IS %INSMF
          NEXT COLUMN TO BE READ IS %COL
          LENGTH OF RECORD IS %RECLEN

   TYPE:  Warning

   REASON:  This message is printed when a short record is
            encountered.

   ACTION:  Using the diagnostic information printed in the
            message text, review the records indicated.

   REFERENCES:  DYPWRWFM

+-----------------+
| P W R 0 1 1 0 6 |
+-----------------+

   TEXT:  SHORT EXECUTION ACCOUNT RECORD FOUND IN FILE
            %VSEDDNAM
          RECORD COUNT FROM ALL FILES IS %INSMF
          NEXT COLUMN TO BE READ IS %COL
          LENGTH OF RECORD IS %RECLEN

   TYPE:  Warning

   REASON:  This message is printed when a short record is
            encountered.

   ACTION:  Using the diagnostic information printed in the
            message text, review the records indicated.

   REFERENCES:  DYPWRWFM
```

```
+-----------------+
| P W R 0 1 1 0 8 |
+-----------------+

   TEXT:  SHORT EXECUTION ACCOUNT RECORD FOUND IN FILE
            %VSEDDNAM
          RECORD COUNT FROM ALL FILES IS %INSMF
          NEXT COLUMN TO BE READ IS %COL
          LENGTH OF RECORD IS %RECLEN

   TYPE:  Warning

   REASON:  This message is printed when a short record is
            encountered.

   ACTION:  Using the diagnostic information printed in the
            message text, review the records indicated.

   REFERENCES:  DYPWRWFM

+-----------------+
| P W R 0 1 1 1 0 |
+-----------------+

   TEXT:  SHORT LIST ACCOUNT RECORD FOUND IN FILE %VSEDDNAM
          RECORD COUNT FROM ALL FILES IS %INSMF
          NEXT COLUMN TO BE READ IS %COL
          LENGTH OF RECORD IS %RECLEN

   TYPE:  Warning

   REASON:  This message is printed when a short record is
            encountered.

   ACTION:  Using the diagnostic information printed in the
            message text, review the records indicated.

   REFERENCES:  DYPWRWFM

+-----------------+
| P W R 0 1 1 1 2 |
+-----------------+

   TEXT:  SHORT PUNCH ACCOUNT RECORD FOUND IN FILE %VSEDDNAM
          RECORD COUNT FROM ALL FILES IS %INSMF
          NEXT COLUMN TO BE READ IS %COL
          LENGTH OF RECORD IS %RECLEN

   TYPE:  Warning

   REASON:  This message is printed when a short record is
            encountered.

   ACTION:  Using the diagnostic information printed in the
            message text, review the records indicated.

   REFERENCES:  DYPWRWFM

+-----------------+
| P W R 0 1 1 1 4 |
+-----------------+

   TEXT:  SHORT TRANSMITTER OR RECEIVER ACCOUNT RECORD FOUND
            IN FILE %VSEDDNAM
          RECORD COUNT FROM ALL FILES IS %INSMF
          NEXT COLUMN TO BE READ IS %COL
          LENGTH OF RECORD IS %RECLEN

   TYPE:  Warning

   REASON:  This message is printed when a short record is
            encountered.

   ACTION:  Using the diagnostic information printed in the
            message text, review the records indicated.

   REFERENCES:  DYPWRWFM
```

```
+-----------------+
| P W R 0 1 1 1 6 |
+-----------------+

   TEXT:  SHORT READER ACCOUNT RECORD FOUND IN FILE
            %VSEDDNAM
          RECORD COUNT FROM ALL FILES IS %INSMF
          NEXT COLUMN TO BE READ IS %COL
          LENGTH OF RECORD IS %RECLEN

   TYPE:  Warning

   REASON:  This message is printed when a short record is
            encountered.

   ACTION:  Using the diagnostic information printed in the
            message text, review the records indicated.

   REFERENCES:  DYPWRWFM
```

```
+-----------------+
| P W R 0 1 1 2 0 |
+-----------------+

   TEXT:  SHORT RJE - BSC ACCOUNT RECORD FOUND IN FILE
            %VSEDDNAM
          RECORD COUNT FROM ALL FILES IS %INSMF
          NEXT COLUMN TO BE READ IS %COL
          LENGTH OF RECORD IS %RECLEN

   TYPE:  Warning

   REASON:  This message is printed when a short record is
            encountered.

   ACTION:  Using the diagnostic information printed in the
            message text, review the records indicated.

   REFERENCES:  DYPWRWFM
```

```
+-----------------+
| P W R 0 1 1 1 8 |
+-----------------+

   TEXT:  SHORT NETWORK ACCOUNT RECORD FOUND IN FILE
            %VSEDDNAM
          RECORD COUNT FROM ALL FILES IS %INSMF
          NEXT COLUMN TO BE READ IS %COL
          LENGTH OF RECORD IS %RECLEN

   TYPE:  Warning

   REASON:  This message is printed when a short record is
            encountered.

   ACTION:  Using the diagnostic information printed in the
            message text, review the records indicated.

   REFERENCES:  DYPWRWFM
```

```
+-----------------+
| P W R 0 1 1 2 2 |
+-----------------+

   TEXT:  SHORT RJE - SNA ACCOUNT RECORD FOUND IN FILE
            %VSEDDNAM
          RECORD COUNT FROM ALL FILES IS %INSMF
          NEXT COLUMN TO BE READ IS %COL
          LENGTH OF RECORD IS %RECLEN

   TYPE:  Warning

   REASON:  This message is printed when a short record is
            encountered.

   ACTION:  Using the diagnostic information printed in the
            message text, review the records indicated.

   REFERENCES:  DYPWRWFM
```

```
+-----------------+
| P W R 0 1 1 2 4 |
+-----------------+

   TEXT:  SHORT SYSTEM-UP ACCOUNT RECORD FOUND IN FILE
            %VSEDDNAM
          RECORD COUNT FROM ALL FILES IS %INSMF
          NEXT COLUMN TO BE READ IS %COL
          LENGTH OF RECORD IS %RECLEN

   TYPE:  Warning

   REASON:  This message is printed when a short record is
            encountered.

   ACTION:  Using the diagnostic information printed in the
            message text, review the records indicated.

   REFERENCES:  DYPWRWFM


+-----------------+
| P W R 0 1 1 2 5 |
+-----------------+

   TEXT:  VSE/POWER VERSION SPECIFICATION IS IN ERROR FOR
            ORGSYSID %ORGSYSID
          PLEASE VERIFY VERSION FOR ALL SYSTEMS LISTED IN
            PREFIX.MICS.PARMS(PWROPS)

   TYPE:  Warning

   REASON:  The VSE/POWER version provided in the PWROPS
            member does not match the Account record version
            found in the System Identifier header.  Note,
            this applies only to sharing spool environments,
            as only they produce data containing the
            header.

            Processing will continue.  However, the VSVER
            element will contain incorrect values for one or
            more observations.

   ACTION:  Review the contents of prefix.MICS.PARMS(PWROPS)
            and revise the VERSION and ORGSYSID fields of the
            parameter as applicable.

   REFERENCES:  DYPWRWFM


+-----------------+
| P W R 0 1 1 2 6 |
+-----------------+

   TEXT:  POWER RECORD VERSION %PWRRVER IS NOT SUPPORTED

   TYPE:  Error

   REASON:  The CA MICS Analyzer Option for VSE/POWER product
            supports only specified releases of IBM's
            VSE/POWER.

   ACTION:  Review the CA MICS product's requirements (listed
            in the product guide) and the release of IBM's
            product that is available at your installation.
            Update the version field in the PWROPS member of
            prefix.MICS.PARMS.

   REFERENCES:  DYPWRWFM


+-----------------+
| P W R 0 1 1 2 7 |
+-----------------+

   TEXT:  VSE/POWER VERSION SPECIFICATION IS IN ERROR FOR
            ORGSYSID %ORGSYSID
          PLEASE VERIFY VERSION FOR ALL SYSTEMS LISTED IN
            PREFIX.MICS.PARMS(PWROPS)
          UNABLE TO CONTINUE PROCESSING

   TYPE:  Error

   REASON:  The VSE/POWER version provided in the PWROPS
            member does not match that found in the System-Up
            Account Data record.  This message may be
            accompanied by INVALID DATA errors in the SAS
            log.  The daily update step will ABEND to avoid
            corrupting the database.

   ACTION:  Examine the System-Up report for the record or
            product version found.  Review the contents of
            prefix.MICS.PARMS(PWROPS) and revise the VERSION
            and ORGSYSID fields of the parameter.

   REFERENCES:  DYPWRWFM
```

```
+-----------------+
| P W R 0 1 1 2 8 |
+-----------------+

   TEXT:  THE FOLLOWING VSESYSID(S) ARE NOT DEFINED IN
            PWROPS FOR DD NAME %VSEDDNAM - %SKPIDS
          %SKPCOUNT RECORDS HAVE BEEN SKIPPED AND WILL NOT
            BE INCLUDED IN SUBSEQUENT RECORD COUNTS

   TYPE:  Warning

   REASON:  CA MICS will process only data belonging to
            VSE/POWER systems which have been defined in
            prefix.MICS.PARMS(PWROPS).  Data for other
            systems will be skipped.

   ACTION:  If you wish to add the referenced system(s) to
            the CA MICS database, you must define them in
            prefix.MICS.PARMS members PWROPS, PWRCONFG, and
            SYSID.  You can use the FORCE option to reprocess
            the data.

   REFERENCES:  DYPWRWFM
```

```
+-----------------+
| P W R 0 1 1 2 9 |
+-----------------+

   TEXT:  VSE/POWER VERSION %PWRVER IS NOT SUPPORTED,
          CONTACT CA MICS PRODUCT SUPPORT

   TYPE:  Error

   REASON:  CA MICS processed data that contains an
            unsupported VSE/POWER release found in the
            System-Up Account data record.

   ACTION:  Check the DAY035 SASLOG for dump of the record
            with invalid release.  The System-Up Account data
            record can be found by checking for a "U" in the
            second position of the record.  Note the value in
            position 33 and contact CA MICS Product Support.

   REFERENCES:  DYPWRWFM
```

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

APPENDIX B

DATA DICTIONARY

```
 CCCCCCCC       AAAAAAA              MMM       MMM  IIIIIIIIII   CCCCCCCC    SSSSSSSS
CCCCCCCCCCC    AAAAAAAAA             MM MM   MM MM      III     CCCCCCCCCC  SSSSSSSSSS
CCC           AA       AA            MM  MM MM  MM      III     CCC         SS      SS
CCC           AA       AA            MM   MMM   MM      III     CCC         SS
CCC           AAAAAAAAAAA            MM    M    MM      III     CCC          SSSSSSSSS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC                 SS
CCC           AA       AA            MM         MM      III     CCC          SS     SS
CCCCCCCCCCC   AA       AA            MM         MM      III     CCCCCCCCCC   SSSSSSSSS
 CCCCCCCC     AA       AA            MM         MM  IIIIIIIIII   CCCCCCCC     SSSSSSS
```

r14.2

C A M I C S A N A L Y Z E R O P T I O N F O R V S E / P O W E R G U I D E

APPENDIX B

DATA DICTIONARY

Appendix B. DATA DICTIONARY

The CA MICS Analyzer for VSE supports the VSE/POWER Information Area. The following sections describe the files and data elements supported in this area:

1 - The Common Data Elements
2 - The VSE/POWER Information Area

B.1 - The Common Data Elements

Common data elements are named for the measurement descriptive quality that they possess. These data elements can be included as data elements in two or more of the CA MICS Analyzer for VSE files. There are also some common data elements that exist in only one file, but they were made common elements so that they could be given familiar names (rather than following the CA MICS convention of the first three characters as the file prefix).

Definitions for the CA MICS Analyzer for VSE common data elements follow, in alphabetical order.

D A Y — Day of Month

The calendar day of the month, a number from 1 to 31.

TYPE: Common, retained - Numeric, measurement unit is integer.

SEE ALSO: ENDTS - End Time Stamp

ELEMENT DERIVATION: DAY is derived from the standard CA MICS time-stamp field ENDTS.

If the 13MONTHYEAR option of MICS.PARMS(SITE) is used to define your fiscal year as having 13 months of 28 days each, then the value of DAY is set according to how many days from the beginning of one of the thirteen "months" the day represented by ENDTS falls.

For example, if your fiscal year is specified as starting on July 1, then July 28 is DAY=28 of MONTH=01, while July 29 is DAY=01 of MONTH=02. The thirteenth "month" will have 29 days in a non-leap year and 30 days in a leap year.

RANGE OF VALUE: DAY takes any numeric value in the following ranges:

1 to 31

1 to 30 if the 13MONTHYEAR option is in use

SUMMARIZATION PROCESS: DAY contains the value of the last DAY encountered. It is not meaningful above the DAYS timespan.

USAGE NOTES: DAY can be used to select data for a day in which you are interested. Remember that files in the DETAIL and DAYS timespans may contain data for more than one day, and therefore selection is needed.

D A Y N A M E — Name of Day of Week

DAYNAME is the name of the day of the week associated with the measurement data in a CA MICS record.

TYPE: Common, retained, - Character, length 3.

SEE ALSO: DAY - Day of Month
ENDTS - End Time Stamp

ELEMENT DERIVATION: DAYNAME is derived from the standard CA MICS time-stamp field ENDTS.

RANGE OF VALUE: DAYNAME can contain any of the following:

SUN, MON, TUE, WED, THU, FRI, or SAT.

SUMMARIZATION PROCESS: DAYNAME contains the value of the last DAYNAME encountered. DAYNAME is not meaningful above the DAYS level.

USAGE NOTES: You can use DAYNAME to select data applicable to a day of the week in which you are interested. Remember that a cycle in the DETAIL or DAYS timespan may contain data from more than one day, so selection is necessary.

D E V A D D R — Device Address

DEVADDR is the physical address of an I/O device. This data element is obtained from RMF, SMF, VSE/POWER, and VM/370 Monitor data sources.

TYPE: Common, retained - Character, length 4.

SEE ALSO: CHANNEL - Channel Path Address
CUADDR - Control Unit Address
DEVNUM - Device Number

ELEMENT DERIVATION: The derivation of DEVADDR depends on the CA MICS product and data source.

o In the CA MICS Hardware and SCP Analyzer, DEVADDR contains the value input from one of the following fields:

- SMF74NUM of the SMF type 74 subtype 1 Device Activity

record

- SMF75CHA of the SMF type 75 subtype 1 Page Data Set Activity record

- R796UCB of the SMF type 79 subtype 6 RMF Monitor II Activity Reserve Data record

o In the CA MICS Batch and Operations Analyzer, DEVADDR contains the value input from one of the following fields:

- SMF8IODV of the SMF type 8 record (I/O configuration)

- SMF9DVAD of the SMF type 9 record (vary device online)

- SMF10DEV of the SMF type 10 record (allocation recovery)

- SMF11DED of the SMF type 11 record (vary device offline)

- Any of several fields of the SMF type 22 record (configuration)

- SMF30CUA of the SMF type 30 record (common address space work)

o In the CA MICS VSE/POWER Analyzer, DEVADDR contains the value input from one of the following fields:

- LSTADR of the list account record

- PUNADR of the punch account record

- NACLAD of the transmitter and receiver account records

- B10 table of the execution account record

o In the CA MICS VM and CMS Analyzer, DEVADDR contains the value input from one of the following fields:

- MN600ADD of class 6 code 0 monitor record

- MN602ADD of class 6 code 2 monitor record

- MN005ADR of class 0 code 5 monitor record

- MN700ADD of class 7 code 0 monitor record

RANGE OF VALUE: Any 4 hexadecimal digits, from '0000' to 'FFFF'.

SUMMARIZATION PROCESS: DEVADDR contains the value of the last DEVADDR encountered.

USAGE NOTES: DEVADDR may be used to select statistics about I/O devices or groups of I/O devices. The proper design of an I/O configuration is a central concern of tuners and capacity planners.

When files are sorted on this field, they will not be in order from lowest device address to highest. This is because DEVADDR is an EBCDIC field, and while 'FFFF' is a higher hexadecimal number than '0000', it has a lower value when considered as a character string (which is what the sort treats it as). If you require that the file be sorted by device number, use the element DEVNUM.

D E V C L A S S — Device Class

DEVCLASS is the class to which an I/O device belongs.

TYPE: Common, retained - Character, length 8.

SEE ALSO:
- DEVADDR - Device Address
- DEVNUM - Device Number
- DEVTYPE - Device Type
- $cccDCDT - Component specific device type derivation

ELEMENT DERIVATION: Derivation of this value is operating system dependent. For details, see the DIC.TEXT member mentioned above for component specific derivations or consult the related component guide (for example the Analysis Option for VSE/POWER guide).

RANGE OF VALUE: The DEVCLASS data element for true device classes is translated from the codes shown in the following table. These codes are the same as those supplied by z/OS in UCBTBYT3 of the Unit Control Block.

CODE	CLASS	DESCRIPTION
x'80'	TAPE	Magnetic Tape
x'44'	COMMGEAR	Communications (Teleprocessing)
x'42'	COMMGEAR	Communications (Teleprocessing)
x'41'	CTC	Channel-to-Channel Adapter
x'40'	COMMGEAR	Communications (Teleprocessing)
x'21'	DASD/FBA*	Direct-Access Storage Device (FBA)
x'20'	DASD*	Direct-Access Storage Device (CKD and ECKD)

```
      x'10'    GRAPHICS     Graphics (e.g. 3270 local)
                            Devices
      x'08'    UNIT-REC     Unit Record Devices
      x'04'    CHAR-RDR**   Character Reader Devices

Note:  *   A bitstring of x'20' (DASD) or x'21' (DASD/FBA)
       plus a virtual device flag of x'08' cause CA MICS to
       set the value of DEVCLASS to 'MASSTOR'.  The virtual
       device flag is the same indicator used by z/OS in the
       UCBRVDEV bit of UCBTBYT2.

       **  At present, no devices have been defined for this
       class.  Existing character readers are classed as unit
       record devices.

       The device class of a given I/O device may surprise
       you.  For example, the 3851 Mass Storage Subsystem
       Communicator was a "UNIT-REC" device.
```

The Batch Workload Device Activity (BATWDA) file also accounts for a set of "pseudo" device classes. These classes are produced from segments of the session, step, and interval SMF records. The amount of activity associated with these pseudo device classes is recorded in the WDAEXCPS data element. The DEVADDR data element for these classes contains an abbreviated description of the pseudo device class as listed in the following table:

PSEUDO DEVCLASS	PSEUDO DEVADDR	DESCRIPTION
CMNPAGES	CMN	Common Area Page Ins
DEMPAGE	DPG	Non VIO, Non-Swap Page Ins + Non VIO, Non-Swap Page Outs
PAGIN	INS	Non VIO, Non-Swap Page Ins
SWAPIN	SIN	Pages Swapped In
SWAPPAGE	SPG	Pages Swapped In + Pages Swapped Out
SWAPSSEQ	SWP	Address Space Swap Sequences
VIOPAGE	VPG	VIO Page Ins + VIO Page Outs

SUMMARIZATION PROCESS: DEVCLASS contains the last value of DEVTYPE processed in the level of summarization.

USAGE NOTES: Statistics accumulated for I/O device activity may be grouped at the detail level by either Device Class (DEVCLASS) or Device Type (DEVTYPE) and are summarized by Device Class (DEVCLASS) in the higher timespans.

D E V T Y P E | Device Type

The value of DEVTYPE indicates the type of I/O device.

TYPE: Common, retained - Character, length 8.

SEE ALSO:
- DEVADDR - Device Address
- DEVCLASS - Device Class
- DEVNUM - Device Number
- $cccDCDT - Component specific device type derivation

ELEMENT DERIVATION: Derivation of this value is operating system dependent. For details, see the DIC.TEXT member mentioned above for component specific derivations or consult the related component guide (for example the Analysis Option for VSE/POWER guide).

RANGE OF VALUE: The DEVTYPE data element is translated from the codes shown in sharedprefix.MICS.SOURCE($DEVTYPS). Supported device types are listed in $DEVTYPS sorted by device class (DEVCLASS) followed by the EBCDIC representation (DEVTYPE) that is stored in the CA MICS database. The hexadecimal code shown in the leftmost column of the $DEVTYPS member is the same value that is tested in UCBTBYT3 and UCBTBYT4 for RMF or SMF, or the OBR (OutBoard Recorder) device code for VCC or SRL.

SUMMARIZATION PROCESS: DEVTYPE contains the last value of DEVTYPE processed in the level of summarization.

USAGE NOTES: Statistics accumulated for I/O device activity might be grouped at the detail level by either Device Class (DEVCLASS) or Device Type (DEVTYPE) and are summarized by Device Class (DEVCLASS) in the higher timespans.

D U R A T I O N | Recording Interval Time

DURATION contains the number of seconds in the "reporting interval" of a given monitor. Reporting interval is the period of time during which a monitor gathers and reports statistics.

DURATION is calculated for the monitors RMF, TSO/MON, CICS, IMS, NPM, NetView, CA NetSpy, CA NetMaster, DB2, VM, VCC/VCA, TAP, and MQSeries. In these monitors, DURATION is the length of time that one record covers in the DETAIL timespan. In higher timespans, DURATION is the length of time during which the data collector provides measurement data within the

interval that is covered by the CA MICS record for the time period.

The length of the RMF reporting interval is specified via the RMF INTERVAL parameter. Allowed values are from 1 to 60 minutes. The default value for the RMF data recording interval is 30 minutes for the RMF record types 70-79. The Hardware Instrumentation Services (HIS) create SMF type 113 records, also processed by the CA MICS Hardware and SCP Analyzer Option. The duration for SMF type 113 interval records is 15 minutes.

The length of the TSO/MON reporting interval is specified via the INTVL parameter of the OPTIONS macro. Five minutes (INTVL=5) is the recommended value.

The length of a CICS recording interval is specified for CMF (CICS Monitoring Facility) at CICS/MVS Version 2 via the FREQ parameter in DFHMCT TYPE=RECORD macro. This affects the duration of the performance class global records. For CMF input at CICS/ESA Release 3.1.1 and higher, DURATION is set to the recording interval of CICS statistics data. You can change the statistics recording interval in CICS using the CEMT SET STATISTICS command. For TMON/CICS, the system interval records are written on a minute basis.

For IMS, you specify the number of IMS log records to record between IMS checkpoints. After these records are written to the IMS log, an IMS checkpoint is taken. Recognition of this checkpoint is the event CA MICS uses to produce another DETAIL IMS system record. You specify the number of log records between checkpoints with the CPLOG= parameter of the IMSCTF macro in the IMS Stage I generation. Note that under this scheme for logging checkpoints to the IMS log, DURATION is not a constant value for all CA MICS IMS DETAIL observations, and may, in fact, vary greatly according to IMS system load and time of day.

NPM, the NetView Performance Monitor, is divided into two subsystems: the Network Subsystem and the Session Subsystem. For the Network Subsystem, the length of the NPM recording interval is specified via the INTERVAL operand of the NPM INTERVAL initialization parameter and the online START COLLECT command. For the NPM Session Subsystem, the length of the interval is specified via the SESSINT operand of the NPM INTERVAL initialization parameter.

For NetView Session Monitor/NLDM, interval recording is provided through a Network Communications Control Facility (NCCF) CLIST. The CLIST issues an NCCF EVERY command to collect NLDM/RTM data on the interval you choose.

TCP information area files:

For all the files in the TCP area, DURATION is the elapse time between a connection start time and end time.

- For TCP Termination (subtype 2) records, DURATION is calculated by subtracting connection start time from connection end time.

- For TN3270E Telnet server SNA session termination (subtype 21) records, DURATION comes from field SMF119TN_NTDur at offset x'64' in SMF type 119.

- For TSO Telnet client termination (subtype 23) records, DURATION comes from field SMF119TN_CTDur at offset x'4C' in SMF type 119.

- For FTP client transfer completion (subtype 3) records, DURATION comes from field SMF119FT_FCDur at offset x'74' in SMF type 119.

- For FTP server transfer completion (subtype 70) records, DURATION comes from field SMF119FT_FSDur at offset x'70' in SMF type 119.

- For TCPIP Statistics (subtype 5) records that generate TCPIPX, TCPTCI, TCPUDI, and TCPICX files, the DURATION in these files comes from the respective fields SMF119AP_TSIPDuration, SMF119AP_TSTCDuration, SMF119AP_TSUDDuration, and SMF119AP_TSICDuration at offset x'00' in SMF type 119.

- For Interface statistics (subtype 6) records, DURATION comes from field SMF119IS_IFDuration at offset x'00' in SMF type 119.

CDZ information area files:

For the CCT IBM Sterling Connect:Direct file, DURATION is th elapse time between time the COPY step started (STARTS) and ENDTS.

In DB2, the DURATION element for the DB2DSY and DB2DSD files represents the length of time that is reported in each detail observation. DB2 Release 2 provided DB2 systems personnel with the ability to define, at DB2 system startup, the time interval in which SMF system statistics are produced. This value is specified in minutes and should equal DURATION.

For VCA, except for the exceptions described below, DURATION contains the difference in time between the previous and current executions of the CA MICS Space Collector Option

(VCC) scanning process.

For the first execution of a VCC scan, no previous scan timestamp is available. In this case, DURATION is set to the value on the OPTIONS statement specified in prefix.MICS.PARMS(VCAOPS), default 24 hours.

For data sets that do not have a data set creation time, whose create date is later that the previous VCC scan date, DURATION is calculated by multiplying the number of days the data set existed prior to the current VCC scan, plus the time of day when the current VCC scan executed.

Beginning with z/OS 1.11, the Volume Table of Contents (VTOC) for Extended Address Volumes (EAV) began recording both the date and time of data set creation. For data sets with both the time and date of creation, if they were created after the previous VCC scan, DURATION is calculated as the difference between the current VCC scan time and data set creation time.

For data sets that are created after the VCC scan started, the DURATION value is set to zero.

For VM/370 Monitor, the recording interval length is specified via the INTERVAL operand of the MONITOR command. For VM/XA or VM/ESA Monitor, the interval length is specified via the INTERVAL operand of the MONITOR SAMPLE command.

In MQSeries, the DURATION element for the MQSBMS, MQSDMS, MQSLMS, MQSMMS, MQSCMS, and MQSDBS files represents the length of time that is reported in each detail observation.

The Message Queue Manager (MQM) allows an interval length specification at MQM system startup via the STATIME parameter. If not specified, the system default is 30 minutes. In the MQ Message Broker MQBMFA and MQBMFN files, the DURATION represents the difference between the ENDTS and STARTS of the message flow interval.

In all files for the CA MICS Analyzer Option for CA IDMS, except the IDMS System Activity File (IDMSSY), DURATION represents the elapsed time of the individual transaction records. In summarized timespans, DURATION represents the sum of DURATION of the individual transaction records that contributed to the summarized observation. DURATION is calculated as the difference between the End Date and Time (TASEDATE and TASETIME) and the Start Date and Time (TASSDATE and TASSTIME) fields from the CA IDMS Performance Monitor header record.

In all files for the CA MICS Analyzer Option for CA IDMS except the IDMS System Activity File (IDMSSY), the Start Time Stamp (STARTTS), and End Time Stamp (ENDTS), data elements reflect the start and end times of the individual transactions. For IDMSSY file, STARTTS and ENDTS are adjusted to represent the start and end of the time interval within which the transactions executed.

TYPE: Common accumulated data element - NUMERIC, measurement unit is INTEGER.

```
SEE ALSO:  ENDTS    - End Timestamp
           STARTTS  - Start Timestamp
           INTERVLS - Number of Recording Intervals
           SAMPLES  - Number of Samples
```

ELEMENT DERIVATION: For RMF record types 70-79, DURATION contains the value input from field SMFxxINT. It is computed according to the following formula:

```
DURATION=60*FLOOR(SMFxxINT/100000)+MOD(SMFxxINT,100000)
/1000;

where SMFxxINT is in the form "MMSSTTT"
```

For the RMF type 113 record, DURATION is computed by subtracting STARTTS from ENDTS, input from the SMF type 113 record fields SMF113IntervalStart and SMF113IntervalEnd, respectively.

For TSO/MON, DURATION contains the value input from field TSMSINTV of the System Record (usually assigned SMF number 200).

For CICS, DURATION is measured from interval start to end based on timestamps in the record: DURATION=ENDTS-STARTTS. However, for CMF processing at CICS/ESA Release 3.1.1 and higher, DURATION is set to the sum of dispatch time (CSYQRDSP) and wait time (CSYQRWTM) when the statistics record is written for either the first or last (EOD) recording interval. The derivation is: DURATION=SUM(CSYQRDSP,CSYQRWTM).

For IMS, DURATION is calculated as described below unless the system interval time specification (from the IMSOPS member of the prefix.MICS.PARMS library on the OPTIONS statement) has been exceeded by 50 percent and the IMS checkpoint number of the previous checkpoint is not equal to the current checkpoint number-1. If these conditions are met, DURATION is set to the IMSOPS interval specification.

Under normal circumstances, the IMS DURATION contains the difference between the end timestamp of the current checkpoint and the end timestamp of the previous checkpoint.

The interval specification on the IMSOPS OPTIONS statement does not override this calculation if the IMS checkpoint numbers monotonically increase (for example, 1, 2, 3, ...).

For example, assume that the specified system interval is 15 minutes. If the initial calculation of DURATION was 17 minutes, DURATION would contain a value of 17 minutes. If the initial calculation was 22.6 minutes (greater than 1.5 times 15 minutes, or 22.5 minutes), DURATION would be set to 15 minutes, except for IMS systems with monotonically increasing checkpoint numbers.

For the NPM Network Subsystem, DURATION contains the value input from field LOGTIME, which is the actual NPA observation time for the NCP being used. For the NPM Session Subsystem, DURATION contains the difference between the interval end timestamp, VPVEINT, and the interval start timestamp, VPVDT.

For NLDM, DURATION contains the difference between the Collection Period Begin Time Stamp, LRTMCOLB, and the Collection Period End Time Stamp, LRTMCOLE.

For CA NetMaster, DURATION equals the elapsed time between session start and session end time.

For DB2 interval records, DURATION contains the difference between the end timestamp of the current SMF record and the end timestamp of the previously processed SMF record.

For VCC and VCA, DURATION is the difference between the time of the previous VCC scan execution, which is saved in the VCC control file, and the time of the current VCC scan execution. Exceptions to this computation, described earlier, occur when processing records with an initial VCC scan, and newly created data sets.

For the TLM component of the CA MICS Tape Analyzer Option, DURATION is the difference between the time of the previous TMCC scan execution, which is saved in the TMCC control file, and the time of the current TMCC scan execution.

For the VTS component of the CA MICS Tape Analyzer Option:

For the following SVT StorageTek VSM Virtual Tape Subsystem Information Area (SVT) DETAIL timespan files, DURATION is set to 900 seconds (15 minutes):

- o VTSS Subsystem Performance (SVTSSP) file
- o Channel Interface Performance (SVTCIP) file
- o Real Tape Drive Performance (SVTRPR) file
- o StorageTek VTSS Summary (SVTSVS) file

For the IBM Virtual Tape Subsystem Information (IVT) Area DETAIL and DAYS timespan files, DURATION is set to exactly 3600 seconds (1 hour).

For the IBM Hydra Virtual Tape Server Information (HVT) Area, DURATION contains the value input from field "Interval Duration" in the header section of each input record.

For the VM component, VMCCMU obtains DURATION from type 01 and type C1 account records columns 29-32. VMCDAC gets DURATION from types 02, C2, 03, and C3 account records columns 29-32. In VMCVMU file, DURATION contains the difference between VMUENDTS and STARTTS. In other VMC and VMX Information Area files, DURATION contains the difference between ENDTS and STARTTS in the DETAIL timespan.

For the CA MICS Analyzer Option for MeasureWare, DURATION is set to the value of the MeasureWare Global metric INTERVAL.

For the CA MICS Analyzer Option for MQSeries, DURATION contains the difference between the end timestamp of the current SMF record and the end timestamp of the previously processed SMF record. In the MQ Message Broker MQBMFA and MQBMFN files, the DURATION represents the difference between the ENDTS and STARTS of the message flow interval - the interval end datetime and interval start datetime.

For the CA MICS Analyzer Option for CA IDMS:

For the CA IDMS files, DURATION contains the difference between the ENDTS and STARTTS data elements. STARTTS and ENDTS contain the values of the start date and time (TASSDATE and TASSTIME) and end date and time (TASEDATE and TASETIME) fields from the CA IDMS Performance Monitor header record.

In individual IDMSUA file transaction records, DURATION is recorded in one of six category response time data elements (conversational, long, medium, short, excessive, and user-defined), based on the transaction type. Transaction type is determined in user written code in the relative longevity exit IDMRLRT.

RANGE OF VALUE: The value of this element ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: DURATION contains the sum of all occurrences of DURATION that were included in the level of summarization.

USAGE NOTES: At the DETAIL level, DURATION is no larger than ENDTS-STARTTS, but may be smaller if the data collector being used does not provide measurement data for all of the time between STARTTS and ENDTS.

For VCA, DURATION contains the time interval between VCC scan executions. However, if VCC processing is performed frequently, or if two or more devices are processed, the computed values may not provide the results you expect for computed average values on reports. It is difficult to report average space utilization on volumes if the volumes are not processed with each VCC scan execution.

E N D T S	End Timestamp

ENDTS has different definitions, depending on the timespan and the data collector.

DETAIL Timespan:

- o ENDTS is the time of termination of an executable function, such as job, command, and so on.

- o For incident files in which ENDTS exists, ENDTS is the time at which the incident occurred:

  For the CICS, IMS, VM/CMS, and Network Analyzer Option incident files, this is the end timestamp of the transaction or system measurement interval during which the incident occurred.

- o For other files in which ENDTS exists, it is the time that the data collector's measurement interval ended:

  For CA IDMS data:

  For the IDMS System Activity File (IDMSSY), ENDTS is adjusted based on a user-defined interval value. This value is coded in the INTERVAL statement of prefix.MICS.PARMS(IDMOPS) and determines the cut-off point for each timespan.

  For all other CA IDMS files, ENDTS is the date and time when the IDMS transaction completed. ENDTS contains the value of the end date and time fields (TASEDATE and TASETIME) from the #PMTAS section of the CA IDMS Performance Monitor record.

  For RMF-derived data:

  For files generated from the SMF type 70-79 RMF records, ENDTS is computed by adding the duration of the interval to the starting time for compatibility with RMF.

  For files generated from the SMF type 113 subtype 1 or 2 CPU Hardware capacity, reporting, and statistics record generated by the IBM CPU Measurement Facility (CPU MF) Hardware Instrumentation Services (HIS).

  ENDTS is set equal to field SMF113_2_CTM (subtype 2) or field SMF113IntervalEnd (subtype 1), adjusted to local time by adding the GMT Offset value.

For TSO/MON data:

  For the TSOTSO file, ENDTS is the time (date and time) when the TSO/MON record writer routine processed the record.

  For the TSOTSI and TSOTSA files, ENDTS is the time when the TSO command or subcommand ended.

  For the TSOTSU file, CA MICS combines user information from multiple TSO/MON system records when the user was inactive for one or more recording intervals. In this case, ENDTS is the timestamp from the last record consolidated into the DETAIL-level record.

  For the TSOTSC file, data is summarized by HOUR at the DETAIL level. (This is unusual for CA MICS, but is required by the volume of data.) ENDTS is taken from the timestamp of the last TSO/MON system record included in the hour.

For VCC/VCA data:

  ENDTS is the time from the last execution of the VCC scan. If multiple VCC executions are processed into one update execution, then the value is the last time within that particular level of summarization.

For the TLM component of the CA MICS Tape Analyzer Option:

  ENDTS is the time from the last execution of the TMCC scan. If multiple TMCC executions are processed into one update execution, then the value is the last time within that particular level of summarization.

For the VTS component of the CA MICS Tape Analyzer

Option:

For the IBM Virtual Tape Subsystem Information Area (IVT) files, ENDTS is derived as follows:

First, the date and time the SMF type 94 record was written to the SMF buffer is determined. The raw metrics in the record relate to the previous hour, so the code logic establishes ENDTS at 59 minutes and 59.99 seconds of that previous hour.

For example, if an SMF type 94 record was written at 13:12:48.02, the ENDTS for all IVTfff files generated from that record would be 12:59:59.99.

For the Sun StorageTek Information Area (SVT) files, ENDTS is derived as follows:

ENDTS is the time when the Sun StorageTek user SMF record was created. It is read from bytes 3 to 10 on the SMF record.

For VM Monitor interval recording data:

ENDTS in the CA MICS Analyzer Option for VM/CMS is the time when VM Monitor created the record.

For HP MeasureWare for HP-UX Systems data:

ENDTS in the CA MICS Analyzer Option for MeasureWare is the time that the data was captured in the log file.

For WebSphere MQ data:

In all files except the MQBMFA file, ENDTS is set to the value in the SMF header that tells the time and date the record was written to the SMF buffer, for example SM116DTE and SM116TME.

In the MQBMFA file, ENDTS is set to the interval end date and time values found in the message flow accounting record fields IMFLENDT and IMFLENTM.

For Web Analyzer:

ENDTS is set to the value input from field SM1209CQ of the SMF type 120 record subtype 9 at offset 68 (x'44') of the z/OS Request Information section.

All Other Timespans:

ENDTS is set to the maximum-end timestamp encountered from the records used to compile the summarized record. Thus, the combination of STARTTS and ENDTS in the observation identify the boundaries of the range of time over which the data in the record was summarized.

In the CA MICS Accounting and Chargeback Option journal files, ENDTS corresponds to the ENDTS in the component record being charged. In the ledger files, it is summarized from the journal file records.

TYPE: Common, retained - Numeric, measurement unit is SAS datetime value.

SEE ALSO: STARTTS - Start Timestamp
DURATION - Recording Interval Time
INTERVLS - Number of Recording Intervals

ELEMENT DERIVATION:

For RMF records, CA MICS follows the RMF convention and calculates ENDTS from the "beginning of interval" datetime given in fields SMFnnDAT and SMFnnIST, and the length of the interval, SMFnnINT.

For non-RMF records, ENDTS contains the value input from fields SMFnnDTE and SMFnnTME, where "nn" is the number of the SMF record. If the SMF record number is greater than 99, the input fields are named SMnnnDTE and SMnnnTME.

In the DAYS level of the ADMEXC file, ENDTS is set to the ENDTS of the CA MICS record from which the exception condition was detected.

For the CICS files, ENDTS is set to the following:

CICS CMF: The source of this data element is raw CICS monitor input data.

The CMF timestamp fields are presented in "TOD Clock Format," and are adjusted by the GMT offset for the system being processed. This offset is specified by the user in the CICOPS member of the MICS.PARMS library, on the CICOPTS statement. The field type is T, indicating a timestamp, an 8 byte copy of the output of a local store clock (STCK) instruction.

For transaction-level records written to the User Activity file (CICCSU) Application Unit Activity file (CICCAU) and the User Application Count file (CICCAC), ENDTS is either the time at which the user-task was detached or the time at which data recording was completed in support of CONV=YES. The source of this

data element for these files follows:

Monitor	Input Field	Description
CTS 2.2 to 3.1	MNR_ID_STOP	Transaction stop time
CTS 3.2 and above	STOP (FID 006)	Finish time of measurement interval in the DFHCICS group

For system-level records written to the System Activity (CICCSY) file and the Dictionary file (CICCDC), ENDTS is the time at which the recording interval ended. The source of this data element for these files follows:

Monitor	Input Field	Description
CTS 2.2 and above	SMFSTDAT and SMFSTCLT	Collection date Collection time

For records written to the Incident file (CICCIN), ENDTS is the end time of the exception's occurrence. The source of this data element for this file follows:

Monitor	Input Field	Description
CTS 2.2 and above	EXCMNSTO	Exception stop time

ASG-TMON for CICS TS (TCE): The source of this data element is raw Monitor input data.

For transaction-level records written to the User Activity file (CICCSU) Application Unit Activity file (CICCAU), the User Application Count file (CICCAC), the File/DBD Activity file (CICCSF), and the CICS MRO Activity file (CICCMR), ENDTS is the time of either the transaction's termination or the conversational task's termination. The source of this data element for these files follows:

Monitor	Input Field	Description
TCE	TAENDDTS	Transaction end date

For system-level records written to the System Activity (CICCSY) file, ENDTS is the time at which the recording interval ended. The source of this data element for this file follows:

Monitor	Input Field	Description
TCE	TIENDDTS	Interval end date

For records written to the Incident file (CICCIN), ENDTS is the last available end timestamp from the Transaction (TA) records.

For The Monitor releases 7.1 and below, ENDTS is derived from the start timestamp of the next system record since the end timestamp is not in the raw data record.

CICS Transaction Gateway: For the CTG information area files created from the SMF type 111 CICS Transaction Gateway records, ENDTS is derived from the date and time values when the raw data record was written to the SMF buffer. The source of this data element follows:

Monitor	Input Field	Description
CTG	SMF111_SMFSTDTE SMF111_SMFTME	Date and time when record was moved to SMF buffer

For the DB2 files, ENDTS is set to the following:

ENDTS is derived from the date-time value found in the SMF header segment of the interval or thread event generated SMF record used to create the CA MICS database record.

For database records created from the interval based statistics records (SMF type 100, subtype 0 and 1), ENDTS correlates with the startup of the DB2 region and the user specified interval duration value (usually 30 minutes, but less if the region is stopped).

For database transaction-level records created from the SMF type 101, subtype 0 and 1 records, ENDTS correlates to an event, such as a thread termination, an authorization ID change in a thread re-use environment, or reaching the threshold value associated with DB2 ACCUMAC SMF record summarization.

For the IMS files, ENDTS is set to the following:

IMSISY (IMS System Activity) File: ENDTS contains the values input from the date and time fields found in the configuration checkpoint end record (type '40'X, subtype '98'X) on the IMS log.

IMSINC (IMS Incident) File: ENDTS contains the value input from the last ENDTS constructed for any other file.

Transaction-oriented Files (IMSISU User Activity, IMSIAU Application Unit Activity, and IMSIAC User Application Count Files): ENDTS depends on the collection method. With IMF, ENDTS is constructed from the end date and time presented by IMF in its DETAIL transaction accounting record (IMS log record type 'FA'X).

Without IMF, ENDTS is constructed from the date and time fields of the IMS log record that signifies the end of processing region occupancy for the message being analyzed. These fields may come from the type '31'X log record, field QLGUDTME, or the type '07'X log record, fields DLRDTE and DLRTME.

Except for those CA MICS Network Analyzer Option files listed below, ENDTS contains the value input from the SMF record end timestamp from the CA MICS Network Analyzer Option data sources. The exceptions, by file, are as follows:

- o NVSRTM and SNTNSV files - ENDTS is taken from the field LRTMCOLE of the RTM data section of the SMF type 39 record written by NetView/NLDM or CA NetMaster.

- o NVSNSA file - ENDTS is taken from field LACCENDT of the Accounting and Availability data section of the SMF type 39 record written by NetView/NLDM or CA NetMaster.

- o NVSNSC and NVSRTE files - There is only one CA MICS observation for each unique SNA session and the ENDTS for that observation is taken from the highest timestamp found in all SMF type 39 records (written by NetView/NLDM or CA NetMaster) for that session.

- o CDZCCT file - ENDTS is derived from the date-time value found in the SMF header segment of the IBM Sterling Connect:Direct copy termination record, SMF 133 (user defined), subtype CT.

For all VSE/Power files, the ENDTS is derived from the ACDATE and ACSTOP fields of the account record used to create the observation.

For the VMC and VMX files, the derivation of ENDTS depends on various sources:

- o VM and VM account data - VMCCMU, VMCDAC, VMCNDT and VMCVRA files obtain ENDTS from record types 01, C1, 02, C2, 03, C3, 04, 05, 06, 08, C0, 0C (RSCS) records columns 23-28. VMCNTU obtains ENDTS from record type 07 columns 53-60.

- o VM/ESA and z/VM monitor data - For files that have one observation per input record, the value of ENDTS is taken directly from the time-of-day clock stamp (MRHDRTOD) in the record header of input record. For other files, the value of ENDTS is taken from the record with the highest timestamp that contributes to the observation.

For CA MICS Analyzer Option for MeasureWare data, ENDTS is set to the value of the configuration metric DATE_SECONDS.

RANGE OF VALUE: ENDTS contains any valid SAS datetime value. The value of this data element is not affected by use of the 13MONTHYEAR option in prefix.MICS.PARMS(SITE).

SUMMARIZATION PROCESS: ENDTS contains the value of the last occurrence of ENDTS in the observations processed for the summarization level.

USAGE NOTES: The value of DURATION, which is the amount of time in the measurement interval, is sometimes smaller than ENDTS minus STARTTS. This occurs when measurement data was not available from a data collector for some of the time in the interval. A common mistake is to compute averages using ENDTS minus STARTTS.

| F O R M N U M | Form Number

FORMNUM is the output FORM designation for printed or punched output.

For JES3 environments, this may have been specified on any of the following:

```
SYSOUT card
//*FORMAT card
```

For JES2, this may have been specified on any of the following:

```
SYSOUT card
/*JOBPARM card
/*OUTPUT card
```

For VSE/POWER, the form number may have been specified on either of the following:

```
* $$ LST
```

```
      * $$ PUN

TYPE:  Common, retained - Character, length 8.

SEE ALSO:  Not applicable

ELEMENT DERIVATION:  For JES2 and JES3, FORMNUM is derived
from the SMF6FMN field of the SMF SYSOUT Writer Record (type
6).

For POWER, FORMNUM is derived from the PUNFOR field of the
punch account record, or the LSTFOR field of the list account
record.

RANGE OF VALUE:  FORMNUM can contain any combination of 1 to
8 alphanumeric characters.

SUMMARIZATION PROCESS:  FORMNUM is not summarized. It is used
to determine a unique key for records within a file based on
the timespan, so other elements in the file can be
summarized.

USAGE NOTES:  For OS/390 system prior to MVS/SP3 (ESA),
FORMNUM can contain four bytes.


+-----------------+
| H O U R         |   HOUR OF DAY
+-----------------+
The hour of the day, based on a 24 hour clock.

TYPE:  Common, retained - Numeric, measurement unit is
integer.

SEE ALSO:  ENDTS - End Time Stamp

ELEMENT DERIVATION:  HOUR is derived from the standard
CA MICS time-stamp field ENDTS.

RANGE OF VALUE:  HOUR takes any numeric value in the
following range:

  00 through 23, where 00 represents the hour 00:00:00.00
  through 00:59:59.99 and 23 represents the hour 23:00.00.00
  through 23:59:59.99.

SUMMARIZATION PROCESS:  HOUR contains the value of the last
HOUR encountered.  HOUR is not meaningful above the WEEKS
timespan.

At the DAYS and WEEKS levels of summarization in most CA MICS
files, HOUR is used to determine a unique key for records
within a file based on the timespan so other elements in
the file can be summarized.

USAGE NOTES:  You can use HOUR to select data for a reporting
period.


+-----------------+
| J O B           |   JOB IDENTIFICATION
+-----------------+
JOB contains the name of a job as specified by the user in
the job name field of the JOB JCL statement.  In the batch
TSO file (BAT_TS), JOB represents the TSO user ID.  For
VSE/Power files, JOB contains the POWER Job Name from the JOB
JCL statement.

For the CA MICS Analyzer Option for CICS, JOB is available
for CMF (CICS Monitoring Facility) input at CICS/ESA Release
4.1 and higher.  JOB contains the name of the job that starts
CICS.

For the VTS component of the CA MICS Tape Analyzer Option,
JOB is available from StorageTek user SMF records.  JOB
contains the name of the job that issued the virtual tape
request.

For the CA MICS Network Analyzer , JOB is available from
Connect:Direct user SMF records. JOB contains the name of the
copy job.

For the CA MICS Analyzer Option for MQSeries, JOB is
available from the channel initiation statistics record
identifying the CHININT job names.

TYPE:  Common Control data element--CHARACTER, LENGTH 8.

ELEMENT DERIVATION:  Job is extracted from the standard SMF
jobname in the SMF header area from the SMF Step Termination
Type 4, Job Termination Type 5, SYSOUT Writer Type 6, Job
Initiation Type 20, Common Address Space Workload Type 30,
TSO Logoff Type 34, TSO Session Logoff Type 35, and Dynamic
Allocation Type 40.

For CICS, JOB is extracted from the jobname field (SMFSTJBN)
in the SMF type 110 record that is produced by CMF at
CICS/ESA Release 4.1 and higher.

For Connect:Direct (NDM) file, JOB is obtained from the
CTSUBJOB field of the CT records' General Purpose Extension 1
data section.

For VSE/Power files, JOB is obtained from the ACNAME field of
```

the Execution, List, Punch, Reader, Transmitter, and Receiver Account records.

For the VTS component of the CA MICS Tape Analyzer Option, JOB is obtained from the StorageTek user SMF records, subtypes 13 and 14, (VTV Mount and VTV Dismount requests).

For the MQS, JOB is obtained from field QCCTJOBN in the SMF 115, subtype 231 Channel Initiation Statistics record.

RANGE OF VALUE: Any alphabetic or national ($#@) character followed by 0-7 alphabetic, national, or numeric characters.

SUMMARIZATION PROCESS: JOB contains the last value of JOB processed in the level of summarization.

JOB is meaningful only at the DETAIL level.

J O B C L A S S — Job Input Class

This data element represents the job class that is used to execute the address space.

This data element is not populated for Batch User Job Activity (BATJOB) file observations that are created for system address spaces (JOBTYPE=6).

TYPE: Common Control data element--CHARACTER, LENGTH 8.

SEE ALSO: Not applicable

ELEMENT DERIVATION: JOBCLASS is set according to the first available metric in the following hierarchy:

JOB TERMINATION RECORD	(TYPE 30 Subtype 5, field SMF30CL8)
JOB INITIATION RECORD	(TYPE 30 Subtype 1, field SMF30CL8)
JOB STEP RECORD	(TYPE 30,Subtype 2 or 3, field SMF30CL8)
JOB PURGE RECORD	(TYPE 26, field SMF26WJC)

For VSE/POWER files, this element is obtained from the EXICL field of the Execution Account Record or field RDRICL of the Reader Account Record.

RANGE OF VALUE: Any legitimate JES class (A-Z, 0-9), or blank.

VSE/POWER job classes might be a one-character letter (A-Z) o a single digit number (0-9).

For the CA MICS Batch and Operations Analyzer, JOBCLASS can be one to eight characters in length. For started tasks (JOBTYPE=3) JOBCLASS contains 'STC' and for TSO sessions (JOBTYPE=2) JOBCLASS contains 'TSU'.

SUMMARIZATION PROCESS: JOBCLASS is only meaningful at the DETAIL level.

USAGE NOTES: The JOBCLASS data element usually reflects the JOB CLASS specified on the JOB statement. However, if the job class is changed prior to job initiation, the JOBCLASS data element contains the new value, and the original value from the job statement is lost.

J O B G R O U P — JOB GROUP

The job group is a method to classify batch jobs, normally in terms of their service requested and received attributes. The job group itself, is defined by the installation and may be derived from data such as class, priority, jobname, etc. The job group is a 3-character numeric field that has a value from 01-149 for standard job groups, 150-179 for deadline job groups, and 180-195 are reserved for open user definitions and 196-199 are reserved for CA MICS use.

Please note that there are three forms of user-specified job groups; standard, deadline, and open. Standard job groups have service measured in terms of job turnaround time, (e.g. job group 1 are jobs with a 10 minute turnaround target. Deadline jobs, however, are based on time of day submission and completion, considering their time of submission and the resulting turnaround time (e.g. job group 152 are jobs which if submitted by 8:00 a.m. have a service target of being "turned around" by 8:00 p.m. the same day). Open job groups simply allow number and name classification and do not have service targets associated to the definitions. The open job group is used for functions such as IMS, TMS, or other types of online systems, which should not be considered as standard batch load.

TYPE: Common Control data element--NUMERIC, measurement unit is INTEGER VALUE.

SEE ALSO:
- JOBTARTM - Job Turnaround Target Time
- JOBTURTM - Job Turnaround Time
- JOBSRVEX - Jobs Exceeding Target
- JOBSRVMS - Jobs Missing Target
- JOBSRVMT - Jobs Meeting Target
- PJBTARTM - Job Turnaround Target Time
- PJBTURTM - Job Turnaround Time

PJBSRVEX - Jobs Exceeding Target
PJBSRVMS - Jobs Missing Target
PJBSRVMT - Jobs Meeting Target

ELEMENT DERIVATION: JOBGROUP is derived via an installation written routine in the CA MICS Parms member JOBGPRTE or PWRGPRTE. The user definition of JOBGROUP is described in section 7.3.2 of the Batch and Operations Analyzer Guide.

RANGE OF VALUE: 1 to 199.

SUMMARIZATION PROCESS: This is a summarization control element. During the summarization process a new record is created for each unique record key combination, and this field is part of the key of its record.

USAGE NOTES: None

M O N T H — Month of Year

MONTH is the calendar month of the year (1 through 12).

TYPE: Common, retained - Numeric, measurement unit is integer.

SEE ALSO: DAY - Day of Month

ELEMENT DERIVATION: MONTH is derived from the standard CA MICS time-stamp field ENDTS. The value ranges from 1 through 12, representing January through December.

If the 13MONTHYEAR option is specified in MICS.PARMS(SITE), then the value of MONTH ranges from 1 to 13, representing the thirteen months in the organization's fiscal year. In this case, the fiscal year is divided into groups of 28 days, and MONTH is set according to which group of 28 days the date/time falls. For example, if the fiscal year was specified as starting on July 1, July 28 would be the last day of MONTH=01 and July 29 would be the first day of MONTH=02.

The MONTH variable in the CA MICS Accounting and Chargeback financial recap files, ACTRCP and ACT_RC, is set to the month value of the prior month. MONTH in these files represents the month for which the work was invoiced, not the month in which the work occurred.

RANGE OF VALUE: MONTH takes any value in the following ranges:

1 to 12; 1 to 13 with 13MONTHYEAR option.

SUMMARIZATION PROCESS: MONTH contains the last value of MONTH processed in the level of summarization.

At the higher levels of summarization in most CA MICS files, MONTH is not summarized. It is used to determine a unique key for records within a file based on the timespan, so other elements in the file can be summarized.

O R G S Y S I D — Original System Identification

For z/OS systems, ORGSYSID is the SMF system identifier of the z/OS system on which data was collected.

The z/OS SMFWTM routine copies field SMCASID to offset x'0E' of every SMF record before it writes it to a SYS1.MANx data set. SMCASID is filled in during the IPL process from the SID= parameter in member SMFPRMxx of SYS1.PARMLIB.

For non-z/OS systems, ORGSYSID is not obtained directly from the input data. It is obtained from specifications in prefix.MICS.PARMS member cccOPS.

TYPE: Common retained data element - CHARACTER, LENGTH 4.

SEE ALSO: SYSID - System Identification

ELEMENT DERIVATION: When z/OS SMF is the source of the input records, ORGSYSID is extracted from the field at offset 10 in the standard SMF header area. In IBM documentation, this field has the name SMFxxSID.

Although the VCA component normally reads SMF records written by the VCC component, it will also read non-SMF SMF-look-a-like records written by VCC to a sequential data set.

For all AUM, DEX, VSE/PWR, and SRL files, ORGSYSID is not obtained directly from the data. It is obtained from specifications in prefix.MICS.PARMS member cccOPS.

For CICS, when reading data written by ASG-TMON for CICS, the ORGSYSID is equated to the field called xxSMFSID in the ASG-TMON for CICS documentation. The 'xx' stands for the record type: TA, TI, or TR.

For IMS, when reading data extracted from the BMC MAINVIEW for IMS Online product and the IMS Analyzer AutoDetect Facility is being used, the ORGSYSID value is extracted from

the MAINVIEW transaction accounting records, specifically from the field containing the System Name ID (SYSNAME). Otherwise, the SYSID specified on the IMSOPS OPTION statement's OSYSID parameter is assigned to all the incoming log data.

NOTE: A more correct approach to populating the ORGSYSID value using the IMS Analyzer AutoDetect Facility would be to use the field that contains the SMF ID to populate the ORGSYSID data element. However, the BMC Mainview transaction accounting records do not always contain the SMF ID. If your System Name IDs (SYSNAME) differ from the SMF IDs defined for the z/OS LPARs, the IMS00408 error message displays in the MICS log with information about the SYSNAME and SMF ID values so that you can make appropriate adjustments to the OSYSID parameter of the IMSOPS OPTION statement.

Tandem MEASURE data contains a Tandem system identifier. The CA MICS Tandem Option matches this Tandem system identifier to one of those specified in the TDMOPS parameter library member to identify the Tandem system and obtain the ORGSYSID.

For the TLM component of the CA MICS Tape Analyzer Option, ORGSYSID represents the tape library name (TAPELIB) used to identify unique tape library systems. ORGSYSID is derived from the TMCTLIB field of the TMCC record. TMCTLIB is the tape library name specified during TMCC execution. ORGSYSID is not used in the sort sequence of TLM files and is not retained outside the DETAIL timespan.

For the VTS component of the CA MICS Tape Analyzer Option, since no ORGSYSID is supplied by VTS data sources, ORGSYSID is not used. Data element SYSID is assigned the value SYS1 by default, unless overridden with a VTSSYSID statement in prefix.MICS.PARMS(VTSOPS).

VM measurement data does not contain the SMF System Identifier. The CA MICS Analyzer Option for VM/CMS matches the CPU model and serial number in the monitor data to an ORGSYSID definition in the VMCOPS parameter library member to identify a VM system and obtain the ORGSYSID.

For VSE/PWR files, this field is obtained from the VSESYSID based on the mapping defined in prefix.MICS.PARMS(PWROPS).

For the CA MICS Web Analyzer component processing Web Log Extractor (WLE) records, the ORGSYSID is supplied by configuration file server information parameters in prefix.MICS.PARMS(WLECONF).

For a non-MSI FDA component, ORGSYSID is populated by code in the USRFMT2 macro. The MSI FDA uses the ORGSYSID statement in its fdaGENIN member to identify the input field containing the ORGSYSID. The MSI FDA could also use the cccSYSID exit for specialized ORGSYSID assignment.

RANGE OF VALUE: 1 to 4 alphanumeric characters.

SUMMARIZATION PROCESS: ORGSYSID contains the value of the last ORGSYSID encountered.

USAGE NOTES: CA MICS provides a mapping of input SYSID (ORGSYSID) to logical SYSID (SYSID) in order to support the concept of "successor" systems.

The ORGSYSID is used to find information about the computer system that is identified by the ORGSYSID, information such as the CPU model and MIPS rating.

P R O G R A M | Program Name

PROGRAM contains the full name of the program being executed. The program may be invoked in batch via a JCL EXEC card (for example, // EXEC PGM=IEBCOPY) or invoked under TSO via the CALL command (for example, CALL 'SYS1.LINKLIB(IEBCOPY)'). It may also be the name of the program being executed by a CICS transaction.

TYPE: Common, retained - Character, length 8.

SEE ALSO: $TSOCMND - TSO/MON Command Recording

ELEMENT DERIVATION: CA MICS sets this value from SMF, TSO/MON, and CICS data sources.

For the files in the Batch Information Area, PROGRAM contains the value input from field SMF30PGN of the SMF Common Address Space Work Record (type 30). However, for system address spaces (for example, GRS, CONSOLE, JES2, and so on), the SMF30PGN field is blank so the PROGRAM data element is blank in the System Address Space Activity (BAT_SA) file.

For the files in the TSO Information Area, PROGRAM contains the value input from the TSO/MON Command Record for TSO interactive program activity. If the program name is $ERROR, then TSO/MON was unable to locate the program name for an interactive process. Also, if COMMAND=EXEC, then the program name contains the name of the CLIST that was executed interactively. These considerations do not apply to batch program activity.

For CICS files, PROGRAM contains the program name obtained from the following data fields in the CICS monitor records. From CMF performance class transaction record, the field is PGMNAME (field 071), described as the name of the first program invoked at attach time. From The Monitor task accounting detail record, the field is TAPGM.

RANGE OF VALUE: This element might contain any combination of one to eight alphanumeric characters.

SUMMARIZATION PROCESS: PROGRAM contains the value of the last occurrence of PROGRAM in the observations processed for the summarization level.

USAGE NOTES: For programs executed in batch, the name is in the form *.DD. if a backwards reference is used on the EXEC JCL statement.

PROGRAM is a summarization key in the Batch Information Area files, but the SMF type 30 records generated for system address spaces do not supply a program name. If separation of system address space data in the summarized time spans is desired in the System Address Space Activity (BAT_SA) file, you can use the _USRSPGM user exit in sp.MICS.SOURCE(SMFEXIT) to populate PROGRAM with the system address space job name by adding the following statement:

```
IF PGMTYPE=6 THEN PROGRAM=JOB ; /*PGMTYPE=6 is SYSADDRSP*/
```

P W R A C T x | Account Level Identifier

The PWRACTx data elements are user-defined fields used to define the accounting or cost center structure of an installation. There may be up to nine account codes, each representing a level of accountability for the installation. The highest account code is PWRACT1, the second highest PWRACT2, and so on. These data elements are defined and included in the database by the user with CA MICS Analyzer Option for VSE/POWER product installation. They are defined in the member PWRACCT in the sharedprefix.MICS.PARMS library.

TYPE: Common Control data element -- CHARACTER, LENGTH USER DEFINED TO 30.

SEE ALSO: Not applicable

ELEMENT DERIVATION: The derivation of the account code fields is the responsibility of the user and is defined in the member PWRACRT in the CA MICS parameter library (sharedprefix.MICS.PARMS). The content of the PWRACTx data elements is installation dependent. Contact your organization's CA MICS System Administrator for further information.

RANGE OF VALUE: Any combination of 1 to 30 letters, numbers, blanks, or national characters, per field, according to user definition.

SUMMARIZATION PROCESS: This is a summarization control variable. CA MICS builds a separate record for each unique combination of key values, and this variable is part of the key of its file.

ACCESS: PWRACTx is present in the following files and levels of summarization.

-FILE-	DETAIL	DAYS	WEEKS	MONTHS	YEARS
PWRPJB	YES	--	--	YES	YES
PWR_PJ	YES	--	--	--	--
PWRPPG	YES	--	--	YES	--
PWRPOA	YES	--	--	YES	--

USAGE NOTES: PWRACTx data elements can be dropped from higher levels of summarization via a specification in the PWRACCT parameter member of sharedprefix.MICS.PARMS. Consequently, the user should not assume that the existence of a PWRACTx field at a given level implies that it exists at all levels of the database.

P W R J O B N O | POWER Job Number

The job number assigned by VSE/POWER.

TYPE: Common retained data element - NUMERIC, measurement unit is INTEGER.

SEE ALSO: Not applicable

ELEMENT DERIVATION: PWRJOBNO contains the value input from field ACJOBN of the Type P Punch Account record or the value input from field ACNUMB of either the Type E Execution Account Record, the Type L List Account Record, the Type R Reader Account Record, or the Type M/V Transmitter/Receiver Account Record.

RANGE OF VALUE: 1 to 65535.

SUMMARIZATION PROCESS: PWRJOBNO contains the last value of PWRJOBNO encountered in the level of summarization.

ACCESS: PWRJOBNO is present in the following files and levels of summarization.

-FILE-	DETAIL	DAYS	WEEKS	MONTHS	YEARS
PWRPJB	YES	--	--	--	--
PWR_PJ	YES	--	--	--	--
PWRPPG	YES	--	--	--	--
PWRPOA	YES	--	--	--	--
PWRPDA	YES	--	--	--	--

USAGE NOTES: In the PWRPDA file, PWRJOBNO is part of the file key at the DETAIL level.

PWRJOBNO is only meaningful at the DETAIL level.

P W R J U S E R | POWER JOB User Information

Up to 16 bytes of user information as specified in the USER parameter on the * $$ JOB card or * $$ LST card.

TYPE: Common retained data element - CHARACTER, LENGTH 16

SEE ALSO: VSEJUSER - VSE JOB User Information

ELEMENT DERIVATION: PWRJUSER contains the value input from field ACUSER of either the Type E Execution Account Record, the Type L List Account Record, the Type P Punch Account record, the Type R Reader Account Record, or Type M/V Transmitter/Receiver Account Record.

RANGE OF VALUE: An alphanumeric string, including embedded blanks if string was enclosed in apostrophes. If a * $$ JOB card was not used, the VSE/POWER job name is the same as the VSE job name and PWRJUSER is set to a missing value (blanks).

SUMMARIZATION PROCESS: PWRJUSER contains the last value of PWRJUSER encountered in the level of summarization.

ACCESS: PWRJUSER is present in the following files and levels of summarization.

-FILE-	DETAIL	DAYS	WEEKS	MONTHS	YEARS
PWRPJB	YES	--	--	--	--
PWR_PJ	YES	--	--	--	--
PWRPPG	YES	--	--	--	--
PWRPOA	YES	--	--	--	--

USAGE NOTES: If JLOG=YES was specified during VSE/POWER generation, the specified user information is printed on the SYSLOG (system log) when execution of a job begins. If applicable, VSE/POWER prints this information on separator pages.

PWRJUSER is only meaningful at the DETAIL level.

P W R N E T A C | POWER Network Account Number

PWRNETAC contains the network account number associated with the job. This account number is kept constant as the job is moved from one system to another through an NJE network.

This element is available for VSE/POWER Release 4.1 and later systems.

TYPE: Common retained data element - CHARACTER, LENGTH 8.

SEE ALSO: PWRACTx - User Account Fields

ELEMENT DERIVATION: PWRNETAC contains the value input from one of the following fields depending on input record type:

```
EXPACCT  : Type E, Execution Account Record
LSTACCT  : Type L, List Account Record
PUNACCT  : Type P, Punch Account Record
RDRACCT  : Type R, Reader Account Record
NACACCT  : Type V, Receiver Account Record
NACACCT  : Type M, Transmitter Account Record
XSPACCT  : Type X, Spool Access Operations Account Record
```

RANGE OF VALUE: Any alphanumeric string. If the network account number was not supplied, PWRNETAC is set to blanks.

SUMMARIZATION PROCESS: PWRNETAC contains the last value of PWRJUSER encountered in the level of summarization.

USAGE NOTES: Network account numbers are useful for gathering resource usage information for a job that is managed by several systems (VSE and MVS).

R D R T S | Reader Timestamp

RDRTS contains the date and time at which a job is read into the system. The Reader Timestamp is from JMRENTRY and JMREDATE in the Job Management Record (JMR). For APPC Transaction Programs (TPs), RDRTS is the date and time that

the APPC/MVS address space received the TP execution request.

RDRTS is also populated by SMF type 110 records written by CMF (CICS Monitoring Facility) at CICS/ESA Release 4.1 and higher. It contains the same date and time values as those in the Job Management Record.

TYPE: Common, retained - Numeric, measurement unit is SAS datetime value.

ELEMENT DERIVATION: The CA MICS Batch and Operations Analyzer derives RDRTS from the standard SMF reader date and time fields (SMFnRSD and SMFnRST) in the JES Output Writer Record (type 6), the JES3 Device Allocation Record (type 25), the JES Job Purge Record (type 26), and the Common Address Space Workload Record (type 30).

For APPC/MVS ASCH scheduled TPs, RDRTS contains the values input from fields SMF33FMD and SMF33FMT in the SMF type 33 APPC/MVS TP Accounting record.

The CA MICS Analyzer Option for CICS derives RDRTS from the SMF reader date and time fields (SMFSTRSD, SMFSTRST) in the SMF type 110 record written by CMF. RDRTS is available for CICS/ESA Release 4.1 and higher.

RANGE OF VALUE: Any valid SAS datetime value.

SUMMARIZATION PROCESS: RDRTS contains the last value of RDRTS processed in the level of summarization.

RDRTS is meaningful only at the DETAIL level of summarization.

USAGE NOTES: Reader Timestamp is the chronologically earliest timestamp available in the CA MICS Batch Information Area files, where the file observations represent a batch job, step, started task, TSO session, or APPC/MVS ASCH scheduled transaction program (TP).

| S T A R T T S | Start Timestamp

STARTTS has different definitions depending on the timespan and the data collector.

DETAIL Timespan:

o Gives the time of initiation for an executable function, such as job or command.

o Tells when a measurement interval started.

All Other Timespans:

o Gives the minimum start timestamp encountered in the records used to compile the summarized record.

o In any timespan but DETAIL, the combination of STARTTS and ENDTS in the record identifies the boundaries of the range of time over which the data in the record was summarized.

In the CA MICS Accounting and Chargeback Option ledger files, STARTTS is the lowest ENDTS value in the journal files from which the ledger file was summarized.

TYPE: Common, retained - Numeric, measurement unit is SAS datetime value.

SEE ALSO: DURATION - Recording Interval Time
ENDTS - End Timestamp

ELEMENT DERIVATION: The derivation of STARTTS depends on the file:

RMF Files: For files generated from the SMF type 70-79 RMF records, STARTTS is derived from fields SMFnnDAT (interval start date) and SMFnnIST (interval start time) of each RMF record (where nn is the record number).

For files generated from the SMF type 113 subtype 1 or 2 Hardware capacity, reporting, and statistics record generated by the IBM CPU Measurement Facility (CPU MF) Hardware Instrumentation Services (HIS).

For 113-2 records, STARTTS is determined in one of two ways:

- If the interval record is the first from a HIS collection run, STARTTS is set equal to field SMF113_2_CTS, adjusted to local time by adding the GMT Offset value.

- If the interval record is an intermediate or final from a HIS collection run, STARTTS is set equal to the ENDTS of the previous interval record.

For 113-1 records, STARTTS is set equal to field SMF113IntervalStart, adjusted to local time by adding the GMT Offset value.

- If the interval record is the first from a HIS collection run, STARTTS is set equal to field

SMF113_2_CTS, adjusted to local time by adding the GMT Offset value.

- If the interval record is an intermediate or final from from a HIS collection run, STARTTS is set equal to the ENDTS of the previous interval record.

TSO Files: For the TSOTSO file, this value is calculated by subtracting the length of recording interval (TSMSINTV) from the record generation date (TSMSDTSP) and record generation time (TSMSTMSP) fields in the systems segment of the TSO/MON Systems Record.

For the TSOTSU and TSOTSC files, STARTTS is the same as either the TSOTSO file or the LOGON timestamp, TSMSLOGD (LOGON date) and TSMSLOGT (LOGON time), whichever is less.

For the TSOTSI file, STARTTS is taken from the Command Start Time (TSMPSTRT) and Command Start Date (TSMPSTRD) fields in the TSO/MON Command Record.

SMF Files: For the BATJOB file, STARTTS is taken from fields SMF30DTE and SMF30TME in the Common Address Space Work Record (type 30), subtype 5.

For the BATPGM, BAT_ST, BAT_TS, and BAT_TP files:

o For complete step records (PGMINTVL='SE24'), STARTTS is taken from fields SMF30STD (date initiator selected step) and SMF30SIT (time initiator selected step) of the SMF Common Address Space Work Record (type 30).

o For interval records, STARTTS represents the start time of the interval and is taken from one of the following, depending on the level of z/OS that produced the SMF record:

- The end time of the previous interval
- Fields SMF30IST and SMF30ISD
- Field SMF30ISS

For the BATSPL file, STARTTS is taken from fields SMF6WSD and SMF6WST (datetime output function began work on this file) of the SMF JES2 and JES3 Output Writer records (type 6).

ADM Files: For ADMEXC at the DAYS level, STARTTS is undefined. For ADMEXC at the MONTHS level, STARTTS is the lowest date and time associated with data summarized into the record.

CA IDMS Files: For the IDMS System Incident File (IDMSIN), STARTTS is the date and time when the CA IDMS transaction began processing. STARTTS contains the value of the Start Time (PMHSTIME) field from the header section of the CA IDMS Performance Monitor record.

For all other CA IDMS files, STARTTS is adjusted based on a user-defined interval value. This value is coded in the INTERVAL statement of prefix.MICS.PARMS(IDMOPS) and determines the cut-off point for each timespan.

CICS Files: For the CICS Incident File (CICCIN), STARTTS is set to the value of the ENDTS for the incident. The STARTTS value for the Application Unit Activity File (CICCAU) is set from and identical to the STARTTS value for the User Activity File (CICCSU). Construction of the timestamp itself varies according to the monitor used to collect CICS data:

CMF: When type 110 Performance records are input, the STARTTS is read from Field 5 (START) that carries either the time at which the user task was attached or the time at which data recording was most recently reset in support of the MCT user event monitoring point DELIVER option or of the monitoring options MNCONV, MNSYNC, or FREQUENCY. After this value is read from Field 5, it is adjusted by the GMT offset that is input from the header section of the same type 110 record. The resulting value populates the STARTTS in the CICS User Activity (CICCSU) file and in the CICS Application Unit Activity (CICCAU) file.

When type 110 Statistics records are input, the STARTTS is calculated by the formula:

ENDTS - DURATION

The STARTTS values in this case populate the CICS System Activity (CICCSY) file.

ASG-TMON for CICS TS: To populate the CICS User Activity (CICCSU) file, the STARTTS is read from the main segment of the type TA record. To populate the CICS System Activity (CICCSY) file, the STARTTS is read from the main segment of the type TI record.

DB2 Files: For the DB2DSU, DB2DSP, DB2DDU, and DB2DDP files, STARTTS is set equal to ENDTS minus the elapsed time, DSUELPTM. For the DB2DSD, DB2DSY, and DB2DDY files, STARTTS is set equal to the ENDTS of the previous record.

IMS Files: For the IMS Incident File (IMSINC), STARTTS is equal to and set from the ENDTS of the incident. The STARTTS values for the Application Unit Activity File (IMSIAU) and User Application Count File (IMSIAC) are set from and identical to the STARTTS value for the User Activity File (IMSISU). For the System Activity File (IMSISY), STARTTS = ENDTS - DURATION. Construction of STARTTS for transaction-oriented files varies according to the method used to accumulate IMS data:

With IMF: STARTTS is constructed from the time and date of processing region occupancy presented by Control/IMS in its detail transaction record.

Without IMF: STARTTS is constructed from the time and date fields in the log type '31'X record for the Get Unique of the transaction's first message segment from the IMS message queue. The field in the '31'X record that contains date and time is QLGUDTME.

MQS Files: For all files except MQAQAA, MQATAA, and MQBMFA, the STARTTS for an interval is the ENDTS of the previous interval.

For the MQAQAA and MQATAA files, STARTTS is derived by subtracting Task Execution Time (TAAEXCTM) from End Timestamp (ENDTS): STARTTS = ENDTS - TAAEXCTM;

Note that TAAEXCTM = TAAIETS-TAAISTS where TAAIETS is SMF field WTASINTE and TAAISTS is SMF field WTASINTS in IBM DSECT CSQDWTAS.

For the MQBMFA file, STARTTS is set to the interval start date and time values found in the Message flow accounting record fields IMFLSTDT and IMFLSTTM.

For Web Analyzer:

STARTTS is set to the value input from field SM1209CM of the SMF type 120 record subtype 9 at offset 4 (x'04') of the z/OS Request Information section.

Network Analyzer Option Files:
NPM Network data collection: STARTTS is the end timestamp of the measurement interval minus the actual observation time of the interval: STARTTS = ENDTS - NPMTMAOT.

NPM Session data collection: STARTTS is the Date and Time of Beginning Interval, VPVDT, from the Session Statistics Detail Record.

NetView/NLDM or CA NetMaster NTS data (by CA MICS File):

- o NVSRTM and SNTNSV files - STARTTS is taken from field LRTMCOLB of the SMF type 39 record.
- o NVSNSA file - STARTTS is taken from field LACCBEGT of the Accounting and Availability data section of SMF type 39 record.
- o NVSNSC and NVSRTE files - There is only one observation in CA MICS for each unique SNA session in the DETAIL timespan of these files, and the STARTTS for that observation is taken from the lowest timestamp found in all SMF type 39 records processed for that session.

NetView/NPDA or CA NetMaster NEWS Data: STARTTS is set equal to ENDTS.

IBM Sterling Connect:Direct data collection: STARTTS is the timestamp for when the COPY function was started. It is a combination of fields CTSDATE and CTSTIME from the SMF 133 (user defined) record, subtype CT.

VSE/Power Files: The element is derived from the ACDATE and ACSTRT fields of the account record used to create the observation. However, if the value of ACSTRT is greater than ACSTOP, the date used is one day earlier than ACDATE.

When processing the Execution Account Record for VSE/Power, the element is derived by subtracting the execution time (EXCJDUR) from ENDTS.

VM/CMS Files: In the DETAIL timespan, the derivation of STARTTS varies on files:

For VMCCMU, VMCDAC, and VMCVRA, STARTTS contains the difference between ENDTS and DURATION. In VMCNTU file, STARTTS contains the value input from record type 07 column 45-52.

For VMXVXU, VMXVXT, VMX_VU, and VMX_VT, STARTTS of a user record is set to the value of ENDTS of the previous record processed for the user. For the first user record after a user logged on, STARTTS is set to either the logon timestamp, if available, or the difference between ENDTS and interval record length.

For other files, STARTTS contains the value of ENDTS of the previous record processed under the same unique key for records within a file.

TLM Component TMC Information Area files: For the TMCfff files, STARTTS is the start of the collection interval. Generally, this is the last time TMCC was executed for a given tape library. STARTTS is derived from the TMCLDATE/TMCLTIME fields of the TMCC record.

VTS Component IVT Information Area files: For the IVTfff files, created from SMF type 94 records for IBM VTS systems, STARTTS is established as the exact hour value of the hour that preceded the hour when the SMF type 94 record was written to the SMF buffer.

For example, if an SMF type 94 record was written at 13:12:48.02, the STARTTS for all IVTfff files generated from that record would be 12:00:00.00.

VTS Component SVT Information Area files: For the SVTSSP, SVTCIP, and SVTRPR files, STARTTS is created from Sun StorageTek User SMF records. It is calculated by subtracting 15 minutes from the ENDTS for the interval records, subtypes 10, 11, and 20.

For all other SVT files except SVTSVS, STARTTS is set to the ENDTS value read from the StorageTek event records.

For the SVTSVS file, STARTTS is set to the start of each 15 minute boundary 00:00.00, 15:00.00, 30:00.00, 45:00.00, in the DETAIL timespan.

RANGE OF VALUE: Any valid SAS datetime value. The value of this data element is not affected by your use of the 13MONTHYEAR option in prefix.MICS.PARMS(SITE).

SUMMARIZATION PROCESS: The minimum STARTTS encountered in summarizing a number of records to a higher level of granularity.

S Y S I D	SYSTEM IDENTIFICATION

SYSID is the translated system identifier that was derived from ORGSYSID by the CA MICS SYSID translation process. It is defined in the CPLXSID or SYSID member of a CA MICS parameter library.

TYPE: Common, retained - Character, length 4.

SEE ALSO: ORGSYSID - Original System Identifier

ELEMENT DERIVATION: Every record coming from most CA MICS data collection sources contains an SMF system identifier in the appropriate field of the record. CA MICS calls this field the ORGSYSID. For collection sources that do not provide such an identifier, CA MICS provides a method to determine the ORGSYSID. This ORGSYSID is compared to a user-defined SYSID table (PARMS members CPLXSID and/or SYSID) to determine if the ORGSYSID should be used as the SYSID or translated to a reporting SYSID.

The prefix.MICS.PARMS(SYSID) member is used to build SYSID table entries for a specific unit. The sharedprefix.MICS.PARMS(CPLXSID) member is used to build SYSID table entries for every unit in a complex.

RANGE OF VALUE: SYSID can contain any combination of 1 to 4 alphabetic and/or numeric characters.

SUMMARIZATION PROCESS: SYSID is not summarized. It is used to determine a unique key for records within a file based on the timespan, so other elements in the file can be summarized.

USAGE NOTES: Most CA MICS files have SYSID as their highest level or primary key. This is what allows CA MICS to store information from multiple systems (SYSIDs) in the same database.

The ADMIHL file uses ORGSYSID as its highest level or primary key.

The CA MICS Network Analyzer Option uses SYSID as its second highest level key. The highest level key in these files is NETWRKID, Network Identifier. NETWRKID enables these files to support data from multiple networks (for example, networks supported by SNA Network Interconnect, SNI).

For the VTS component of the CA MICS Tape Analyzer Option, in all IBM Virtual Tape Subsystem Information Area (IVTfff) files, SYSID defaults to SYS1, or may be set to a value specified in prefix.MICS.PARMS(VTSOPS) using the VTSSYSID statement.

For the TLM component of the CA MICS Tape Analyzer Option, SYSID is not used in the sort sequence of TLM files, and is not retained outside the DETAIL timespan.

There is no general way of meaningfully combining or even comparing data gathered on different computer systems, so be careful when putting together data from two SYSIDs.

| S Y S O U T | SYSOUT CLASS

SYSOUT is the output writer (SYSOUT) class used to print or punch a SYSOUT data set.

TYPE: Common, retained - Character, length 1.

SEE ALSO: Not applicable

ELEMENT DERIVATION: SYSOUT is extracted from the SMF6OWC field of the JES2/3 Output Writer record (Type 6).

In JES2, the class is taken from the JOECURCL of the Job Output Element.

In JES3, the class is taken from the OSECLASS field of the Output Scheduling Element.

For VSE/POWER files, SYSOUT is obtained from the LSTOCL field of the List Account record, the PUNOCL field of the Punch Account record, or the NACCLAS field of the Transmitter or Receiver Account record.

For the VMCVRA file, SYSOUT contains the value input from the record type C0 (RSCS) VM account record column 49.

RANGE OF VALUE: Any JES SYSOUT class (A-Z or 0-9), blank for non-SYSOUT data sets, or VSE/POWER output class (A-Z).

In VM, SYSOUT is a one-character class associated with each virtual unit record device.

SUMMARIZATION PROCESS: SYSOUT is not summarized. It is used to determine a unique key for records within a file based on the timespan, so other elements in the file can be summarized.

In VMCVRA file, SYSOUT is not a summarization control element. SYSOUT contains the last value of SYSOUT processed in the level of summarization.

| V S E D D N A M | VSE DDNAME

The MVS DDname that pointed to the dataset containing the VSE/POWER accounting data used to construct the record in question.

TYPE: Common retained data element - CHARACTER, LENGTH 8

SEE ALSO: Not applicable

ELEMENT DERIVATION: This value is taken from the specification of the DDname in the OPTIONS statement of the PWROPS member of the prefix.MICS.PARMS library.

RANGE OF VALUE: This value must be a standard 1 to 8 character MVS DDname.

SUMMARIZATION PROCESS: VSEDDNAM is set to the last value of VSEDDNAM encountered in the summarization level.

ACCESS: VSEDDNAM is present in the PWR_PJ file at the DETAIL time span.

USAGE NOTES: None

| V S E J O B | VSE Job Name

The VSE job name from the // JOB card.

TYPE: Common retained data element - CHARACTER, LENGTH 8

SEE ALSO: JOB - Job Identification

ELEMENT DERIVATION: VSEJOB contains the value input from field EXDJOB of the Type E Execution Account Record.

RANGE OF VALUE: Any alphabetic or national ($#@) character followed by 0-7 alphabetic, national, or numeric characters.

SUMMARIZATION PROCESS: VSEJOB contains the last value of VSEJOB encountered in the level of summarization.

ACCESS: VSEJOB is present in the following files and levels of summarization.

-FILE-	DETAIL	DAYS	WEEKS	MONTHS	YEARS
PWRPPG	YES	--	--	--	--

USAGE NOTES: VSEJOB is only meaningful at the DETAIL level.

```
+-----------------+
| V S E J U S E R |  VSE JOB User Information
+-----------------+
Up to 16 bytes of user information as specified on the // JOB
card.

TYPE:  Common retained data element - CHARACTER, LENGTH 16

SEE ALSO:  PWRJUSER - POWER JOB User Information

ELEMENT DERIVATION:  VSEJUSER contains the value input from
field EXDUSER of the Type E Execution Account Record.

RANGE OF VALUE:  An alphanumeric string, including embedded
blanks if the string was enclosed in apostrophes.

SUMMARIZATION PROCESS:   VSEJUSER contains the last value of
VSEJUSER encountered in the level of summarization.

ACCESS:  VSEJUSER is present in the following files and
levels of summarization.

-FILE-   DETAIL  DAYS  WEEKS  MONTHS  YEARS
PWRPPG      YES    --     --      --     --

USAGE NOTES:  VSEJUSER is only meaningful at the DETAIL
level.


+-----------------+
| V S E P R T I D |  VSE Partition Identifier
+-----------------+
The EBCDIC representation of the VSE partition identifier in
which a given job/program was run.

TYPE:  Common retained data element - CHARACTER, LENGTH 2

SEE ALSO:  VSESYSID - VSE System Identifier

ELEMENT DERIVATION:  VSEPRTID contains the value input from
field EXPID of the Type E Execution Account Record.

RANGE OF VALUE:  A two character field containing any valid
VSE partition identifier.

SUMMARIZATION PROCESS:   VSEPRTID contains the last value of
VSEPRTID encountered in the level of summarization.

ACCESS:    VSEPRTID is present in the following files and
levels of summarization.

-FILE-   DETAIL  DAYS  WEEKS  MONTHS  YEARS
PWRPJB      YES    --     --      --     --
PWR_PJ      YES    --     --      --     --
PWRPPG      YES    --     --      --     --

USAGE NOTES:  VSEPRTID is only meaningful at the DETAIL
level.


+-----------------+
| V S E S Y S I D |  VSE System Identifier
+-----------------+
The single character VSE/POWER system identification
contained in the SYSID record header, or blank if there is no
header.

If your VSE/POWER system was generated with shared spool
support, VSE/POWER puts VSESYSID in the account records.  The
value of VSESYSID is set in IBM's SYSID parameter of the
POWER macro used to install VSE/POWER.  It may have been
overridden by a SET statement in IBM's VSE/POWER autostart
function.

TYPE:  Common retained data element - CHARACTER, LENGTH 1

SEE ALSO:  ORGSYSID - Original System Identifier

ELEMENT DERIVATION:  This data element contains the value
input from the ACSYSID field of any VSE/POWER account record
if your system was generated with shared spool support.

RANGE OF VALUE:  A one digit number from 1 to 9, or a missing
value (blank) if shared spool support was not generated into
the system.

SUMMARIZATION PROCESS:  The last value of VSESYSID in the
summarization interval is written to the summarized file.

ACCESS:  VSESYSID is present in the following files and
levels of summarization.

-FILE-   DETAIL  DAYS  WEEKS  MONTHS  YEARS
PWRPJB      YES    --     --     YES    YES
PWR_PJ      YES    --     --      --     --
PWRPPG      YES    --     --     YES     --
PWRPOA      YES    --     --     YES     --
PWRPRA      YES    --     --     YES     --
PWRPDA      YES   YES    YES     YES     --

USAGE NOTES:  None
```

V S E V E R — VSE Version

The version identification of the VSE/Power system that provides the data.

TYPE: Common retained data element - CHARACTER, LENGTH 8

SEE ALSO: Not applicable

ELEMENT DERIVATION: This value is taken from the specification of the VSE/Power version in the OPTIONS statement PWROPS member of the prefix.MICS.PARMS library.

RANGE OF VALUE: This value must be 2.1.0, 2.2.0, 2.3.0, 4.1, 5.1, 5.2, 6.1, 6.3, 6.4, 6.5, 6.6, 6.7, 7.1, 8.1, 8.2, 8.3, 9.1, 9.2, 9.3, or 9.4.

SUMMARIZATION PROCESS: VSEVER is set to the last value of VSEVER encountered in the summarization level.

ACCESS: VSEVER is present in the following files and levels of summarization.

FILE	DETAIL	DAYS	WEEKS	MONTHS	YEARS
PWRPJB	YES	--	--	YES	YES
PWR_PJ	YES	--	--	--	--
PWRPPG	YES	--	--	YES	--
PWRPOA	YES	--	--	YES	--
PWRPRA	YES	--	--	YES	--
PWRPDA	YES	YES	YES	YES	--

USAGE NOTES: None

W E E K — WEEK OF YEAR

WEEK is the calendar week of the year (an integer from 1 to 54). To CA MICS, a week extends from Sunday through Saturday (unless changed via the WEEKSTART parameter mentioned below). The first and last weeks of the year may have less than seven days.

WEEK=54 can only occur in a leap year, and then only when January 1 falls on a Saturday (and therefore is a week all by itself).

TYPE: Common, retained - Numeric, measurement unit is integer.

SEE ALSO: DAY - Day of Month
MONTH - Month of Year

ELEMENT DERIVATION: WEEK is calculated from the date portion of the variable ENDTS. WEEK=01 begins on January 1 and extends through the following Saturday. WEEK=02 begins on Sunday, and so forth.

If you specified the 13MONTHYEAR option of MICS.PARMS(SITE), then WEEK=01 begins on the first day of the fiscal year specified and extends up to the end of the following Saturday. If you have modified the definition of a standard week via the WEEKSTART parameter in MICS.PARMS(SITE), then your WEEK=01 will begin on the first day of your fiscal year and extend to the end of the day before that specified at the operand of the WEEKSTART statement.

RANGE OF VALUE: WEEK takes any numeric value in the range 1 through 54.

SUMMARIZATION PROCESS: WEEK is set to the value of the last WEEK encountered in the summarization period.

For files that exist in the WEEKS timespan, WEEK is not summarized. It is used to determine a unique key for records in the WEEKS timespan so other elements in the file can be summarized.

Y E A R a n d Y E A R 4 — Year of Century

The YEAR (the encoded year of the century) and YEAR4 (the four digit year) data element descriptions are presented in the following order:

* YEAR -- Year of Century
* YEAR4 -- Year

Y E A R — Year of Century

YEAR is the "cyy" encoded year of the century where yy is the last two-digits of year and c, the century indicator, is 0 for years before 2000 and 1 beginning in year 2000. For example, the year 1998 is represented as 98 while the year 2001 is represented as 101.

You can also think of YEAR as the 4-digit year minus 1900.

YEAR is carried in encoded form to reduce database space

while preserving proper chronological sort sequence (e.g., data for year 2000 sorts after data from 1999). Since YEAR appears in every observation of every file, a savings of several megabytes is possible. The maximum value of the encoded YEAR element is 255, which supports years through 2155 (1900 + 255).

TYPE: Common, retained - Numeric, measurement unit is integer.

SEE ALSO: MONTH - Month of Year
WEEK - Week of Year

ELEMENT DERIVATION: Normally, CA MICS calculates YEAR by subtracting 1900 from the year part of ENDTS.

If 13MONTHYEAR YES was specified in prefix.MICS.PARMS(SITE), YEAR is set to the year in which the fiscal year defined by the time stamp begins minus 1900. In other words, if your site specifies that your fiscal year runs from July 1 of one year to June 30 of the following year, then YEAR would be set to 201 for any date/time from 00:00:00 on July 1, 2001, to 23:59:59 on June 30, 2002.

The YEAR variable in the CA MICS Accounting and Chargeback financial recap file is set to the year value of the prior period. In all of the financial recap files: ACTRCP, ACT_RC, ACT_YR, ACT_YT, ACT_RR, AND ACT_RT, the variable YEAR represents the year for which the work was invoiced.

RANGE OF VALUE: YEAR takes any numeric value in the range 0 to 255.

SUMMARIZATION PROCESS: YEAR contains the value of the last YEAR encountered during the summarization process.

At the higher levels of summarization in most CA MICS files, this is a summarization control variable. During the summarization process a new record is created for each unique record key combination, and this field is part of the key of its record.

USAGE NOTES: The default output format for YEAR, YR., prints the last 2-digits of year to retain the "year of century" presentation. For example, for data from year 2001, YEAR is printed as 01 rather than the actual value of 101.

For some applications, such as in program logic, it may be helpful to work with the full 4-digit year. The %YEAR4 macro is available for this purpose. For example, the following SAS instructions both select data for the years 1998 through 2001.

```
IF 98 LE YEAR LE 101;

IF 1998 LE %YEAR4 LE 2001;
```

| Y E A R 4 | Year

YEAR4 is the four digit year.

TYPE: Common, retained - Numeric, measurement unit is integer.

SEE ALSO: MONTH - Month of Year
WEEK - Week of Year
YEAR - Year of Century

ELEMENT DERIVATION: CA MICS calculates YEAR4 as the value of the element YEAR plus 1900.

RANGE OF VALUE: YEAR4 takes any numeric value in the range 0 to 2155.

SUMMARIZATION PROCESS: This value is not summarized.

USAGE NOTES: The YEAR4 data element is shipped turned off. Furthermore, it is not defined as a normal CA MICS data element in sharedprefix.MICS.GENLIB. As a result, you cannot use the standard method of file tailoring to turn YEAR4 on or off. You must activate or deactivate this data element via a parameter in sharedprefix.MICS.PARMS(CPLXDEF). Since CPLXDEF affects the operation of the entire CA MICS complex, the data element will either reside in every CA MICS file or none at all.

Refer to section 2.3.1.8 of the "PIOM" for information on activating/deactivating the YEAR4 data element.

| Z O N E | Time Zone

ZONE is the time zone during which the measurements in this record were taken.

ZONE enables you to categorize activity at a level of granularity that is greater than HOUR but less than DAY. (This is in the DETAIL timespan; ZONE can contain much more time than a day in the higher timespans.)

Each installation defines ZONEs in the manner that is most meaningful to it, but most installations include the notion of "prime" vs. "non-prime" time in the ZONE definitions.

The definition and use of ZONEs is discussed in Section 2.3.2.3 of the CA MICS Planning, Installation, Operation, and Maintenance (PIOM) Guide.

TYPE: Common, retained - Character, length 1.

SEE ALSO: HOUR - Hour of Day

ELEMENT DERIVATION: CA MICS derives ZONE by comparing the date and time (ENDTS) of the measurement source record with your site's HOLIDAY specifications. If there is a match, the "holiday" ZONE is assigned. If there is not, CA MICS compares the DAY and HOUR with the your ZONE specifications in member ZONE of prefix.MICS.PARMS. A match will always be found because MICSGEN requires that all 168 hours within a week be assigned to a ZONE.

RANGE OF VALUE: ZONE contains any one of the following characters:

1, 2, 3, 4, 5, 6, 7, 8, or 9.

SUMMARIZATION PROCESS: ZONE is set to the value of the last ZONE encountered in the summarization process.

At the higher levels of summarization in most CA MICS files, ZONE is not summarized. It is used to determine a unique key for records within a file based on the timespan, so other elements in the file can be summarized.

USAGE NOTES: ZONE is not affected by the 13MONTHYEAR option in prefix.MICS.PARMS(SITE).

B.2 - The VSE/POWER Information Area

The VSE/POWER Information Area is supported by the CA MICS Analyzer for VSE. The following sections describe the files supported in this information area:

1 - VSE/POWER Device Activity (PWRPDA) File
2 - VSE/POWER Job Activity (PWRPJB) File
3 - VSE/POWER Output Activity (PWRPOA) File
4 - VSE/POWER Program Activity (PWRPPG) File
5 - VSE/POWER Remote Activity (PWRPRA) File

B.2.1 - VSE/POWER Device Activity (PWRPDA) File

The VSE/POWER Device Activity File quantifies the SIO activity to devices by partitions that are under the control of VSE/POWER. It is built from the SIO segments in the Execution Account Record of VSE/POWER Accounting. Device Class and Device Type are derived from user-supplied configuration parameters.

| P D A S I O C T | Device SIO Count

PDASIOCT contains the SIO count to each device address for the job step(s) represented by the observation.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO:
- PPGDSIO - DASD SIOs Issued
- PPGMXSIO - Maximum SIOs Issued
- PPGOSIO - Other SIOs Issued
- PPGSSIO - Spool SIOs Issued
- PPGTSIO - Tape SIOs Issued

ELEMENT DERIVATION: PDASIOCT contains the value taken from the 4 right-most bytes of each 6 byte entry in the SIO tables maintained in the Type E Execution Account Record (field EXSIOTB).

RANGE OF VALUE: The value of PDASIOCT ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PDASIOCT contains the sum of all occurrences of PDASIOCT that were included in the level of summarization.

USAGE NOTES: None

B.2.2 - VSE/POWER Job Activity (PWRPJB) File

The records in the VSE/POWER Job Activity File quantify the resources consumed by a single POWER job, including all VSE jobs within it. Additional information includes termination reasons, turnaround specifications, and identification fields such as Job Priority, Job Class, etc. The records in this file are built from the Reader Account Record and the Execution Account Record of VSE/POWER Accounting.

P J B A L L T M | All Bound Time

PJBALLTM contains the system wait time prorated to the POWER job(s) represented in the observation. VSE/POWER arrives at this time by dividing the total system wait time by the number of active partitions based on percentage of used processor time.

TYPE: Accumulated data element -- TIME, measurement unit is SAS TIME value.

SEE ALSO: PJBCPUTM - Program Processor Time
PJBEXCTM - Job Execution Time
PJBOVHTM - Overhead Time
PPGALLTM - All Bound Time

ELEMENT DERIVATION: PJBALLTM contains the sum of the PPGALLTM data element from all VSE jobs and steps (program executions) that make up this POWER job.

RANGE OF VALUE: The value of PJBALLTM ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBALLTM contains the sum of all occurrences of PJBALLTM that were included in the level of summarization.

USAGE NOTES: None

P J B B A D C T | Jobs with Bad SIO Counts

PJBBADCT contains the number of POWER jobs that have invalid SIOs (Start Input/Output Operation) counts in at least one job step (program execution). At the DETAIL level, the element contains a '1' if any steps were detected to have an invalid SIO count and '0' otherwise. PJBBADCT is accumulated at the time spans to provide a count of the total number of POWER jobs that had invalid SIO counts.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGBADCT - SIO Count May Be Wrong Flag
PJBSIO - Total SIOs Issued
PJBDSIO - DASD SIOs Issued
PJBOSIO - Other SIOs Issued
PJBSSIO - Spool SIOs Issued
PJBTSIO - Tape SIOs Issued

ELEMENT DERIVATION: If PPGBADCT is '1' for any of the steps that make up this POWER job, then PJBBADCT is set to '1'. Otherwise, PJBBADCT is set to '0'.

RANGE OF VALUE: The value of PJBBADCT ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBBADCT contains the sum of all occurrences of PJBBADCT that were included in the level of summarization.

USAGE NOTES: If PJBBADCT contain any value other than zero, the various data elements that contain SIO counts (PJBSIO, PJBDSIO, PJBOSIO, PJBSSIO, and PJBTSIO) may contain only partial counts of actual SIO activity.

P J B C O S T | Job Cost

PJBCOST is the total processing costs for this POWER job. If CA MICS Accounting and Chargeback is used and this file is selected for billing, then the PJBCOST is updated by CA MICS processing. Otherwise, the value of PJBCOST is set to '0' unless a user-calculated job charge is stored to it.

TYPE: Computed data element -- NUMERIC, measurement unit is REAL NUMBER.

SEE ALSO: PPGCOST - Program Cost
POACOST - Output Cost

ELEMENT DERIVATION: If CA MICS Accounting and Chargeback is used and this file is selected for billing, PJBCOST is updated based on job related charging elements specified in member RATETBL of the prefix.MICS.PARMS library. Otherwise, the value must be computed by the user in one or more of the standard costing exits:

USRSPJB - Job Costing Exit

USRSPPG - Program Costing Exit
USRSPOA - Spool Costing Exit

RANGE OF VALUE: The value of PJBCOST ranges from a minimum of zero to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBCOST contains the sum of all occurrences of PJBCOST that were included in the level of summarization.

USAGE NOTES: None

P J B C O U N T | POWER Jobs Executed

PJBCOUNT contains the total number of POWER job(s) represented by the observation. At the DETAIL level, this value is always '1'. PJBCOUNT is accumulated at the time spans to provide a count of the total number of POWER job executions.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PJBFLUSH - Jobs Flushed
PJBIOERR - Jobs Terminated with I/O Error
PJBEXITC - Jobs Cancelled by RDREXIT

ELEMENT DERIVATION: Each unique execution of a POWER job results in PJBCOUNT being set to '1' in the DETAIL level observation for that POWER job.

RANGE OF VALUE: PJBCOUNT is always 1 at the DETAIL level. It may range from a minimum of 1 to a maximum that is limited only by practical bounds at the other time spans.

SUMMARIZATION PROCESS: PJBCOUNT contains the sum of all occurrences of PJBCOUNT that were included in the level of summarization.

USAGE NOTES: In addition to POWER jobs which had a normal execution, the PJBCOUNT data element includes jobs which were cancelled due to a PFLUSH command (PJBFLUSH), jobs terminated due to an I/O error (PJBIOERR), and jobs cancelled by the POWER reader exit, RDREXIT (PJBEXITC).

P J B C P U N I | Program Instructions

PJBCPUNI contains an approximation of the total number of CPU instructions executed (in millions) for the POWER jobs represented by this observation, calculated by multiplying the measured CPU time by the MIPS rate (millions of instructions per second) specified in the CA MICS library prefix.MICS.PARMS(SYSID).

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PJBCPUTM - Program Processor Time
PPGCPUTM - Program Processor Time

ELEMENT DERIVATION: PJBCPUNI is the accumulation of the PPGCPUNI elements for all VSE job steps (program executions) that make up a POWER job.

RANGE OF VALUE: The value PJBCPUNI ranges from a minimum of zero to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBCPUNI contains the sum of all occurrences of PJBCPUNI that were included in the level of summarization.

USAGE NOTES: PJBCPUNI approximates the total number of CPU instructions based on the user specified MIPS (millions of instructions per second) rate. The value for MIPS rate is usually obtained from manufacturers specifications.

PJBCPUNI is also dependent on the instruction mix used in the program, the contending workload (if any) using the system concurrently with the step, the processor architecture, and the system microcode level. Altering any of these factors will change the reported value of PPGCPUNI for replicated runs, even though the exact same code executes against the exact same data.

When used with caution, PJBCPUNI can be helpful in comparing the relative efficiency of different software implementations of the same function, for example, the "relative path lengths" of two database management systems for a backup/reload cycle performed on equivalent collections of data.

```
+-----------------+
| P J B C P U T M |  Program Processor Time
+-----------------+
PJBCPUTM contains the total processor time used by the POWER
job(s) represented in this observation, excluding allocated
overhead time.

TYPE:   Accumulated data element -- NUMERIC, measurement unit
is SAS TIME value.

SEE ALSO:  PPGCPUTM - Program Processor Time
           PJBALLTM - All Bound Time
           PJBEXCTM - Program Execution Time
           PJBOVHTM - Overhead Time

ELEMENT DERIVATION:  PJBCPUTM is the accumulation of the
PPGCPUTM element for all VSE steps (program executions) that
make up a POWER job.

RANGE OF VALUE:  The value of PJBCPUTM ranges from a minimum
of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS:  PJBCPUTM contains the sum of all
occurrences of PJBCPUTM that were included in the level of
summarization.

USAGE NOTES:  None

All SVC processing is counted as active processor time for
the job or job step and is included in the this element.


+-----------------+
| P J B D R M T   |  Destination Remote
+-----------------+
PJBDRMT is the remote identifier of the RJE workstation that
this POWER job (program execution) was routed to.

TYPE:   Retained data element -- NUMERIC, measurement unit is
INTEGER.

SEE ALSO:  PPGDRMT - Destination Remote
           PJBSRMT - Source Remote

ELEMENT DERIVATION:  PJBDRMT contains the value of PPGDRMT
taken from the last PWRPPG job step observation in the POWER
job if any steps were executed.  Otherwise, PJBDRMT contains
the value input from the EXRDEST field of the Type R Reader
Account Record.

RANGE OF VALUE:  The value of PJBDRMT ranges from 0 to 250,
where a value of 0 indicates destination local.

SUMMARIZATION PROCESS:  PJBDRMT contains the last value of
PJBDRMT encountered in the level of summarization.

USAGE NOTES:  For VSE/POWER Version 2 and above, PJBDRMT
contains a value of zero.

PJBDRMT has meaning only at the DETAIL level.


+-----------------+
| P J B D S I O   |  DASD SIOs Issued
+-----------------+
PJBDSIO contains the total number of DASD SIOs (Start
Input/Output Operations) generated by the POWER jobs (program
executions) described in this observation.

TYPE:   Accumulated data element -- NUMERIC, measurement unit
is INTEGER.

SEE ALSO:  PJBSIO - Total SIOs Issued
           PPGDSIO - DASD SIOs Issued

ELEMENT DERIVATION:  PJBDSIO is the accumulation of the
PPGDSIO element from all steps that make up the POWER job
(program execution).

RANGE OF VALUE:  The value of PJBDSIO ranges from a minimum
of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS:  PJBDSIO contains the sum of all
occurrences of PJBDSIO that were included in the level of
summarization.

USAGE NOTES:  None


+-----------------+
| P J B E P R T Y |  Job Execution Priority
+-----------------+
PJBEPRTY is the execution priority of the last job step
(program execution) for the POWER job represented in this
observation.

TYPE:  Retained data element -- CHARACTER, LENGTH 1.

SEE ALSO:  PJBJPRTY - Job Input Priority
           PPGEPRTY - Job Execution Priority

ELEMENT DERIVATION:  PJBEPRTY contains the value of PPGEPRTY
```

taken from the last step of the POWER job (program execution).

RANGE OF VALUE: The value of PJBEPRTY may range between 0 and 9.

SUMMARIZATION PROCESS: PJBEPRTY contains the last value of PJBEPRTY encountered in the level of summarization.

USAGE NOTES: PJBEPRTY has meaning only at the DETAIL level.

P J B E X C N N | Execution Node Name

The name of the network node on which this POWER job executed.

TYPE: Retained data element -- CHARACTER, LENGTH 8.

SEE ALSO: PPGEXCNN - Execution Node Name
PJBORGNN - Origin Node Name

ELEMENT DERIVATION: PJBEXCNN contains the value of PPGEXCNN taken from the last step of the POWER job.

RANGE OF VALUE: PJBEXCNN can be any valid network node name consisting of one to eight alphanumeric characters, where the first character must be one of the letters A through Z or one of the special characters $, #, and @. Network node names are defined to VSE/POWER via the PNODE macro.

SUMMARIZATION PROCESS: PJBEXCNN contains the last value of PJBEXCNN encountered in the level of summarization.

USAGE NOTES: PJBEXCNN only has meaning at the DETAIL level.

P J B E X C T M | Job Execution Time

PJBEXCTM is the total amount of elapsed time that the POWER job(s) represented in this observation spent in execution. It is the accumulation of the execution time for the various steps of the represented job(s).

TYPE: Accumulated data element -- NUMERIC, measurement unit is SAS TIME value.

SEE ALSO: PPGEXCTM - Program Execution Time
PJBALLTM - All Bound Time
PJBCPUTM - Program Processor Time
PJBOVHTM - Overhead Time

ELEMENT DERIVATION: PJBEXCTM is the accumulation of the PPGEXCTM data element for all steps that make up this POWER job (program execution).

RANGE OF VALUE: The value of PJBEXCTM ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBEXCTM contains the sum of all occurrences of PJBEXCTM that were included in the level of summarization.

USAGE NOTES: None

P J B E X I T C | Jobs Cancelled by RDREXIT

PJBEXITC contains the total number of POWER jobs (program executions) represented in this observation that were cancelled by the POWER reader exit, RDREXIT. At the DETAIL level, this value is either zero or one.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PJBCOUNT - POWER Jobs Executed
PJBPTERM - POWER Termination Code

ELEMENT DERIVATION: PJBEXITC is determined by testing data element PJBPTERM for a value of '60'. If it does equal '60', PJBEXITC is set to '1'. Otherwise, PJBEXITC is set to '0'.

RANGE OF VALUE: The value PJBEXITC is always either '1' or '0' at the DETAIL level, and may range from a minimum of '0' to a maximum that is limited only by practical bounds at other time span levels.

SUMMARIZATION PROCESS: PJBEXITC contains the sum of all occurrences of PJBEXITC that were included in the level of summarization.

USAGE NOTES: None

```
+-----------------+
| P J B F L U S H |  Jobs Flushed
+-----------------+
PJBFLUSH contains the number of POWER jobs (program
executions) represented in this observation that experienced
at least one flushed job step (program execution) that was
cancelled due either to a VSE/POWER PFLUSH command or a VSE
CANCEL command.  At the DETAIL level, the element contains a
one if any steps were detected to have been flushed, and zero
otherwise.

TYPE:   Accumulated data element -- NUMERIC, measurement unit
is INTEGER.

SEE ALSO:  PPGFLUSH - Programs Flushed
           PJBCOUNT - Program Executions
           PJBPTERM - POWER Termination Code
           PJBVTERM - VSE Termination Code

ELEMENT DERIVATION:  CA MICS checks field PPGFLUSH for each
job step used to construct an observation in the PJB file.
If PPGFLUSH is '1' for any of the job steps that make up the
POWER job, then PJBFLUSH is set to '1'.

RANGE OF VALUE:  The value PJBFLUSH is always either '1' or
'0' at the DETAIL level, and may range from a minimum of '0'
to a maximum that is limited only by practical bounds at
other time span levels.

SUMMARIZATION PROCESS:  PJBFLUSH contains the sum of all
occurrences of PJBFLUSH that were included in the level of
summarization.

USAGE NOTES:  None


+-----------------+
| P J B G R P R C |  Job Group Received
+-----------------+
PJBGRPRC is the number of the job group that has been defined
to have the job turnaround or service objective that this
POWER job received.  Job groups and their attendant service
objectives are defined by the installation.  PJBGRPRC is only
applicable to standard job groups (those ranging from 1
through 149).  If multiple job groups were defined to have
the same service objective, then the first one defined with
that service objective will always be used when the job
turnaround time falls within that definition.  If the job
groups were assigned in ascending sequence by the
installation, then this number will be lower than JOBGROUP if
service was better than expected and higher if the service
objective was missed.

TYPE:   Retained data element -- NUMERIC, measurement unit is
INTEGER.

SEE ALSO:  JOBGROUP - Job Group
           PJBTURTM - Job Turnaround Time
           PJBSRVEX - Jobs Exceeding Target
           PJBSRVMS - Jobs Missing Target
           PJBSRVMT - Jobs Meeting Target

ELEMENT DERIVATION:  PJBGRPRC is derived based on the
installation definition of JOBGROUP as described in Section
7.3.3 of the VSE/POWER Analysis Product Guide.

RANGE OF VALUE:  PJBGRPRC contains a value ranging from 1 to
149, or is a missing value for non-standard jobs.

SUMMARIZATION PROCESS:  PJBGRPRC contains the last value of
PJBGRPRC encountered in the level of summarization.

USAGE NOTES:  PJBGRPRC only has meaning at the DETAIL level.


+ -----------------+
|  P J B I N C L S |  Job Input Class
+ -----------------+
PJBINCLS is the job class for the POWER job (program
execution) as coded on the * $$ JOB card or the installation
default.

TYPE:  Retained data element -- CHARACTER, LENGTH 1.

SEE ALSO:  JOBCLASS - Job Input Class

ELEMENT DERIVATION:  PJBINCLS contains the value input from
the RDRICL field of the Type R Reader Account Record.  If the
Type R record in not available, PJBINCLS is taken from the
JOBCLASS data element associated with the first job step or
program execution (PPG file) observation used to construct
this PJB observation.

RANGE OF VALUE:  The value of PJBINCLS may contain any
alphabetic character from A to Z or a one-digit number from 0
through 9.

SUMMARIZATION PROCESS:  PJBINCLS contains the last value of
PJBINCLS encountered in the level of summarization.

USAGE NOTES:  Classes 0 through 9 are the partition-dependent
classes.  Jobs with class 0 are selected for execution only
in the background partition, jobs with class 1 in partition
```

F1, and so on.

If a class is not specified on the * $$ JOB card, VSE/POWER uses the class specified by way of an * $$ CTL statement. If no such statement was given, VSE/POWER uses the class specified in the applicable PSTART command issued for the reader. If no class is specified at all, VSE/POWER assigns class A.

PJBINCLS only has meaning at the DETAIL level.

P J B I N C P U | Input Processor System ID

PJBINCPU is the translated system identification (SYSID) of the VSE system this POWER job (program execution) was read in on. SYSID is derived from the ORGSYSID by the CA MICS SYSID translation process and is defined in the SYSID member of prefix.MICS.PARMS. In turn, ORGSYSID is based on the VSESYSID and/or VSEDDNAM associated with the specification made in the PWROPS member of the same prefix.MICS.PARMS library.

TYPE: Retained data element -- CHARACTER, LENGTH 4.

SEE ALSO: SYSID - System Identification
ORGSYSID - Original System Identification
VSESYSID - VSE System Identifier
VSEDDNAM - VSE DDname

ELEMENT DERIVATION: PJBINCPU is assigned the value of the SYSID data element as translated for the Type R Reader Account Record.

RANGE OF VALUE: 1 to 4 alphabetic and/or numeric characters.

SUMMARIZATION PROCESS: PJBINCPU contains the last value of PJBINCPU encountered in the level of summarization.

USAGE NOTES: PJBINCPU only has meaning at the DETAIL level.

P J B I N D E V | Input Device Name

The name of the input device used by VSE/POWER to input the POWER job (program execution) represented in this observation.

TYPE: Retained data element -- CHARACTER, LENGTH 3.

SEE ALSO: Not applicable

ELEMENT DERIVATION: PJBINDEV contains the value of field RDRADD of the Type R Reader Account Record.

RANGE OF VALUE: The value of this element may contain the reader device or line address (cuu), SNA, or PSP for submission from a partition.

SUMMARIZATION PROCESS: PJBINDEV contains the last value of PJBINDEV encountered in the level of summarization.

USAGE NOTES: PJBINDEV only has meaning at the DETAIL level.

P J B I N Q T M | Input Queue Time

The total elapsed time spent by the POWER job (program execution) in the reader queue.

TYPE: Accumulated data element -- NUMERIC, measurement unit is SAS TIME value.

SEE ALSO: PJBRDRTM - Reader Time
PJBEXCTM - Job Execution Time
STARTTS - Start Time Stamp
PJBRENTS - Job Reader End Time Stamp

ELEMENT DERIVATION: PJBINQTM is calculated as the difference between when the job is finished being read in and when it is selected for execution. The following formula is used:

```
PJBINQTM = MAX(STARTTS - PJBRENTS,0)
```

RANGE OF VALUE: The value of PJBINQTM ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBINQTM contains the sum of all occurrences of PJBINQTM that were included in the level of summarization.

USAGE NOTES: If the clocks on different VSE/POWER systems are not synchronized and a job is read in on one system for execution on another, it is possible that a job might have an execution start time stamp (STARTTS) prior to the job's reader end time stamp (PJBRENTS). In such an instance, PJBINQTM will be set to zero.

```
+-----------------+
| P J B I N V I D |  Input Processor VSE System ID
+-----------------+
PJBINVID is the one character VSE system identifier for the
processor this POWER job was read in on in a shared spool
environment.  For a system generated without shared spool
support, PJBINVID is set to blank.

TYPE:  Retained data element -- CHARACTER, LENGTH 1.

SEE ALSO:  PJBINCPU - Input Process System ID
           VSESYSID - VSE System Identifier

ELEMENT DERIVATION:  PJBINVID contains the value of field
ACSYSID of the Type R Reader Account Record for VSE/POWER
systems generated with shared spool support.  Otherwise, it
is set to a blank.

RANGE OF VALUE:  A one digit number from 1 to 9 or a missing
value (blank) if shared spool support was not generated into
the system.

SUMMARIZATION PROCESS:  PJBINVID contains the last value of
PJBINVID encountered in the level of summarization.

USAGE NOTES:  PJBINVID only has meaning at the DETAIL level.



+-----------------+
| P J B I O E R R |  Jobs Terminated with I/O Error
+-----------------+
PJBIOERR contains the number of POWER jobs (program
executions) represented in this observation that experienced
an I/O error in at least one job step.  At the DETAIL level,
the element contains a '1' if any steps were detected to have
an I/O error and '0' otherwise.

TYPE:   Accumulated data element -- NUMERIC, measurement unit
is INTEGER.

SEE ALSO:  PPGIOERR - Programs Terminated with I/O Error
           PJBCOUNT - Program Executions
           PJBPTERM - POWER Termination Code
           PJBVTERM - VSE Termination Code

ELEMENT DERIVATION:  CA MICS checks field PPGIOERR for each
job step used to construct an observation in the PJB file.
If PPGIOERR is '1' for any of the job steps that make up the
POWER job, then PJBIOERR is set to '1'.  Otherwise, PJBIOERR
is '0'.

RANGE OF VALUE:  The value PJBIOERR is either '1' or '0' at
the DETAIL level, and may range from a minimum of '0' to a
maximum that is limited only by practical bounds at other
time span levels.

SUMMARIZATION PROCESS:  PJBIOERR contains the sum of all
occurrences of PJBIOERR that were included in the level of
summarization.

USAGE NOTES:  None


+-----------------+
| P J B J P R T Y |  Job Input Priority
+-----------------+
PJBJPRTY is the input priority of the POWER job (or program
execution) when it was read into the system.

TYPE:  Retained data element -- CHARACTER, LENGTH 1.

SEE ALSO:  PJBEPRTY - Job Execution Priority
           PPGEPRTY - Job Execution Priority

ELEMENT DERIVATION:  PJBJPRTY contains the value input from
field RDRIPR of the Type R Reader Account Record.  In
VSE/POWER, jobs are assigned a priority based on either a
default priority or on the specification made in the PRI
parameter of the * $$ JOB statement.  If no Type R record was
encountered for the job in CA MICS processing, then PJBJPRTY
is set to the value of PPGEPRTY for the first job step.

RANGE OF VALUE:  The value of PJBJPRTY may range between 0
and 9.

SUMMARIZATION PROCESS:  PJBJPRTY contains the last value of
PJBJPRTY encountered in the level of summarization.

USAGE NOTES:  PJBJPRTY only has meaning at the DETAIL level.


+-----------------+
| P J B M A S K   |  Record Construction Audit Mask
+-----------------+
The PJBMASK data element is two bytes in length, with each
byte signifying the presence or absence of a particular
VSE/POWER account record type used to construct this
observation, as shown below:

    +---------------- Reader Account Record - 'R' or '.'
    |   +--------- Execution Account Record - 'S' or '.'
    |   |
    V   V
```

```
+---+---+
| R | S |      <===  Value of PJBMASK
+---+---+
```

A job having at least one record present for each record type would have a PJBMASK equal to 'RS'. If a record type is not present, it is denoted with a period. For example, if no Execution Account Records were produced for a job due to cancellation by the VSE/POWER reader exit, RDREXIT, the PJBMASK would be equal to 'R.'.

TYPE: Retained data element -- CHARACTER, LENGTH 2.

SEE ALSO: Not applicable

ELEMENT DERIVATION: PJBMASK is constructed at the time all of the available VSE/POWER accounting records for a job are merged together by the CA MICS module DYPWRFMT.

RANGE OF VALUE: Any combination of R or '.' in position 1 and 'S' or '.' in position 2.

SUMMARIZATION PROCESS: PJBMASK contains the last value of PJBMASK encountered in the level of summarization.

USAGE NOTES: PJBMASK provides an audit trail identifying which VSE/POWER record types were used to build each observation in the PWRPJB and PWR_PJ files. PJBMASK can be useful in analyzing the completeness of the job data at the DETAIL level. As noted throughout the VSE/POWER data dictionary, certain PWRPJB and PWR_PJ data elements are dependent upon the Type E Execution Account Records or the Type R Reader Account Record being available. Examination of the PJBMASK will reveal why certain data elements contain missing values.

PJBMASK is only meaningful in the DETAIL timespan.

```
+-----------------+
| P J B M X C T M |  Maximum Job Program Processor Time
+-----------------+
```

PJBMXCTM contains the maximum program processor time used by any one POWER job (program execution) represented in the observation.

TYPE: Maximum value data element -- NUMERIC, measurement unit is SAS TIME value.

SEE ALSO: PJBCPUTM - Program Processor Time

ELEMENT DERIVATION: PJBMXCTM is obtained from PJBCPUTM. At the DETAIL level, it is set equal to PJBCPUTM and at higher summarization levels, it retains the maximum value for a single POWER job.

RANGE OF VALUE: The value of PJBMXCTM ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBMXCTM contains the maximum value for all occurrences of PJBMXCTM in the observations processed for the summarization level.

USAGE NOTES: None

```
+-----------------+
| P J B M X D A S |  Maximum DASD Devices Used
+-----------------+
```

PJBMXDAS is the maximum number of direct access device allocations made by any job step (program execution) in any POWER job.

TYPE: Maximum value data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGMXDAS - Maximum DASD Devices Used

ELEMENT DERIVATION: PJBMXDAS is set to the highest value of PPGMXDAS encountered in the PWRPPG observations used to construct a POWER job observation.

RANGE OF VALUE: The value PJBMXDAS ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBMXDAS contains the maximum value for all occurrences of PJBMXDAS in the observations processed for the summarization level.

USAGE NOTES: None

```
+-----------------+
| P J B M X M U S |  Maximum Step Memory Used
+-----------------+
```

PJBMXMUS contains the maximum amount of memory, in Kilobytes, used by any job step (program execution) in any POWER job.

TYPE: Maximum value data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGMXMUS - Maximum Memory Used

ELEMENT DERIVATION: PJBMXMUS is set to the highest value of PPGMXMUS encountered in the PWRPPG observations used to construct a POWER job observation.

RANGE OF VALUE: The value PJBMXMUS ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBMXMUS contains the maximum value for all occurrences of PJBMXMUS in the observations processed for the summarization level.

USAGE NOTES: None

P J B M X S I O | Maximum Job SIOs Issued

PJBMXSIO contains the maximum number of SIOs (Start Input/Output Operations) issued by any one POWER job (program execution) represented in the observation.

TYPE: Maximum value data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PJBSIO - Total SIOs Issued

ELEMENT DERIVATION: PJBMXSIO is obtained from PJBSIO. At the DETAIL level, it is set equal to PJBSIO and at higher summarization levels, it retains the maximum value for a single POWER job.

RANGE OF VALUE: The value of PJBMXSIO ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBMXSIO contains the maximum value for all occurrences of PJBMXSIO in the observations processed for the summarization level.

USAGE NOTES: None

P J B M X T A P | Maximum Tape Devices Used

PJBMXTAP is the maximum number of tape device allocations made by any job step (program execution) in any POWER job.

TYPE: Maximum value data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGMXTAP - Maximum Tape Devices Used

ELEMENT DERIVATION: PJBMXTAP is set to the highest value of PPGMXTAP encountered in the PWRPPG observations used to construct a POWER job observation.

RANGE OF VALUE: The value PJBMXTAP ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBMXTAP contains the maximum value for all occurrences of PJBMXTAP in the observations processed for the summarization level.

USAGE NOTES: None

P J B O R G I D | Origin User Identification

PJBORGID is the origin identifier for the VSE/POWER job. For remotely submitted jobs, it indicates the RJE workstation (or user) submitting the job.

TYPE: Retained data element -- CHARACTER, LENGTH 8.

SEE ALSO: PPGORGID - Origin User
PJBORGJN - Origin Job Number
PJBORGNN - Origin Node Name

ELEMENT DERIVATION: PJBORGID contains the value of PPGORGID taken from PWRPPG observation representing the last job step of the POWER job if it is available. Otherwise, PJBORGID contains the value input from field RDRFRUS in the Type R Reader Account Record.

RANGE OF VALUE: PJBORGID may contain any valid user identifier. For locally submitted jobs, it is usually set to blanks (a missing value). For remotely submitted jobs, it is usually the letter R followed by the number (from 001 to 250) of the RJE workstation the POWER job was submitted from.

SUMMARIZATION PROCESS: PJBORGID contains the last value of PJBORGID encountered in the level of summarization.

USAGE NOTES: PJBORGID only has meaning at the DETAIL level.

```
+-----------------+
| P J B O R G J N |  Origin Job Number
+-----------------+
PJBORGJN contains the job number assigned at the job's origin
network node.  For locally submitted jobs, PJBORGJN is set to
zero.

TYPE:   Retained data element -- NUMERIC, measurement unit is
INTEGER.

SEE ALSO:  PWRJOBNO - POWER Job Number
           PPGORGJN - Origin Job Number
           PJBORGID - Origin User Identification
           PJBORGNN - Origin Node Name

ELEMENT DERIVATION:  PJBORGJN contains the value of PPGORGJN
taken from the PWRPPG observation representing the last job
step of the POWER job.

RANGE OF VALUE:  0 to 65535.

SUMMARIZATION PROCESS:  PJBORGJN contains the last value of
PJBORGJN encountered in the level of summarization.

USAGE NOTES:  PJBORGJN only has meaning at the DETAIL level.


+-----------------+
| P J B O R G N N |  Origin Node Name
+-----------------+
PJBORGNN is the name of the network node this POWER job came
from or was read in on.  If the VSE/POWER job was not
transmitted to this node from another network node for
execution, then PJBORGNN will equal PJBEXCNN.

TYPE:  Retained data element -- CHARACTER, LENGTH 8.

SEE ALSO:  PPGORGNN - Origin Node Name
           PJBORGID - Origin User
           PJBORGJN - Origin Job Number

RANGE OF VALUE:  PJBORGNN can be any valid network node name
consisting of one to eight alphanumeric characters, where the
first character must be one of the letters A through Z or one
of the special characters $, #, and @.  Network node names
are defined to VSE/POWER via the PNODE macro.

RANGE OF VALUE:  PJBORGNN contains any valid network node
name that may be assigned in the PNODE generation macro.  The
first character must be one of the letters A through Z or one
of the special characters $, #, and @.  The remaining seven
characters may be any alphanumeric characters.

SUMMARIZATION PROCESS:  PJBORGNN contains the last value of
PJBORGNN encountered in the level of summarization.

USAGE NOTES:  PJBORGNN only has meaning at the DETAIL level.


+-----------------+
| P J B O S I O   |  Other SIOs Issued
+-----------------+
PJBOSIO contains the total number of uncategorized SIOs
(Start Input/Output Operations) generated by the POWER jobs
(program executions) described in this observation.

TYPE:  Accumulated data element -- NUMERIC, measurement unit
is INTEGER.

SEE ALSO:  PJBSIO  - Total SIOs Issued
           PPGOSIO - Other SIOs Issued
           PJBDSIO - DASD SIOs Issued
           PJBSSIO - Spool SIOs Issued
           PJBTSIO - Tape SIOs Issued

ELEMENT DERIVATION:  PJBOSIO is the accumulation of the
PPGOSIO element from all steps that make up the POWER job.

RANGE OF VALUE:  The value of PJBOSIO ranges from a minimum
of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS:  PJBOSIO contains the sum of all
occurrences of PJBOSIO that were included in the level of
summarization.

USAGE NOTES:  Non-zero values in this data element may be
indicative of one or more devices attached to the system
which have not been defined to CA MICS in the PWRCONFG member
of prefix.MICS.PARMS.


+-----------------+
| P J B O V H N I |  Overhead Instructions
+-----------------+
PJBOVHNI contains an approximation of the total number of
overhead-related CPU instructions executed (in millions) for
the POWER jobs (program executions) represented in this
observation, calculated by multiplying the measured overhead
processor time by the MIPS rate (millions of instructions per
second) specified in the CA MICS library
prefix.MICS.PARMS(SYSID).
```

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGOVHNI - Overhead Instructions
PJBCPUNI - Program Instructions
PJBOVHTM - Overhead Time

ELEMENT DERIVATION: PJBOVHNI is the accumulation of the PPGOVHNI elements for all VSE job steps that make up a POWER job.

RANGE OF VALUE: The value PJBOVHNI ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBOVHNI contains the sum of all occurrences of PJBOVHNI that were included in the level of summarization.

USAGE NOTES: PJBOVHNI approximates the total number of CPU instructions based on the user specified MIPS (millions of instructions per second) rate. The value for MIPS rate is usually obtained from manufacturers specifications.

PJBOVHNI is also dependent on the instruction mix used in the program, the contending workload (if any) using the system concurrently with the step, the processor architecture, and the system microcode level. Altering any of these factors will change the reported value of PJBOVHNI for replicated runs, even though the exact same code executes against the exact same data.

P J B O V H T M | Overhead Time

PJBOVHTM contains the total processor time needed for activities that cannot be charged to a specific program or partition by the POWER job (program execution) represented in this observation. VSE/POWER distributes this time over the number of active partitions, so this represents the overtime allocated to the program(s) represented by this observation.

TYPE: Accumulated data element -- NUMERIC, measurement unit is SAS TIME value.

SEE ALSO: PPGOVHTM - Overhead Time
PJBALLTM - All Bound Time
PJBCPUTM - Program Processor Time
PJBEXCTM - Program Execution Time

ELEMENT DERIVATION: PJBOVHTM is the accumulation of the PPGOVHTM element for all VSE steps that make up a POWER job.

RANGE OF VALUE: The value of PJBOVHTM ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBOVHTM contains the sum of all occurrences of PJBOVHTM that were included in the level of summarization.

USAGE NOTES: Examples of system overhead processing include the time from the start of the $JOBACCT routine to the processing of the EXEC statement, the time for calling a routine, or the time for error recovery.

All SVC processing is counted as active processor time for the job or job step and is included in the PJBCPUTM (Program Processor Time) data element.

P J B P C S E X | Pct Jobs Exceeding Target

PJBPCSEX is the percentage of POWER jobs (program executions) which exceeded their target for turnaround time.

TYPE: Computed data element -- NUMERIC, measurement unit is REAL NUMBER.

SEE ALSO: PJBSRVEX - Jobs Exceeding Target
PJBTURTM - Job Turnaround Time
PJBTARTM - Job Turnaround Target Time
PJBPCSMS - Pct Jobs Missing Target
PJBPCSMT - Pct Jobs Meeting Target
PJBCOUNT - POWER Jobs Executed

ELEMENT DERIVATION: PJBPCSEX is computed as a percentage of the cumulative element PJBSRVEX to PJBCOUNT.

PJBPCSEX = (PJBSRVEX * 100) / PJBCOUNT

RANGE OF VALUE: The value of PJBPCSEX ranges from a minimum of 0 to a maximum of 100.

SUMMARIZATION PROCESS: PJBPCSEX contains the result of the computation described in ELEMENT DERIVATION. The value is recomputed at each level of summarization.

USAGE NOTES: To report the percentage of jobs that met or exceeded their turnaround time objective, it is necessary to add the service exceeded (PJBPCSEX) and service met (JOBPCSMT) percentages together.

```
+-----------------+
| P J B P C S M S |  Pct Jobs Missing Target
+-----------------+
The percentage of POWER jobs (program executions) which
missed their target for turnaround time.

TYPE:  Computed data element -- NUMERIC, measurement unit is
REAL NUMBER.

SEE ALSO:  PJBSRVMS - Jobs Missing Target
           PJBTURTM - Job Turnaround Time
           PJBTARTM - Job Turnaround Target Time
           PJBPCSEX - Pct Jobs Exceeding Target
           PJBPCSMT - Pct Jobs Meeting Target
           PJBCOUNT - POWER Jobs Executed

ELEMENT DERIVATION:  PJBPCSMS is computed as a percentage of
the cumulative element PJBSRVMS to PJBCOUNT.

    PJBPCSMS = (PJBSRVMS * 100) / PJBCOUNT

RANGE OF VALUE:  The value of PJBPCSMS ranges from a minimum
of 0 to a maximum of 100.

SUMMARIZATION PROCESS:  PJBPCSMS contains the result of the
computation described in ELEMENT DERIVATION.  The value is
recomputed at each level of summarization.

USAGE NOTES:  To report the percentage of jobs that met or
exceeded their turnaround time objective, it is necessary to
add the service exceeded (PJBPCSEX) and service met
(JOBPCSMT) percentages together.


+-----------------+
| P J B P C S M T |  Pct Jobs Meeting Target
+-----------------+
PJBPCSMT is the percentage of POWER jobs (program executions)
which exactly met their target for turnaround time.

TYPE:   Computed data element -- NUMERIC, measurement unit is
REAL NUMBER.

SEE ALSO:  PJBSRVMT - Jobs Meeting Target
           PJBTURTM - Job Turnaround Time
           PJBTARTM - Job Turnaround Target Time
           PJBPCSEX - Pct Jobs Exceeding Target
           PJBPCSMS - Pct Jobs Missing Target
```

```
           PJBCOUNT - POWER Jobs Executed

ELEMENT DERIVATION:  PJBPCSMT is computed as a percentage of
the cumulative element PJBSRVMT to PJBCOUNT.

    PJBPCSMT = (PJBSRVMT * 100) / PJBCOUNT

RANGE OF VALUE:  The value of PJBPCSMT ranges from a minimum
of 0 to a maximum of 100.

SUMMARIZATION PROCESS:  PJBPCSMT contains the result of the
computation described in ELEMENT DERIVATION.  The value is
recomputed at each level of summarization.

USAGE NOTES:  To report the percentage of jobs that met or
exceeded their turnaround time objective, it is necessary to
add the service exceeded (PJBPCSEX) and service met
(JOBPCSMT) percentages together.


+-----------------+
| P J B P T E R M |  POWER Termination Code
+-----------------+
PJBPTERM contains the code indicating the reason for the
termination of a POWER job.  This is defined as the
termination code of the first job step (program execution)
that did not complete successfully.

TYPE:  Retained data element -- CHARACTER, LENGTH 2.

SEE ALSO:  PPGPTERM - POWER Termination Code
           PJBVTERM - VSE Termination Code
           PJBFLUSH - Jobs Flushed
           PJBIOERR - Jobs Terminated with I/O Error

ELEMENT DERIVATION:  If any observation from the PWRPPG file
used in constructing this observation has a PPGPTERM value
other than '10' (Normal end), then PJBPTERM is set to the
value of PPGPTERM for the first such step in the POWER job.

RANGE OF VALUE:  The value PJBPTERM may contain any of the
following values:

          '10' = Normal end of VSE/POWER job or task
          '30' = PSTOP command was issued
          '40' = PFLUSH command was issued
          '60' = The job was cancelled via JOBEXIT
          '70' = The job was cancelled due to an I/O error

SUMMARIZATION PROCESS:  PJBPTERM contains the last value of
PJBPTERM encountered in the level of summarization.
```

USAGE NOTES: Even though a POWER job might end with a termination code of 10, associated VSE jobs may have been cancelled by the system. The PJBVTERM data element must also be checked when analyzing successful versus unsuccessful jobs.

PJBPTERM only has meaning at the DETAIL level.

P J B R D R T M — Reader Time

PJBRDRTM contains the total elapsed time between when a POWER job (program execution) is first recognized by a reader and when it is completely read in and placed on a reader queue.

TYPE: Accumulated data element -- NUMERIC, measurement unit is SAS TIME value.

SEE ALSO: PJBRENTS - Job Reader End Time Stamp
RDRTS - Reader Time Stamp
PJBEXCTM - Job Execution Time
PJBINQTM - Input Queue Time
PJBTURTM - Job Turnaround Time

ELEMENT DERIVATION: PJBRDRTM is calculated as the difference between the reader start time (RDRTS) and the reader end time stamp (PJBRENTS). Both RDRTS and PJBRENTS are obtained from the Type R Reader Account Record. If this record is not available, PJBRDRTM is set to zero.

RANGE OF VALUE: The value PJBRDRTM ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBRDRTM contains the sum of all occurrences of PJBRDRTM that were included in the level of summarization.

USAGE NOTES: None

P J B R E N T S — Job Reader End Time Stamp

PJBRENTS contains the date and time that this POWER job (program execution) was completely read into the system.

TYPE: Retained data element -- NUMERIC, measurement unit is SAS DATETIME value.

SEE ALSO: RDRTS - Reader Time Stamp
STARTTS - Start Time Stamp

ELEMENT DERIVATION: PJBRENTS contains the ending time stamp (fields ACDATE and ACSTOP) extracted from the Type R Reader Account Record, if it is available. Otherwise, PJBRENTS contains the STARTTS taken from the first PWRPPG file job step observation used in constructing this POWER job observation.

RANGE OF VALUE: Not applicable

SUMMARIZATION PROCESS: PJBRENTS contains the last value of PJBRENTS encountered in the level of summarization.

USAGE NOTES: PJBRENTS is only meaningful at the DETAIL level.

P J B S I O — Total SIOs Issued

PJBSIO contains the total number of SIOs (Start Input/Output Operations) generated to all devices by the POWER job (program execution) described in this observation.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGSIO - Total SIOs Issued
PJBDSIO - DASD SIOs Issued
PJBOSIO - Other SIOs Issued
PJBSSIO - Spool SIOs Issued
PJBTSIO - Tape SIOs Issued

ELEMENT DERIVATION: PJBSIO is the accumulation of the PPGSIO element from all steps that make up the POWER job.

RANGE OF VALUE: The value of PJBSIO ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBSIO contains the sum of all occurrences of PJBSIO that were included in the level of summarization.

USAGE NOTES: None

```
+-----------------+
| P J B S P P G   |  Pages Spooled
+-----------------+
PJBSPPG contains the total number of pages spooled by the
POWER jobs represented in this observation.

TYPE:   Accumulated data element -- NUMERIC, measurement unit
is INTEGER.

SEE ALSO:  PPGSPPG - Pages Spooled
           PJBSPPR - Lines Spooled
           PJBSPPU - Cards Spooled

ELEMENT DERIVATION:  PJBSPPG is the accumulation of the
PPGSPPG element from all steps that make up the POWER job.

RANGE OF VALUE:  The value of PJBSPPG ranges from a minimum
of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS:  PJBSPPG contains the sum of all
occurrences of PJBSPPG that were included in the level of
summarization.

USAGE NOTES:  None


+-----------------+
| P J B S P P R   |  Lines Spooled
+-----------------+
PJBSPPR contains the total number of lines spooled by the
POWER job(s) represented in this observation.

TYPE:   Accumulated data element -- NUMERIC, measurement unit
is INTEGER.

SEE ALSO:  PPGSPPR - Lines Spooled
           PJBSPPG - Pages Spooled
           PJBSPPU - Cards Spooled

ELEMENT DERIVATION:  PJBSPPR is the accumulation of the
PPGSPPR element from all steps that make up the POWER job.

RANGE OF VALUE:  The value of PJBSPPR ranges from a minimum
of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS:  PJBSPPR contains the sum of all
occurrences of PJBSPPR that were included in the level of
summarization.

USAGE NOTES:  None
```

```
+-----------------+
| P J B S P P U   |  Cards Spooled
+-----------------+
PJBSPPU contains the total number of cards spooled by the
POWER job(s) represented in this observation.

TYPE:   Accumulated data element -- NUMERIC, measurement unit
is INTEGER.

SEE ALSO:  PPGSPPU - Cards Spooled
           PJBSPPG - Pages Spooled
           PJBSPPR - Lines Spooled

ELEMENT DERIVATION:  PJBSPPU is the accumulation of the
PPGSPPU element from all steps that make up the POWER job.

RANGE OF VALUE:  The value of PJBSPPU ranges from a minimum
of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS:  PJBSPPU contains the sum of all
occurrences of PJBSPPU that were included in the level of
summarization.

USAGE NOTES:  None


+-----------------+
| P J B S R M T   |  Source Remote
+-----------------+
PJBSRMT contains the remote identifier of the RJE workstation
that the POWER job (program execution) came from.  For
locally submitted jobs, this will be set to zero.

TYPE:  Retained data element -- NUMERIC, measurement unit is
INTEGER.

SEE ALSO:  PPGSRMT - Source Remote
           PJBDRMT - Destination Remote

ELEMENT DERIVATION:  PJBSRMT contains the value of PPGSRMT
taken from the last PWRPPG job step observation in the POWER
job if any steps were executed.  Otherwise, PJBSRMT contains
the value input from field RDRFRM of the Type R Reader
Account Record.

RANGE OF VALUE:  The value of PJBSRMT ranges from a minimum
of 0 to a maximum of 250.

SUMMARIZATION PROCESS:  PJBSRMT contains the last value of
PJBSRMT encountered in the level of summarization.

USAGE NOTES:  PJBSRMT only has meaning at the DETAIL level.
```

```
+-----------------+
| P J B S R V E X |  Jobs Exceeding Target
+-----------------+
PJBSRVEX contains the count of the number of times that jobs
received turnaround that was better, or in excess of, what
was requested.

A target turnaround time (PJBTARTM) is established for each
standard JOBGROUP by the installation.  If the turnaround
time (PJBTURTM) received is less than the target turnaround
time for the next better JOBGROUP, then the job exceeded its
target.

    Example:  JOBGROUP    TURNAROUND TARGET
                 1              10 Minutes
                 2              30 Minutes
                 3              60 Minutes

    Job Exceeding Target:

    If JOBGROUP 2 is requested and the turnaround received
    is less than or equal to 10 minutes, then service
    exceeded the request.

For deadline JOBGROUPs, it means that the job came in after
the required submit time but was still able to be turned
around before the specified completion time.

At the DETAIL level, PJBSRVEX contains either '1' or '0'.  At
higher summarization levels, it is accumulated to provide a
count of jobs exceeding their turnaround objectives.

TYPE:  Accumulated data element -- NUMERIC, measurement unit
is INTEGER.

SEE ALSO:  PJBPCSEX - Pct Jobs Exceeding Target
           PJBTURTM - Job Turnaround Time
           PJBTARTM - Job Turnaround Target Time
           PJBSRVMS - Jobs Missing Target
           PJBSRVMT - Jobs Meeting Target

ELEMENT DERIVATION:  PJBSRVEX is set to '1' if the PJBTURTM
received is less than or equal to the target turnaround time
for the next better job group than was requested.  Otherwise,
it is set to '0'.

RANGE OF VALUE:  The value of PJBSRVEX ranges from a minimum
of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS:  PJBSRVEX contains the sum of all
occurrences of PJBSRVEX that were included in the level of
summarization.

USAGE NOTES:  None


+-----------------+
| P J B S R V M S |  Jobs Missing Target
+-----------------+
PJBSRVMS contains the count of the number of times that jobs
received turnaround that missed, or was greater than, what
was requested.

A target turnaround time (PJBTARTM) is established for each
standard JOBGROUP by the installation.  If the turnaround
time (PJBTURTM) received is greater than the target
turnaround time for the JOBGROUP, then the job turnaround
missed its target.

    Example:  JOBGROUP    TURNAROUND TARGET
                 1              10 Minutes
                 2              30 Minutes
                 3              60 Minutes

    Job Missed Target:

    If JOBGROUP 2 is requested and the turnaround received
    is greater than 30 minutes, then the service missed the
    request.

For deadline JOBGROUPs, it means that the job came in before
the required submit time but was not turned around before the
specified completion time.

At the DETAIL, level PJBSRVMS contains either '1' or '0'.  At
higher summarization levels, it is accumulated to provide a
count of jobs missing their turnaround objectives.

TYPE:   Accumulated data element -- NUMERIC, measurement unit
is INTEGER.

SEE ALSO:  PJBPCSMS - Pct Jobs Missing Target
           PJBTURTM - Job Turnaround Time
           PJBTARTM - Job Turnaround Target Time
           PJBSRVEX - Jobs Exceeding Target
           PJBSRVMT - Jobs Meeting Target

ELEMENT DERIVATION:  PJBSRVMS is set to '1' if the PJBTURTM
received is greater than the PJBTARTM expected.  Otherwise,
it is set to '0'.
```

RANGE OF VALUE: The value of PJBSRVMS ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBSRVMS contains the sum of all occurrences of PJBSRVMS that were included in the level of summarization.

USAGE NOTES: None

| P J B S R V M T | Jobs Meeting Target

PJBSRVMT contains the count of the number of times that jobs received turnaround that were within, or met, what was requested.

A target turnaround time (PJBTARTM) is established for each standard JOBGROUP by the installation. If the turnaround time (PJBTURTM) received is less than the target turnaround time for the JOBGROUP and still above the target for the next better JOBGROUP, then the job turnaround met its target.

```
Example:  JOBGROUP TURNAROUND TARGET
               1 10 Minutes
               2 30 Minutes
               3 60 Minutes
```

Job Met Target:

If JOBGROUP 2 is requested and the turnaround received is less than or equal to 30 minutes and greater than 10 minutes, then the service met the request.

For deadline JOBGROUPs, it means that the job came in before the required submit time and was turned around before the specified completion time.

At the DETAIL level, PJBSRVMT contains either '1' or '0'. At higher summarization levels, it is accumulated to provide a count of jobs missing their turnaround objectives.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PJBPCSMT - Pct Jobs Meeting Target
PJBTURTM - Job Turnaround Time
PJBTARTM - Job Turnaround Target Time
PJBSRVEX - Jobs Exceeding Target
PJBSRVMS - Jobs Missing Target

ELEMENT DERIVATION: PJBSRVMT is set to '1' if the PJBTURTM received is less than or equal to the PJBTARTM expected, but not better than the PJBTARTM of the next better JOBGROUP. Otherwise, it is set to '0'.

RANGE OF VALUE: The value of PJBSRVMT ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBSRVMT contains the sum of all occurrences of PJBSRVMT that were included in the level of summarization.

USAGE NOTES: None

| P J B S S I O | Spool SIOs Issued

PJBSSIO contains the total number of spool SIOs (Start Input/Output Operations) generated by the POWER job (program execution) described in this observation.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PJBSIO - Total SIOs Issued
PPGSSIO - Spool SIOs Issued

ELEMENT DERIVATION: PJBSSIO is the accumulation of the PPGSSIO element from all steps that make up the POWER job.

RANGE OF VALUE: The value of PJBSSIO ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBSSIO contains the sum of all occurrences of PJBSSIO that were included in the level of summarization.

USAGE NOTES: None

| P J B S T E P S | Phases Executed

PJBSTEPS contains the total number of job steps (program executions) in the POWER job(s) represented in this observation.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: Not applicable

ELEMENT DERIVATION: PJBSTEPS is a cumulative count of the number of Type E Execution Account records that make up this POWER job.

RANGE OF VALUE: The value PJBSTEPS ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBSTEPS contains the sum of all occurrences of PJBSTEPS that were included in the level of summarization.

USAGE NOTES: None

P J B S U S P N | Job Suspend Flag

PJBSUSPN defines the data suspend status for jobs that are still being carried in the Job Suspend File (PWR_PJ).

TYPE: Retained data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PJBMASK - Record Construction Audit Mask

ELEMENT DERIVATION: PJBSUSPN is a cumulative count of the number of days this job was and is in a state of suspension while being maintained in the VSE/POWER Job Suspend File.

RANGE OF VALUE: PJBSUSPN is equal to 0 when in the VSE/POWER Job Activity File and is a value of 1 to 10 while in the VSE/POWER Job Suspend File.

SUMMARIZATION PROCESS: PJBSUSPN contains the last value of PJBSUSPN encountered in the level of summarization.

USAGE NOTES: The PJBSUSPN element is useful in doing daily reporting where it is necessary to use both complete job data and data for jobs still held in suspension. The key is to not report a suspended job more than one time while it is in a suspended status.

To report on the jobs processed yesterday, both the VSE/POWER Job Activity File and VSE/POWER Job Suspend File should be input. The PJBSUSPN element should be used to report complete jobs (PJBSUSPN=0) or jobs that have been in suspend for only one day (PJBSUSPN=1). This technique is shown below:

```
   DATA;
   SET &PPWRX..PWRPJB01 &PPWRX..PWR_PJ01;
   IF PJBSUSPN LE 1;
```

PJBSUSPN is only meaningful at the DETAIL level.

P J B S Y S I N | Input Cards Read

PJBSYSIN contains the total number of records read by the reader for the POWER job (program execution) represented in this observation.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PJBTKOBL - Input Storage Tracks

ELEMENT DERIVATION: PJBSYSIN contains the value input from the RDRNUM field of the Type R Reader Account Record if available. Otherwise, PJBSYSIN is set to zero.

RANGE OF VALUE: The value of PJBSYSIN ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBSYSIN contains the sum of all occurrences of PJBSYSIN that were included in the level of summarization.

USAGE NOTES: None

P J B T A R T M | Job Turnaround Target Time

PJBTARTM contains the target turnaround time for a standard job group and is defined by the installation as a service objective for each standard JOBGROUP. The turnaround target time as reported for the job is relative to its JOBGROUP classification. For deadline, open, and CA MICS reserved job groups, this element is set to missing. The target turnaround times are defined in the PWRGROUP member in prefix.MICS.PARMS.

TYPE: Retained data element -- NUMERIC, measurement unit is SAS TIME value.

SEE ALSO: PJBSRVEX - Jobs Exceeding Target
PJBSRVMS - Jobs Missing Target
PJBSRVMT - Jobs Meeting Target

PJBTURTM - Job Turnaround Time
PJBPCSEX - Pct Jobs Exceeding Target
PJBPCSMS - Pct Jobs Missing Target
PJBPCSMT - Pct Jobs Meeting Target

ELEMENT DERIVATION: PJBTARTM is obtained by matching the JOBGROUP for this job to installation predefined target values. PJBTARTM is set to missing for deadline and open job groups.

RANGE OF VALUE: Installation dependent.

SUMMARIZATION PROCESS: PJBTARTM contains the value of the last occurrence of PJBTARTM in the observations processed for the summarization level.

USAGE NOTES: At the DETAIL level, it can be useful to compare actual turnaround time (PJBTURTM) to the objective (PJBTARTM).

P J B T K O B L | Input Storage Tracks

For VSE/POWER Versions 2.1 and 2.2, PJBTKOBL contains the number of tracks used for input storage of the POWER job (program execution) represented in the observation. For VSE/POWER Versions 2.3 and above, PJBTKOBL contains the number of data block (DBLK) groups used for input storage of the POWER job (program execution) represented in the observation.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PJBSYSIN - Input Cards Read
POATKOBL - Tracks or Blocks for Storage

ELEMENT DERIVATION: PJBTKOBL contains the value of field RDRTRK from the Type R Reader Account Record for the POWER job, if available. Otherwise, PJBTKOBL is set to zero.

RANGE OF VALUE: The value of PJBTKOBL ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBTKOBL contains the sum of all occurrences of PJBTKOBL that were included in the level of summarization.

USAGE NOTES: For VSE/POWER Versions 2.3 and above at the DETAIL level, analysis of PJBTKOBL and POATKOBL for all jobs can be useful in determining whether an appropriate size has been chosen for DBLK groups in the DBLKGP operand of the POWER generation macro. If a high percentage of queue entries have 1 allocated DBLK group (a value of one for PJBTKOBL or POATKOBL), it might be an indication that the DBLK group size is too high. Since a DBLK group is the smallest unit of spool space the VSE/POWER allocates to a job, this can result in fragmentation on the spool volume(s), causing the system to run out of spool space because data blocks are being wasted in each DBLK group.

P J B T O H R S | Tape Occupancy Hours

PJBTOHRS is a measure of the tape device resource usage of the POWER job represented in this observation. Its value is the sum of the occupancy hours for the various steps that make up the job (program execution). For each step, occupancy hours are calculated as the product of the number of tape drives allocated and the number of hours of execution (elapsed) time accumulated by the step.

TYPE: Accumulated data element -- NUMERIC, measurement unit is REAL NUMBER.

SEE ALSO: PPGTOHRS - Tape Occupancy Hours
PPGEXCTM - Program Execution Time
PPGMXTAP - Maximum Tape Devices Used
PJBVKHRS - Virtual Kcore Hours

ELEMENT DERIVATION: PJBTOHRS is the accumulation of the PPGTOHRS element for all steps that make up this job.

RANGE OF VALUE: The value PJBTOHRS ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBTOHRS contains the sum of all occurrences of PJBTOHRS that were included in the level of summarization.

USAGE NOTES: None

P J B T S I O | Tape SIOs Issued

PJBTSIO contains the total number of Tape SIOs (Start Input/Output Operations) generated by the POWER job (program execution) described by this observation.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PJBSIO - Total SIOs Issued
PPGTSIO - Tape SIOs Issued

ELEMENT DERIVATION: PJBTSIO is the accumulation of the PPGTSIO element from all steps that make up the POWER job.

RANGE OF VALUE: The value of PJBTSIO ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBTSIO contains the sum of all occurrences of PJBTSIO that were included in the level of summarization.

USAGE NOTES: None

P J B T U R T M | Job Turnaround Time

PJBTURTM is the total amount of time required for this job to turnaround as defined by the installation. The definition of turnaround time is installation unique and, for standard job groups, may consist of the sum of any of the following:

PJBRDRTM - Reader Time
PJBINQTM - Input Queue Time
PJBEXCTM - Job Execution Time

Alternatively, PJBTURTM may be computed by the installation by inclusion of source code to do so in member PWRTNRTE of the CA MICS parameter library, prefix.MICS.PARMS. This code, if used, would supersede the standard CA MICS derivation utilizing the aforementioned times. For deadline and open job groups, this element is set to missing.

TYPE: Accumulated data element -- NUMERIC, measurement unit is SAS TIME value.

SEE ALSO: JOBGROUP - Job Group
PJBTARTM - Job Turnaround Target Time
PJBRDRTM - Reader Time
PJBINQTM - Input Queue Time
PJBEXCTM - Job Execution Time

ELEMENT DERIVATION: PJBTURTM is derived by summarizing the elements listed above based upon the installation specification in member PWRGROUP of prefix.MICS.PARMS. Alternately, the installation may code its own routine for the computation of PJBTURTM and place it in member PWRTNRTE of prefix.MICS.PARMS. The installation may specify different time values to be used for locally and remotely processed jobs.

RANGE OF VALUE: The value of PJBTURTM ranges from a minimum of zero to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBTURTM contains the sum of all occurrences of PJBTURTM that were included in the level of summarization.

USAGE NOTES: In other than the DETAIL timespan, PJBTURTM divided by PJBCOUNT (Job Count) would provide an average turnaround time for POWER jobs with a JOBGROUP value below 150 (standard jobs). Consideration should be given to subtracting the non-execution type jobs from PJBCOUNT, such as those cancelled by RDREXIT.

P J B V J O B S | VSE Jobs Executed

PJBVJOBS contains the total number of VSE jobs contained in the POWER job(s) represented by this observation.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: VSEJOB - VSE Job Name

ELEMENT DERIVATION: PJBVJOBS is a cumulative count of the number of VSE jobs that make up this POWER job. PJBVJOBS is set to one for the first PWRPPG observation that makes up this POWER job. PJBVJOBS is incremented by one each time the value of VSEJOB (VSE job name) changes in the PWRPPG observations that make up this POWER job.

RANGE OF VALUE: The value of PJBVJOBS ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PJBVJOBS contains the sum of all occurrences of PJBVJOBS that were included in the level of summarization.

USAGE NOTES: If a POWER job is composed of successive VSE jobs with the same job name, CA MICS treats these VSE jobs as a single VSE job for purposes of computing PJBVJOBS.

```
+-----------------+
| P J B V K H R S |  Virtual Kcore Hours
+-----------------+
PJBVKHRS is a measure of the memory resource usage of the
POWER job(s) represented by this observation.  Its value is
the sum of the virtual Kilobyte hours for the various steps
that make up the job(s).  For each step, virtual Kilobyte
hours is calculated as the product of the kilobytes of memory
used and the number of hours of execution (elapsed) time
accumulated by the step.

TYPE:   Accumulated data element -- NUMERIC, measurement unit
is REAL NUMBER.

SEE ALSO:  PPGVKHRS - Virtual Kcore Hours
           PPGEXCTM - Program Execution Time
           PPGMEMUS - Kilobytes Memory Used
           PJBTOHRS - Tape Occupancy Hours

ELEMENT DERIVATION:  PJBVKHRS is the accumulation of the
PPGVKHRS element for all steps that make up this job.

RANGE OF VALUE:  The value PJBVKHRS ranges from a minimum of
0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS:  PJBVKHRS contains the sum of all
occurrences of PJBTOHRS that were included in the level of
summarization.

USAGE NOTES:  None



+-----------------+
| P J B V T E R M |  VSE Termination Code
+-----------------+
PJBVTERM contains the code indicating the reason for the
termination of a VSE job contained in the VSE/POWER job
represented by this observation.

TYPE:  Retained data element -- CHARACTER, LENGTH 2.

SEE ALSO:  PPGVTERM - VSE Termination Code
           PJBPTERM - POWER Termination Code
           PJBFLUSH - Jobs Flushed
           PJBIOERR - Jobs Terminated with I/O Error

ELEMENT DERIVATION:  If any observation from the PWRPPG file
used in constructing this observation has a PPGVTERM value
other than '10' (Normal end) or '30' (PSTOP command issued),
then PJBVTERM is set to the value of PPGVTERM for the first
such step in the VSE/POWER job.

RANGE OF VALUE:  The value PJBVTERM may contain any of the
following values:

          '10' = Normal end of VSE/POWER step
          '30' = PSTOP command was issued
          '40' = PFLUSH command was issued
          '70' = The step was cancelled due to an I/O error
          'xx' = Other possible 2 character termination codes
                 based on the  SVC in  control at the time of
                 termination.

SUMMARIZATION PROCESS:  PJBVTERM contains the last value of
PJBVTERM encountered in the level of summarization.

USAGE NOTES:  PJBVTERM only has meaning at the DETAIL level.

Values other than '10' and '30' do not necessarily mean that
an abnormal termination occurred.  The VSE termination code
can be installation and environment dependent.  Consult your
VSE systems programmer for assistance.
```

B.2.3 - VSE/POWER Output Activity (PWRPOA) File

The VSE/POWER Output Activity File quantifies the print and punch activity of the VSE/POWER system. Observations in this file are built from the List Account Record, the Punch Account Record, and the Transmitter/Receiver Record of VSE/POWER Accounting.

| P O A A C T N N | Action Node Name

POAACTNN contains the name of the system node on which the output represented by this observation was generated. The node name is defined to VSE/POWER in the PNODE generation macro.

TYPE: Retained data element -- CHARACTER, LENGTH 8.

SEE ALSO: POAADJNN - Adjacent Node Name

ELEMENT DERIVATION: POAACTNN contains the value input from either field NACCURR of the Type M or V Transmitter/Receiver Account Record, field PUNNODE of the Type P Punch Account Record, or field LSTNODE of the Type L List Account Record.

RANGE OF VALUE: POAACTNN may contain any combination of one to eight alphanumeric characters; the first character must be one of the letters A through Z or one of the special characters $, # and @.

SUMMARIZATION PROCESS: POAACTNN contains the last value of POAACTNN encountered in the level of summarization.

USAGE NOTES: If shared spooling is being used, all sharing systems are defined to VSE/POWER with the same node name in the PNODE generation macro with LOCAL=YES also specified.

POAACTNN is only meaningful at the DETAIL level.

| P O A A C T T M | Active Time

POAACTTM contains the active time of the list, punch, or transmit/receive operation.

TYPE: Accumulated data element -- NUMERIC, measurement unit is SAS TIME value.

SEE ALSO: Not applicable

ELEMENT DERIVATION: POAACTTM is calculated by CA MICS as the difference between the end time contained in the ACSTOP field and the start time contained in the ACSTRT field of the common header information contained in the VSE/POWER Account Record used to construct the observation.

RANGE OF VALUE: The value of POAACTTM ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: POAACTTM contains the sum of all occurrences of POAACTTM that were included in the level of summarization.

USAGE NOTES: None

| P O A A D J N N | Adjacent Node Name

POAADJNN contains the name of the network node physically adjacent to the node on which this output was processed. It is defined only for output sent via a network connection.

TYPE: Retained data element -- CHARACTER, LENGTH 8

SEE ALSO: POAACTNN - Action Node Name

ELEMENT DERIVATION: POAADJNN contains the value input from field NACADJ of the Type M or V Transmitter/Receiver Account Record. For observations derived from either the Type L List Account Record, or the Type P Punch Account Record, POAADJNN is set to missing (blanks).

RANGE OF VALUE: POAADJNN may contain any combination of one to eight alphanumeric characters; the first character must be one of the letters A through Z or one of the special characters $, # and @.

SUMMARIZATION PROCESS: POAADJNN contains the last value of POAADJNN encountered in the level of summarization.

USAGE NOTES: POAADJNN is only meaningful at the DETAIL level.

POAADJNN reflects the physical network configuration by indicating the next network node the transmitted output must pass through to reach the destination node.

| P O A C N L R | Control Logical Records

POACNLR contains the count of the number of control records either transmitted or received by the system network node for the job(s) or output(s) represented by this observation. POACNLR is only applicable to network transmissions or receptions.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: Not applicable

ELEMENT DERIVATION: POACNLR contains the value input from field NACCNTC of the Type M or V Transmitter/Receiver Account Record. For observations derived from either the Type L List Account Record or the Type P Punch Account Record, POACNLR is set to missing.

RANGE OF VALUE: The value of POACNLR ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: POACNLR contains the sum of all occurrences of POACNLR that were included in the level of summarization.

USAGE NOTES: None

| P O A C O S T | Output Cost

The total processing costs for this output. If CA MICS Accounting and Chargeback is used and this file is selected for billing, then the value of POACOST is updated by CA MICS processing. Otherwise, the value of POACOST is set to zero unless a user-calculated output charge is stored to it.

TYPE: Computed data element -- NUMERIC, measurement unit is REAL NUMBER.

SEE ALSO: PJBCOST - Job Cost
PPGCOST - Program Cost

ELEMENT DERIVATION: If CA MICS Accounting and Chargeback is used and this file is selected for billing, POACOST is updated based on charging element specifications for this file. Otherwise, the value is computed by the user in the USRSPOA exit.

RANGE OF VALUE: The value of POACOST ranges from a minimum of zero to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: POACOST contains the sum of all occurrences of POACOST that were included in the level of summarization.

USAGE NOTES: None

| P O A C O U N T | Activity Count

POACOUNT contains the number of DETAIL level observations that have been summarized into this observation.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: Not applicable

ELEMENT DERIVATION: At the DETAIL level, this data element is set to 1. As observations are summarized into a given time span supported for this file, POACOUNT accumulates the number of records that have been summarized into the new observation created at that level.

RANGE OF VALUE: The value of POACOUNT ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: POACOUNT contains the sum of all occurrences of POACOUNT that were included in the level of summarization.

USAGE NOTES: None

| P O A C P S P R | Copies Printed

POACPSPR is the number of output copies printed, punched, or transmitted. If the value of POACPSPR is greater than one, the statistics in this observation represent the totals for all copies.

TYPE: Retained data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: POANLR - Logical Writer Records
POAENLR - Extra Logical Writer Records

POAEPGE - Extra Pages Printed
POAPGE - Pages Printed

ELEMENT DERIVATION: POACPSPR contains the value input from either field LSTCOP of the Type L List Account Record, field PUNCOP of the Type P Punch Account Record, or field NACCOP of the Type M or V Transmitter/Receiver Account Record.

RANGE OF VALUE: The value of POACPSPR ranges from a minimum of 1 to a maximum of 255.

SUMMARIZATION PROCESS: POACPSPR contains the last value of POACPSPR encountered in the level of summarization.

USAGE NOTES: POACPSPR is only meaningful at the DETAIL level.

| P O A C P Y M D | 3800 Copy Modification Module Name

POACPYMD contains the name of a copy modification module loaded into the 3800 Printing Subsystem. This module contains predefined data such as legends and column headings as well as where an on which copies the data is to be printed. This data element applies only to 3800 printers.

TYPE: Retained data element -- CHARACTER, LENGTH 8.

SEE ALSO: POAFLASH - 3800 Forms Overlay Name

ELEMENT DERIVATION: POACPYMD only has meaning for list output directed to a 3800 printer. POACPYMD contains the value input from field LSTCPYG of the Type L List Account Record. For output that is not directed to a 3800 printer, POACPYMD is set to missing (blanks). For observations derived from either the Type P Punch Account Record or the Type M or V Transmitter/Receiver Account Records, POACPYMD is set to missing (blanks).

RANGE OF VALUE: The value of this data element is 'MOD1' followed by four alphanumeric characters.

SUMMARIZATION PROCESS: POACPYMD contains the last value of POACPYMD encountered in the level of summarization.

USAGE NOTES: POACPYMD is only meaningful at the DETAIL level.

| P O A D R M T | Destination Remote

POADRMT contains the ID of the remote system or workstation to which output is to be sent. Both list and punch output can be routed to other network nodes.

TYPE: Retained data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: POASRMT - Source Remote

ELEMENT DERIVATION: POADRMT contains the value input from either field LSTTO of the Type L List Account Record or field PUNTO of the Type P Punch Account Record. For observations derived from the Type M or V Transmitter/Receiver Account Record, POADRMT is set to missing.

RANGE OF VALUE: The value POADRMT ranges from a minimum of 0 to a maximum of 250. A value of 0 indicates destination local.

SUMMARIZATION PROCESS: POADRMT contains the last value of POADRMT encountered in the level of summarization.

USAGE NOTES: POADRMT is only meaningful at the DETAIL level.

| P O A D S T I D | Destination User Identification

POADSTID contains the VSE/POWER destination identifier. For output routed to a remote destination, this identifies the RJE workstation (user) to which the output is being sent.

TYPE: Retained data element -- CHARACTER, LENGTH 8.

SEE ALSO: POADSTNN - Destination Node Name

ELEMENT DERIVATION: POADSTID contains the value input from either field LSTTOUS of the Type L List Account Record, field PUNTOUS of the Type P Punch Account Record, or field NACTUS of the Type M or V Transmitter/Receiver Account Record.

RANGE OF VALUE: POADSTID may contain any valid user identifier. For a locally routed output or job it is usually set to blanks (a missing value), and for a remotely routed output or job it is usually the letter R followed by the number (from 001 to 250) of the destination RJE workstation.

SUMMARIZATION PROCESS: POADSTID contains the last value of

POADSTID encountered in the level of summarization.

USAGE NOTES: POADSTID only has meaning at the DETAIL level.

| P O A D S T N N | Destination Node Name

POADSTNN is the name of the destination node for jobs or output transmitted or received over the network. The node name is defined to VSE/POWER in the PNODE generation macro. It is not applicable for list or punched output unless it is either transmitted or received.

TYPE: Retained data element -- CHARACTER, LENGTH 8.

SEE ALSO: POADSTID - Destination User Identification

ELEMENT DERIVATION: POADSTNN contains the value input from field NACTN of the Type M or V Transmitter/Receiver Account Record. For observations derived from the Type L List Account Record or the Type P Punch Account Record, POADSTNN is set to missing (blanks).

RANGE OF VALUE: POADSTNN may contain any combination of one to eight alphanumeric characters; the first character must be one of the letters A through Z or one of the special characters $, # and @.

SUMMARIZATION PROCESS: POADSTNN contains the last value of POADSTNN encountered in the level of summarization.

USAGE NOTES: POADSTNN is only meaningful at the DETAIL level.

| P O A E N L R | Extra Logical Writer Records

POAENLR contains the number of extra records, for the output(s) represented by this observation, printed or punched due to a restart, a PSETUP request, separator pages, or extra copies.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: POANLR - Logical Writer Records
POACPSPR - Copies Printed
POAEPGE - Extra Pages Printed
POAPGE - Pages Printed

ELEMENT DERIVATION: POAENLR contains the value input from either field LSTEXR of the Type L List Account Record or field PUNEXR of the Type P Punch Account Record. For observations derived from the Type M or V Transmitter/Receiver Account Records, POAENLR is set to missing.

RANGE OF VALUE: The value of POAENLR ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: POAENLR contains the sum of all occurrences of POAENLR that were included in the level of summarization.

USAGE NOTES: None

| P O A E P G E | Extra Pages Printed

POAEPGE contains the number of extra pages printed due to PRESTART, PSETUP, separator pages or extra copies for the output(s) represented by the observation.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: POAPGE - Pages Printed
POAENLR - Extra Logical Writer Records
POANLR - Logical Writer Records
POACPSPR - Copies Printed

ELEMENT DERIVATION: POAEPGE contains the value input from field LSTEXP of the Type L List Account Record. For observations derived from either the Type P Punch Account Record or the Type M or V Transmitter/Receiver Account Record, POAEPGE is set to missing.

RANGE OF VALUE: The value of POAEPGE ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: POAEPGE contains the sum of all occurrences of POAEPGE that were included in the level of summarization.

USAGE NOTES: None

| P O A F L A S H | 3800 Forms Overlay Name

POAFLASH contains the 3800 printer forms flash identifier. It is only applicable to output process by a 3800 subsystem.

TYPE: Retained data element -- CHARACTER, LENGTH 4.

SEE ALSO: POACPYMD - 3800 Copy Modification Module Name

ELEMENT DERIVATION: POAFLASH only has meaning for list output directed to a 3800 printer. POAFLASH contains the value input from field LSTFLSH of the Type L List Account Record. For output that is not directed to a 3800 printer, POAFLASH is set to missing (blanks). For observations derived from either the Type P Punch Account Record or the Type M or V Transmitter/Receiver Account Records, POAFLASH is set to missing (blanks).

RANGE OF VALUE: The element may contain any combination of one to four alphanumeric characters.

SUMMARIZATION PROCESS: POAFLASH contains the last value of POAFLASH encountered in the level of summarization.

USAGE NOTES: POAFLASH is only meaningful at the DETAIL level.

| P O A L S T S G | Last Segment Indicator

VSE/POWER job output can be segmented, that is part of the output from a job can be printed or punched before the entire job is finished. Each segment is given a different number. The last segment of the series is flagged. POALSTSG is the indicator of the last segment.

TYPE: Retained data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: POASEGCT - Segment Count

ELEMENT DERIVATION: CA MICS uses either field LSTSUF of the Type L List Account Record, field PUNSUF of the Type P Punch Account Record, or field NACSUF of the Type M or V Transmitter/Receiver Account Record to determine how many segments of output a given POWER job has. If this field has X'00' in it, this indicates that the job only had one segment. Any value less than X'80' represents the segment number for a job that produced multiple segments. Finally, if the value is greater than or equal to X'80', it indicates that this record contains information about the last output segment and the low-order seven bits contain the total number of segments for the job. CA MICS places LSTSUF, PUNSUF, or NACSUF in a field called WRKFLGN1 and POALSTSG is then determined by the following method:

```
IF WRKFLGN1 EQ 0 THEN DO;
  POALSTSG = 1;
  END;
ELSE DO;
  POALSTSG = WRKFLGN1 GE 128;    /*  GE X'80'  */
  END;
```

RANGE OF VALUE: The value of POALSTSG is either 0 or 1.

SUMMARIZATION PROCESS: POALSTSG contains the last value of POALSTSG encountered in the level of summarization.

USAGE NOTES: POALSTSG is only meaningful at the DETAIL level.

| P O A N L R | Logical Writer Records

POANLR contains the number of lines printed, records punched, or records transmitted or received over the network for the job(s) or output(s) represented by the observation.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: POAENLR - Extra Logical Writer Records

ELEMENT DERIVATION: POANLR contains the value input from either field LSTNUM of the Type L List Account Record, field PUNNUM of the Type P Punch Account Record, or field NACCNTD of the Type M or V Transmitter/Receiver Record.

RANGE OF VALUE: The value of POANLR ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: POANLR contains the sum of all occurrences of POANLR that were included in the level of summarization.

USAGE NOTES: None

```
+-----------------+
| P O A N X D E L | Records Deleted by NETEXIT/XMTEXIT
+-----------------+
POANXDEL contains the number of records deleted from
transmitted jobs or output by the NETEXIT or XMTEXIT
routines.  This measurement was introduced with VSE/POWER
Version 5.1.

TYPE:  Accumulated data element -- NUMERIC, measurement unit
is INTEGER.

SEE ALSO:  POANXINS - Records Inserted by NETEXIT/XMTEXIT
           POAXRDEL - Records Deleted by the OUTEXIT Routine
           POAXRINS - Records Inserted by the OUTEXIT Routine

ELEMENT DERIVATION:  POANXDEL contains the value input from
field NACDLR of the Type V (Receiver) or Type M (Transmitter)
Account Record.

RANGE OF VALUE:  The value of POANXDEL ranges from a minimum
of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS:  POANXDEL contains the sum of all
occurrences of POANXDEL that were included in the level of
summarization.

USAGE NOTES:  None


+-----------------+
| P O A N X I N S | Records Inserted by NETEXIT/XMTEXIT
+-----------------+
POANXINS contains the number of extra records added to a
job or output by the NETEXIT or XMTEXIT routines.  This
measurement was introduced with VSE/POWER Version 5.1.

TYPE:  Accumulated data element -- NUMERIC, measurement unit
is INTEGER.

SEE ALSO:  POANXDEL - Records Deleted by NETEXIT/XMTEXIT
           POAXRDEL - Records Deleted by the OUTEXIT Routine
           POAXRINS - Records Inserted by the OUTEXIT Routine

ELEMENT DERIVATION:  POANXINS contains the value input from
field NACINR of the Type V (Receiver) or Type M (Transmitter)
Account Record.

RANGE OF VALUE:  The value of POANXINS ranges from a minimum
of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS:  POANXINS contains the sum of all
occurrences of POANXINS that were included in the level of
summarization.

USAGE NOTES:  None


+-----------------+
| P O A O P R T Y |  Output Priority
+-----------------+
POAOPRTY contains the priority number for the output
or job represented by this observation.

TYPE:  Retained data element -- CHARACTER, LENGTH 1.

SEE ALSO:  POAQTYPE - Queue Type

ELEMENT DERIVATION:  POAOPRTY contains the value input from
either field LSTOPR of the Type L List Account Record, field
PUNOPR of the Type P Punch Account Record, or field NACPR of
the Type M or V Transmitter/Receiver Account Record.

RANGE OF VALUE:  POAOPRTY may contain a single character
digit between 0 and 9.

SUMMARIZATION PROCESS:  POAOPRTY contains the last value of
POAOPRTY encountered in the level of summarization.

USAGE NOTES:  For jobs received or transmitted to the reader
queue (POAQTYPE='R'), POAOPRTY contains the job input
priority.

POAOPRTY is only meaningful at the DETAIL level.


+-----------------+
| P O A O R G I D |  Origin User Identification
+-----------------+
POAORGID contains the VSE/POWER source or origin identifier
indicating the origin of the job or output represented by
this observation.

TYPE:  Retained data element -- CHARACTER, LENGTH 8.

SEE ALSO:  POAORGJN - Origin Job Number
           POAORGNN - Origin Node Name

ELEMENT DERIVATION:  POAORGID contains the value input from
either field LSTFRUS of the Type L List Account Record, field
PUNFRUS of the Type P Punch Account Record, or field NACOUS
of the Type M or V Transmitter/Receiver Account Record.

RANGE OF VALUE:  POAORGID may contain any valid user
identifier.  For locally originated jobs or output, it is
```

usually set to blanks (missing value). For remotely originated jobs or output, it is usually the letter R followed by the number (from 001 to 250) of the RJE workstation the POWER job or output was originated from.

SUMMARIZATION PROCESS: POAORGID contains the last value of POAORGID encountered in the level of summarization.

USAGE NOTES: POAORGID only has meaning at the DETAIL level.

P O A O R G J N | Original Job Number

POAORGJN contains the job number, if any, assigned at the job's origin network node.

TYPE: Retained data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PWRJOBNO - POWER Job Number
POAORGID - Origin User Identification
POAORGNN - Origin Node Name

ELEMENT DERIVATION: POAORGJN contains the value input from either field LSTOJ# of the Type L List Account Record, field PUNOJ# of the Type P Punch Account Record, or field NACORGJ# of the Type M or V Transmitter/Receiver Account Record.

RANGE OF VALUE: 1 to 65535.

SUMMARIZATION PROCESS: POAORGJN contains the last value of POAORGJN encountered in the level of summarization.

USAGE NOTES: POAORGJN only has meaning at the DETAIL level.

P O A O R G N N | Origin Node Name

POAORGNN contains the name of the network node this VSE/POWER job or output came from.

TYPE: Retained data element -- CHARACTER, LENGTH 8.

SEE ALSO: POAORGID - Origin User Identification
POAORGJN - Original Job Number

ELEMENT DERIVATION: POAORGNN contains the value input from either field LSTFRNO of the Type L List Account Record, field PUNFRNO of the Type P Punch Account Record, or field NACON of the Type M or V Transmitter/Receiver Account Record.

RANGE OF VALUE: POAORGNN can be any valid network node name consisting of one to eight alphanumeric characters, where the first character must be one of the letters A through Z or one of the special characters $, #, and @. Network node names are defined to VSE/POWER via the PNODE macro.

SUMMARIZATION PROCESS: POAORGNN contains the last value of POAORGNN encountered in the level of summarization.

USAGE NOTES: POAORGNN only has meaning at the DETAIL level.

P O A P G E | Pages Printed

POAPGE contains the approximate number of pages printed for the outputs represented by the observation. Each skip to channel 1 is considered to be a page. The page count is also incremented whenever a page filled condition is encountered.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: POAEPGE - Extra Pages Printed
POANLR - Logical Writer Records

ELEMENT DERIVATION: POAPGE contains the value input from field LSTPAG of the Type L List Account Record. For observations derived from either the Type P Punch Account Record or the Type M or V Transmitter/Receiver Account Record, POAPGE is set to missing.

RANGE OF VALUE: The value of POAPGE ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: POAPGE contains the sum of all occurrences of POAPGE that were included in the level of summarization.

USAGE NOTES: None

| P O A P T E R M | POWER Termination Code

POAPTERM contains the code indicating the reason for the termination of output processing, transmission, or reception. The value placed here by POWER depends on the type of record used to create the observation.

TYPE: Retained data element -- CHARACTER, LENGTH 2.

SEE ALSO: POAQTYPE - Queue Type

ELEMENT DERIVATION: POAPTERM contains the value input from the ACCANC field in the common header information contained in the VSE/POWER account record used to construct the observation.

RANGE OF VALUE: POAPTERM may contain any of the following values:

'10' = Normal end of VSE/POWER job or task. The associated VSE job(s) may have been cancelled by the system nevertheless.

'30' = PSTOP command was issued. The code is not stored in the account record if the EOJ option was specified in the PSTOP command.

'40' = PFLUSH command was issued.

'60' = The job was cancelled via RDREXIT. Only applicable to jobs transmitted or received to the reader queue (POAQTYPE = 'R').

'70' = The job was cancelled due to an I/O error.

'80' = The job or output transmission was cancelled due to a receiver-task stop at the receiving end.

SUMMARIZATION PROCESS: POAPTERM contains the last value of POAPTERM encountered in the level of summarization.

USAGE NOTES: POAPTERM is only meaningful at the DETAIL level.

| P O A Q T Y P E | Queue Type

POAQTYPE indicates whether the data contained in this observation represents list output, punch output, or a job transmitted or received to a reader queue.

TYPE: Retained data element -- CHARACTER, LENGTH 1.

SEE ALSO: Not applicable

ELEMENT DERIVATION: POAQTYPE is set by CA MICS based on the type of queue processing that took place, as indicated in the raw account records used to construct the observation. For observations derived from the Type L List Account Record CA MICS sets the value for POAQTYPE to 'L'. For observations derived from the Type P Punch Account Record, CA MICS sets the value of POAQTYPE to 'P'. For observations derived from the Type M or V Transmitter/Receiver Account Record, POAQTYPE contains the value input from field NACQTYP. NACQTYP may contain any of the values 'L', 'P', or 'R'.

RANGE OF VALUE: The value of POAQTYPE contains one of the following values:

'L' = List
'P' = Punch
'R' = Reader

SUMMARIZATION PROCESS: POAQTYPE contains the last value of POAQTYPE encountered in the level of summarization.

USAGE NOTES: POAQTYPE is only meaningful at the DETAIL level.

| P O A S E G C T | Segment Count

VSE/POWER job output can be segmented, that is part of the output from a job can be printed or punched before the entire job is finished. Each segment is given a different number. POASEGCT contains the segment count.

TYPE: Retained data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: POALSTSG - Last Segment Indicator

ELEMENT DERIVATION: CA MICS uses either field LSTSUF of the Type L List Account Record, field PUNSUF of the Type P Punch

Account Record, or field NACSUF of the Type M or V Transmitter/Receiver Account Record to determine how many segments of output a given POWER job has. If this field has a X'00' in it, this indicates that the job only had one segment. Any value less than X'80' represents the segment number for a job that produced multiple segments. Finally, if the value is greater than X'80', it indicates that this record contains information about the last output segment and the low-order seven bits contain the total number of segments for the job. CA MICS places LSTSUF, PUNSUF, or NACSUF in a field called WRKFLGN1 and POASEGCT is then calculated by the following method:

```
IF WRKFLGN1 EQ 0 THEN DO;
  POASEGCT = 1;
  END;
ELSE DO;
  POASEGCT = MOD(WRKFLGN1,128);
  END;
```

RANGE OF VALUE: The value of this POASEGCT ranges from 1 to 127.

SUMMARIZATION PROCESS: POASEGCT contains the last value of POASEGCT encountered in the level of summarization.

USAGE NOTES: POASEGCT is only meaningful at the DETAIL level.

P O A S R M T | Source Remote

POASRMT contains the remote identifier of the RJE workstation that the List or Punch output represented by this observation came from. For locally generated output, this will be set to zero.

TYPE: Retained data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: POADRMT - Destination Remote

ELEMENT DERIVATION: POASRMT contains the value input from either field LSTFRM of the Type L List Account Record or field PUNFRM of the Type P Punch Account Record. For observations derived from the Type M or V Transmitter/Receiver Account Record, POASRMT is set to missing (blanks).

RANGE OF VALUE: The value of POASRMT ranges from a minimum of 0 to a maximum of 250.

SUMMARIZATION PROCESS: POASRMT contains the last value of POASRMT encountered in the level of summarization.

USAGE NOTES: POASRMT only has meaning at the DETAIL level.

P O A T K O B L | Tracks or Blocks for Storage

For VSE/POWER Versions 2.1 and 2.2, POATKOBL contains the number of tracks used for output storage of the POWER job(s) represented by the observation. For VSE/POWER Versions 2.3 and above, POATKOBL contains the number of data block (DBLK) groups used for output storage of the POWER job(s) represented by the observation. This value of this data element is 0 if the output was spooled to tape.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PJBTKOBL - Input Storage Tracks

ELEMENT DERIVATION: POATKOBL contains the value input from either field LSTTRK of the Type L List Account Record or field PUNTRK of the Type P Punch Account Record. For observations derived from the Type M or V Transmitter/Receiver Account Record, POATKOBL is set to missing.

RANGE OF VALUE: The value of POATKOBL ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: POATKOBL contains the sum of all occurrences of POATKOBL that were included in the level of summarization.

USAGE NOTES: For VSE/POWER Versions 2.3 and above at the DETAIL level, analysis of PJBTKOBL and POATKOBL for all jobs can be useful in determining whether an appropriate size has been chosen for DBLK groups in the DBLKGP operand of the POWER generation macro. If a high percentage of queue entries have one allocated DBLK group (a value of '1' for PJBTKOBL or POATKOBL), it might be an indication that the DBLK group size is too high. Since a DBLK group is the smallest unit of spool space that VSE/POWER allocates to a job, this can result in fragmentation on the spool volume(s), causing the system to run out of spool space because data blocks are being wasted in each DBLK group.

```
+-----------------+
| P O A X R D E L | Records Deleted by the OUTEXIT Routine
+-----------------+
POAXRDEL contains the number of lines deleted from the
spooled output for a job.  These lines may be removed from
from either print or punch output by the POWER output exit.

TYPE:  Accumulated data element -- NUMERIC, measurement unit
is INTEGER.

SEE ALSO:  POAXRINS - Records Inserted by the OUTEXIT Routine

ELEMENT DERIVATION:  POAXRDEL contains the value input from
one of the following fields based on record type:

   LSTRDEL  :  Type L List Account Record
   PUNRDEL  :  Type P Punch Account Record
   XSPRDEL  :  Type X Spool Access Operation Account Record

RANGE OF VALUE:  The value of POAXRDEL ranges from a minimum
of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS:  POAXRDEL contains the sum of all
occurrences of POAXRDEL that were included in the level of
summarization.

USAGE NOTES:  None


+-----------------+
| P O A X R I N S | Records Inserted by the OUTEXIT Routine
+-----------------+
POAXRINS contains the number of extra lines added to the
spooled output for a job.  These lines may be added to either
print or punch output by the POWER output exit.

TYPE:  Accumulated data element -- NUMERIC, measurement unit
is INTEGER.

SEE ALSO:  POAXRDEL - Records Deleted by the OUTEXIT Routine

ELEMENT DERIVATION:  POAXRINS contains the value input from
one of the following fields based on record type:

   LSTRINS  :  Type L List Account Record
   PUNRINS  :  Type P Punch Account Record
   XSPRINS  :  Type X Spool Access Operation Account Record

RANGE OF VALUE:  The value of POAXRINS ranges from a minimum
of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS:  POAXRINS contains the sum of all
occurrences of POAXRINS that were included in the level of
summarization.

USAGE NOTES:  None
```

B.2.4 - VSE/POWER Program Activity (PWRPPG) File

The VSE/POWER Program Activity File quantifies the resource consumption for the execution of a program in a POWER Job. Additional information includes termination reasons, turnaround specifications, and identification fields such as Job Priority, Jobs Class, etc. The records in this file are built from the Execution Account Record of VSE/POWER Accounting.

P P G A L L T M | All Bound Time

PPGALLTM contains the system wait time prorated to all program executions (job steps) represented in this observation. VSE/POWER arrives at this time by dividing the total system wait time by the number of active partitions based on percentage of used processor time.

TYPE: Accumulated data element -- NUMERIC, measurement unit is SAS TIME value.

SEE ALSO: PPGCPUTM - Program Processor Time
PPGEXCTM - Program Execution Time
PPGOVHTM - Overhead Time

ELEMENT DERIVATION: PPGALLTM contains the value input from field EXALLTM of the Type E Execution Account Record. As measured by VSE/POWER, EXALLTM is in units of 300th seconds. CA MICS divides EXALLTM by 300 to convert it to seconds.

RANGE OF VALUE: The value of PPGALLTM ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PPGALLTM contains the sum of all occurrences of PPGALLTM that were included in the level of summarization.

USAGE NOTES: None

P P G B A D C T | SIO Count May Be Wrong Flag

PPGBADCT contains the number of program executions (job steps) that have invalid SIO (Start Input/Output Operation) counts. At the DETAIL level, the element contains a '1' if an invalid SIO count was detected by VSE/POWER during the job step or a '0' otherwise. PPGBADCT is accumulated at the time spans to provide a count of the total number of job steps that may have invalid SIO counts.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGSIO - Total SIOs Issued
PPGDSIO - DASD SIOs Issued
PPGOSIO - Other SIOs Issued
PPGSSIO - Spool SIOs Issued
PPGTSIO - Tape SIOs Issued

ELEMENT DERIVATION: In the first byte after the SIO tables (field EXSIOTB) recorded in the Type E Execution Account Record, VSE/POWER puts a value of '20' if all SIO counts in the table are valid or '30' if one or more counts were invalid. CA MICS checks this byte for each job step and sets PPGBADCT to '1' if the counts were invalid or to '0' if the counts were valid.

RANGE OF VALUE: The value of PPGBADCT ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PPGBADCT contains the sum of all occurrences of PPGBADCT that were included in the level of summarization.

USAGE NOTES: If PPGBADCT contain any value other than zero, the various data elements that contain SIO counts (PPGSIO, PPGDSIO, PPGOSIO, PPGSSIO, and PPGTSIO) may contain only partial counts of actual SIO activity.

P P G C O S T | Program Cost

The total processing costs for this program execution (job step). If CA MICS Accounting and Chargeback is used and this file is selected for billing, the element is updated by CA MICS processing. Otherwise, the value of this element is set to zero unless a user-calculated job step charge is stored to it.

TYPE: Computed data element -- NUMERIC, measurement unit is REAL NUMBER.

SEE ALSO: PJBCOST - Job Cost
POACOST - Output Cost

ELEMENT DERIVATION: If CA MICS Accounting and Chargeback is used and this file is selected for billing, PPGCOST is updated based on step related charging elements specified in member RATETBL of the prefix.MICS.PARMS library. Otherwise,

the value must be computed by the user in the USRSPPG exit.

RANGE OF VALUE: The value of PPGCOST ranges from a minimum of zero to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PPGCOST contains the sum of all occurrences of PPGCOST that were included in the level of summarization.

USAGE NOTES: None

P P G C O U N T | Program Executions

PPGCOUNT contains the total number of program executions (job steps) represented in this observation. At the DETAIL level, this value is always '1'.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGFLUSH - Programs Flushed
PPGIOERR - Programs Terminated with I/O Error

ELEMENT DERIVATION: Each unique job step execution results in PPGCOUNT being set to '1' in the DETAIL level observation for that job step.

RANGE OF VALUE: PPGCOUNT is always one at the DETAIL level, and may range from a minimum of 1 to a maximum that is limited only by practical bounds at the other time spans.

SUMMARIZATION PROCESS: PPGCOUNT contains the sum of all occurrences of PPGCOUNT that were included in the level of summarization.

USAGE NOTES: In addition to program executions (job steps) which had a normal execution, the PPGCOUNT data element includes jobs which were cancelled due to a PFLUSH command (PPGFLUSH) and jobs terminated due to an I/O error (PPGIOERR).

P P G C P U N I | Program Instructions

PPGCPUNI contains an approximation of the total number of CPU instructions executed (in millions) for this program, calculated by multiplying the measured CPU time by the MIPS rate (millions of instructions per second) specified in the CA MICS library prefix.MICS.PARMS(SYSID).

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGCPUTM - Program Processor Time

ELEMENT DERIVATION: PPGCPUNI is calculated as the product of step program processor time (PPGCPUTM) and the MIPS rate specified for this CPU in the SYSID member of prefix.MICS.PARMS.

RANGE OF VALUE: The value PPGCPUNI ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PPGCPUNI contains the sum of all occurrences of PPGCPUNI that were included in the level of summarization.

USAGE NOTES: PPGCPUNI approximates the total number of CPU instructions based on the user specified MIPS (millions of instructions per second) rate. The value for MIPS rate is usually obtained from manufacturers specifications.

PPGCPUNI is also dependent on the instruction mix used in the program, the contending workload (if any) using the system concurrently with the step, the processor architecture, and the system microcode level. Altering any of these factors will change the reported value of PPGCPUNI for replicated runs, even though the exact same code executes against the exact same data.

When used with caution, PPGCPUNI can be helpful in comparing the relative efficiency of different software implementations of the same function, for example, the "relative path lengths" of two data base management systems for a backup/reload cycle performed on equivalent collections of data.

P P G C P U T M | Program Processor Time

PPGCPUTM contains the total CPU time that is specifically used by a program for the program executions (job steps) represented in this observation (excluding allocated overhead time).

TYPE: Accumulated data element -- NUMERIC, measurement unit is SAS TIME value.

SEE ALSO: PPGALLTM - All Bound Time
PPGEXCTM - Program Execution Time
PPGOVHTM - Overhead Time

ELEMENT DERIVATION: PPGCPUTM contains the value input from field EXCPUTM of the Type E Execution Account Record. As measured by VSE/POWER, EXCPUTM is in units of 300th seconds. CA MICS divides EXCPUTM by 300 to convert it to seconds.

RANGE OF VALUE: The value of PPGCPUTM ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PPGCPUTM contains the sum of all occurrences of PPGCPUTM that were included in the level of summarization.

USAGE NOTES: All SVC processing is counted as active processor time for the job or job step and is included in this element.

P P G D R M T — Destination Remote

The remote identifier of the RJE workstation that the POWER job was routed to.

TYPE: Retained data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGSRMT - Source Remote

ELEMENT DERIVATION: PPGDRMT contains the value input from the EXDEST field of the Type E Execution Account Record.

RANGE OF VALUE: The value of PPGDRMT ranges from 0 to 250, where a value of 0 indicates destination local.

SUMMARIZATION PROCESS: PPGDRMT contains the last value of PPGDRMT encountered in the level of summarization.

USAGE NOTES: For Version 2 and above of VSE/POWER, this data element will contain a value of zero.

PPGDRMT has meaning only at the DETAIL level.

P P G D S I O — DASD SIOs Issued

PPGDSIO contains the total number of DASD SIOs (Start Input/Output Operations) generated by the program executions (job steps) described by this observation.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGSIO - Total SIOs Issued

ELEMENT DERIVATION: PPGDSIO contains the value taken from the 4 right-most bytes of each 6 byte entry, pertaining to DASD SIOs, in the SIO tables maintained in the Type E Execution Account Record (field EXSIOTB). For each entry in the SIO tables, CA MICS makes a determination of what device is associated with the entry (from the first 2 bytes) and then accumulates SIO counts based on the "device class" specification made in the CA MICS parameter library member PWRCONFG of prefix.MICS.PARMS.

RANGE OF VALUE: The value of PPGDSIO ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PPGDSIO contains the sum of all occurrences of PPGDSIO that were included in the level of summarization.

USAGE NOTES: None

P P G E P R T Y — Job Execution Priority

The input priority of the POWER job under which this program (job step) executed when the step was dispatched to a partition for execution.

TYPE: Retained data element -- CHARACTER, LENGTH 1.

SEE ALSO: Not applicable

ELEMENT DERIVATION: PPGEPRTY contains the value input from field EXIPR of the Type E Execution Account Record. In VSE/POWER, jobs are assigned a priority based on either a default priority or on the specification made in the PRI parameter of the * $$ JOB statement. Job input priority may also be changed by the system operator via the PALTER command.

RANGE OF VALUE: The value of PPGEPRTY may range between 0 and 9.

SUMMARIZATION PROCESS: PPGEPRTY contains the last value of PPGEPRTY encountered in the level of summarization.

USAGE NOTES: PPGEPRTY has meaning only at the DETAIL level.

P P G E X C N N | Execution Node Name

The name of the network node on which the program (job step) executed.

TYPE: Retained data element -- CHARACTER, LENGTH 8.

SEE ALSO: PPGORGNN - Origin Node Name

ELEMENT DERIVATION: PPGEXCNN contains the value input from field EXXNODE of the Type E Execution Account Record.

RANGE OF VALUE: PPGEXCNN can be any valid network node name consisting of one to eight alphanumeric characters, where the first character must be one of the letters A through Z or one of the special characters $, #, and @. Network node names are defined to VSE/POWER via the PNODE macro.

SUMMARIZATION PROCESS: PPGEXCNN contains the last value of PPGEXCNN encountered in the level of summarization.

USAGE NOTES: PPGEXCNN only has meaning at the DETAIL level.

P P G E X C T M | Program Execution Time

PPGEXCTM is the total amount of elapsed time that this program (job step) spent in execution accumulated over all program executions (job steps) represented in this observation. A program is considered to be in a state of execution as soon as it is loaded and available to run.

TYPE: Accumulated data element -- NUMERIC, measurement unit is SAS TIME value.

SEE ALSO: PPGALLTM - All Bound Time
PPGCPUTM - Program Processor Time
PPGOVHTM - Overhead Time

ELEMENT DERIVATION: PPGEXCTM contains the value input from field EXJDUR of the Type E Execution Account Record. As measured by VSE/POWER, EXJDUR is in units of 300th seconds. CA MICS divides EXJDUR by 300 to convert it to seconds.

RANGE OF VALUE: The value of PPGEXCTM ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PPGEXCTM contains the sum of all occurrences of PPGEXCTM that were included in the level of summarization.

USAGE NOTES: None

P P G F L U S H | Programs Flushed

PPGFLUSH contains the total number of program executions (job steps) that were cancelled due to either a VSE/POWER PFLUSH command or a VSE CANCEL command. At the DETAIL level, this value is either '0' or '1'.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGCOUNT - Program Executions
PPGPTERM - POWER Termination Code
PPGVTERM - VSE Termination Code

ELEMENT DERIVATION: PPGFLUSH is determined by testing both data elements PPGPTERM and PPGVTERM for a value of '40'. If either one does equal '40', PPGFLUSH is set to '1'. Otherwise, PPGFLUSH is set to '0'.

RANGE OF VALUE: The value PPGFLUSH is always either '1' or '0' at the DETAIL level, and may range from a minimum of zero to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PPGFLUSH contains the sum of all occurrences of PPGFLUSH that were included in the level of summarization.

USAGE NOTES: None

```
+-----------------+
| P P G I O E R R | Programs Terminated with I/O Error
+-----------------+
PPGIOERR contains the total number of program executions (job
steps) that were terminated due to an I/O Error.  At the
DETAIL level, this value is either '0' or '1'.

TYPE:  Accumulated data element -- NUMERIC, measurement unit
is INTEGER.

SEE ALSO:  PPGCOUNT - Program Executions
           PPGPTERM - POWER Termination Code
           PPGVTERM - VSE Termination Code

ELEMENT DERIVATION:  PPGIOERR is determined by testing both
data elements PPGPTERM and PPGVTERM for a value of '70'.  If
either one does equal '70', PPGIOERR is set to '1'.
Otherwise, PPGIOERR is set to '0'.

RANGE OF VALUE:  The value PPGIOERR is always either '1' or
'0' at the DETAIL level, and may range from a minimum of 0 to
a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS:  PPGIOERR contains the sum of all
occurrences of PPGIOERR that were included in the level of
summarization.

USAGE NOTES:  None


+-----------------+
| P P G M E M U S | Kilobytes Memory Used
+-----------------+
PPGMEMUS contains the amount of memory, in Kilobytes, used by
the program (job step).

TYPE:   Retained data element -- NUMERIC, measurement unit is
INTEGER.

SEE ALSO:  PPGMXMUS - Maximum Memory Used

ELEMENT DERIVATION:  PPGMEMUS contains the value input from
field EXPASZ of the Type E Execution Account Record.  As
measured by VSE/POWER, EXPASZ is the number of pages
multiplied by 2K bytes.  CA MICS divides EXPASZ by 1024 to
convert it to Kilobytes.

RANGE OF VALUE:  The value of PPGMEMUS ranges from a minimum
of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS:  PPGMEMUS contains the last value of
PPGMEMUS encountered in the level of summarization.

USAGE NOTES:  PPGMEMUS only has meaning at the DETAIL level.


+-----------------+
| P P G M X C T M | Maximum Program Processor Time
+-----------------+
PPGMXCTM is the largest amount of processor time consumed by
a program execution (job step).  At the DETAIL level, this
element is the time for each execution (PPGCPUTM).  At higher
summarization levels, it is the largest value encountered for
a single execution within the prescribed levels of
summarization.

TYPE:   Maximum value data element -- NUMERIC, measurement
unit is SAS TIME value.

SEE ALSO:  Not applicable

ELEMENT DERIVATION:  PPGMXCTM is obtained from PPGCPUTM. At
the DETAIL level, it is set equal to PPGCPUTM and at higher
summarization levels it retains the maximum value of PPGCPUTM
for a single execution.

RANGE OF VALUE:  The value PPGMXCTM ranges from a minimum of
0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS:  PPGMXCTM contains the maximum value
for all occurrences of PPGMXCTM in the observations processed
for the summarization level.

USAGE NOTES:  None


+-----------------+
| P P G M X D A S |  Maximum DASD Devices Used
+-----------------+
The maximum number of direct access device allocations by a
program execution (job step).  At the DETAIL level, this
element is a count of all DASD volumes allocated to the
execution of this program.  At higher summarization levels,
it is the largest value encountered for a single execution
within the prescribed level of summarization.

TYPE:  Maximum value data element   --  NUMERIC, measurement
unit is INTEGER.

SEE ALSO:  PPGDSIO - DASD SIOs Issued
```

ELEMENT DERIVATION: PPGMXDAS is calculated by counting the number of DASD entries in the SIO tables maintained in field EXSIOTB of the Type E Execution Account Record. At higher summarization levels, the maximum value of PPGMXDAS for a single execution is retained.

RANGE OF VALUE: The value PPGMXDAS ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PPGMXDAS contains the maximum value for all occurrences of PPGMXDAS in the observations processed for the summarization level.

USAGE NOTES: None

P P G M X M U S | Maximum Memory Used

PPGMEMUS contains the maximum amount of memory, in Kilobytes, used by a program execution (job step). At the DETAIL level, PPGMXMUS is the number of Kilobytes used for each execution (PPGMEMUS). At higher summarization levels, it is the largest value encountered for a single execution within the prescribed level of summarization.

TYPE: Maximum value data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGMEMUS - Kilobytes Memory Used

ELEMENT DERIVATION: PPGMXMUS is obtained from PPGMEMUS. At the DETAIL level, it is set equal to PPGMEMUS and at higher summarization levels it retains the maximum value of PPGMEMUS for a single execution.

RANGE OF VALUE: The value PPGMXMUS ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PPGMXMUS contains the maximum value for all occurrences of PPGMXMUS in the observations processed for the summarization level.

USAGE NOTES: None

P P G M X S I O | Maximum SIOs Issued

PPGMXSIO contains the maximum number of SIOs (Start Input/Output Operations) issued by a program execution (job step). At the DETAIL level, PPGMXSIO is the SIOs issued for each execution (PPGSIO). At higher summarization levels, it is the largest value encountered for a single execution within the prescribed level of summarization.

TYPE: Maximum value data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGSIO - Total SIOs Issued

ELEMENT DERIVATION: PPGMXSIO is obtained from PPGSIO. At the DETAIL level, it is set equal to PPGSIO and at higher summarization levels it retains the maximum value of PPGSIO for a single execution.

RANGE OF VALUE: The value PPGMXSIO ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PPGMXSIO contains the maximum value for all occurrences of PPGMXSIO in the observations processed for the summarization level.

USAGE NOTES: None

P P G M X T A P | Maximum Tape Devices Used

PPGMXTAP is the maximum number of tape devices allocated to a program execution (job step). At the DETAIL level, this element is a count of all tape devices allocated to the execution of this program. At higher summarization levels, it is the largest value encountered for a single execution within the prescribed level of summarization.

TYPE: Maximum value data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGTSIO - Tape SIOs Issued

ELEMENT DERIVATION: PPGMXTAP is calculated by counting the number of tape entries in the SIO tables maintained in field EXSIOTB of the Type E Execution Account Record. At higher summarization levels, it retains the maximum value of PPGMXTAP for a single execution.

RANGE OF VALUE: The value PPGMXTAP ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PPGMXTAP contains the maximum value for all occurrences of PPGMXTAP in the observations processed for the summarization level.

USAGE NOTES: None

| P P G O R G I D | Origin User

PPGORGID is the origin identifier for the VSE/POWER job. For remotely submitted jobs, it indicates the RJE workstation (or user) submitting the job.

TYPE: Retained data element -- CHARACTER, LENGTH 8.

SEE ALSO: PPGORGJN - Origin Job Number
PPGORGNN - Origin Node Name

ELEMENT DERIVATION: PPGORGID contains the value input from field EXFRUS in the Type E Execution Account Record.

RANGE OF VALUE: PPGORGID may contain any valid user identifier. For locally submitted jobs, it is usually set to blanks (missing value). For remotely submitted jobs, it is usually the letter R followed by the number (from 001 to 250) of the RJE workstation the POWER job was submitted from.

SUMMARIZATION PROCESS: PPGORGID contains the last value of PPGORGID encountered in the level of summarization.

USAGE NOTES: PPGORGID only has meaning at the DETAIL level.

| P P G O R G J N | Origin Job Number

PPGORGJN contains the job number assigned at the job's origin network node. For locally submitted jobs, PPGORGJN is set to zero.

TYPE: Retained data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PWRJOBNO - POWER Job Number
PPGORGID - Origin User
PPGORGNN - Origin Node Name

ELEMENT DERIVATION: PPGORGJN contains the value input from field EXOJ# of the Type E Execution Account Record.

RANGE OF VALUE: 0 to 65535.

SUMMARIZATION PROCESS: PPGORGJN contains the last value of PPGORGJN encountered in the level of summarization.

USAGE NOTES: PPGORGJN only has meaning at the DETAIL level.

| P P G O R G N N | Origin Node Name

The name of the network node this POWER job came from or was read in on. If the VSE/POWER job was not transmitted to this node from another network node for execution, then PPGORGNN will equal PPGEXCNN.

TYPE: Retained data element -- CHARACTER, LENGTH 8.

SEE ALSO: PPGORGID - Origin User
PPGORGJN - Origin Job Number

ELEMENT DERIVATION: PPGORGNN contains the value input from field EXFRNO of the Type E Execution Account Record.

RANGE OF VALUE: PPGORGNN can be any valid network node name consisting of one to eight alphanumeric characters, where the first character must be one of the letters A through Z or one of the special characters $, #, and @. Network node names are defined to VSE/POWER via the PNODE macro.

SUMMARIZATION PROCESS: PPGORGNN contains the last value of PPGORGNN encountered in the level of summarization.

USAGE NOTES: PPGORGNN only has meaning at the DETAIL level.

| P P G O S I O | Other SIOs Issued

PPGOSIO contains the total number of uncategorized SIOs (Start Input/Output Operations) generated by the program executions (job steps) described by this observation.

SIOs are counted by VSE/POWER for each device address used by the program (step). CA MICS classifies the SIOs by device class (e.g., tape, DASD, spool) according to specifications in the PWRCONFG member of prefix.MICS.PARMS. If a device address is not assigned to a device class by the PWRCONFG parameter, the SIOs are accumulated in PPGOSIO.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGSIO - Total SIOs Issued
PPGDSIO - DASD SIOs Issued

PPGSSIO - Spool SIOs Issued
PPGTSIO - Tape SIOs Issued

ELEMENT DERIVATION: PPGOSIO contain the value taken from the 4 right-most bytes of each 6 byte entry pertaining to unclassified SIOs in the SIO tables maintained in the Type E Execution Account Record (field EXSIOTB). For each entry in the SIO tables, CA MICS makes a determination of what device is associated with the entry (from the first 2 bytes), and then accumulates SIO counts based on the device class specification made in the CA MICS parameter library member PWRCONFG of prefix.MICS.PARMS. Devices that do not appear in the PWRCONFG member or are not broadly classified as DASD, Spool, or Tape are accumulated for the classification of Other (PPGOSIO).

RANGE OF VALUE: The value of PPGOSIO ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PPGOSIO contains the sum of all occurrences of PPGOSIO that were included in the level of summarization.

USAGE NOTES: Non-zero values in this data element may be indicative of one or more devices attached to the system which have not been defined to CA MICS in the PWRCONFG member of prefix.MICS.PARMS.

P P G O V H N I — Overhead Instructions

PPGOVHNI contains an approximation of the total number of overhead-related CPU instructions executed (in millions) for this program execution (job step). It is calculated by multiplying the measured overhead processor time by the MIPS rate (millions of instructions per second) specified in the CA MICS library prefix.MICS.PARMS(SYSID).

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGCPUNI - Program Instructions
PPGOVHTM - Overhead Time

ELEMENT DERIVATION: PPGOVHNI is calculated as the product of step overhead processor time (PPGOVHTM) and the MIPS rate specified for this CPU in the SYSID member of prefix.MICS.PARMS.

RANGE OF VALUE: The value PPGOVHNI ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PPGOVHNI contains the sum of all occurrences of PPGOVHNI that were included in the level of summarization.

USAGE NOTES: PPGOVHNI approximates the total number of CPU instructions based on the user specified MIPS (millions of instructions per second) rate. The value for MIPS rate is usually obtained from manufacturers specifications.

PPGOVHNI is also dependent on the instruction mix used in the program, the contending workload (if any) using the system concurrently with the step, the processor architecture, and the system microcode level. Altering any of these factors will change the reported value of PPGOVHNI for replicated runs, even though the exact same code executes against the exact same data.

P P G O V H T M — Overhead Time

PPGOVHTM contains the processor time needed for activities that cannot be charged to a specific program or partition. VSE/POWER distributes this time over the number of active partitions, so this represents the overhead time allocated to the program executions (job steps) represented by this observation.

TYPE: Accumulated data element -- NUMERIC, measurement unit is SAS TIME value.

SEE ALSO: PPGALLTM - All Bound Time
PPGCPUTM - Program Processor Time
PPGEXCTM - Program Execution Time

ELEMENT DERIVATION: PPGOVHTM contains the value input from field EXOVHTM of the Type E Execution Account Record. As measured by VSE/POWER, EXOVHTM is in units of 300th seconds. CA MICS divides EXOVHTM by 300 to convert it to seconds.

RANGE OF VALUE: The value of PPGOVHTM ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PPGOVHTM contains the sum of all occurrences of PPGOVHTM that were included in the level of summarization.

USAGE NOTES: Examples of system overhead processing include the time from the start of the $JOBACCT routine to the

processing of the EXEC statement, the time for calling a routine, or the time for error recovery.

All SVC processing is counted as active processor time for the job or job step and is included in the PPGCPUTM (Program Processor Time) data element.

| P P G P T E R M | POWER Termination Code

PPGPTERM contains the code indicating the reason for the termination of a POWER program execution (job step).

TYPE: Retained data element -- CHARACTER, LENGTH 2.

SEE ALSO: PPGVTERM - VSE Termination Code
PPGFLUSH - Programs Flushed
PPGIOERR - Programs Terminated with I/O Error

ELEMENT DERIVATION: PPGPTERM contains the value input from field ACCANC of the Type E Execution Account Record.

RANGE OF VALUE: The value PPGPTERM may contain any of the following values:

'10' = Normal end of VSE/POWER job or task
'30' = PSTOP command was issued
'40' = PFLUSH command was issued
'70' = The job was cancelled due to an I/O error

SUMMARIZATION PROCESS: PPGPTERM contains the last value of PPGPTERM encountered in the level of summarization.

USAGE NOTES: Even though a POWER job might end with a termination code of '10' or '30', associated VSE job(s) may have been cancelled by the system. You must examine both PPGPTERM and PPGVTERM to verify successful program completion.

PPGPTERM only has meaning at the DETAIL level.

| P P G R T Y P E | Step Record Type

PPGRTYPE indicates whether or not the program execution (job step) represented by this observation is the last job step of the POWER job. PPGRTYPE is set ot 'L' for the last job step and to 'S' otherwise.

TYPE: Retained data element -- CHARACTER, LENGTH 1.

SEE ALSO: Not applicable

ELEMENT DERIVATION: PPGRTYPE contains the value input from field EXTYPE of the Type E Execution Account Record.

RANGE OF VALUE: The value of PPGRTYPE may contain one of the following values:

S = program execution (job step) record
L = Last program execution (job step) record

SUMMARIZATION PROCESS: PPGRTYPE contains the last value of PPGRTYPE encountered in the level of summarization.

USAGE NOTES: PPGRTYPE only has meaning at the DETAIL level.

| P P G S I O | Total SIOs Issued

PPGSIO contains the total number of SIOs (Start Input/Output Operations) generated to all devices by the program executions (job steps) described in this observation.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGDSIO - DASD SIOs Issued
PPGOSIO - Other SIOs Issued
PPGSSIO - Spool SIOs Issued
PPGTSIO - Tape SIOs Issued

ELEMENT DERIVATION: PPGSIO is the sum of the PPGDSIO, PPGOSIO, PPGSSIO, and PPGTSIO SIO counts.

RANGE OF VALUE: The value of PPGSIO ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PPGSIO contains the sum of all occurrences of PPGSIO that were included in the level of summarization.

USAGE NOTES: None

| P P G S P P G | Pages Spooled

PPGSPPG contains the number of pages spooled by the program executions (job steps) represented in this observation.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGSPPR - Lines Spooled
PPGSPPU - Cards Spooled

ELEMENT DERIVATION: PPGSPPG contains the value input from field EXNPG of the Type E Execution Account Record.

RANGE OF VALUE: The value of PPGSPPG ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PPGSPPG contains the sum of all occurrences of PPGSPPG that were included in the level of summarization.

USAGE NOTES: None

| P P G S P P R | Lines Spooled

PPGSPPR contains the number of lines spooled by the program executions (job steps) represented in this observation.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGSPPG - Pages Spooled
PPGSPPU - Cards Spooled

ELEMENT DERIVATION: PPGSPPR contains the value input from field EXNLN of the Type E Execution Account Record.

RANGE OF VALUE: The value of PPGSPPR ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PPGSPPR contains the sum of all occurrences of PPGSPPR that were included in the level of summarization.

USAGE NOTES: None

| P P G S P P U | Cards Spooled

PPGSPPU contains the number of cards spooled by the program executions (job steps) represented in this observation.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGSPPG - Pages Spooled
PPGSPPR - Lines Spooled

ELEMENT DERIVATION: PPGSPPU contains the value input from field EXNCD of the Type E Execution Account Record.

RANGE OF VALUE: The value of PPGSPPU ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PPGSPPU contains the sum of all occurrences of PPGSPPU that were included in the level of summarization.

USAGE NOTES: None

| P P G S R M T | Source Remote

PPGSRMT contains the remote identifier of the RJE workstation that the VSE/POWER job came from. For locally submitted jobs, this will be set to zero.

TYPE: Retained data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGDRMT - Destination Remote

ELEMENT DERIVATION: PPGSRMT contains the value input from field EXFRM of the Type E Execution Account Record.

RANGE OF VALUE: The value of PPGSRMT ranges from a minimum of 0 to a maximum of 250.

SUMMARIZATION PROCESS: PPGSRMT contains the last value of PPGSRMT encountered in the level of summarization.

USAGE NOTES: PPGSRMT only has meaning at the DETAIL level.

```
+-----------------+
| P P G S S I O   |  Spool SIOs Issued
+-----------------+
PPGSSIO contains the total number of Spool SIOs (Start
Input/Output Operations) generated by the program executions
(job steps) described in this observation.

TYPE:  Accumulated data element -- NUMERIC, measurement unit
is INTEGER.

SEE ALSO:  PPGSIO - Total SIOs Issued

ELEMENT DERIVATION:  PPGSSIO contains the value taken from
the 4 right-most bytes of each 6 byte entry pertaining to
spool SIOs in the SIO tables maintained in the Type E
Execution Account Record (field EXSIOTB).  For each entry in
the SIO tables, CA MICS makes a determination of what device
is associated with the entry (from the first 2 bytes) and
then accumulates SIO counts based on the device class
specification made in the CA MICS parameter library member
PWRCONFG of prefix.MICS.PARMS.

RANGE OF VALUE:  The value of PPGSSIO ranges from a minimum
of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS:  PPGSSIO contains the sum of all
occurrences of PPGSSIO that were included in the level of
summarization.

USAGE NOTES:  None


+-----------------+
| P P G T O H R S |  Tape Occupancy Hours
+-----------------+
PPGTOHRS is a measure of the tape device resource usage of
this program execution (job step).  Its value is the product
of the number of tape drives allocated and the number of
hours of execution (elapsed) time accumulated by each program
execution.

TYPE:  Accumulated data element -- NUMERIC, measurement unit
is REAL NUMBER.

SEE ALSO:  PPGEXCTM - Program Execution Time
           PPGVKHRS - Virtual Kcore Hours
           PPGMXTAP - Maximum Tape Devices Used

ELEMENT DERIVATION:  PPGTOHRS is calculated with the
following formula:

          PPGMXTAP * (PPGEXCTM / 3600)

RANGE OF VALUE:  The value PPGTOHRS ranges from a minimum of
0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS:  PPGTOHRS contains the sum of all
occurrences of PPGTOHRS that were included in the level of
summarization.

USAGE NOTES:  None


+-----------------+
| P P G T S I O   |  Tape SIOs Issued
+-----------------+
PPGTSIO contains the total number of Tape SIOs (Start
Input/Output Operations) generated by the program executions
(job steps) described in this observation.

TYPE:   Accumulated data element -- NUMERIC, measurement unit
is INTEGER.

SEE ALSO:  PPGSIO - Total SIOs Issued

ELEMENT DERIVATION:  PPGTSIO contains the value taken from
the 4 right-most bytes of each 6 byte entry pertaining to
tape SIOs in the SIO tables maintained in the Type E
Execution Account Record (field EXSIOTB).  For each entry in
the SIO tables, CA MICS makes a determination of what device
is associated with the entry (from the first 2 bytes) and
then accumulates SIO counts based on the device class
specification made in the CA MICS parameter library member
PWRCONFG of prefix.MICS.PARMS.

RANGE OF VALUE:  The value of PPGTSIO ranges from a minimum
of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS:  PPGTSIO contains the sum of all
occurrences of PPGTSIO that were included in the level of
summarization.

USAGE NOTES:  None


+-----------------+
| P P G U F L D L |  User Field Length
+-----------------+
PPGUFLDL contains the total length of the user account
information that was provided in the Type E Execution Account
Record used to construct this observation.  User account
information can be placed in the Execution Account Record by
the PUTACCT macro issued in the $JOBACCT routine.  If no user
```

account information is provides, PPGUFLDL will be zero.

TYPE: Retained data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PPGUFLDx - User Field x

ELEMENT DERIVATION: PPGUFLDL is calculated by subtracting the starting record position for the user account information in the Type E Execution Account Record from the total record length.

RANGE OF VALUE: The value of this element ranges from a minimum of 0 to a maximum of 2000.

SUMMARIZATION PROCESS: PPGUFLDL contains the value of the last occurrence of PPGUFLDL in the observations processed for the summarization level.

USAGE NOTES: PPGUFLDL does not necessarily reflect the length of information put into the PPGUFLDx data elements. Usage of PPGUFLDL is installation dependent. See your CA MICS System Administrator for information on what user account information is being recorded by VSE/POWER.

P P G U F L D x | User Field

The PPGUFLDx data elements are used to save user account information recorded in the Type E Execution Account record via the PUTACCT macro provide under VSE/POWER. You can define up to nine 200 byte user fields to the CA MICS Analyzer Option for VSE/POWER product. Five are provided by default. The value of the 'x' suffix in the data element determines what user data is recorded to it (e.g., PPGUFLD1 contains the first 200 bytes, PPGUFLD2 contains the next 200 bytes).

TYPE: Retained data element -- CHARACTER, LENGTH 200.

SEE ALSO: PPGUFLDL - User Field Length

ELEMENT DERIVATION: CA MICS extracts data from the user account area of each Type E Execution Account record in 200 byte segments.

RANGE OF VALUE: Any combination of 1 to 200 bytes of alphanumeric characters.

SUMMARIZATION PROCESS: PPGUFLDx contains the value of the last occurrence of PPGUFLDx in the observations processed for the summarization level.

USAGE NOTES: PPGUFLDx data elements may be used in your PWRACRT exit to derive values for the PWRACTx data elements. The PPGUFLDx data elements are not carried on the PWRPPG file at any timespan.

P P G V K H R S | Virtual Kcore Hours

PPGVKHRS is a measure of the memory resource usage of this program execution (job step). Its value is the product of the kilobytes of memory used and the number of hours of execution (elapsed) time accumulated by the program execution (job step).

TYPE: Accumulated data element -- NUMERIC, measurement unit is REAL NUMBER.

SEE ALSO: PPGEXCTM - Program Execution Time
PPGTOHRS - Tape Occupancy Hours
PPGMEMUS - Kilobytes Memory Used

ELEMENT DERIVATION: PPGVKHRS is calculated with the following formula:

PPGMEMUS * (PPGEXCTM / 3600)

RANGE OF VALUE: The value PPGVKHRS ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PPGVKHRS contains the sum of all occurrences of PPGTOHRS that were included in the level of summarization.

USAGE NOTES: None

P P G V T E R M | VSE Termination Code

PPGVTERM is the VSE termination code for the program execution (job step) represented by this observation.

TYPE: Retained data element -- CHARACTER, LENGTH 2.

SEE ALSO: PPGPTERM - POWER Termination Code
PPGFLUSH - Programs Flushed
PPGIOERR - Programs Terminated with I/O Error

ELEMENT DERIVATION: PPGVTERM contains the value input from field EXDCANC of the Type E Execution Account Record.

RANGE OF VALUE: The value PPGVTERM may contain any of the following values:

```
'10' = Normal end of VSE/POWER step
'30' = PSTOP command was issued
'40' = PFLUSH command was issued
'70' = The step was cancelled due to an I/O error
'xx' = Other possible 2 character termination codes
       based on the  SVC in  control at the time of
       termination.
```

SUMMARIZATION PROCESS: PPGVTERM contains the last value of PPGVTERM encountered in the level of summarization.

USAGE NOTES: PPGVTERM only has meaning at the DETAIL level.

Values other than '10' and '30' do not necessarily mean that an abnormal termination occurred. The VSE termination code can be installation and environment dependent. Consult your VSE systems programmer for assistance.

B.2.5 - VSE/POWER Remote Activity (PWRPRA) File

The VSE/POWER Remote Activity File maintains information on the BSC and SNA RJE Sessions:

- o For SNA RJE Sessions, the session information is taken from the SNA Account Record of VSE/POWER Accounting. Session duration and identification are maintained.

- o For BSC RJE Sessions, the session information is taken from the RJE Account Record of VSE/POWER Accounting. Session duration and identification are maintained, as well as activity and errors. The Network Record is used here also.

P R A B U F R V Buffers Received

PRABUFRV is the number of buffers received during a measurement interval. At the DETAIL level, this represents the number of buffers received during a single SNA RJE session.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PRABUFTR - Buffers Transmitted

ELEMENT DERIVATION: PRABUFRV contains the value input from field NETRCVE of the Type N Network Account Record.

RANGE OF VALUE: The value of PRABUFRV ranges from a minimum of 0 to a maximum that is limited only by practical bounds. For BSC RJE sessions (PRATYPE = 'RJEBSC' or 'NETBSC') and for observations derived from the Type S RJE-SNA Account Record (PRATYPE = 'RJESNA'), PRABUFRV is set to a missing value.

SUMMARIZATION PROCESS: PRABUFRV contains the sum of all occurrences of PRABUFRV that were included in the level of summarization.

USAGE NOTES: Buffers received only has meaning for an SNA RJE session (PRATYPE = 'NETSNA').

P R A B U F T R Buffers Transmitted

PRABUFTR is the number of buffers transmitted during a measurement interval. At the DETAIL level, this represents the number of buffers transmitted during a single RJE session.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PRABUFRV - Buffers Received
PRATIMOT - Timeouts
PRAERROR - Errors Count

ELEMENT DERIVATION: PRABUFTR contains the value input from field NETTRAN of the Type N Network Account Record for observations created from that record (PRATYPE = 'NETSNA' or 'NETBSC'). For BSC RJE sessions (PRATYPE = 'RJEBSC'), PRABUFTR is obtained from field BSCTRAN of the Type T RJE-BSC Account Record.

RANGE OF VALUE: The value of PRABUFTR ranges from a minimum of 0 to a maximum that is limited only by practical bounds. PRABUFTR is set to a missing value for observations derived from the Type S RJE-SNA Account Record (PRATYPE = 'RJESNA').

SUMMARIZATION PROCESS: PRABUFTR contains the sum of all occurrences of PRABUFTR that were included in the level of summarization.

USAGE NOTES: For observations quantifying BSC RJE sessions (PRATYPE = 'RJEBSC'), comparing PRABUFTR and PRATIMOT gives an indication of the idle time per session. Also for BSC RJE sessions, comparing PRABUFTR, PRATIMOT, and PRAERROR gives an indication of line quality.

P R A E R R O R Errors Count

PRAERROR is the total number of line errors that occurred during the measurement interval for BSC RJE lines. At the DETAIL level, this is the number of line errors that occurred during a single BSC RJE session.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PRABUFTR - Buffers Transmitted
PRATIMOT - Timeouts

ELEMENT DERIVATION: PRAERROR contains the value input from field NETERR of the Type N Network Account Record for observations derived from that record (PRATYPE = 'NETBSC'). For observations derived from the Type T RJE-BSC Account

Record (PRATYPE = 'RJEBSC'), PRAERROR contains the value input from field BSCERR.

RANGE OF VALUE: The value of PRAERROR ranges from a minimum of 0 to a maximum that is limited only by practical bounds. For SNA RJE sessions (PRATYPE = 'NETSNA' or 'RJESNA'), PRAERROR is set to a missing value.

SUMMARIZATION PROCESS: PRAERROR contains the sum of all occurrences of PRAERROR that were included in the level of summarization.

USAGE NOTES: For observations derived from the Type T RJE-BSC Account Record (PRATYPE = 'RJEBSC'), comparing PRAERROR, PRABUFTR, and PRATIMOT can provide an indication of the BSC line quality.

PRAERROR only has meaning for BSC RJE sessions.

P R A I N R S P — Invalid Responses

PRAINRSP is the number of invalid responses encountered during the measurement interval. At the DETAIL level, this represents the number of invalid responses encountered during a single RJE session.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: Not applicable

ELEMENT DERIVATION: PRAINRSP contains the value input from either field BSCIRS of the Type T RJE-BSC Account Record (PRATYPE = 'RJEBSC'), field SNAIRS of the Type S RJE-SNA Account Record (PRATYPE = 'RJESNA'), or field NETICNT of the Type N Network Account Record (PRATYPE = 'NETBSC' or 'NETSNA').

RANGE OF VALUE: The value of PRAINRSP ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PRAINRSP contains the sum of all occurrences of PRAINRSP that were included in the level of summarization.

USAGE NOTES: None

P R A L P S W D — Line Password

PRALPSWD defines the line password which an RJE operator must specify to sign on to a remote workstation via either a given BSC RJE line as defined to VSE/POWER in the PLINE macro, a given SNA RJE workstation as defined to VSE/POWER in the PRMT macro, or specified by the local system operator in the PSTART PNET command. In any case, an installation can choose not to require passwords for RJE lines.

TYPE: Retained data element -- CHARACTER, LENGTH 8

SEE ALSO: PRANPSWD - Node Password

ELEMENT DERIVATION: PRALPSWD contains the value input from either field NETPSW of the Type N Network Account Record (PRATYPE = 'NETBSC' or 'NETSNA) or field BSCPAS of the Type T RJE-BSC Account Record (PRATYPE = 'RJEBSC').

RANGE OF VALUE: The value of PRALPSWD contains any 8 characters chosen by the site for a line password. For observations derived from the Type S RJE-SNA Account Record (PRATYPE = 'RJESNA'), PRALPSWD is set to a missing value (blanks).

SUMMARIZATION PROCESS: PRALPSWD contains the value of the last occurrence of PRALPSWD in the observations processed for the summarization level.

USAGE NOTES: None

P R A N P S W D — Node Password

PRANPSWD defines the node password which must be specified by an operator attempting to activate VSE/POWER's PNET function using a PSTART PNET command. If not specified in the PSTART PNET command, VSE/POWER uses the password that was defined in the PNODE generation macro for the local node. At an installation's option, passwords may not be used for network nodes.

TYPE: Retained data element -- CHARACTER, LENGTH 8

SEE ALSO: PRALPSWD - Line Password

ELEMENT DERIVATION: PRANPSWD contains the value input from field NETNPAS of the Type N Network Account Record (PRATYPE = 'NETBSC' or 'NETSNA').

RANGE OF VALUE: The value of PRANPSWD contains any 8 characters chosen by the site for a line password. For observations derived from the Type S RJE-SNA Account Record (PRATYPE = 'RJESNA') or from the Type T RJE-BSC Account Record (PRATYPE = 'RJEBSC'), PRANPSWD is set to a missing value (blanks).

SUMMARIZATION PROCESS: PRANPSWD contains the value of the last occurrence of PRANPSWD in the observations processed for the summarization level.

USAGE NOTES: None

P R A P T E R M | POWER Termination Reason

PRAPTERM contains a code indicating the reason for terminating an RJE session. The value placed here by POWER depends on the type of RJE session (SNA or BSC) and on the type of record used to create the observation.

TYPE: Retained data element -- CHARACTER, LENGTH 2

SEE ALSO: PRATYPE - Remote Type

ELEMENT DERIVATION: PRAPTERM contains the value from either field NETTERM of the Type N Network Account Record (PRATYPE = 'NETSNA' or 'NETBSC'), field BSCFSC of the Type T RJE-BSC Account Record (PRATYPE = 'RJEBSC'), or field SNATERM of the Type S RJE-SNA Account Record.

RANGE OF VALUE: The value of PRAPTERM is based on the record type used to create the DETAIL observation, as follows:

For PRATYPE = 'NETSNA' or 'NETBSC', it may contain any of the following values:

'02' = Normal ACF/VTAM shutdown
'04' = Abnormal end of ACV/VTAM
'08' = An internal error occurred
'10' = A line error occurred or a session was terminated
'20' = A time-out occurred
'40' = A remote SIGNOFF occurred
'80' = Cancel on operator request (one of the commands PSTOP and PEND)

For PRATYPE = 'RJEBSC', it may contain any of the following values:

'01' = Normal SIGNOFF
'02' = SIGNOFF forced due to PSTOP cuu
'04' = SIGNOFF forced due to excessive idle time
'08' = SIGNOFF forced due to unrecoverable I/O error
'10' = SIGNOFF forced due to PEND or PSTOP cuu,EOJ
'20' = SIGNOFF forced by lack of processor storage
'40' = SIGNOFF forced due to PSTOP cuu,FORCE
'80' = SIGNOFF forced due to line stop at last I/O

For PRATYPE = 'RJESNA', it may contain any of the following values:

'01' = Normal termination (LOGOFF or SIGNOFF)
'02' = Abnormal termination

SUMMARIZATION PROCESS: PRAPTERM contains the value of the last occurrence of PRAPTERM in the observations processed for the summarization level.

USAGE NOTES: None

P R A R M T I D | Remote Identifier

PRARMTID is the identifier for the RJE line. This identifier represents either the network node name as defined to VSE/POWER in the PNODE macro or the remote line number as defined to VSE/POWER in the PRMT macro.

TYPE: Common data element - CHARACTER, LENGTH 8

SEE ALSO: PRATYPE - Remote Type

ELEMENT DERIVATION: For observations derived from the Type N Network Account Record (PRATYPE = 'NETSNA' or 'NETRJE'), PRARMTID contains the value input from field NETNODE. For observations derived from the Type T RJE-BSC Account Record (PRATYPE = 'RJEBSC'), PRARMTID contains the character R followed by a character representation of the value input from field BSCRID. For observations derived from the Type S RJE-SNA Account Record (PRATYPE = 'RJESNA'), PRARMTID contains the character R followed by a character representation of the value input from field SNARID.

RANGE OF VALUE: PRARMTID can be any valid resource name

consisting of one to eight alphanumeric characters. For observations derived from either the BSC (Type T) or SNA (Type S) RJE Account Records (PRATYPE = 'RJEBSC' or 'RJESNA'), the first character is an R followed by the remote line number.

SUMMARIZATION PROCESS: PRARMTID is a summarization control variable. During the summarization process, a new record is created for each unique record key combination and this field is part of the key of its record.

USAGE NOTES: None

P R A R M T N M | Remote Name

PRARMTNM is the name assigned to the RJE line. For BSC RJE lines, PRARMTNM is the four characters LINE followed by the device address (X'cuu') defined to VSE/POWER in the PLINE macro. For SNA RJE lines, this might be just the three characters SNA or the secondary logical unit name used in LOGON of the RJE line and specified to VSE/POWER in the PRMT macro.

TYPE: Common data element - CHARACTER, LENGTH 8

SEE ALSO: PRATYPE - Remote Type

ELEMENT DERIVATION: For observations derived from the Type N Network Account Record for BSC RJE lines (PRATYPE = 'NETRJE'), PRARMTNM contains the four characters LINE followed by the device address (X'cuu') obtained from field NETLAD. For observations derived from the Type N Network Account Record for SNA RJE lines (PRATYPE = 'NETSNA'), PRARMTNM contains the characters SNA. For observations derived from the Type T RJE-BSC Account Record (PRATYPE = 'RJEBSC'), PRARMTNM contains the characters LINE followed by the device address (X'cuu') obtained from field BSCLAD. For observations derived from the Type S RJE-SNA Account Record (PRATYPE = 'RJESNA'), PRARMTNM contains the logical unit name value input from field SNALUN.

RANGE OF VALUE: For BSC RJE lines, this element can be any valid device address defined to VSE/POWER via the PLINE macro. For SNA RJE lines, this element contains either the characters SNA or a valid secondary logical unit name defined to VSE/POWER in the PRMT macro.

SUMMARIZATION PROCESS: PRARMTNM is a summarization control variable. During the summarization process, a new record is created for each unique record key combination and this field is part of the key of its record.

USAGE NOTES: None

P R A S E S S N | Sessions

PRASESSN is the total number of RJE sessions that occurred during the measurement interval. At the DETAIL level, this always has a value of 1. PRASESSN is accumulated at higher summarization levels to provide a count of the total number of RJE sessions.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: Not applicable

ELEMENT DERIVATION: Each unique RJE session results in the variable being set to 1 in the DETAIL level observation created for the session.

RANGE OF VALUE: The value of PRASESSN ranges from a minimum of 0 to a maximum that is limited only by practical bounds.

SUMMARIZATION PROCESS: PRASESSN contains the sum of all occurrences of PRASESSN that were included in the level of summarization.

USAGE NOTES: None

P R A T I M O T | Timeouts

PRATIMOT is the total number of timeouts that occurred during the measurement interval for BSC RJE lines. At the DETAIL level, this is the number of timeouts that occurred during a single BSC RJE session.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PRABUFTR - Buffers Transmitted
PRAERROR - Errors Count

ELEMENT DERIVATION: PRATIMOT contains the value input from field NETTCNT of the Type N Network Account Record for observations derived from that record (PRATYPE = 'NETBSC').

For observations derived from the Type T RJE-BSC Account Record (PRATYPE = 'RJEBSC'), PRATIMOT contains the value input from field BSCTCNT.

RANGE OF VALUE: The value of PRATIMOT ranges from a minimum of 0 to a maximum that is limited only by practical bounds. For SNA RJE sessions (PRATYPE = 'NETSNA' or 'RJESNA'), PRATIMOT is set to a missing value.

SUMMARIZATION PROCESS: PRATIMOT contains the sum of all occurrences of PRATIMOT that were included in the level of summarization.

USAGE NOTES: For observations derived from the Type T RJE-BSC Account Record (PRATYPE = 'RJEBSC'), comparing PRATIMOT, PRABUFTR, and PRAERROR can provide an indication of the BSC line quality.

This field only has meaning for BSC RJE sessions.

P R A T R M E R | Terminal Errors

PRATRMER is the total number of terminal (workstation) errors that occurred during the measurement interval for BSC RJE lines. At the DETAIL level, this represents the total number of such errors for a single BSC RJE session.

TYPE: Accumulated data element -- NUMERIC, measurement unit is INTEGER.

SEE ALSO: PRATYPE - Remote Type

ELEMENT DERIVATION: For observations derived from the Type T RJE-BSC Account Record (PRATYPE = 'RJEBSC'), PRATRMER contains the value input from field BSCTEC.

RANGE OF VALUE: The value of PRATRMER ranges from a minimum of 0 to a maximum that is limited only by practical bounds. For SNA RJE sessions (PRATYPE = 'NETSNA' or 'RJESNA') and for observations derived from the Type N Network Account Record for BSC RJE sessions (PRATYPE = 'NETBSC'), PRATRMER is set to a missing value.

SUMMARIZATION PROCESS: PRATRMER contains the sum of all occurrences of PRATRMER that were included in the level of summarization.

USAGE NOTES: PRATRMER only has meaning for BSC RJE sessions.

P R A T Y P E | Remote Type

PRATYPE indicates which record type was used to create the measurement data for this observation. VSE/POWER quantifies RJE activity in three record types. The Type T RJE-BSC Account Activity Record contains information about each Bisynchronous RJE session. The Type S RJE-SNA Account Record contains information about each SNA RJE session. Finally, the Type N Network Activity Record contains information about both SNA and BSC RJE sessions.

TYPE: Retained data element -- CHARACTER, LENGTH 6

SEE ALSO: Not applicable

ELEMENT DERIVATION: PRATYPE is set by CA MICS based on the type of raw input record used to create the observation and the type of RJE activity information (SNA or BSC) contained in that record.

RANGE OF VALUE: The value of PRATYPE contains any of the following values:

```
'RJEBSC' = Source record was RJE,BSC Account
           Activity Record (Type T).
'RJESNA' = Source record was RJE,SNA Account
           Activity Record (Type S).
'NETBSC' = Source record was Network Account
           Activity Record (Type N) for BSC RJE.
'NETSNA' = Source record was Network Account
           Activity Record (Type N) for SNA RJE.
```

SUMMARIZATION PROCESS: PRATYPE contains the value of the last occurrence of PRATYPE in the observations processed for the summarization level.

USAGE NOTES: None

P R A U S E R | SIGNON User Information

When a remote terminal operator indicates that a session is to begin by issuing a *.. SIGNON command, up to 16 bytes of user information may be included as part of the command entry. VSE/POWER moves this information to the line account record created for the session.

TYPE: Retained data element -- CHARACTER, LENGTH 16

SEE ALSO: Not applicable

ELEMENT DERIVATION: PRAUSER contains the value input from either field BSCUSE of the Type T RJE-BSC Account Activity Record or field SNAUSE of the Type S RJE-SNA Account Activity Record.

RANGE OF VALUE: The value of PRAUSER contains any value entered by the terminal operator via the *.. SIGNON command. For observations derived from the Type N Network Account Activity Record (PRATYPE = 'NETSNA' or 'NETBSC'), this field is set to a missing value (blanks).

SUMMARIZATION PROCESS: PRAUSER contains the value of the last occurrence of PRAUSER in the observations processed for the summarization level.

USAGE NOTES: None